

CANADA GAMES POOL & CENTENNIAL COMMUNITY CENTRE

REDEVELOPMENT FEASIBILITY REPORT

NEW WESTMINSTER, BC

NOVEMBER 2010

CANNONDESIGN.

Programming and Operations Planning	Cannon Design
Facility Options	Cannon Design
Interdisciplinary Coordination	Cannon Design
Structural Engineering	Fast + Epp
Mechanical Engineering	Jade West Engineering
Electrical Engineering	Acumen Engineering
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Acoustics	BKL Consultants
Code Consultants	LMDG Building Code Consultants

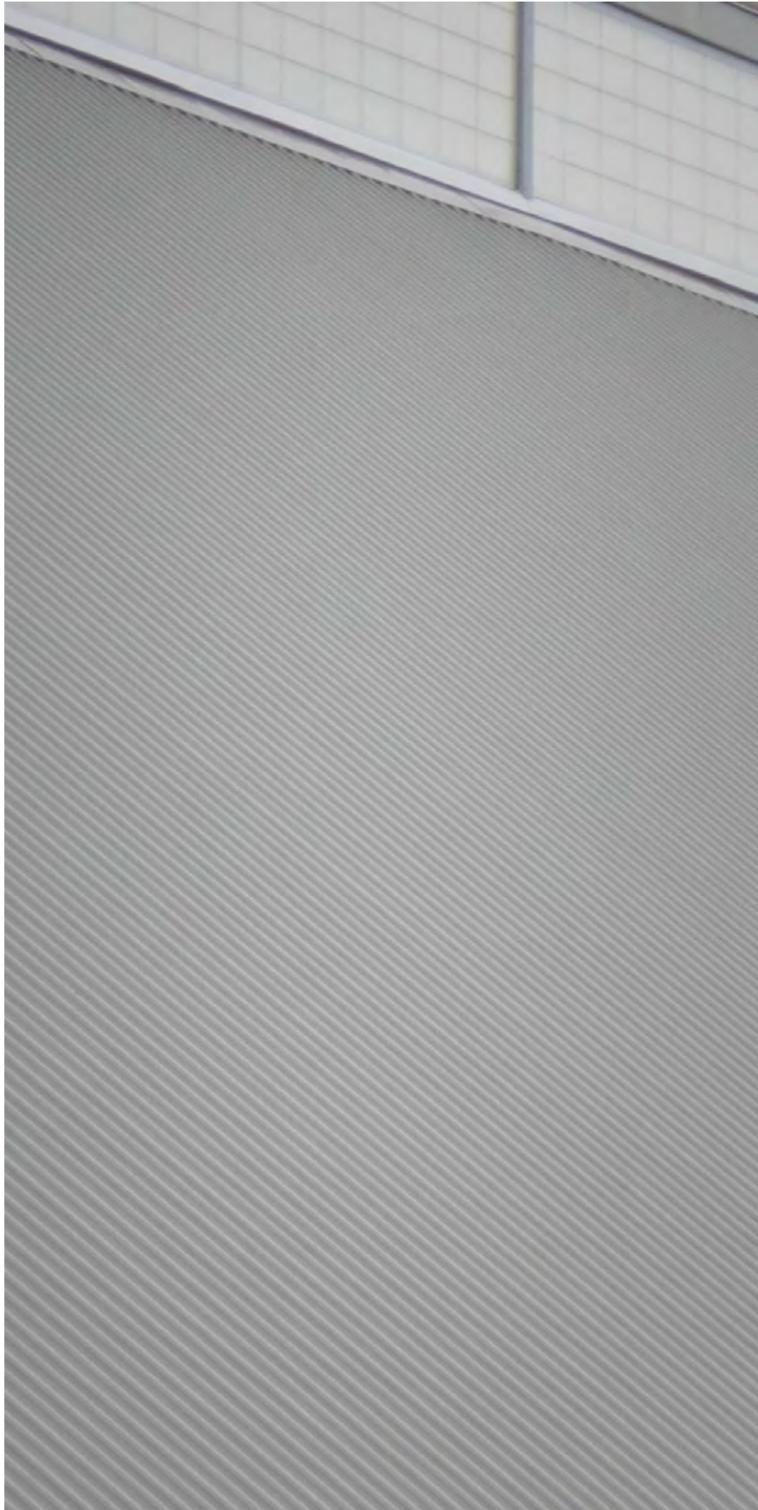
DOCUMENTS INFORMING THE FEASIBILITY STUDY

NAME	FACILITY	DATED
Structural systems review	Canada Games Pool	1992
Structural systems review	Centennial Community Centre	1992
Geotechnical engineering assessment report: proposed waterslide addition	Canada Games Pool	2006
Asbestos Abatement	Centennial Community Centre	2007
Geotechnical engineering assessment report: proposed mech room addition	Canada Games Pool	2007
Energy use analysis and savings identification	Canada Games Pool	2007
Energy consumption	Canada Games Pool	2007
Energy consumption	Centennial Community Centre	2007
Ground penetrating radar survey	Canada Games Pool	2008
Recommended core locations	Canada Games Pool	2008
Geotechnical engineering assessment report: slab on grade re-hab	Canada Games Pool	2008
Water filtration concrete tank condition survey (images useless)	Canada Games Pool	2008
Main pool tank waterstop review	Canada Games Pool	2008
Oily Water Remediation E-mails	Canada Games Pool	2008
Request for Proposals	All	2009
Feasibility Study: Cannon Design Proposal	All	2010
Concrete Water Filtration Tank Visit Summary	Canada Games Pool	2010

Note: All documentation is available from the City of New Westminister, Facilities Management

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EXECUTIVE SUMMARY

This report identifies options and makes recommendations regarding the refurbishment and/or the replacement of the Canada Games Pool (CGP) and the adjacent Centennial Community Centre (CCC) in the city of New Westminster.

Canada Games Pool is a community pool and fitness facility owned and operated by the Corporation of the City of New Westminster. It includes a 67-metre, 8-lane main tank, tot pool, hot pool, waterslide and fitness centre on the mezzanine. It was constructed in 1972, and has undergone a series of changes and partial upgrades over time. Now with many building systems approaching the end of their expected service life, investigations into strategies for the buildings' future have begun.

Centennial Community Centre is a recreation/activity building located adjacent to the Canada Games Pool. It is also owned and operated by the Corporation of the City of New Westminster. This facility was constructed in 1967 and upgraded in 1979 and is now experiencing many of the same challenges as the pool.

The Cannon Design Consulting Team was commissioned to investigate the possibilities for renewing these facilities, to analyze the demand variables, and to examine the capital and operating cost implications of redevelopment strategies. Key findings include the need to expand services to absorb the growing demand fueled by projected population growth, a leisure pool market largely lost to pools in surrounding municipalities, and a high level of inefficiency in the operations of functionally and technically obsolete buildings.

Extensive further community consultation will be required at any future stage to ensure all needs have been identified and considered. For the purposes of developing alternatives for assessing and costing, stakeholder input for this study was limited to users and staff.

Cannon Design developed a series of options ranging from minimal intervention and lowest capital cost to a completely new and efficient replacement facility with a projected 60-year service life, with multiple options in between. The Cannon Design team met with the City of New Westminster project team to discuss, explore and evaluate the options.

The process reduced the options to four viable redevelopment directions:

Option 0: Minimal fix and upgrade of building systems to extend the building life for five to ten years. This 'status-quo' option is really just a benchmark for evaluating the premium associated with the other options.

Option 1: Retrofit existing buildings without adding new gross building space or addressing any of the expansion issues defined in the building program.

Option 2: Retrofit existing buildings and add new, 22,500 SF lobby/fitness building providing link between existing buildings. Also add new, 20,500 SF Leisure Pool and support space. Option 2 is understood to proceed in two distinct phases.

Option 3 (A,B,C): Demolish and replace existing buildings with new facilities. The new complex would be approximately 113,574 square feet (10,551 square metres) or approximately 42,780 square feet of new and additional area. This would include a new 10-lane 52-metre pool, a separate leisure pool, a 20,000 square foot fitness centre, new change rooms, multi-purpose rooms, food concession, and various support spaces as per the attached building program.

The options (excluding option 0) range in cost from \$22 million to \$55 million in 2010 dollars.

The new facility could be built in one of three locations: north-east of the existing buildings in the parking area; on the sports field / recycling depot site; or, on south parking lot fronting 6th Avenue. Parking is a major issue with every option. According to the City of New Westminster parking guidelines and bylaws, CGP and CCC are deficient by 49 parking spaces. A newer and larger building will support more users and consequently increase parking demand.

In absence of any budget imperatives, Cannon Design's recommendation is in support of Option 3 built on the sports field / recycling depot site (3A). The sport field would be rebuilt on the old pool site and the recycling centre relocated since it does not engage with the developing site or neighbourhood. The remainder of the site would be dedicated for parking. This option represents the best value for investment, the greatest ability to meet future increased demand and the best siting of the building.

SECTION ONE - INTRODUCTION

The existing Canada Games Pool (CGP) was constructed in 1972 and added to in the last decade. The Centennial Community Centre (CCC) was built in 1967. The two facilities combined have a gross area of approximately 61,000 square feet. The aquatic centre primarily serves New Westminster residents but also draws from Surrey, Burnaby, Coquitlam and Richmond.

In general, the community centre focus and programming is geared toward the local community and the immediate surrounding neighbourhoods. The two buildings are separate – standing about 40-feet apart – with largely independent clientele. One of the ambitions expressed by stakeholders during this study was the desire to see the two buildings combined to create operational efficiencies and to create linkages between programming.

The pool features an eight-lane 67-metre pool which can be sub-divided into two 25m lengths with a 13m residual area, a small tot pool, hot pool and waterslide. Post-Canada Games, when excess spectator seating was removed, a fitness centre was added on to the mezzanine and on to sections of the pool deck. This configuration does not conform to current pool regulations and creates a hot and humid work-out environment in the fitness area. Nonetheless, the facility is very well utilized and revenue performance is higher than could be expected. The pool focuses on swim meets and competitions, swim lessons, swim clubs and the lane swimming community (i.e. tri-athletes).

Owing to the cooler water temperature and water depth, many local young families likely by-pass Canada Games Pool for contemporary pools in adjacent municipalities that feature ramp or beach entry, warmer water and play features. It is possible the net loss of clientele for leisure water exceeds the positive gain of long-water users drawn to New Westminster. An ideal situation in the future would be to offer both.

The Centennial Community Centre includes a gymnasium, a series of multi-purpose rooms, some dedicated rooms (for example pre-school and martial arts), and support spaces. Like the pool, comments were made about the generally poor air environment and inadequate electrical service. Maintenance and utility costs are also significantly high per square foot than comparably-scaled contemporary recreation and community centres. The community features a very popular aerobic fitness program which unfortunately is not linked to the fitness centre in

the pool. Co-location by linking the buildings and creating a single point of sale and entry should foster cross-pollination.

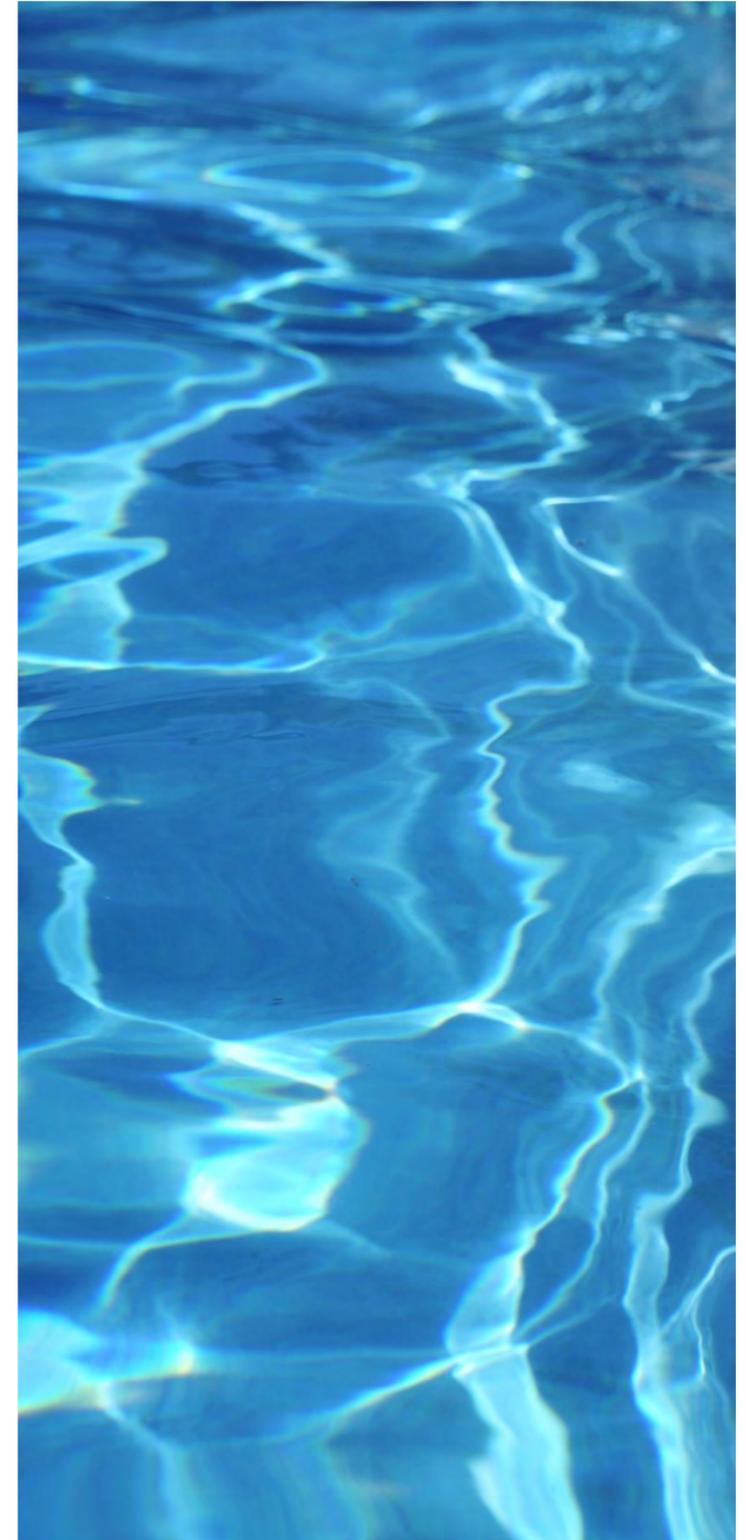
This study has focused on examining variables that influence the future New Westminster and how demand can be expected to grow, quite possibly greater than just the expected increase in population (a projected increase of over 50% in the next two decades). It then examines a series of options for renovating, renovating and expanding, or outright replacing the existing buildings. In all options studied, it was assumed that the existing facilities had to remain open and at least partially operational during construction or that new facilities could be opened to allow the older portions to temporarily be taken off-line.

Along with outlining the cost of status quo operations, this report presents the three most viable options: the bookends of building systems renovation-only (ignoring functional changes) or complete replacement of both buildings with one new facility. The middle solution adds a moderate amount of area and renovates the existing buildings. Total area added in the Expansion Option is 43,000 square feet and the Replacement Option alternatives constructing a total square footage of 115,000 square feet. The latter two options both feature adding a second leisure-focused body of water and increasing the fitness centre by 15,000 to 20,000 square feet, as well as adding more family change rooms, a common lobby and support spaces.

Program priorities were determined from two sources: meetings with stakeholder groups including staff and user groups, and secondly by extrapolating responses to specific needs identified in the City of New Westminster Parks and Recreation – Comprehension Plan (the recently updated parks, recreation and culture master plan). The key program priorities identified included:

PROGRAM NEEDS AND CONSIDERATIONS

- Operations ideally must remain at least partially open throughout the development (problem with retrofit)
- Replacement program tank should be 52m x 25m (10-lanes). Existing 67m x 17.3m (8-lanes) may be retained if cost precludes change
- A new second tank should be a separate warmer body of water with a moveable floor and leisure, play, and therapeutic elements. This would include 2 or 3 shallow lanes for teaching swimming to young children



- Increase the number of family change rooms 100% to 200%. Men's and Women's locker rooms are of adequate size.
- Fitness Centre should double or ideally triple in size from about 6,000 SF to 15-20,000 SF and be located in a proper environmentally controlled space
- The two buildings should be linked by a common lobby, both for operational efficiency and creating a common community social space
- At least two additional multi-purpose rooms are needed to meet future demand (in renovation and expansion scenarios, one space would be added regardless when the Lacrosse Hall of Fame is relocated
- Storage is inadequate throughout the facility
- Overall environment needs to be improved, including day-lighting, humidity controls, acoustics, maintainability
- Parking is already 49 stalls below required, mitigated by a joint-use agreement with the neighbouring Justice Institute of BC. Expansion to the facility will increase usage by 50% to 100% so a parking strategy will need to be developed
- Martial arts is growing in demand and the space could be expanded to be replaced with a larger space
- In renovation and expansion scenarios, change rooms and washrooms in the Centennial Community Centre need to be re-planned and relocated
- A games room area, either as part of the lobby or immediately off the pool deck, would continue a popular amenity
- The extremely popular sauna should be upgraded and augmented with a new steam room. The hot pool should be increased in capacity and made disabled accessible
- Retractable seating (2-3 rows) on one or both sides of the pool deck should be considered to accommodate competitions, but not at the expense of valuable deck space
- A food concession should be added to the facility. Ideally, it would be a branded franchise to improve chances of financial success



- Larger staff work spaces required. Many current offices are under-sized second storage spaces and stairwells. New offices should be to the City's office planning standards
- Pre-school area should be upgraded with proper access and washroom within the controlled space
- Attractions and opportunities for youth should be considered such as a games area and a pool climbing wall
- Parking shared with the Royal City Curling Club should respect travel distances as the clientele are primarily seniors



SECTION TWO – DEMAND ANALYSIS

This section of the report examines present demographics that create the foundation of current demand for Canada Games Pool and the Centennial Community Centre. While many specific variables can impact demand, such as weather or the economy, the only reliable baseline data tends to be demographics. In examining and interpreting the historical patterns and project trends we can create a reasonable hypothesis about the future.

POPULATION

The current population in New Westminster has been estimated at 66,000 people. Twenty-five years ago the population was approximately 40,000. BC Stats estimates the population twenty-five years into the future (2035) to be 95,000 based on a straight-line linear projection. Historical growth, however, has been anything but a straight line. The New Westminster population was 15,000 in 1925, and rose to 42,000 in 1960. It would plateau here for about two decades before continuing to grow.

If the linear projection is adjusted to reflect 75 years growth rather than just the past twenty-five, 85,000 may be a more realistic number, especially when factoring in economic and real estate correction of the

past two years and the years of slow recovery anticipated. This suggests that growth over the next two and half decades will be 23% instead of 44%.

Regardless of the precise percentage, long term growth will occur. The New Westminster Planning Department indicated that largely through industrial and institutional land being shifted to residential use and through densification (medium and high-density housing), population goals are attainable. Health Services Delivery Area population profiles and the Ministry of Education School District largely concur with the BC Stats projection, particularly in the sub-categories of age and at-risk populations.

Two segments of population are of particular interest and relevance to this study: the under-24 age group that represents current largely unmet demand, and the 50+ cohorts that represent current demand. As a proportion of the total population, the under-24 cohorts will remain relatively stable. They will grow at the same rate as general population. The 50+ group will grow twice as quickly as the overall population, which will come at the expense of the 25-49 age groups. According to StatsCan, New Westminster's current population of seniors (65 or older) is already slightly higher than Metro Vancouver's at 12.8% versus 12.3%.

Assuming that increased population will lead to an equal proportional

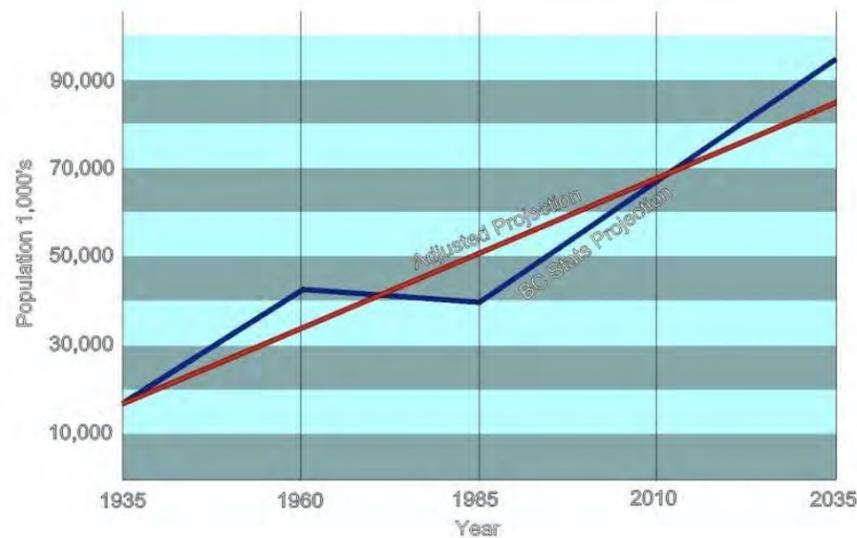


Fig 2.1 New Westminster Population Projection

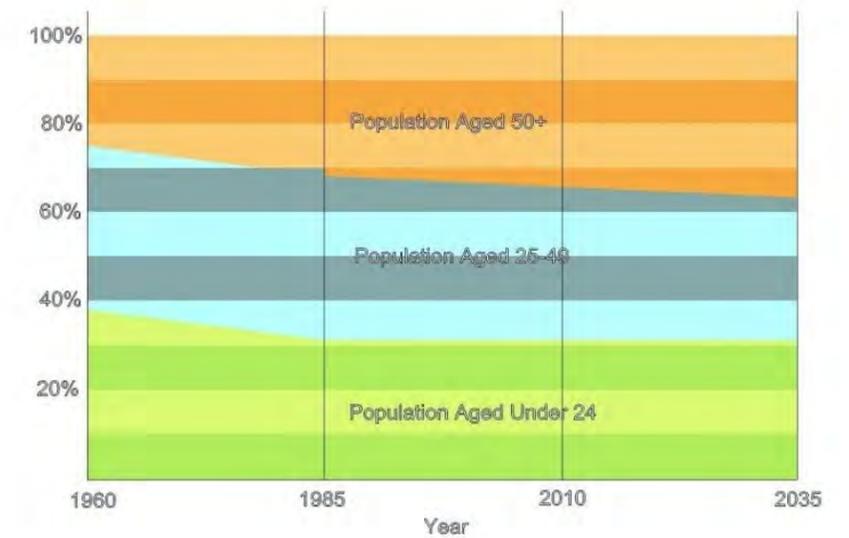


Fig 2.2 Population Trend by Age Group

increase in demand, this age correction implies the original demand increase of about 44% could be reasonable.

GENERAL TARGET POPULATIONS

Recreation services and facilities are a benefit to be enjoyed by all members of the community. However, a community's at-risk populations may represent a priority as the social and health costs are a burden borne by all. While this population segment may not translate into significant demand numbers or revenues to a facility, the intangible benefits have significant weight. The most reliable barometer for flagging at-risk populations is the inverse relationship between income and/or education and health risk. Health demographers, including those at UBC, have mapped and studied this correlation and advocate for strategic interventions.

In New Westminster, 18.5% of households have an annual income of under \$20,000 and 40.2% under \$40,000. At the other end of the spectrum, 24.8% of households have an aggregate household income over \$80,000. New Westminster's employment participation rate is higher than the BC average (69.3% v 65.6%) and unemployment rate lower (5.6% v 6.0%). The other marker is education: 44.2% of the adult population has a high school diploma or less; 27.4% have a university degree, which tends to indicate double the earning potential.

Other indicators of household economics include home ownership and cost of housing. A staggering 66% of New Westminster residents live in apartment style homes and 39.4% of tenant households spend more than 30% of gross income on housing. Conversely, only 28.4% of home-owners spend more than 30% of gross income on housing even though the average rent in New Westminster is \$800 per month (lower than the GVRD average of \$900) and the average owner payments are \$1,300 per month (higher than the GVRD average of \$1,150).

Not directly related but tangential to the discussion of at-risk are the number of single-occupant households and aboriginal populations. Of the 27,585 households in New Westminster, 10,700 or 38.8% are individuals living alone. 8,885 households or 32.2% are couples or single parents with children. Many of the households living in poverty include children, so the high ratio of single-occupant households may reflect seniors or other factors. The Aboriginal population in New Westminster is relatively low at 3%, much lower than the provincial average of 5%.

Immigrant populations may influence preferences and consequently demand for recreation services. Until 1990, in New Westminster, the ratio of immigrants or New Canadians to the general population was below the BC average. The New Westminster immigrant population is as young (based on relative percentage of children and youth) as BC as a whole, but has fewer 50+ adults than the provincial average. This means the city has attracted a larger working-age population of Immigrants than the Lower Mainland as a whole. As immigration will continue to fuel much of the population growth in the future, this factor could offset the increasing average age of the total population.

TARGET POPULATIONS BY NEIGHBOURHOOD

Cannon Design examined the census tract data for each of New Westminster's neighbourhoods to better understand the relationship of the Canada Games Pool service hub to the communities it serves. Key facts are summarized below followed by observations on demand impacts and catalysts for improving use of CGP / CCC facilities by residents of those communities.

For benchmark reference, the New Westminster composite under-24 population is 25.7% and 50-plus is 32% of total population; 40% of households have an annual combined income of under \$40,000 and 25% of households have an income of over \$80,000.



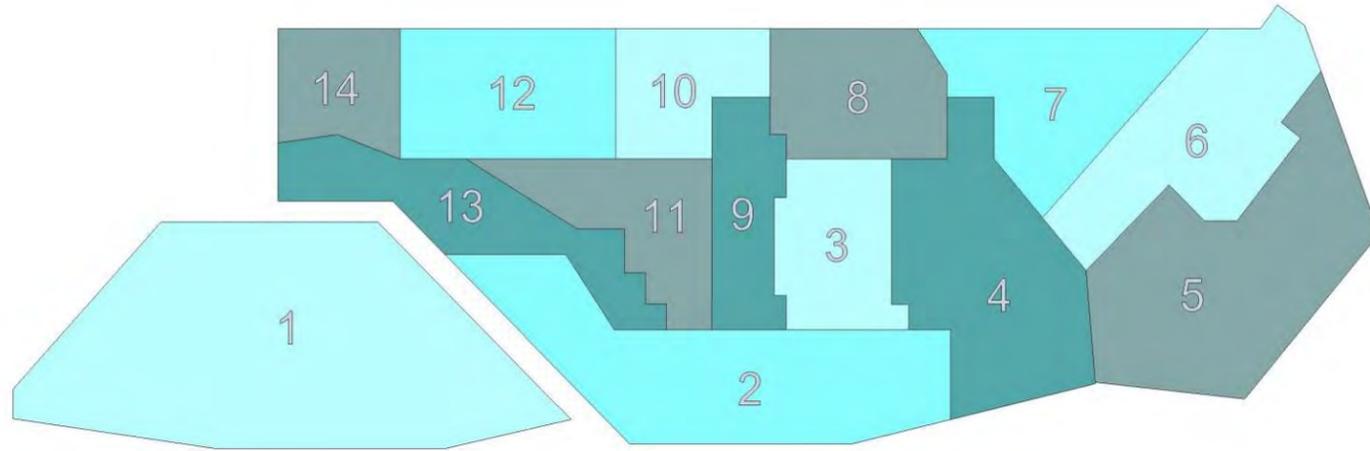


Fig 2.3 New Westminster Neighbourhoods

KEY OBSERVATIONS

1 QUEENSBOROUGH

Under-24 above average at 33%; 38% of households earned >\$80,000, only 24% <\$40,000
 Attractors: Add attractions and amenities to CGP; create incentives for travelling the distance

2 DOWNTOWN

50-plus above average at 36%, Under-24 is 17.6%; slightly above low income avg. at 40%
 Attractors: Improve transportation access; increase rehab aspects of fitness and pool

3 QUEEN'S PARK

Under-24 above average at 31.8%; 43% of households earn >\$80,000
 Attractors: Add attractions and amenities

4 GLENBROOKE SOUTH

Under-24 below avg. at 20%, 50-plus well over at 50.6%; >\$80,000 above at 31%
 Attractors: Increase fitness and rehab aspects; no barriers to access

5 BRUNETTE CREEK No data

6 SAPPERTON

Age populations equals overall; fewer low-income households at 35%
 Attractors: Add attractions and amenities; no barriers to access

7 VICTORY HEIGHTS

Higher Under-24 at 31.6%, close to 50-plus avg.; almost twice avg. >\$80,000 at 46%
 Attractors: Add attractions and amenities; no barriers to access

8 GLENBROOKE NORTH

Age populations equals overall; slightly higher household incomes than average
 Attractors: no barriers to access

9 UPTOWN

Under-24 below avg. at 18.7%, 50-plus higher at 43%; 55% of households low income
 Attractors: Improve transportation access; increase rehab aspects of fitness and pool

10 KELVIN

Under-24 above avg. at 30.7%, 50-plus close to avg.; >\$80,000 income 34%, 34% <\$40,000
 Attractors: Improve transportation access; increase rehab aspects of fitness and pool

11 BROW OF THE HILL

50+ population below avg. at 25%; 53% of households with income <\$40,000
 Attractors: Improve transportation access; add attractions and amenities

12 WEST END

Under-24-above avg. at 30.8%, 50-plus is 28%; 42% incomes >\$80,000, low 23% <\$40,000
 Attractors: Add attractions and amenities to CGP; create incentives for travelling the distance

13 NORTH ARM NORTH No data

14 CONNAUGHT HEIGHTS

Under-24 above avg. at 32.5%, 50-plus near avg.; 39% incomes >\$80,000, low 18% <40,000

Attractors: Add attractions and amenities to CGP; create incentives for travelling the distance

Overall, most of the neighbourhoods have above-average incomes and fewer low-income households, meaning the low-income households have an extreme concentration in a few neighbourhoods. Downtown, Uptown and Brow of the Hill are three areas with a high proportion of low income households coupled with distance from the Canada Games Pool location. The former two are characterized by higher than average mature adult populations likely on fixed incomes like pensions. Brow of the Hill has a disproportionately high number of young people living in low-income households.

Cost and transportation access may be the greatest impediments to accessing CGP for those residents. Perhaps by creating a discounted admission for those travelling from those neighbourhoods, there may be an increase in participation from those at-risk neighbourhoods. It is important to note however that there are low-income households distributed in virtually all areas of the city. One other barrier to youth in general is an age 15+ barrier that precludes access to fitness centres (in most other municipalities the age is 13 after attending an orientation program).

All other district's profiles appear to be relatively affluent and mobile. Particular areas such as Queensborough and the north-west neighbourhoods are just as likely attracted to aquatic facilities in other municipalities as their own. This suggests the quality and quantity of offerings will repatriate their recreation spending on CGP facilities.

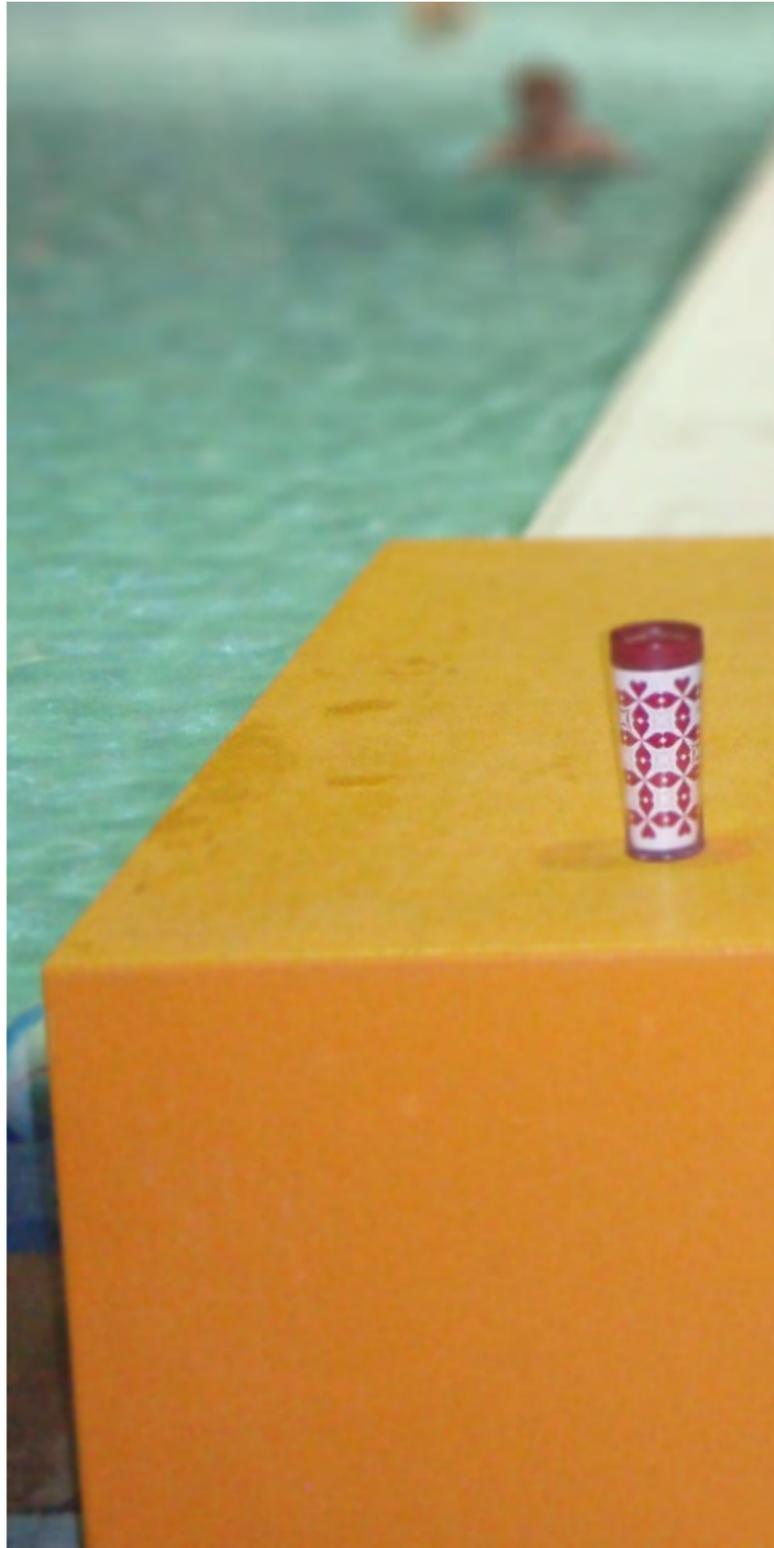
PARTICIPATION RATE

Projecting future facility utilization rates by correlating the demand curve with the population curve is a reliable assumption in most situations. Population growth in Greater Vancouver will continue to be fueled by migration and immigration as opposed to increased birth rate, and New Westminster's experience with immigration reflects a vibrant higher than average ratio of working-age adults, many with children.

Another factor seldom examined is the participation rate of the general population, which is universally low. Through promotions and incentives, the participation rate may be influenced positively. An example of a promotion or incentive is if a portion of a housing developer's DCCs

(development cost charges) came in the form of one-year family memberships for their buyers. This would allow new residents to immediately be drawn to the renewed Canada Games Pool facility. This technique has been used often and successfully in Calgary and Edmonton, creating linkages of new suburbs to new regional recreation facilities. In most cases the retention rate after the complimentary year is between 33% and 50%.





Using the BC Stats population projection curve that suggests population will increase by 44% by 2035. Adding a compounding 0.5% annual increase in participation would yield an additional 10% in demand. The BC Stats number assumes population will grow at a rate of 1,150 per year – the increased participation target is entirely achieved if 300 of those new added residents above the expected average become actively engaged in recreation and wellness.

According to some in the recreation industry, participation nationally is in decline. It is important to acknowledge that participation in team sports is in serious decline in relative and absolute terms – fewer youth (predominantly) with less participating. This decline is mitigated by an increase in participation in individual recreational activities, especially fitness training, and particularly by older adults. As education and awareness of the benefits of healthy living and physical activity grow, so does participation. With a rapidly aging population and health care limitations, the responsibility shifts increasingly on to the individual to mitigate risks of disease and premature death. In some jurisdictions, especially in the U.S. where healthcare is largely private, health insurance rates are tied to health maintenance (in the same way the life insurance industry penalizes high risk individuals).

CURRENT UTILIZATION OF FACILITIES AND PEAK DEMAND

Current and projected utilization will be assessed in numeric detail in the Financial Analysis section. In overview, the current utilization of facilities operates at capacity, especially during peak period demand. According to staff, programs are fully subscribed and numerous applicants are turned away, suggesting significant unmet demand. The aquatic facility is over-used during the 4:00-7:00 PM timeslot and the facility is remarkably busy during all times of day, 7-days per week. Much of the peak demand is swim clubs and swimming lessons which are difficult to shift to off-peak shoulder periods. Adding a second leisure-focused body can shift some of the younger swimmers away from the main tank as well as creating play opportunities. Replacing the existing 8-lane 67-metre tank with a 10-lane 52-metre will - for the same water surface area - increase lane capacity from 16 to 20.

The fitness centre has been observed as operating near peak capacity during much of the day. At 6,000 SF currently, the fitness centre supports about 80-activity stations (equipment, benches, and mats). It is not uncommon to see well over 120 users cycling through and waiting to use equipment. Increasing fitness centre space will allow for better

spacing of equipment (reducing density, increasing safety) as well as the doubling or tripling in the amount of equipment (capacity).

The diagram below illustrates a generic typical time-of-day profile for most recreation facilities. The peak stress on facilities begins at about 4:00 PM and goes till about 7:00 PM. Fixed-schedule school-aged children and adult commuters working-out on their way home make up most of this demand. A second more modest peak occurs at the mid-day period where workers locally use their lunchtime for a work-out or swim. The shoulder periods are generally populated by those with more flexible schedules such as those who are self-employed, seniors, students and stay-at-home parents, who have shifted their activities to less over-crowded trough-period times.

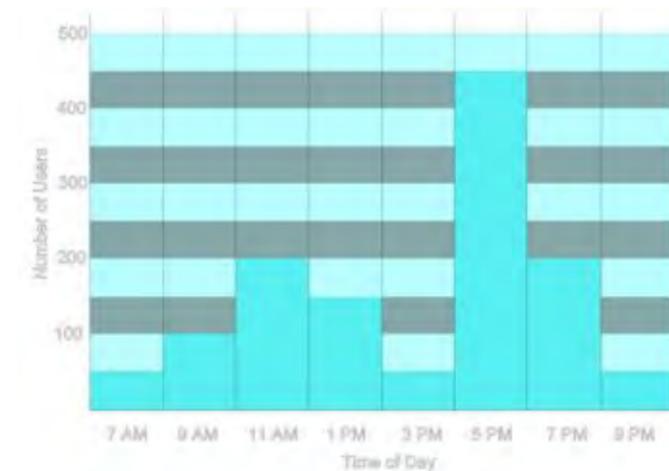


Fig 2.4 Recreation Facility Daily Demand

Addressing increased demand in the future can only occur in one or in a combination of three ways: adding additional facilities and capacity; create incentives for more people to shift to off-peak times (this may include extending the number of operating hours each day); and allowing excess demand to drift to competing facilities elsewhere. New users in particular could easily be discouraged and lost to the competition.

During consultation with stakeholders for this study, user groups and staff each indicated support for expanding these two areas as well as augmenting support and amenity areas (refer to Appendix for detail). Readers should also refer to the recently updated Parks and Recreation Comprehensive Plan where surveys and interviews identified a need to expand the pool and fitness centre.

TRENDS IN HEALTH AND RECREATION

The American Journal of Health (2003) identified studies that established a positive correlation between the density of indoor recreation facilities and the frequency of physical activity self-reporting.

The World Health Report (2003) indicated the incidence of chronic illness will be doubled from 1990 to 2020.

Health Canada has identified that over half of children between the ages of 5-17 are not active enough (1/2 hour per day strenuous activity + 1 hour of walking). This includes 48% of boys and 38% of girls and the incidence increases with age. This represents a more than doubling since 1981. Inactivity increases the risk of chronic disease in adulthood (cardio-vascular, diabetes, etc.).

Seniors will outnumber children in British Columbia within two years. Nationally, seniors will increase as a proportion of the population from 15% to 24% by 2035. Resulting systemic labour shortages could involve the re-evaluation of the national retirement policy (i.e. increasing the age from 65 to 70) or necessitating increasing immigration to replace the depleted labour pool.

Participation in sport has declined in Canada from 45% of the population in 1992 to 28% in 2005. The 15 to 18-age cohort showed the most significant decline from 77% to 59%. Participation continues to shift from organized sport to individual activities such as fitness, swimming, cycling, triathlon training and walking.

Education and income have a direct correlation with sport participation (the same variables inversely marking health at-risk populations). Nationally, 25% with a high school certificate or less are regularly engaged in sports versus 33% for those with university or college degrees. In 2005, households with an income of more than \$80,000 were twice as likely to participate in sports as households with incomes under \$30,000.

People born in Canada were more likely to participate in sport than immigrants, 30% to 27%. This definition may be too narrow to include forms of activity prevalent in other cultures including table tennis, cricket and badminton.

Of the 100 top ranked sports in Canada, swimming ranked third (at 3%; soccer led at 5%); ranked third with women (24.8%); ranked third with boys (20.5%) and second with girls (30.3%). Pattern changes included 5-

14 cohort swim participation increased 2% between 1998 and 2005, declined for boys but increased for girls.

Individual or group fitness continues to increase and expand at a rapid rate, especially among youth, women, fusion-type activities and home-based training. Fitness centres have grown from an average of 2,000 square feet in the mid-1990's, to 5,000 SF in 2000, then increasing to 10,000 SF at mid-decade, and now new facilities are planned at measuring 15,000 to 20,000 SF.



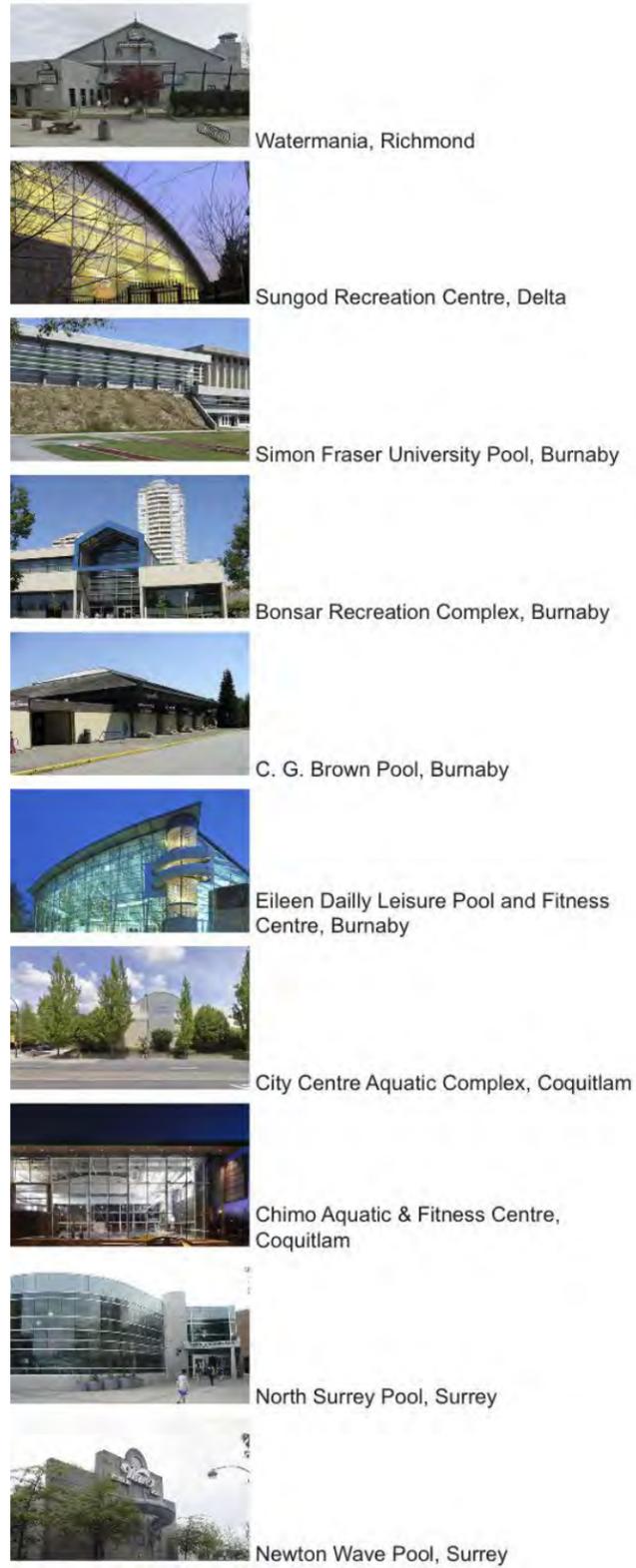


Fig 3.1 Nearby Indoor Pools

SECTION THREE – MARKET ANALYSIS

New Westminster’s CGP shares a relatively small regional market niche in the 50-metre+ program water market with City Centre in Coquitlam, Watermania in Richmond, the Vancouver Aquatic Centre and UBC. This niche draws market from other communities for competitions and swim meets, well-regarded swim lesson programs and lane swim. Conversely, within a 10-kilometre radius there are six indoor aquatic facilities (incl. City Centre) in other neighbouring municipalities with at least some form of leisure or warm-water play water component. This likely creates a net negative outflow of young families that will travel to pools elsewhere that have these amenities (except in the summer when outdoor pools are in operation). Typically these trips will be linked to shopping or other recreational activities in the town centres of Burnaby, Surrey and Port Coquitlam.

An ideal solution for New Westminster would be the addition of a leisure water component, recognizing that this will likely only repatriate New Westminster residents, while not likely attracting the destination entertainment aquatic clientele of Richmond’s Watermania or Surrey’s Newton Wave Pool. Retaining a 50-metre body of water (especially if new) as well as adding leisure water will retain current market share and correct market share loss. Because of short travel distance, New Westminster residents can separate pool use from other excursions meaning the Canada Games Pool location relative to other forms of entertainment will not factor in.

The map on the following page illustrates the proximity and density of the competition. City Centre in Coquitlam, Watermania in Richmond, and the South Surrey YMCA are probably the greatest direct competitors for Canada Games Pool’s current market share. The former two facilities include 50m pools and the latter; YMCA’s in general focus on structured program delivery and not play. Where New Westminster is losing local demand is to leisure pool facilities such as Burnaby’s Bonsor Pool at Metrotown, Surrey’s Newton Wave Pool, and Coquitlam’s City Centre Pool, as well as any of the lesser pool facilities in those municipalities. The scale of leisure aquatics proposed for CGP will not likely draw market share away from those civic pools, but the convenience of a local opportunity likely would repatriate residents with young families.

FITNESS CENTRES

Fitness is a considerably more crowded market owing to the private sector presence. Most fitness centre clientele connect with a certain

type of facility and typically remain loyal - be that ‘women’s only’ or free-weights gyms or a community centre. Community recreation facilities generally draw on the broadest clientele with an emphasis on mature adults, novices just starting out, or those less committed to a regular routine than membership-based clubs require. Financial commitment and the ability to pay also factor into the equation. Private facility memberships can have a lower cost per visit providing you use the facility three to five times per week, but community centres offer flexibility with single tickets, strip tickets or monthly passes.

The scale of a fitness centre is also a consideration. Many clients are drawn to large private facilities because of diversity of equipment offerings, personal attention and service, and quality of locker rooms and amenities. Fitness centres in community facilities have grown exponentially in the past decade from basement or racquet court spaces to 12,000 to 20,000 square foot facilities with personal trainers available.

Fitness centres larger than 10,000 square feet also have the advantage of being large enough to create two complete compliments of cardio, strength machines and free weights – one grouping catering to the louder, social or high performance athlete types and another grouping catering to a quieter and more passive experience with greater privacy for those with body-modesty or disability issues or those just starting out with a fragile self-confidence. Parallel circuits also allow a centre to rent out a section of its space without interrupting access to regular clientele.

By creating a 15,000 to 20,000 square foot modern, day-lit fitness facility at CGP, the centre has as strong a likelihood of attracting and retaining new participants to recreation as it does attempting to attract clients from other existing facilities. The large facility is better equipped for dealing with peak period demand, typically the 4:00 to 6:00 PM timeslot weekdays, as well as lesser peaks at lunchtime or early morning. As most residents of New Westminster actually work outside of the municipal boundaries, these commuters are less likely to form early and mid-day demand at this facility, but in all probability form most of the evening peak.

Overall, the decision to expand the fitness centre to as close to 20,000 square feet is a sound one. Most new recreation centres, both municipal and student recreation centres at post-secondary institutions, are now being programmed at the 20,000 square-foot threshold. The few operating at this new plateau now easily accommodate peaks of 250-300

people, and have expressed no concerns about over-building in a segment most feel will continue to grow as participation rates in the population increase. On a per-square foot basis, fitness centres have the greatest net revenue, the lowest construction cost, and the highest density of users, compared to other recreation centre components.

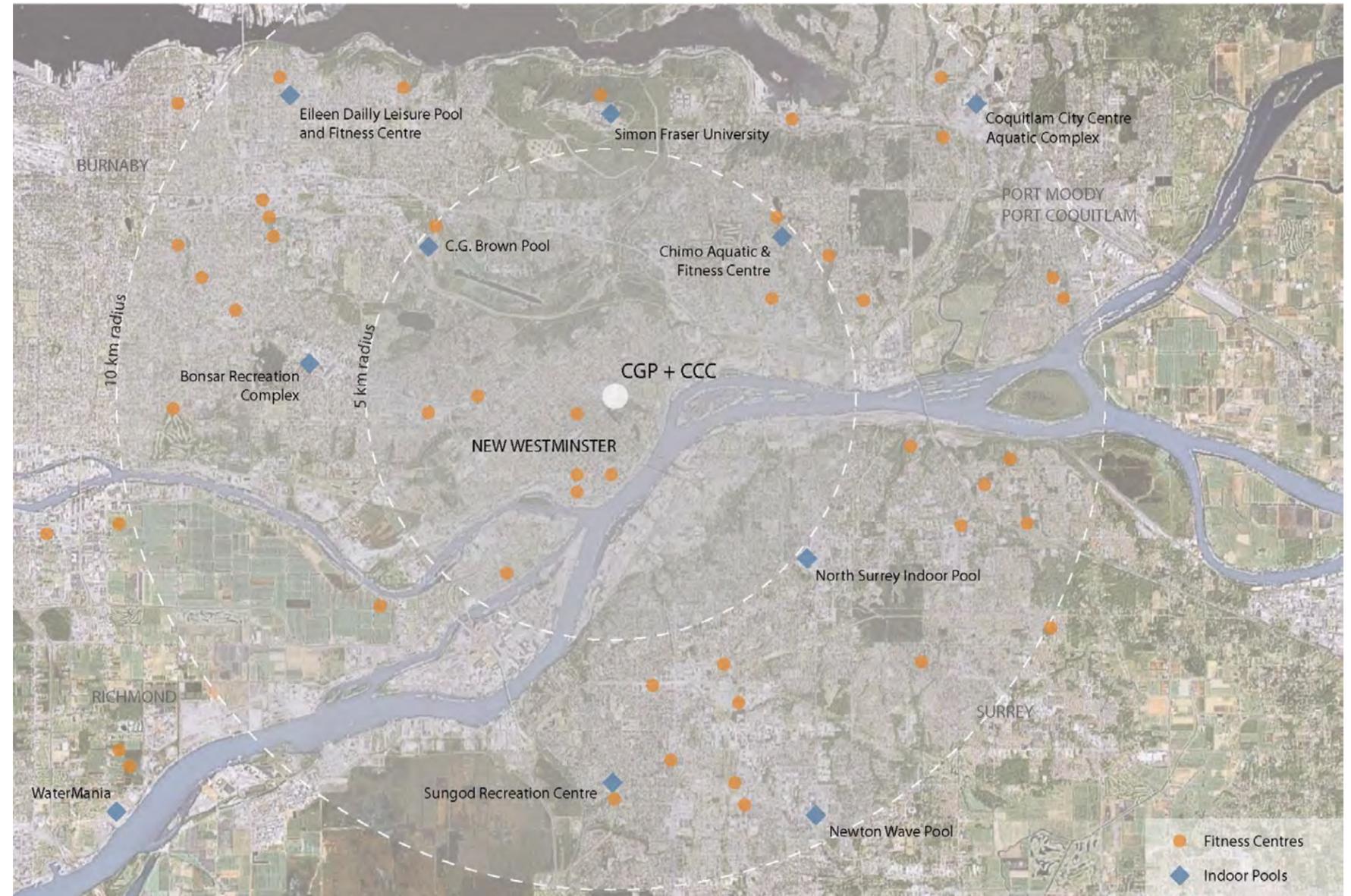


Fig 3.2 Regional Recreation Facilities

Fitness Centres	Location	Area SF / Other	Redevelopment Plans
NEW WESTMINSTER FITNESS CENTRES			
Canada Games Pool Fitness Centre	65 East 6th Avenue.	6,000 SF	15-20,000 SF proposed
Queensborough Community Centre	600 8 St.		
Justice Institute of BC	715 McBride Blvd.	Double gymnasium	
Curves	310-65t		
Fitness Quest	703 Front Street		Recently moved
Lady Dyna-Fit Health	1015 Columbia St.		
Fit X-Press	606 Victoria St.		
BURNABY			
Bonsor Recreation Complex at Metrotown	6550 Bonsor Avenue	5,000 SF, 2 gymnasiums	
C.G. Brown Memorial Pool	3702 Kensington Avenue	2,000 SF	
Eileen Daily Leisure Pool & Fitness Centre	240 Willingdon Avenue	7,000 SF	Feasibility study completed
Cameron Recreation Complex	9523 Cameron Street	Multi-gym sport hall, multi-purpose rooms	
Eastburn Community Centre	7435 Edmonds Street	2,000 SF, gymnasium, multi-purpose rooms	
Willingdon Centre	1491 Carleton Avenue	2,000 SF	
Simon Fraser University	8888 University Drive	12,000 SF, 4 gyms, studios	
Curves	6983 Kingsway	2,000 SF	
Curves	6532 Hastings	2,000 SF	
Curves	3790 Canada Way	2,000 SF	
FitCity for Women	4664 Lougheed Hwy.		
Golds Gym	4161 Dawson St.		
World Gym	4247 Lougheed Hwy		
Fitness World	5500 Kingsway		
Life Fitness Western Canada	3060 Norland Ave.		
Fitness 2000	9304 Salish Court		
Telus (staff fitness centre)	5455 Rumble St.	3,000 SF	
SURREY FITNESS CENTRES			
Surrey Sport and Leisure Complex	16555-Fraser Highway	10,000 SF	
Fleetwood Community Centre	15996-84 Avenue	, multi-purpose hall	
Guildford Recreation Centre	15105-105 Avenue	15,000 SF, triple gym, multi-purpose rooms	
Newton Recreation Centre	13730-72 Ave.		
North Surrey Recreation Centre	10275-135 St.		
South Surrey Indoor Pool	14655-17 Ave.,	4,300 SF	
South Surrey Recreation Centre	14601-20 Ave.	15,000 SF, triple gym, multi-purpose rooms	
Fraser Heights Community Centre	10588-160 Street	2,000 SF	Expanding to 5,000 SF
YMCA Tong Louie South Surrey	14988-57 Avenue		Opened 2002
Balanced Fitness Studio	10422-168 St		
Curves	14815-108 Ave	2,000 SF	
Curves	8484-162 St	2,000 SF	
Curves	6448-148 St	2,000 SF	
Curves	2336 King George Hwy		
World Gym	7130 Scott Rd.		
Contours Express	2370-152 Ave.		
She's Fit	15355 Fraser Hwy.		2010
Bodycircuit for Her	15421-92 Ave.		
Fitness World	13821 103 Ave.		
Dynamic Fitness	7788 132 St.		
World Health and Fitness	7728 128 St.		
RICHMOND FITNESS CENTRES			
Richmond Oval	6111 River Road	16,000 SF, 8 gyms, 200m track, multi-purpose rms.	Opened 2009
Watermania	14300 Entertainment Boulevard	5,000 SF	
Cambie Community Centre	4111 Jacombs Rd.	3,000 SF	
Hamilton Community Centre	540 Smith Drive	Gymnasium, multi-purpose rooms	Expansion in 2011
South Arm Community Centre	8880 Williams Rd.	7,000 SF	
Steveston Community Centre	4111 Moncton Street	2,000 SF	
Thompson Community Centre	5151 Granville Avenue	4,000 SF	
West Richmond Community Centre	9180 No. 1 Rd.		
Sport Central	2611 Viscount Way		
Curves	11590 Cambie Rd	2,000 SF	
Curves	12320 Trites Rd	2,000 SF	
Curves	11331 Coppersmith Way	2,000 SF	
The River Club	11111 Horseshoe Way		
COQUITLAM / PORT MOODY FITNES CENTRES			
Chimo Pool	620 Poirier Street	6,800 SF, circuit room	Opened 2008
Port Coquitlam Recreation Complex	2150 Wilson Avenue	Sport hall	
Gates Park Outdoor Gym	Wilson Ave. and Reeve St.	Outdoor fitness circuit	
Aradia Fitness	2071 Kingsway Port Coquitlam		
Curves	2239-D McAllister Ave.	2,000 SF	
Curves	2764 Barnett Hwy	2,000 SF	
Curves	2809 Spring St	2,000 SF	
Curves	1001 Austin Ave	2,000 SF	
Expressfit for Women	2189 Austin Ave		
Fitbodies Fitness and Wellness	2599 Runnel Dr.		
She's Fit	567 Clark Rd.		
VANCOUVER FITNESS CENTRES			
Over 50 locations identified			

POOL & FITNESS CENTRE INVENTORY (Greater Regional)

Pools	Location	Pool Type	Redevelopment Plans
NEW WESTMINSTER INDOOR			
Canada Games Pool Fitness Centre	65 East 6th Avenue.	67 m pool, diving, waterslide, tot pool	Feasibility study
NEW WESTMINSTER OUTDOOR POOLS			
Hume Park	Hume Park	Spray pool, outdoor pool	
Moody Park	Moody Park	Outdoor pool, spray pool	Recently completed
BURNABY			
Bonsor Recreation Complex	6550 Bonsor Avenue	25 m pool, leisure pool	
C.G. Brown Memorial Pool	3702 Kensington Avenue	25 m pool, waterslide, leisure pool	In capital plan; no feasibility plan yet
Eileen Daily Leisure Pool & Fitness Centre	240 Willingdon Avenue	25 m pool, water slide, leisure pool	Feasibility study completed
Simon Fraser University	Burnaby Mountain	25 m pool	
SURREY INDOOR POOLS			
Newton Wave Pool	13730-72 Ave.	Wave pool, 25m	
North Surrey Recreation Centre Indoor Pool	10275-135 St.	37 m pool	
South Surrey Indoor Pool	14655-17 Ave.,	40 m pool	
YMCA Tong Louie South Surrey	14988-57 Avenue	25 m, tot pool	Opened 2002
SURREY OUTDOOR POOLS			
Bear Creek Pool	13820-88 Ave., Surrey		
Greenaway Pool	17901-60 Ave., Surrey		
Hjorth Rd. Pool	10277-148 St., Surrey		
Holly Pool	10662-148 St., Surrey		
Kennedy Pool	9058 Holt Rd., Surrey		
Kwantlen Pool	13035-104 Ave., Surrey		
Port Kells Pool	13940-88 Ave., Surrey		
Sunnyside Pool	15455-26 Ave., Surrey		
Unwin Pool	6845-133 St., Surrey		
RICHMOND INDOOR POOLS			
Minoru Aquatic Centre	7560 Minoru Gate	25 m x 2	Feasibility study eminent
Watermania	14300 Entertainment Boulevard	57 m pool, leisure, waterslides	
RICHMOND OUTDOOR POOLS			
Steveston Pool	4151 Moncton Street, Steveston	25 m	
South Arm Pool	Garden City Rd. at No.3 Rd.	Leisure water, waterslides	
COQUITLAM / PORT MOODY INDOOR			
City Centre Aquatic Complex	1210 Pinetree Way	50 m pool, wave pool, waterslide, tot pool	
Chimo Pool	620 Poirier Street	25 m pool	Opened 2008
COQUITLAM / PORT MOODY OUTDOOR POOLS			
Blue Mountain Spray Park & Wading Pool	975 King Albert Street	Wading pool & spray park	
Eagle Ridge Outdoor Pool	1200 Lansdowne Drive	Heated outdoor 25 m pool with diving tank	
Mackin Park Outdoor Pool	1000 Brunette Avenue	Wading pool	
Panorama Spray Park	1455 Johnson Street	Spray park and wading pool	
Rochester Outdoor Pool	1390 Rochester Avenue	25 m heated pool	
Spani Outdoor Pool	655 Hillcrest Street	25 m heated pool	
VANCOUVER INDOOR POOLS			
Britannia	1661 Napier St	25 m pool, tot pool	
Hillcrest	Hillcrest Park	25 m pool, leisure pool	Opening 2010
Kensington	5175 Dumfries St	25 m pool	
Kerrisdale	5851 West Boulevard	30 m pool	
Killarney Pool	6260 Killarney	25 m pool	
Lord Byng Pool	3990 West 14th	25 m pool	
Percy Norman Pool-Riley Park	30 East 30th	25 m pool, dive tank	Demolition in 2011
Renfrew Pool	2929 E. 22nd	25 m pool	
Templeton Park Pool	700 Templeton	25 m pool, tot pool	
University Of B.C. Aquatic Centre	UBC	Olympic size pools, toddler pool	New outdoor 50 m pool planned
Vancouver Aquatic Centre	1050 Beach	50 m pool, tots pool, dive tank	
YMCA Robert Lee Downtown Vancouver	955 Burrard	Infinity pool	
YMCA Langara	282W-49th Avenue	25 m pool, tot pool	
VANCOUVER OUTDOOR POOLS			
Second Beach	Stanley Park	50 m pool	
Third Beach	Stanley Park		
English Bay Beach	Stanley Park		
Kerrisdale Pool	5851 West Boulevard		
Kitsilano Pool	2305 Cornwall Street	137.5 m pool at Kitsilano Beach	
Mount Pleasant Pool	3161 Ontario St	30 m pool	
Maple Grove Pool	Yew St. at S.W. Marine Dr.	Free form wading pool (0 to 1m depth)	
New Brighton Pool	North foot of Windermere Street	25 m pool	
Oak-Marpole Pool	990 West 59th		
Sunset Pool	404 East 51st	30 m pool	
NORTH VANCOUVER INDOOR POOLS			
Andrews Recreation Centre	931 Lytton Street	37.5 m pool	
Delbrook Recreation Centre	600 West Queens Road	37.5 m pool	Consolidation of Delbrook and Griffn
Griffin Recreation Centre	851 West Queens Road	25 m pool	into one new facility
Lonsdale Recreation Centre	123 East 23rd Street	25 m pool	
Magnussen Recreation Centre	2300 Kirkstone Road	25 m pool	
		wave pool	

SECTION FOUR – SITE ANALYSIS

Although the subject of this Feasibility Report focuses on the redevelopment of the two buildings under review – the Canada Games Pool and the Centennial Community Centre, the context within which these facilities operate is critically important in directing the design options. The immediate site available for development is practically limited by the City of New Westminster owned parcel of land subtended by Cumberland Street, East 6th Avenue, McBride Boulevard and the

Justice Institute of BC property to the North. This parcel of land is currently encumbered not only by the CGP and the CCC but also the NWM Royal City Curling Club, fire station, all weather soccer field, parking and circulation facilities, soft and hard landscape and the recycling depot.

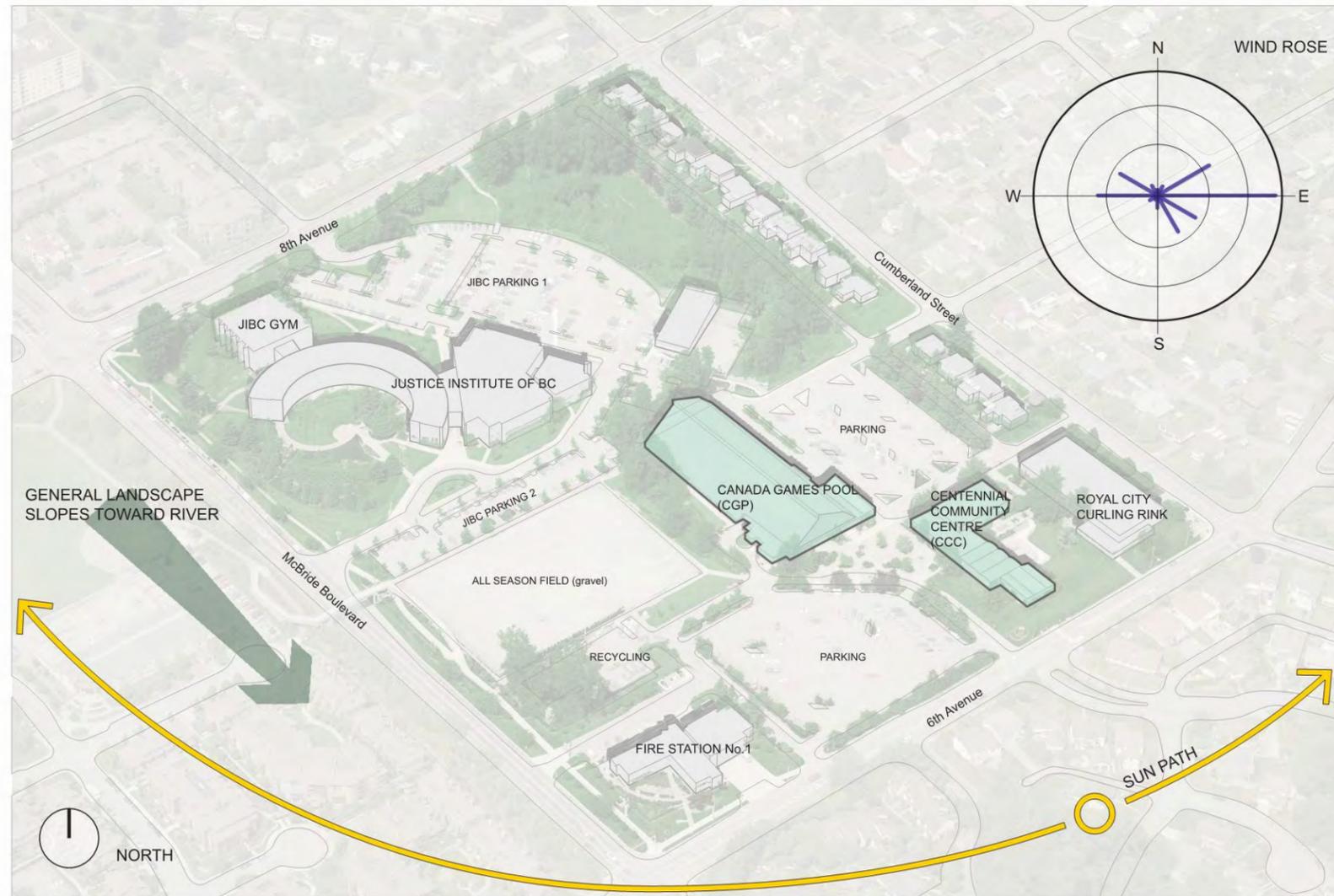
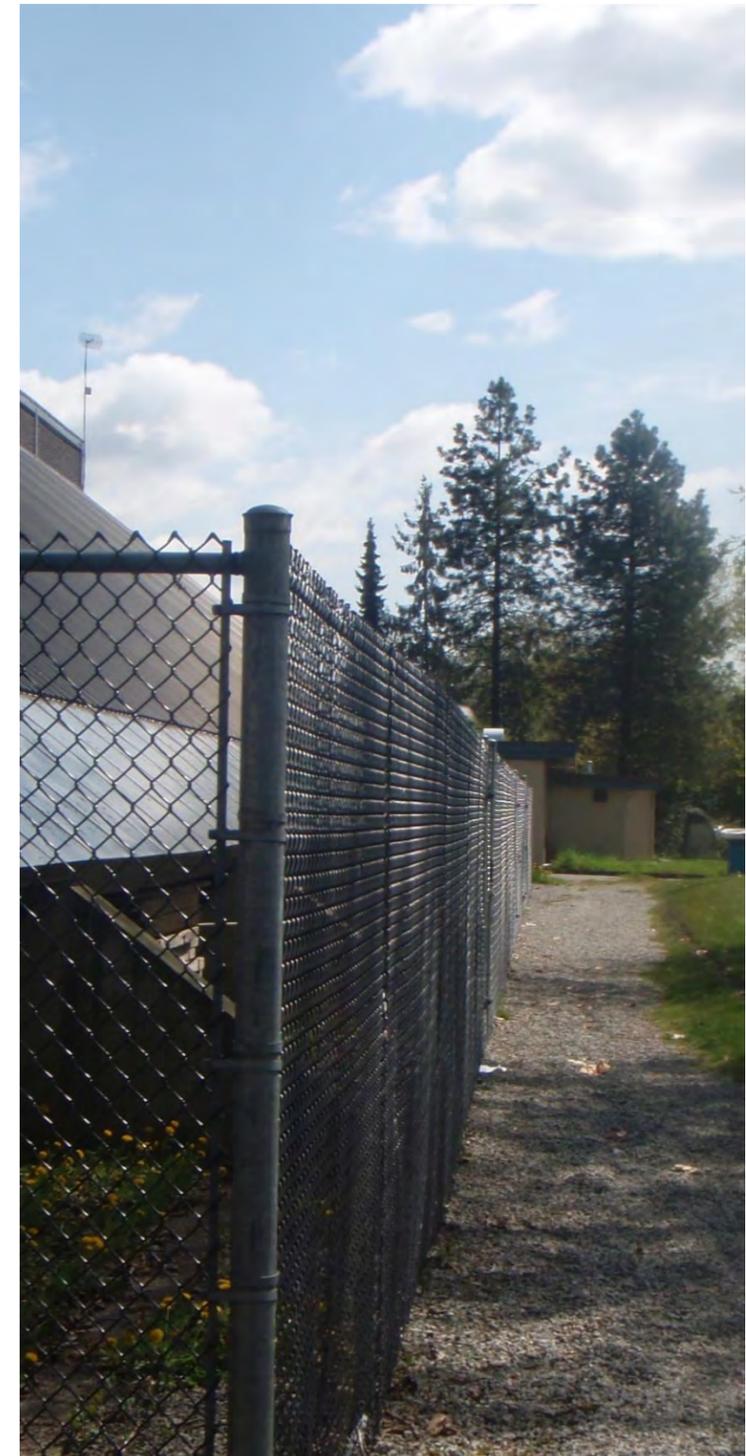


Fig 4.1 Natural Systems



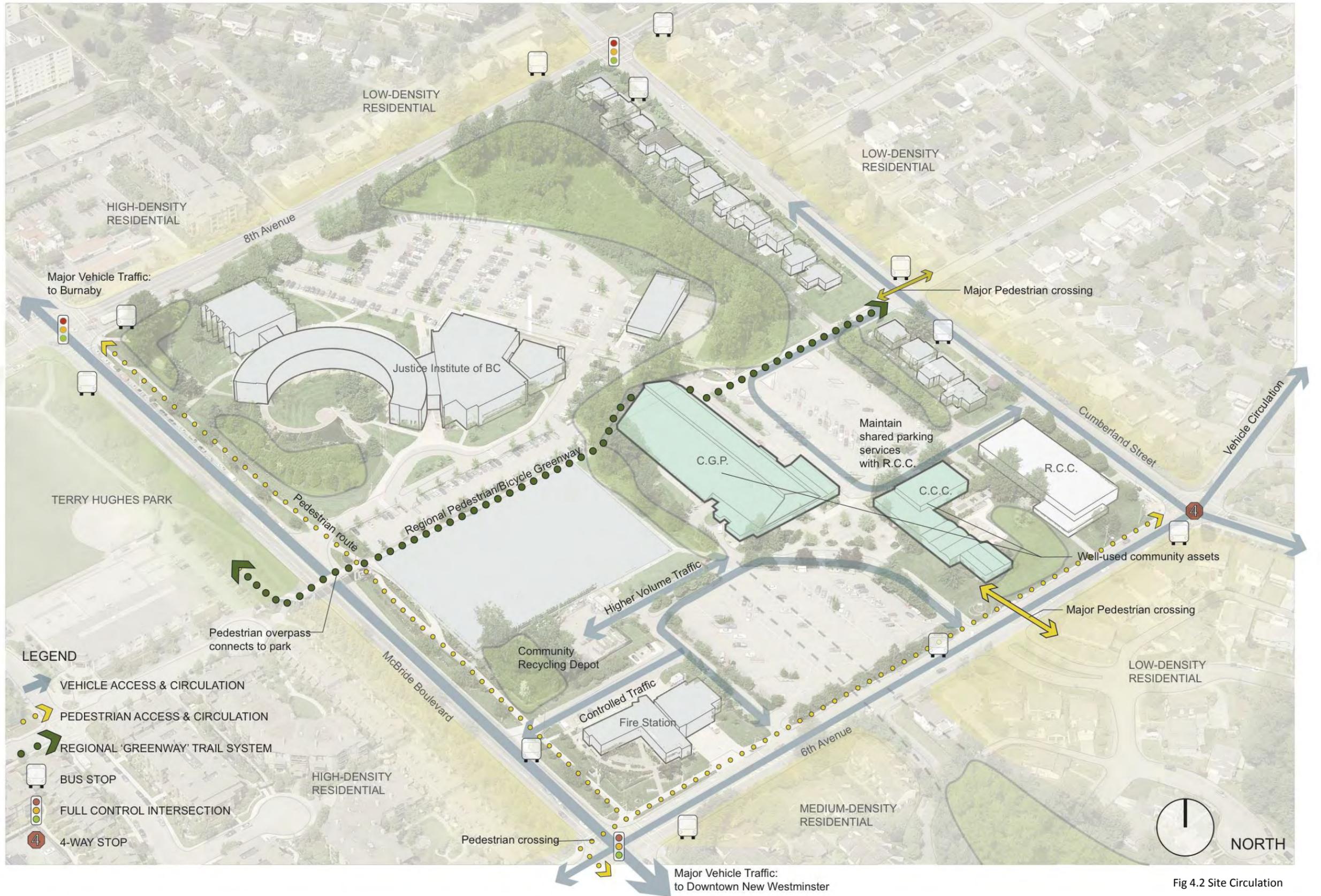


Fig 4.2 Site Circulation

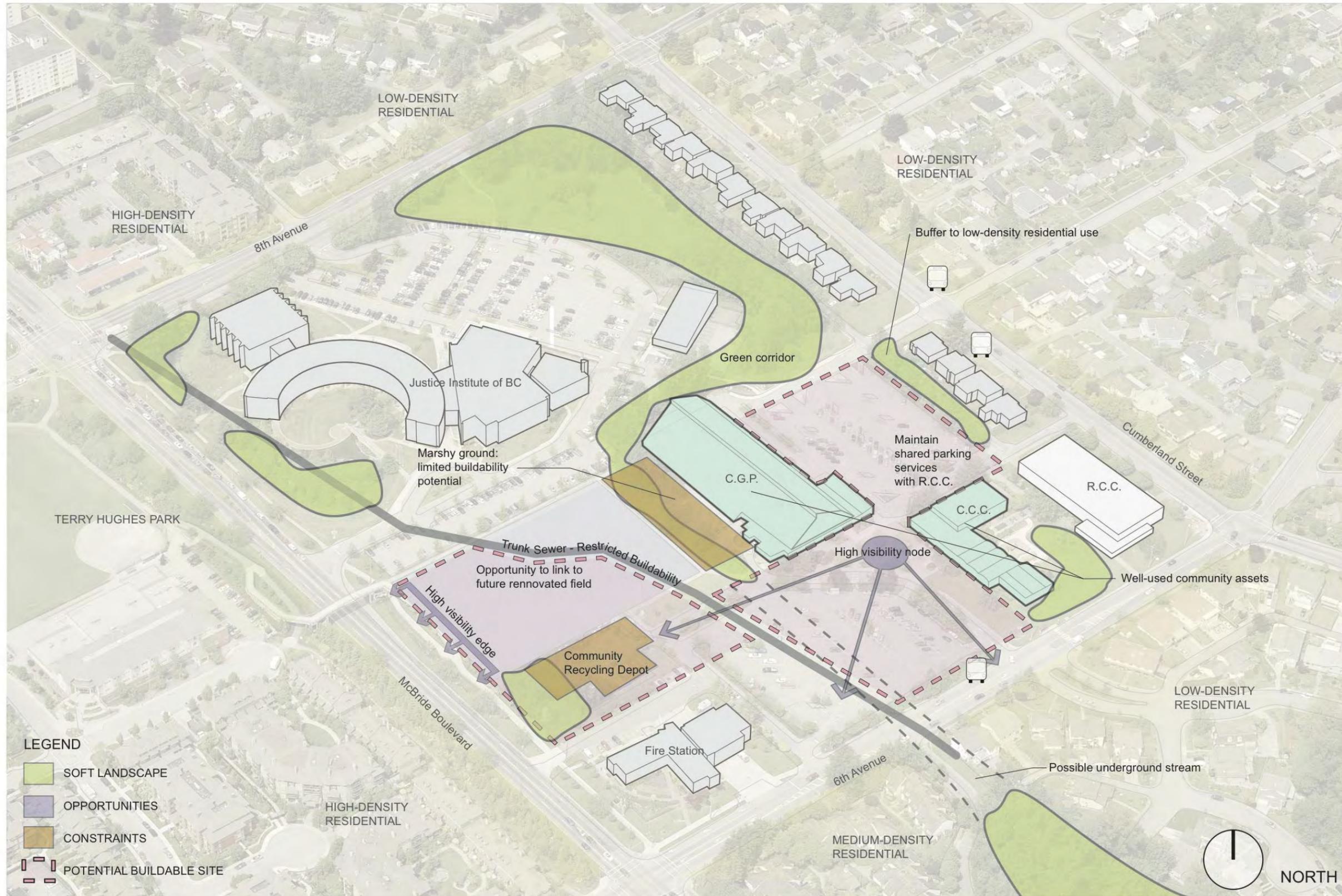


Fig 4.3 Opportunities & Constraints

The principal traffic connector serving the site is McBride Boulevard. This road is a multi-lane commuter way with traffic signals at East 6th and East 8th. There are two bus stops on McBride at either end of the site. There is a pedestrian overpass that connects the site with the Glenbrook Middle School park and field across McBride. This over-pass serves as the continuous pedestrian and bicycle regional trail. There is limited parking and vehicle access to/from McBride and the fire station. Additionally, there is a parking lot and frontage connector ingress to the Justice Institute of BC. Egress takes place on East 8th to the north. No further traffic contribution to McBride from the site should be contemplated as it would result in negative traffic impact. While McBride is by far the busiest street frontage to the site, the existing buildings, with the exception of the fire station and the Justice Institute, are not highly visible from this important thoroughfare.

East 6th Avenue is the feeder street to the site. From the traffic light controlled intersection at McBride, 6th Avenue proceeds along a section of medium density housing development on the south side and the fire station to the north. The approach to the site is well marked and the CGP and CCC buildings are prominent. The principal parking lot servicing both buildings is clearly visible and has a strong relationship to the main entrances of each. This lot has both its access and egress from 6th Avenue. The low density housing development near Cumberland is separated from the large buildings across East 6th Avenue that includes the Royal City Curling Club (RCCC) with sufficient space as to provide an effective buffer.

Further vehicle access into the site is available from Cumberland Street. CGP service vehicles and the 124 parking stalls serving the peak load of the CGP and the RCCC use Cumberland as the feeder street. Since this is a low density housing street, there is some negative impact on traffic volume but to date this has not been seen as an irritant for the neighbourhood. In nearly all of the configurations of the site, access from both Cumberland and East 6th Avenue is essential to maintain the functionality of the site.

Finally, pedestrian access into the site is available from four principal directions. The first is via the regional pedestrian/bicycle greenway that bisects the larger site into the north (Justice Institute of BC) and the south (CGP and CCC). Unfortunately, this way of accessing the site results in approaching the 'back end' of the site amenities with the exception of the soccer field. Many pedestrians access the site from the bus stop adjacent to the fire hall through the fire hall marshalling yard and the main parking lot to the front doors of the CGP and the CCC.

Additional pedestrian access is gained via East 6th Avenue and the vehicle access road to the front plaza of both buildings. Bicycle access follows the major vehicle and pedestrian routes described above.

PARKING

As per the accompanying diagram (below), there are currently two major parking lots servicing the CGP and CCC. The first is the 'South Parking Lot' fronting the entry plaza to the buildings and the second is the 'North Parking Lot' that augments the parking count and also services the RCCC. Under the existing City of New Westminster Bylaw, the program use of the CGP and CCC require 347 parking spaces on site. The combined capacity of the two lots is 291 spaces leaving a deficit of 56 spaces. Since the investigations of this Feasibility Study have identified program needs well in excess of the existing, it is clear that the deficit will grow with the building program. In fact, the parking requirement to the full program identified in the needs assessment of this document results in a total count of 490 spaces.

There are, however, several extenuating issues which in combination may result in a reduced parking provision for the site. The first is the stated policy on the part of the City of New Westminster to reduce automobile dependency. Given the central location of the site and the favourable pedestrian and bicycle access, it could be extrapolated that the percentage of customers arriving without an automobile will grow over time from the present (less than 10% of the users). This is especially pertinent if provisions for weather protected, secure bicycle storage are made as part of the re-development of the site.

Another strategy to mitigate the site parking requirement is the mutual parking sharing agreement between the Justice Institute and the adjacent community / recreation facilities. It has long been recognized by the operators of both facilities that there is a good synergy between peak parking demand at each half of the site. The Justice Institute has significant demand during daytime business hours and the CGP and CCC have their peak in the late afternoon and evenings. Allocating an appropriate number of parking spaces at each facility to be serviced by the neighbouring parking lots makes planning sense and eases the pressure to convert much of the land /space to parking. While it is not clear at this time what number of parking spaces may be shared, it will likely be well in excess of 100 spaces. Of issue will be the possible vehicle interconnection between the sites that is well marked, well lit and safely bisected by the Greenway trail.

In order to maximize the parking potential of the site while ensuring that the area maintains appropriate green and open space, some limited opportunities exist to increase its capacity. The parking analysis diagram below identifies two small areas (shown in a red dashed line) that may yield up to 40 additional spaces. Furthermore, there are two site program uses that occupy a sizeable area each and which may see a change of use to parking.

The recycling depot is a program use that is not compatible with the recreation, wellness and civic amenity use of the site. As well, this use introduces unwanted traffic to the site. While its relocation is difficult since no replacement site has been identified to date in the City Plan, it

is highly recommended. This area would yield approximately 70 to 75 spaces.

The all weather soccer field occupies a large parcel of land immediately adjacent to McBride. Although encumbered by the Sewer Trunk utility, its favourable topography and prominent location lends itself well to both a building footprint as well as a parking area. Of course, it may be necessary for it to remain a soccer field as well, but it is clearly not the highest amenity sport surface and will most likely be improved soon.

A great deal depends on the specific sport needs of this field. Should high performance be required and/or continuous use into the evening, then high intensity sport illumination required for this program renders



Fig 4.4 Site Parking Diagram

Scenario	Parking Demand (including parking)	Parking Available	Net Parking	If Recycling Depot Converted (+75)	Remarks
Option 0 & 1 (no change)	330	281	(49)	26	Existing parking shortage on site.
Option 2 (modest addition)	517	530	13	88	Outdoor field space is lost to parking in these numbers.
Option 3A	538	530	(8)	-	Best parking scenario. Slight shortage likely negotiable due to nearby cycling routes and on-street parking. Recycling depot is not considered because its area sits within the building footprint.
Option 3B	538	500	(38)	37	Good parking numbers but access to curling club is compromised.
Option 3C	538	430	(108)	(33)	Parking shortage and least ideal building siting.

Notes: parking demand based 1 space per 200 sqft of space.
new lot capacity estimate based on gross 33 sqm per stall

Fig 4.5 Parking Estimates
For option descriptions see section seven

the present site most desirable due to the distance to the nearest housing development. In any case, the fit of the soccer field on this site is relatively tight and it would not be possible to insert parking into this same area by reducing the playing field dimensions.

This Feasibility Study assumes that a soccer field will remain as a functional amenity at some location on the site. Should the pressure on additional parking provisions remain high and the need to improve the soccer field immutable, then a covered parking structure with a possible soccer field on the roof should be investigated. This is a costly but effective resolution of significant program pressure on the site.

In conclusion, the accommodation of sufficient parking to service all site uses is a complex issue involving the balancing of by-law requirements, changes on the ground, acknowledging the contribution of non-vehicular arrivals, addressing the need to reduce automobile dependency for the immediate neighbourhood, sharing of neighbouring off-peak parking facilities and establishing accurate and reliable data for the actual parking usage rates and requirements. This last issue is perhaps the most important but is not within the scope of this Feasibility Study. It is recommended, however, that a separate investigation of the present and projected parking usage be undertaken as soon as possible to verify the actual parking needs on the site.

VEGETATION AND NATURAL ENVIRONMENT

The soft landscaping and natural vegetation on site is relatively sparse but very well maintained. The primary natural environmental feature affecting this area is the treed swale with assumed underground stream which falls from a high elevation on the north east corner of the Justice Institute parcel, around the north east wall of the CGP, along the north west side of the CGP and across 6th Avenue just east of Ginger Drive. Although bisected by access roads, the south parking lot and city streets, this natural feature is significant, visible and influential for present and future site development. Due to the underground water stream, the area subtended by this environmental feature is not suitable for any major, load-bearing structures. The feature is identified in the site analysis diagram.

There are several green view buffers principally consisting of mature trees on site. Fronting McBride on the west side of the recycling depot is a grove of trees that shield this program use from traffic. As well, there is an evergreen hedge between the recycling depot and the all-weather field. The south edge of the South Parking Lot is shielded with hedging

as well as mature trees. This feature develops into the drive reaching around the plaza entry to the CGP and CCC with attractive specimen trees and landscape vegetation that provide a natural amenity to the high-traffic environment adjacent to the buildings. Similarly, the landscape treatment on the east side of the CCC is effective and mature. The outdoor play area of the daycare facility is surrounded by lawns, specimen trees and landscape plazas. Finally, there is a significant green buffer consisting of tall, mature trees between the four houses on the east side of the North Parking Lot and the site. Unless this private enclave is incorporated into the larger site by purchase, this buffer is a significant amenity for the residents across the lane.

SOILS AND SERVICE INFRASTRUCTURE

Based on the bore hole information and geotechnical report by Levelton dated July 3rd, 2007 and existing structural drawings for the Canada Games Pool (CGP), the soils appear to consist of silty clay for the top ~6m with compact to dense sand below. Groundwater seepage was encountered at approximately 4.4m below grade. During construction of the east side mechanical room, water seepage at 6 litres/minute was encountered at 1.5 meters. This water was contaminated and required special disposal. As noted in the geotechnical report, end bearing or helical piles would be recommended for future buildings. Alternatively, the dense sand layer at 6m below grade would likely provide adequate bearing capacity for spread footings; however, the required excavation and structural fill may offset the possible savings typical to this type of foundation.

The existing GCP foundation primarily uses timber piles, with the pool portion bearing on compacted structural fill directly on the dense layer. This combination of piled support and spread footings could lend itself to the differential settlement issues and cracking currently visible at the CGP. The Centennial Community Centre foundation type needs to be assessed further once existing drawings are received.

MECHANICAL

Based on information from existing site drawings, the Canada Games Pool (CGP), a 3" water service enters via the water entry room in the East Corner of the building. According to current BC Building Code Requirements, the existing water service is undersized. An upgrade of plumbing and the addition of sprinklers would require a much larger water service or services.

An 18" combined sanitary/storm main exits the building and flows to the South. This combined service would have to be separated if there is a major upgrade of the facility.

ELECTRICAL

In late summer of 2008, the existing indoor 300 kVA 347/600 volt unit substation was replaced with new exterior free-standing Federal Pioneer 750 kVA 347/600V unit substation located on the west side of the building. The unit substation size was increased to accommodate a new electrical service to Centennial Community Center. Depending on the Option these services may be affected or not. Refer to Option section for detailed information.

FURTHER DESIGN CONSIDERATIONS

In any of the scenarios proposed in this document, re-design of the site should follow best practices in landscape design, including integration of ecologically-conscious design, accessibility for disabled persons, and CPTED (crime prevention through environmental design).





SECTION FIVE – EXISTING BUILDING ANALYSIS

INTRODUCTION

The Canada Games Pool (CGP) and the Centennial Community Centre (CCC) are an integral part of the family of buildings comprising the immediate neighbourhood. These facilities are old but have been well maintained. The users of the buildings, while sometimes acutely aware of their shortcomings, nonetheless have a great deal of affection for each and generally enjoy participating in their programs.

The Canada Games Pool was constructed in 1972 to hold the aquatics competition at the Canada Games. Its design is regionally unique in that it allows for 50m competition lanes, a diving tank, and a program extension of the lanes to another 12.5m. Although the competition lanes are not FINA conforming, the ability of the existing pool tank to hold competitions and teaching programs allows it to attract customers from a broad geographic catchment.

The Centennial Community Centre was built in 1967 and is a pleasant environment comprising of primarily community assembly multi-purpose spaces. The combination of disparate uses within this building sometimes result in conflicts and it is highly inefficient to administer this facility independently from the CGP.

As the discussion below illustrates, there are some serious shortcomings of the CGP which is approaching the end of its useful life and the CCC which is a compromised facility in terms of program and performance. The City of New Westminster has been upgrading the buildings responsibly thereby extending the useful life of each. It is apparent now, however, that the degradation due to age of both facilities will need larger and larger capital expenditures and ultimately these will not be sufficient to maintain the functional purpose of the buildings. It is therefore timely to investigate what alternatives exist in addressing the technical shortfalls of the existing facilities and also the program shortfalls listed elsewhere in this Feasibility Study.

LIFE SAFETY

As indicated in the previous Existing Building Condition Assessment report, it is recognized that both of the existing facilities are “non-conforming” to current building code requirements in many respects (i.e., non-sprinkler protected, combustible construction, etc.), which will need to be rationalized and/or rectified in conjunction with the

proposed redevelopment options. The existing CGP facility is non-conforming in many respects including existing heavy timber/wood construction of mezzanine level, lack of adequate exiting facilities for the mezzanine level, no sprinkler protection, outdated fire alarm system and other minor fire separation issues. The existing CCC facility is partially non-conforming in some respects including non-compliant exiting systems for the basement level, compromised fire separation between basement and main floor, no sprinkler protection and outdated fire alarm system. Barrier-free accessibility provisions in both buildings are not fully in compliance with current minimum building code requirements (i.e., public change rooms, showers, washrooms and access between floor levels). The City of New Westminster is committed, by order of the fire and building permit departments, to sprinkler the existing CGP building if an addition is constructed or a substantial renovation is undertaken.

ARCHITECTURAL

The CGP has character. Its idiosyncratic structural ribs subtend a great loft of space that allows for diving, daylight clerestories, and stratification of pool air. It is full of activities and there is a suggestion of past competition glories by having spectator facilities on deck. The fitness centre in both locations is open to the pool deck and this contributes to the energy gained from intensive activity. Unfortunately, this is probably the limit of the CGP architectural amenities.

The exterior of the building is relatively blank – revealing none of the excitement that may be contained within to the outside and sealing the interior from the natural environment outside. The concrete buttresses forming the east and west perimeter of the building create a complex and unassigned ground space with little program purpose and necessitating fencing. The exterior materials are conventional and showing their age (with the exception to the relatively new metal sheet roofs).

The planning of the CGP facility shows the inefficiencies associated with accretion over time. The lobby is insufficient in size and unable to reveal any of the program facilities to patrons or prospective customers. The control point at the desk is compromised since it is remote to the family change room access. There is no public observation platform aside from the public circulation and a small amount of spectator seating at the south and west sides of the pool deck. The fitness centre is a humid, dark, interior space with no connection to the public circulation or the exterior. The administration spaces are remote to the control desk. The service spaces are remote to one another and insufficiently sized. Since the pool deck is also a circulation device, it brings disparate and unhygienic uses to the humid aquatic environment and vastly increases maintenance. Essentially, there is no strong organizational and circulation concept in the CGP. The interior of the main activity space is dark despite the clerestory translucent panels. The structural glu-lams have been painted a dark colour that contributes to the gloomy visual environment. The wood decking, while a warm material, also results in a dark surface. The diving tower at the termination of the pool deck axis is a banal construction that looks too insubstantial even for a temporary feature. The pool deck has seen constant patching and repairs due to material degradation and settlement. The change rooms do not have privacy features other than some doorless change cubicles, and have an unpleasant environment. Nearly all of the finishes need to be replaced.

The CCC is not as compromised in terms of design clarity and performance as the CGP. The essential issue here is lack of direct connection to the CGP and support spaces such as the change area being too remote and inconvenient to service the multi-purpose activity spaces at the CCC. The combatives studio on the lower level has insufficient height. The access to the child minding area on the lower level is not secure and not direct enough. All in all, the CCC is younger and could function with its program and organizational compromises for several more years should renovations dealing with the technical shortfalls be accommodated immediately.

BUILDING ENVELOPE

The building enclosure consists mainly of a large steep sloped peaked roof with a clerestory window west of the ridge, and short walls at the lower eave of the roof. The end walls are wood framed with infill stud framing.

The main roof structure is built of long span glue-laminated beams, plank decking, with an exterior insulated metal clad roof. The wood

appears to be in good condition despite some water staining from previous leaks and condensation, and could be cleaned and recoated easily. The existing roof was installed about 15 years ago, is understood to incorporate an air vapour barrier and insulation, and should have a remaining service life of 25 years or more. It is not known if the roof underlay included plywood.

Windows are dated and could be replaced for both functional and aesthetic improvement. The end and side walls of the building are block and wood framing. They appear to be functional but could be improved with respect to insulation and air tightness. The end walls can easily be sacrificed and replaced if major rehabilitation of the pool tanks is planned.

Plans to install skylights, rehabilitate windows, and improve the interior appearance of the pool roof can all be accommodated by the existing wood enclosure. The wood is a unique feature of the pool, and is one of the materials that best survives the harsh atmosphere inside the pool enclosure. Several new pools in Vancouver have been built with glue laminated timber because of the low maintenance requirements and longevity of wood in the corrosive environment.

STRUCTURAL

The Canada Games Pool (GCP) structure primarily consists of glue laminated beams with wood decking over. Walls typically consist of wood and masonry, with concrete slab-on-grade and suspended slab floors. Foundations are a combination of timber piles with pile caps for the primary structure, with a raft foundation under the pool. The Centennial Community Centre (CCC) is primarily wood framing, with reinforced concrete and wood bearing walls. The foundation and framing of the CCC needs to be confirmed once existing structural drawings are made available.

The GCP and CCC are approaching their design life at 37 years and 43 years of age, respectively. Previous condition assessment reports indicate the buildings are showing signs of deterioration, both aesthetically and structurally, as evident by visible cracks within the CGP floor slabs and foundations. In addition, the CGP uses timber piles for foundation support of the structure. Based on the age of the piles and potential fluctuating water table around the piles, it is recommended that these timber piles are tested in order to determine if rot or deterioration has occurred. This would be possible by exposing an adequate number of piles down to the water table so that they could be



visual inspected and core samples taken for further testing. The CCC foundation type needs to be confirmed. Recommendations would be similar if timber piles were used.

The lateral seismic capacity of both structures does not meet current code requirements. The current 2006 BC Building Code also requires that community centres and assembly areas be designed as “high-importance”, which increases the demand of the building by 15% to 30% over other typical structures. As noted in the 1992 assessment by Seifken Engineering Ltd, the roof diaphragm, shear walls, and connections are in need of repair.

MECHANICAL

Generally, the mechanical, plumbing and pool systems have exceeded their service lives and the equipment should be replaced. Possible exceptions could be made for those areas which have been recently upgraded, including the main boilers, the Tots’ Pool/Hot Tub areas and the Water Slide.

An upgrade with more efficient systems is warranted. This would include heat recovery on the main air systems, additional high efficiency boilers to provide heating to all areas instead of just to the pool and domestic hot water systems, and new building automation controls.

The copper piping throughout the buildings should be replaced/upgraded. All plumbing fixtures should be replaced with more efficient/modern ones.

The required upgrade of the pool filtration and disinfection systems would necessitate a larger mechanical space. Ideally, this one mechanical space would be outside the existing structure and would serve all pools. (For additional description of mechanical system upgrades please see Option 1 on P. 38)

ELECTRICAL

Main Incoming Power: In late summer of 2008, the existing indoor 300 kVA 347/600 volt unit substation was replaced with new exterior free-standing Federal Pioneer 750 kVA 347/600V unit substation located on the west side of the building. The unit substation size was increased to accommodate a new electrical service to Centennial Community Center (including future expansion and air conditioning loads), allow for 65 kilowatt future sauna expansion and 125 kilowatt future pool expansion.

Power enters the building into a 1200 amp 347/600 volt distribution board with 900 amp main breaker and integral ground fault protection. This new board has plenty capacity for future breakers/expansion and contains a 60 kVAR capacitor to assist in maintaining building power factor correction. This system also has a new underground electrical service feeding the Centennial Community Center.

These two components are in new condition and do not require replacement or relocation for this option.

Power Systems: With the exception of the outdoor unit substation and the 600V distribution to Centennial Community Centre, all electrical panels and electrical branch wiring shall be replaced with new and shall be GFCI rated to match the existing outdoor unit substation. All new branch wiring and receptacles including GFCI in pool areas shall be provided. GFCI outlets will be provided within 1.5 meters of sinks, all receptacles in pre-school area within Centennial shall be child tamper resistant.

Grounding: A new building ground system shall be provided interconnected to unit substation. Ground system shall be provided around all pool areas to pick up all metal devices within pool area. Pumps, metal piping, telephone distribution and other pool related equipment shall be tied to this system.

Fire Alarm System: Fire alarm control panels, devices and wiring in both buildings shall be replaced with new addressable 2 stage system with capacity for sprinkler system. The new expansion entry area shall contain the main fire alarm annunciator panel for both buildings and shall be the Fire Department response point.

Lighting System: All light fixtures and lighting controls shall be replaced with new. Fixtures shall be in full compliance with ASHREA 90.1 – 2007 and LEED Gold, lighting control for both facilities shall be done via low voltage lighting control with connections to central building control

system. Occupancy sensors shall be provided in all areas for room control and override. Pool light levels to performance standards shall be provided with layout to ease maintenance replacement of lamps and ballasts.

Emergency Lighting Systems: New emergency battery packs and remote emergency heads shall be provided through-out and designed to provide code compliance on paths to exits. New exit signs shall be provided in compliance with ASHREA 90.1 – 2007.

Telecommunications and Security: Conduit infrastructure shall be provided in both facilities only, new devices and wiring shall be provided by City forces.

Sound System: Conduit infrastructure shall be provided for background music/public announcements. An independent conduit system shall be provided in the Fitness area (with TV provisions) and for the Centennial Community Centre Conference Room.

Mechanical Systems: All new electrical connections shall be provided for mechanical systems. All major sized mechanical systems shall operate on 347/600V power. Power for new pool equipment pumps and equipment shall be provided. All equipment located in the new Tot Whirlpool room is anticipated to remain.

ACOUSTICAL

The primary goal for acoustics within a recreational centre is to improve communication and comfort. A corollary of this is increased safety through effective communication between staff and patrons or instructors and classes. For early costing, it is recommended that the equivalent of the plan area of each space be treated with an acoustically absorptive finish.

Lay-in tile ceilings are practical and effective sound absorbers for most small to mid-sized spaces. Many other finishes such as wood, metal, fabric, gypsum-appearance, or washable tiles are available with a wide range in costs. All finishes must also be selected to meet non-acoustic space requirements such as humidity/mildew resistance and impact resistance.

The secondary goal for acoustics is to control noise from mechanical and electrical equipment. Ideally, mechanical and electrical spaces will be separated from noise-sensitive spaces, and will preferably be located slab-on-grade or above non-sensitive spaces such as storage rooms, or other mechanical/electrical spaces. We recommend allowances for vibration isolators, duct silencers, and cavity wall construction (double walls separated by an airspace) for all mechanical and electrical spaces in early design.

The third key goal of acoustic design is to provide partitions between spaces that provide adequate privacy and sound isolation. Privacy will be most important in office and meeting spaces. Sound isolation for reducing external noise intrusions provides better working and learning environments as occupants will be able to focus better with fewer interruptions or distractions.



SECTION SIX – FUNCTIONAL PROGRAM

PURPOSE AND DEFINITIONS

A functional program describes area, spatial and functional relationship requirements. The first steps in a design process rely on the program to define prescribe space allocations and functional zoning to facilitate development of concepts. Later, the program is relied upon by the designers to provide generic information about the spaces themselves such as critical dimensions and qualitative needs as well as occupant load and HVAC requirements influencing building systems design. This information allows for greater accuracy in cost estimating at the program stage.

The program identifies the users, the activities to be accommodated, where a space is located relative to other spaces, and how access to a space is controlled. It identifies the internal program priorities and the external urban planning considerations necessary to ensure a successful building. The process of translating program needs into area requirements involves a thorough understanding of how recreation buildings work and how people expect to use them. Area allocations and allowances are based on established industry standards and have been tested against case studies of similar scale and composition to ensure accuracy.

Certain terms are commonly used in functional programs, including:

ASSIGNED AREA

The area of space measured from wall face to wall face, excluding columns and plenums (ducting and mechanical chases). Assigned spaces are used for a specific identified activity or function which may determine minimum critical dimensions (such as regulation field of play) or expected occupant load. Most spaces sizes are based on common standards.

BUILDING SYSTEMS ALLOWANCE

An area allowance for space that accounts for building walls and structure, mechanical and electrical equipment and plenum spaces, and circulation allowance. Each varies by building type but typically structure is less than 3% of above the assigned area total. Mechanical space allowance is also dependent on building complexity but is also typically in the range of 5%.

Circulation area calculation is a function of occupant load and anticipated travel distances to exits. Circulation includes horizontal circulation such as halls and corridors, and vertical circulation such as stairwells and elevators. Circulation allowance typically includes washroom stall counts which are driven by code.

In this document some typical ‘grossing factor’ spaces such as lobby and pool mechanical have been identified as assigned spaces in order to more properly describe their requirements and locations.

BUILDING GROSS AREA

All area within the exterior perimeter face of wall for the entire facility including all assigned spaces and all building systems allowances. Building gross area is a larger number than building footprint area as it assumes a purely two-dimensional allocation of space and implies no stacking.

A program document typically includes an abstract functional relationship diagram showing relative sizes of spaces, ideal proximities, circulation patterns and control points. In this case, the functional relationships are directly described in the concepts shown in Sections 8 and 9 to reflect the real conditions and parameters of a real site. In the concepts some spaces are not illustrated but assumed on a basement level such as mechanical and maintenance spaces and some multi-purpose space.

FUNCTIONAL OVERVIEW

This space program has been organized into five major component parts, based primarily on environment or building shell-type, meaning the characteristics of the spaces are what define the categories. Functional commonalities and zoning and control requirements also figure into the groupings. The five major components in this project include:

Component 1.0 – Natatorium

In a replacement facility the aquatic component would be defined by a 10- In a replacement facility the aquatic component would be defined by a 10-lane lane, 52-metre program tank with dive well (with 1 and 3-metre springboards and a 5-metre platform), and a second body of water, warmer water amorphous-shaped leisure pool with movable water spray elements and a waterslide. The latter pool would have a movable floor, two or three shallow lanes integrated within, and would be disabled accessible by shallow beach or ramp. In an expansion

scenario, the existing 8-lane 67-metre tank would be retained and the leisure water possibly added. The new facility would also include an on-deck viewing area, hot pool with ramp, sauna and steam rooms, and staff and storage areas. Pool decks are assumed to be 15-foot or 4.6-metres wide accommodating dry-land training and temporary bleachers for competitive events.

Component 2.0 – Multi-Purpose Spaces

A series of enclosed spaces within the facility designed to accommodate assembly functions such as meetings, instruction and social functions, as well as movement activities such as aerobics, martial arts, yoga and dance. The existing CCC includes an undersized gymnasium which has become extremely popular for large group fitness classes. Dedicated spaces have been allocated for a pre-school program ideally adjacent and connected to a multi-purpose space allowing programs to expand as needed. These space will be either programmed internally or rented out, the latter having implications on overall access controls. Presently, there is a popular games area (table tennis, basketball arcade game) directly on the pool deck which should be moved off to an adjacent separated space, which could also be used for pool party rentals.

Component 3.0 – Fitness Centre

The fitness centre with support spaces would be about 15,200 square feet (1412 SM) for the expansion option or 21,440 SF (1991 SM) for the replacement or new building option. This will be an almost tripling or quadrupling the size of the current facility, to a scale becoming increasingly common in new centres. Recent trends in recreation planning and design suggests the centre to be divided into two sections: the louder, more social, high performance side appealing to the young and athletic; and the quieter, more introverted, modesty side appealing more to novices, seniors and those seeking a more meditative experience. Each side would have complete compliment of cardio, strength training machines, free weights and stretching areas. Common functions include consultation/assessment rooms, spin bike studio space and an equipment repair room.

Component 4.0 – Locker and Change Rooms

The facility will continue to offer three types of locker room spaces: family / accessible change rooms, male and female locker rooms. Family change rooms have increased proportionally, especially with aquatic facilities. The family change areas in a new facility would be a 'dry' change cubicle model, with patrons changing in small enclosed spaces and showering in a common area directly adjacent to the pool deck. Some cubicles will be "wet" and fully- accessible for accommodating individuals with disabilities and their aides. In the expansion scenario, the existing 'wet' change rooms will be maintained and added to.

Component 5.0 – Support and Administration

This component includes all typical front-of-house and back-of-house functions including lobby reception / control, office space, food services and seating area, and maintenance and storage spaces. Current office spaces are too few in number and too small, which is remedied in the new replacement building, but not addressed in the expansion.

DESIGN GUIDELINES

Operational Requirements

The facility is a 24-7, 12-month facility with only a short annual maintenance shutdown. Current operating schedule includes a 6:30 AM weekday opening with a late evening closing, depending on events or rentals. Currently the Canada Games Pool and the Centennial Community Centre are two independent facilities, programmed and controlled independently. In an expanded or replaced facility the two would be combined with access controlled from a single lobby and reception area.

Access Controls and Security

The combined or new complex would be controlled from a single gate-point using a card-swipe system. Reception, registration and sales would occur at a service counter, which will also be charged with passively supervising the turnstiles. Multi-purpose rooms can be located outside the controlled zone as it poses less of a lost revenue risk than a pool or fitness centre. Multi-purpose spaces tend to be more self-regulating in that the next booking displaces the previous users when their time expires. All other doors should be exit-only and alarmed or for staff use. Reception staff should be able to visually supervise the entrance points to the locker rooms to discourage theft or personal safety risks. Pool

staff and fitness centre staff will lifeguard their respective areas. The pre-school area should be planned to ensure child protection, both indoors and out. The loading / receiving / waste handling area should be locked at all time.

Proximity and Zoning

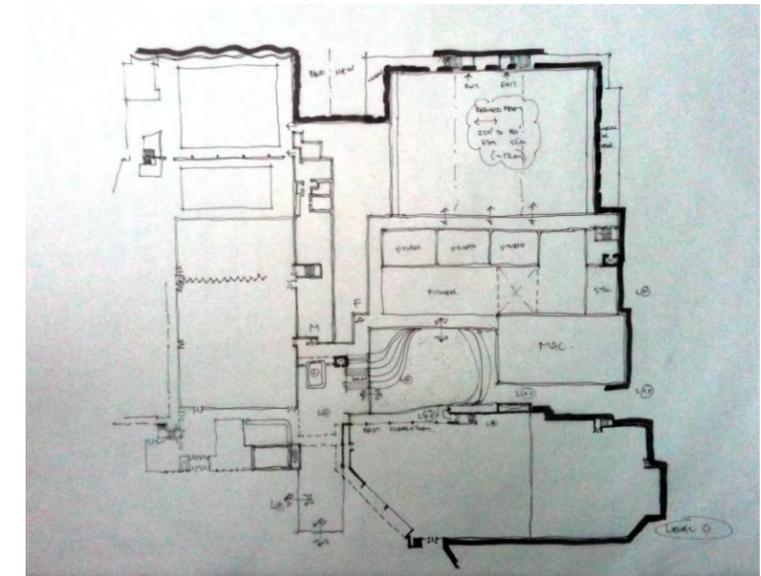
The main entrance, lobby and reception / control desk should be located at the most logical proximity to drop-off parking, disabled and general parking areas. The change rooms should be in relative close proximity to the lobby, but behind the access-control point. The pool deck should be only accessible from change rooms, the viewing area and staff areas. The fitness centre for safety reasons must be supervised at all times as well as preventing children from accidentally entering. As much as possible, the fitness centre should have views to and from the exterior and into other activity areas such as the natatorium, the gym and lobby. Direct daylight and glare pose an operational risk for the pool, therefore views and exterior glazing should be limited to indirect exposures (north, or east) or controlled with shading devices.

Image and Quality of Environment

The existing Canada Games Pool is a reflection of the thinking of its time: virtually no exterior lighting or views, undersized support and amenity spaces and narrow pool decks. Now pools are made to feel almost like outdoor experiences. Fitness centres did not exist and have grown exponentially from basement spaces to bright, open and airy spaces, with interconnected views, pleasing material treatments and the addition of audio/visual entertainment systems. Fitness users will spend on average 250 hours per year in the space, therefore in a competitive market, the experience has to be pleasing. Existing community centre multi-purpose rooms are pleasant and functional, but current concerns are quality and HVAC related.

Special Requirements

The expanded or replacement facility will need to be fully disabled accessible and conform to all building code requirements, including seismic. The natatorium will need to conform to Health Act requirements, FINA competitive requirements and building environmental performance specifications for aquatic facilities. A new facility (if funded by other levels of government) will be expected to meet or exceed requirements for LEED Gold certification. Ceiling height, at least partially in the natatorium would be governed by diving (minimally 7-metres to 12.5 metres). Clear height in the gymnasium would be driven by activities with recreation volleyball being the highest (typically 25-feet, well below the competitive standard of 41-feet). Pool chemical storage, food concession kitchen and the maintenance paint shop will require special independent air handling systems or other special accommodations. A safe will be required in one office used for cash accounting.



1.0 Natatorium	Existing SF	Expansion Program SF	Replacement Program SF
1.1 Program Tank	25,800	0	13,150
1.2 Teaching Tank	(incl'd.)	6,550	6,550
1.3 Deck Area / Viewing / Retr. Seating	(incl'd.)	5,350	13,300
1.4 Waterslide Tower / Run-outs	(incl'd.)	0	1,500
1.5 Hot Pool	(incl'd.)	0	1,000
1.6 Sauna / Steam	150	0	300
1.7 Pool Guards Booth	150	0	150
1.8 Pool Manager Office	0	0	120
1.9 Pool Staff Locker Room(s)	0	0	300 basement
1.10 Pool Storage	400	200	500
1.11 Pool Mechanical	2,000	1,200	4,000 basement
1.12 Pool Chemical Storage	100	0	100 basement
Component Sub-Total	28,600	13,300	40,970
2.0 Multi-Purpose Spaces			
2.1 Multi-Purpose Gym	5,000	0	6,800
2.2 Large Multi-Purpose Rooms	3,600 (two)	0	4,800 (two)
2.3 Medium Multi-Purpose Rooms	2,000 (two)	0	3,600 (three)
2.4 Meeting Rooms	1,100 (three)	2,600 (two)	2,100 (3)basement
2.5 Martial Arts Room	1,200	0	1,800 basement
2.6 Childcare Centre	1,200	0	1,200
2.7 Storage (distributed)	300	0	900
2.8 Pool Mezzanine Games Area	600 (deck)	0	1,050
Component Sub-Total	15,000	2,600	22,250
3.0 Fitness Centre			
3.1 Fitness and Weights Area	5,000	15,000	20,000
3.2 Office / Consult / Testing Rms.	0	0	240 (two)
3.3 Repair Room	0	200	200
3.4 Spin Studio	0	0	1,000
Component Sub-Total	5,000	15,200	21,440
4.0 Locker and Change Rooms			
4.1 Mens Locker and Washroom	1,300	0	1,500
4.2 Womens Locker and Washrooms	1,400	0	1,500
4.3 Family Change	1,300	2,300	2,800
4.4 Community Ctr. Change Rooms	700 (two)	0	0
Component Sub-Total	4,700	2,300	5,800
5.0 Support and Administration			
5.1 Reception Counter and Public Lobby	1,800 (two)	3,550	5,250
5.2 Administration Offices	700 (seven)	0	1,800 (ten+common)
5.3 Lounge	0	0	incl. in Lobby
5.4 Food Concession	0	250	300
5.5 Washrooms in Comm. Ctr.	700 (four)	0	0
5.6 Maintenance Shops	150	0	350 basement
5.7 Paint Shop	0	0	150 basement
5.8 Cold and Dry Storage	0	0	150 basement
5.9 Loading Dock and Staging	0	0	300 basement
Component Sub-Total	3,350	3,800	8,300
Component Assigned Total SF	56,650	37,200	98,760
Gross Building Areas SF	61,000	42,780	113,574

Fig 6.1 Program Areas

	Proximity	Occupant Load	Locking	Clear Span	Clear Height	Telephone	Network / Internet	Power	Lighting Ambient	Lighting Task	Daylight	HVAC	Plumbing	Acoustics	Wall Finishes	Ceiling Finishes	Flooring	Built-ins	Furniture	Special / Notes
1.0 Natatorium																				
1.1 Program Tank	1.3, 4.1-3, 1.5-7, 1.1	480	n/a	Y	O	N	N	N	H	n/a	C	Z	Y	H	T and C	O	T	n/a	bulkhead	To Health Act and FINA standards
1.2 Leisure Pool	1.3, 4.1-3, 1.7, 1.10	650	n/a	Y	O	N	N	N	H	n/a	C	Z	Y	H	T and C	O	T	n/a	n/a	To Health Act standards
1.3 Deck Area / Viewing / Retr. Seating	All 1.0, 4.1-3	above	n/a	Y	O	N	N	N	H	n/a	C	Z	Y	H	T and C	O	T	diving	n/a	Non-slip tile; guard chairs
1.4 Waterslide Tower / Run-outs	1.3	6	n/a	N	OH	N	N	N	H	n/a	C	Z	Y	H	n/a	O	n/a	tower	n/a	Pre-manufactured unit
1.5 Hot Pool	1.3	30	n/a	Y	O or S	N	N	N	H	n/a	C	Z	Y	H	T and C	O	T	n/a	n/a	Ramp entry
1.6 Sauna / Steam	1.3	6	N	N	S	N	N	S	H	N	N	S	Y	S	D	T	R	O	N	2 on deck or 4 in locker rooms
1.7 Pool Guards Booth	All of 1.0	4	Y	N	S	Y	H,W	S	M	H	C	S	N	P	D	T	C	N	OS	Counter, chairs, CC, audio system
1.8 Pool Manager Office	1.7, 1.3	3	Y	N	S	Y	H,W	S	M	H	C	S	N	P	D	T	C	N	OS	Desk, chair, filing cabinet
1.9 Pool Staff Locker Room(s)	1.7	6	Y	N	S	N	N	S	H	N	N	S	Y	S	C	T	R	O	M	Showers, 20 locker columns each
1.10 Pool Storage	1.1-3	n/a	Y	N	S	N	N	S	H	N	N	S	N	S	C	O	R	N	O	Shelving
1.11 Pool Mechanical	1.1-2, 5.6	n/a	Y	N	S	N	N	S	H	N	N	S	N	S	C	O	R	N	O	
1.12 Pool Chemical Storage	1.11, 5.9	n/a	Y	N	S	N	N	S	H	N	N	S	N	S	C	O	R	N	O	2 hr. rated separation
2.0 Multi-Purpose Spaces																				
2.1 Multi-Purpose Gym	5.1, 2.7	275	Y	Y	S	N	W, V	S	L-M	M-H	C	S	N	P	D	T	C, W	N	S	Basketball backstops, v-ball net poles
2.2 Large Multi-Purpose Rooms	5.1, 2.7	80	Y	Y	S	N	W, V	S	L-M	M-H	C	S	N	P	D	T	C, W	N	M	Folding tables and chairs
2.3 Medium Multi-Purpose Rooms	5.1, 2.7	40	Y	Y	S	N	W, V	S	L-M	M-H	C	S	N	P	D	T	C	N	M	Folding tables and chairs
2.4 Meeting Rooms	5.1, 2.7	25	Y	Y	S	N	W, V	S	L-M	M-H	C	S	N	P	D	T	C	N	M	Folding tables and chairs
2.5 Martial Arts Room	5.1, 2.7	30	Y	Y	S	N	W, V	S	L-M	M-H	C	S	N	P	D	T	C	N	S	Floor mats by users
2.6 Childcare Centre	5.1, 2.1, 2.7	25	Y	Y	S	Y	H,W,V	S	L-H	M-H	C	S	Y	P	R	T	R	M	O	Small tables and chairs, shelving
2.7 Storage (distributed)	2.1-6	n/a	Y	N	S	N	N	S	H	N	N	S	N	S	C	O	R	N	O	Shelving
2.8 Pool Mezzanine Games Area	1.3	10	N	Y	S	N	W	S	H	n/a	C	S	N	S	C	O	R	N	O	Table tennis, arcade games
3.0 Fitness Centre																				
3.1 Fitness and Weights Area	5.1, 4.1-3	150-250	Y	Y	O or S	N	W, V	S	L-M	M-H	C	Z	Fountain	P	D	O or T	R	N	S	Cardio, resistance mach., free wts.
3.2 Office / Consult / Testing Rms. (2)	3.1	3	Y	N	S	Y	H,W,V	S	M	H	N	S	N	P	D	T	C	N	OS	
3.3 Repair Room	3.1	1	Y	N	S	Y	H	S	H	H	N	S	N	S	D	O	R	M	O	Workbench
3.4 Spin Studio	3.1, 4.1-3	25	Y	Y	O or S	N	W, V	S	L-M	M-H	C	S	N	P	D	O or T	R	N	S	25 spin bikes
4.0 Locker and Change Rooms																				
4.1 Mens Locker and Washroom	5.1, 1.3, 3.1	50	Y	N	S	N	N	S	H	N	N	Z	Y	S	C	O	T	O	M	Showers, WCs, 150 locker columns
4.2 Womens Locker and Washrooms	5.1, 1.3, 3.1	50	Y	N	S	N	N	S	H	N	N	Z	Y	S	C	O	T	O	M	Privacy showers, 150 locker col.
4.3 Family Change	5.1, 1.3, 3.1	110	Y	N	S	N	N	S	H	N	N	Z	Y	S	C	O	T	O	M	300 locker columns
4.4 Community Ctr. Change Rooms (2)	5.1, 1.3, 2.2-5	20	Y	N	S	N	N	S	H	N	N	S	Y	S	C	T	T	O	M	Showers, 20 locker columns each
5.0 Support and Administration																				
5.1 Reception Counter and Public Lobby	Central to all	3 staff	N	Y or N	O or S	Y	W	S	L-M	H	C	Z	N	S	D	T	R	M	O	Reception counter, seating, display
5.2 Administration Offices (10)	5.1, 5.6	3	Y	N	S	Y	H,W	S	M	H	C	S	N	P	D	T	C	N	OS	Desk, chair, filing cabinet
5.3 Lounge	5.1	15	N	Y	O	Y	W	S	L-M	M	C	Z	N	S	D	T	C	N	O	Sofas and end tables
5.4 Food Concession	5.1	2	Y	N	S	Y	N	208v	H	H	N	S	Y	S	R	T	R	M	O	Coolers, kitchen equipment, cash reg.
5.5 First Aid Room	Central to all	3	Y	N	S	Y	N	S	H	H	N	S	Y	P	R	T	R	M	O	Exam table, desk, chairs, supply cab.
5.6 Maintenance Shops	5.9, 1.11, 3.1	2	Y	N	O	Y	H	208v	H	H	N	S	Y	S	C	O	R	M	O	Workbenches, shelving
5.7 Paint Shop	5.6	1	Y	N	O	N	N	S	H	H	N	S	Y	S	C	O	R	N	O	Compressor
5.8 Cold and Dry Storage	5.4	n/a	Y	N	S	N	N	S	M	N	N	S	N	S	C	O	R	N	O	Walk-in cooler, shelving for dry store
5.9 Loading Dock and Staging	1.11, 1.12, 5.4, 2.0	n/a	Y	N	O	Y	N	S	H	N	N	S	N	S	C	O	R	N	O	Waste storage bins

Legend

Occupant Load Number of occupants / visitors
Locking Room locking Y or N
Clear Span Column-free Y or N
Clear Height Standard office S / over-height O
Telephone Wall jack Y or N
Network / Internet Hardwired H / Wireless W / Video V

Power Standard S / 208V
Lighting Ambient High H / Medium M / Low L
Lighting Task High H / Medium M / Low L
Daylight Yes Y / Controlled C / None N
HVAC Spatial controlled S / Zonal controlled Z
Plumbing Yes Y / No N / Special S

Acoustics Standard s / Privacy P / High H
Walls Drywall D / Resilient R / CMU C / Tile T
Ceilings T-bar T / Open O / Drywall D
Flooring Carpet C / Resilient R / Tile T / Sprung Wood W
Built-ins Millwork M / Other O / None N
Special As described

Furniture Sport Specialty S (see notes)
Office Suite OS / Workstation W
Meeting Room Suite M
Other O

Fig 6.2 Program Analysis

SECTION SEVEN – DEVELOPMENT DIRECTIONS

During this feasibility study process a series of options have been analyzed and evaluated. During the first review three options were discussed: Option A – fitting a 50m and a 25m tanks within the existing structure and adding a link building; Option B – replacing the existing 8-lane 67m tank with a 10-lane 52m tank plus creating an addition with a new 25m pool and a link building; and, Option C – a phased replacement of CGP linked to a retained CCC.

During the second review, six options were assessed: Option 1 - renovate building systems in both existing buildings but do not address functional program needs; Option 2 - renovate both buildings with a modest link addition; Option 3 – same as two but with a more comprehensive expansion in the link building; Option 4 – similar to three except creating an addition for the 25m pool; Option 5 – was a refined version of Option C; and; Option 6 – was a full replacement including the CCC.

The consensus of the project committee was that there were three clear directions to further investigate: the two bookends, Option 0 - the minimal-fix option but no longer reconfiguring the non-standard tank; and Option 3 - the 100% replacement option. The second option was a mid-point solution that added about one-third of the new spatial inventory while retaining all of the existing.

MAINTAIN (OPTION 0)

The ‘maintain’ option is a base line scenario against which the other scenarios may be compared. Leveraging the recent Facility Assessment Studies, it identifies the least amount of expenditure required to maintain operations in the Canada Games Pool and Centennial Community Centre. This option does not account for adding program space, instead outlining the consequences of ‘business as usual’.

It should be noted that the capital financial outlay for this option is not finite, and will increase each year until the building reaches the eventual end of its useful life. Given the condition of the buildings, this timeline is anything but certain and it varies by program component. While some refurbished spaces (family change) and some recently replaced mechanical equipment may be serviceable for over a decade, the majority of the interior spaces and pool tanks will see significant additional deterioration within 5 years.

It is assumed, and included in the pricing of this Option, that any ‘maintain’ expenditures would include full sprinklering of the facility but no scope or price is identified for seismic upgrades or ‘post-disaster’ upgrades. The pricing included in this study includes the entire list of upgrades identified in the facility assessment studies for both: CGP and CCC.

Along with establishing a comparative baseline, the ‘maintain’ option reveals the cost of buying time to organize and raise sufficient funds for more viable longer term options. It is, in itself, not a viable way forward.

RETROFIT AND UPGRADE OPTION (OPTION 1)

The retrofit and upgrade option strives to add at least twenty-years of service life to the existing buildings by addressing essential building system upgrades to both buildings, pool tank replacement and adding some day-lighting to improve the overall appearance of the CGP. The CGP would feature a reconfigured main tank – the 67m x 18m tank replaced within the existing pool hall structure with a 52m x 25m tank and relocating other functions off the sideline pool deck. Note that it is assumed that only a small modification to the water slide will be needed in order to maintain its location and brake lane on the pool deck. This modification has not been analyzed or priced.

Cosmetically, the buildings will be brighter and warmer but otherwise will look the same. The needs for leisure pools, are not addressed nor are fitness centre expansion needs, office and support space, and storage requirements.

Essentially, all work identified in Option 0 plus major interior aquatic replacement and gutting (with a minor mechanical room addition) would be included in the scope. For additional detail see Appendix.

EXPANSION DEVELOPMENT OPTIONS (OPTION 2)

The strategy for modernizing and adding functional capacity to the Canada Games Pool involves two phases or steps that are non-sequential and can be carried out independent of each other or at the same time.

The first phase or module includes the creation of a two-storey massing that links the two existing buildings functionally and operationally and adds space for the most dynamic growth area – the fitness centre, increasing to 15,000 square feet. The new link building will also feature a



larger consolidated lobby area and food concession. The massing of the addition would be very open and transparent (with views to the inside and out) in sharp contrast with the existing buildings and at night would be a bright beacon of light drawing visitors to the entrance.

The second phase or module encompasses a leisure pool as a new and separate but attached building volume, with additional family change rooms and pool support space. It is important to note that the leisure pool module must be completed before upgrades can occur in order to avoid a complete shut-down of pool services during retrofit. The leisure body of water - essentially designed for play - will include some 25m lanes integrated into the layout to allow for young children's swim lessons. The new pool would be fully handicapped accessible and would feature water toys and possibly a lazy river and other moving water features.

REPLACEMENT DEVELOPMENT OPTIONS (OPTION 3)

The cost consultants have suggested that the cost of retrofit and upgrade as well as the addition of all proposed additional space will result in a capital cost approaching the cost of a completely new building with a full sixty or more years projected service life.

The replacement options illustrated are essentially the same and feature the same planning characteristics: pool areas are oriented to the north and east to allow for capture of indirect natural daylight without glare; the main entrance way oriented to the parking and passenger drop-off areas; and short-span low-ceiling spaces are stacked above each other to create as compact a footprint as possible. Some functional spaces such as support and mechanical and a few activity spaces Martial Arts are assumed to be on a basement level.

Each option also respects the fact that the existing facility must remain operational during construction. When the new is operational, the old will be demolished and the footprint areas reallocated to replacing lost parking or the displaced sport field.

Replacement Option A places the building on the north-west corner of the site, with high visibility from the McBride Boulevard. The building, on the site of the all-weather sports field, would have a front entry in close proximity to existing and new parking areas. The sports field would be reconstructed in a proper north-south orientation on the east parking lot and portions of the demolished buildings footprints.

Replacement Option B places the building on the existing main parking area. This would be most disruptive during construction unless the sport field is seconded for temporary parking and restored later. Again, the compact building footprint fits in the available area and avoids disruption to existing buildings. The new stepped massing, taller than the Fire Hall and approaching 300-feet in length would be closer to 6th Avenue and the houses across the road.

Option C places the building behind the two existing buildings on the north-east parking lot but because of area limitations has to be built in a primary phase (the main halls) and a second phase (multi-purpose rooms and additional lobby space 'saddle-bagged' on to the main structure when the old pool has been demolished). This option sets the new building farthest back from any roads and has no impacts on surrounding uses such as the curling club or sports field.

SECTION EIGHT – DEVELOPMENT OPTIONS

The first option (option 0) is a reference or a 'bookend' option as discussed above, consisting of the renovations and priorities identified in the 2007 facility assessment report in order to extend the life of current operations for a period between 5 and 10 years.

The Retrofit and Upgrade option (Option 1) includes the upgrade or replacement of building systems, code requirements and replacement of existing pool tank with 25m x 52m tank and relocated hot pool and tot pool.

The Expansion scheme (Option 2) proposes the addition of up to 42,780 square feet of area to both the CGP and CCC.

This option is a two-storey scheme with fitness centre occupying most of the area (incl. the entire upper level), and a separate leisure pool hall with more family change rooms and support space provided as phase 2.

Developing an entirely new facility on the CGP/CCC site will be challenging. Operations of the existing facility cannot be interrupted and the sports field and parking will have to be replaced when the existing buildings are demolished.

While Replacement Option 3A proposed building new on the sports field and replacing the field later, Option 3B proposes building on the existing parking lot which will create parking issues unless the all-weather field is temporarily seconded. Option 3C is a two-phased approach which neither displaces field or parking, but has the challenge of the tightest construction footprint. Most of the major parts of the facility could be built and put into operation in Phase I.

Most of the deferred elements of the phased development would be functions relating to the community centre. Therefore, the existing pool would have to be removed, Phase II added and only then the CCC demolished.

OPTION 0 – MAINTAIN AND UPGRADE

This option is not discussed here since it is dealt with above and in the 2007 Buildings Assessment Study but is included in the pricing matrix.



Fig 8.1 Before



Fig 8.2 After

OPTION 1 – RETROFIT AND UPGRADE ONLY

ARCHITECTURE

The retrofit and upgrade option strives to add at least twenty-years of service life to the existing buildings by addressing essential building system upgrades to both buildings and adding some day-lighting to improve the overall appearance of the CGP. The CGP would also feature

a reconfigured main tank – the 67m x 18m tank replaced within the existing pool hall structure with a 52m x 25m tank and relocating other functions off the sideline pool deck. Cosmetically, the buildings will be brighter and warmer but otherwise will have similar spatial and program character. The needs for additional aquatic uses, especially leisure functions are not addressed nor are fitness centre expansion needs, office and support space, or storage requirements.



OPTION 1 PLAN

CODE

1. Existing CGP building area to be fully upgraded to current building code requirements relative to exiting, fire protection (sprinklers), fire separations and other critical non-conforming conditions present within the existing building environment (e.g., structural issues as reported by structural consultant, etc.). Existing 2nd storey fitness area of wood/timber-frame construction will need to be addressed with an alternative solution approach to be developed to permit retention of existing combustible construction within building required to be of noncombustible construction. The existing heavy timber roof structure will be permitted under Article 3.2.2.16. with installation of sprinkler protection throughout the building.
2. Exiting from the 2nd storey open fitness area of the CGP building does not comply with current building code requirements and will need to be rectified with the provision of 2 separate fire-rated enclosed exit stairways having a minimum 1-hour rated fire separation and discharging directly to the exterior.
3. The fire alarm system for the CGP building is outdated and does not have capacity to accommodate new sprinkler system zones, functions, etc. and therefore, will need to be replaced and upgraded as part of this option.
4. Existing CCC building areas to be fully upgraded to current building code requirements relative to exiting, fire protection (sprinklers), fire separations and other critical non-conforming conditions present within the existing building environment (e.g., structural issues as reported by structural consultant). The existing fire alarm system appears to be outdated and would also need to be replaced and/or upgraded with this option. Based on the existing building area (to be confirmed) it may be possible to develop an approach to retain the "standalone" CCC building without the installation of sprinkler protection, but this would require further discussion with CNW to determine the acceptability of this approach relative to building longevity and property protection.

STRUCTURAL

As noted in the Existing Building Analysis, the foundations of both buildings will need to be confirmed/tested to determine the extent of foundation upgrade required to these buildings. The gravity supporting structure in these buildings are likely adequate, however a seismic upgrade to both buildings should be undertaken in order to ensure the

buildings do not present a life safety issue during or after a seismic event. The extent of the upgrade will need to be discussed further with the City of New Westminster, as it is often not economically practical to bring the building up to 100% of the current seismic requirements. This would be done by reinforcing masonry shear walls, placing additional sheathing on wood shear walls and roof diaphragms, and upgrading lateral connections and load transfer throughout the building. New openings in the CGP would require new braces to transfer lateral loads to the shear walls.

MECHANICAL

All items recommended are based on providing "as new" mechanical systems (HVAC, Plumbing and Pool) capable of extending the service life of the building as though it were new.

Canada Games Pool:

Mechanical Systems

HVAC: The Heating and Ventilation system serving the main building area, including all pools and fitness areas, consists of two direct-fired make-up air systems located at high level at one end of the building with exhaust fans located at high level at the opposite end. This ventilation system is also the dehumidification system for the pool area, which controls ventilation simply by exchanging moist pool air with drier air from outside.

This system is old and inefficient. The equipment has exceeded its service life and the use of these existing direct-fired heating units would not be allowed under present gas code.

This system needs to be replaced by an entirely new system. I would recommend replacing the ventilation units with high efficiency units that use the following:

- air-to-air heat recovery;
- variable outside air flow controlled by the building humidity levels; and
- hot water coils for heating supplied with water from high efficiency condensing boilers to maximize energy savings.

Additional boilers would be necessary to provide the appropriate capacity. The coils would be sized to operate using low temperature hot water, allowing the boilers to operate more efficiently.

In addition, zoning of the main building's air systems would be necessary, allowing for appropriate heating/ventilating of the fitness areas separate from the pool areas.

Miscellaneous Exhaust Fans and Ventilation Systems

All of the main building's mechanical ventilation systems need to be replaced/ upgraded to provide effective and efficient ventilation and heating.

Main Pool, Filtration

The main pool has a Diatomaceous Earth (DE) filtration system. While this system efficiently removes fine particles from the water, waste DE material is considered to be harmful to the environment. The material must be disposed of in special landfills.

This system should be replaced by a new system which uses multiple large sand filters. This would require a new, expanded pool mechanical room. In all likelihood, it would have to be a new mechanical space constructed outside the existing building envelope.

In addition, pool staff members have requested the installation of an Ultraviolet (UV) water sterilization system similar to the one recently installed for the Tots' pool. This type of system uses a lower level of residual chlorine, resulting in a more pleasant swimming experience with less odour and less skin irritation.

Main Pool, Shell

The existing Main Pool and Water Filtration (Overflow) Tank should be replaced and upgraded to provide a fully operational "as-new" system.

Tots' Pool and Swirl Pool

These have recently been upgraded and should be adequate for continued use. The mechanical room and systems for these pools were also upgraded.

Ideally, the equipment for these pools should be combined with that of the main pool in one area, allowing for easier maintenance, sharing of disinfectant systems and boilers, etc.

Plumbing Systems

The building's existing copper piping system is subject to leaks due to its age and should be completely replaced. Fixtures in the building are serviceable. We would nonetheless recommend replacing all fixtures with more efficient equipment that uses less water and would have "as new" appearance.

Fire Protection

This building is not fully sprinklered. Any major upgrade should include sprinklering the entire facility to the requirements of the National Fire Protection Association (NFPA) 13.

Building Controls

This building currently has a limited Direct Digital Control (DDC) system installed that provides monitoring and control of only a small portion of the facilities' mechanical systems. A complete DDC system should be installed, allowing monitoring and control of all major mechanical and plumbing systems as well as space and water temperatures, humidity levels, etc.

Upgrading the control system allows for improving the efficiency of the systems and allows monitoring of all major systems from a remote location.

1.1.2 Centennial Community Centre

Mechanical Systems

This facility is heated with a hot water heating system with boilers located in the basement. Hot water is distributed to various heaters and air systems. No air conditioning is provided. The boilers and heating pumps were recently replaced (2007) with new mid-efficient boilers (Camus Smart Flame - Model MFNH-500-E-02, 500 mbh input, 425 mbh output).

Much of the piping insulation is asbestos. It is highly likely that other areas of the building also contain asbestos.

The air handlers are heating and ventilating units using hot water coils for supplying heat. The heating units and ventilation system are past their recommended service life. The mechanical controls are pneumatic, old and should be replaced with a modern DDC control system.

All the air handlers in the building should be replaced/upgraded. The new boilers and main circulation pumps are less than three years old. However, all of the piping and coils in the building are original equipment and should be replaced/upgraded.

Plumbing Systems

The plumbing systems are serviceable, but should be upgraded with new piping and fixtures to provide an "as new" facility.

Domestic hot water is provided by two gas-fired storage heaters located in the mechanical boiler room. One is a residential John Wood, gas-fired, 40 US gallon tank. The second is a much larger and newer commercial John Wood, gas-fired 75 US gallon tank complete with a vent damper. The former will need to be replaced in the near future. At that time, the tanks should be standardized, so they are the same size and are piped in parallel.

Fire Protection

This building is not sprinklered. Any major upgrade should include sprinklering the entire facility to the requirements of the National Fire Protection Association (NFPA) 13

Building Controls

This building's mechanical systems currently use old, pneumatic controls, however, there is a newer Direct Digital Control (DDC) system (ESC Automation) installed in the mechanical room that monitors some of the mechanical room equipment. A complete DDC system should be installed, allowing monitoring and control of all major mechanical and plumbing systems as well as space and water temperatures, humidity levels, etc. All of the pneumatic control system should be replaced as it is inefficient and subject to increased maintenance costs maintaining it, repairing air leaks, etc.

Upgrading the control system allows for improving the efficiency of the systems and would allow monitoring of all major systems from a remote location.

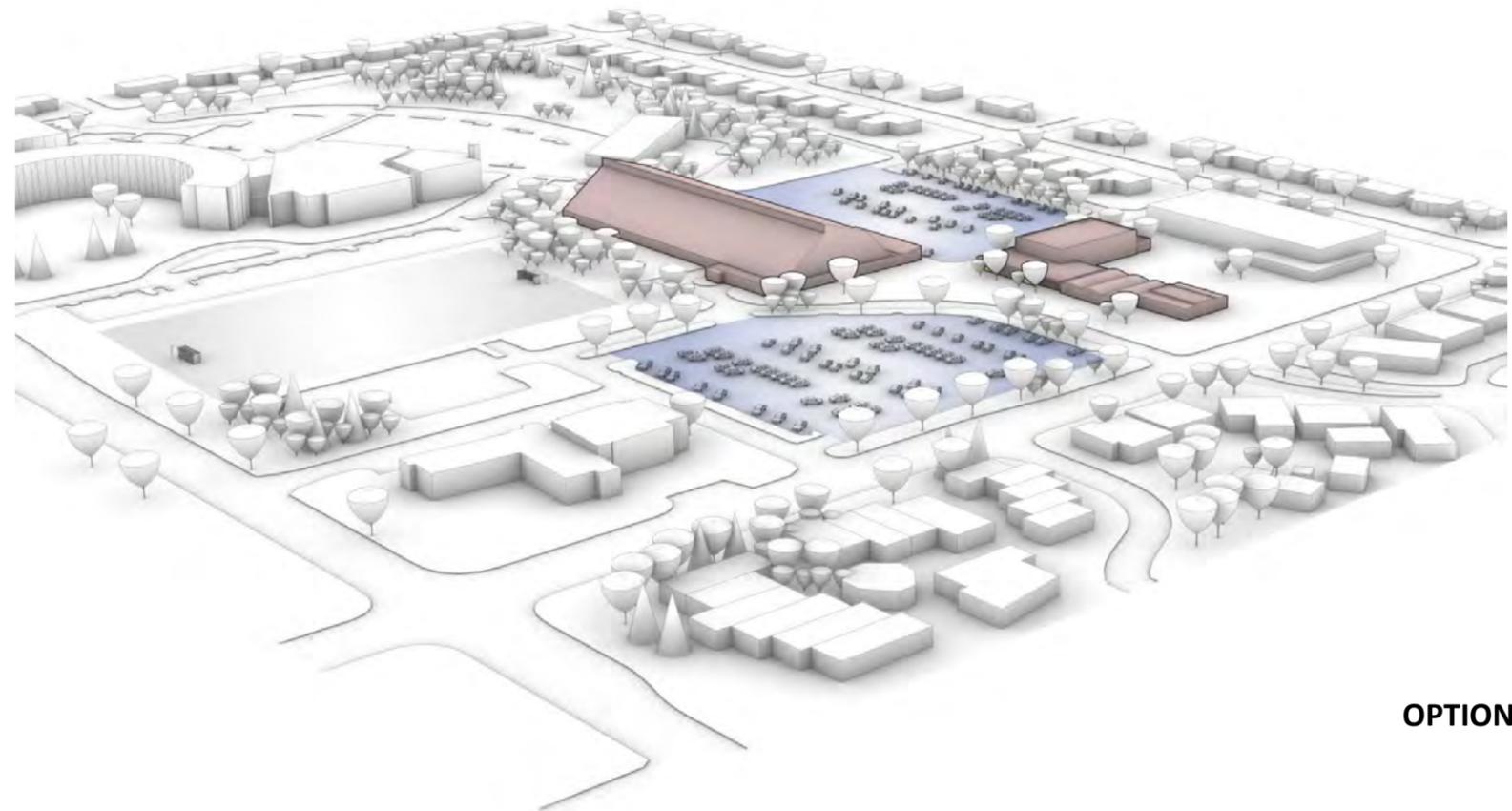
ELECTRICAL

Based on existing Building Analysis and the need for extended life for the facilities this option includes replacement of all existing electrical components and systems. The only exceptions are 2008 installed free-standing 750 kVA 347/600V unit substation located on the west side of the building and main electrical service for Centennial Community Centre.

ACOUSTICS

Where possible, the addition of acoustic upgrades should be considered where functional upgrades require replacement of ceiling or wall finishes (for room acoustics), or partitions (for sound isolation).

The mechanical and electrical systems have been noted to require substantial upgrades/replacements. The selection and installation of any new equipment should include consideration of noise impacts on spaces within the facility and the surroundings (for any equipment located or connected to the outdoors). This may require re-locating equipment, selection of inherently quieter equipment, or the installation of appropriate mitigation such as duct silencers, cavity wall construction (double walls separated by an airspace), or upgraded equipment casing. We recommend appropriate vibration isolation of all mechanical and electrical equipment.



OPTION 1

OPTION 2 – ADDITIONS (PHASE 1 & 2)

ARCHITECTURAL

The strategy for modernizing and adding functional capacity to the Canada Games Pool involves two phases or steps that are non-sequential and can be carried out independent of each other or at the same time.

The first phase or module includes the creation of a two-storey massing that links the two existing buildings functionally and operationally and

adds space for the most dynamic growth area – the fitness centre, increasing to 15,000 square feet. The new link building will also feature a larger consolidated lobby area and food concession. The massing of the addition would be very open and transparent (with views to the inside and out) in sharp contrast with the existing buildings and at night would be a bright beacon of light drawing visitors to the entrance.

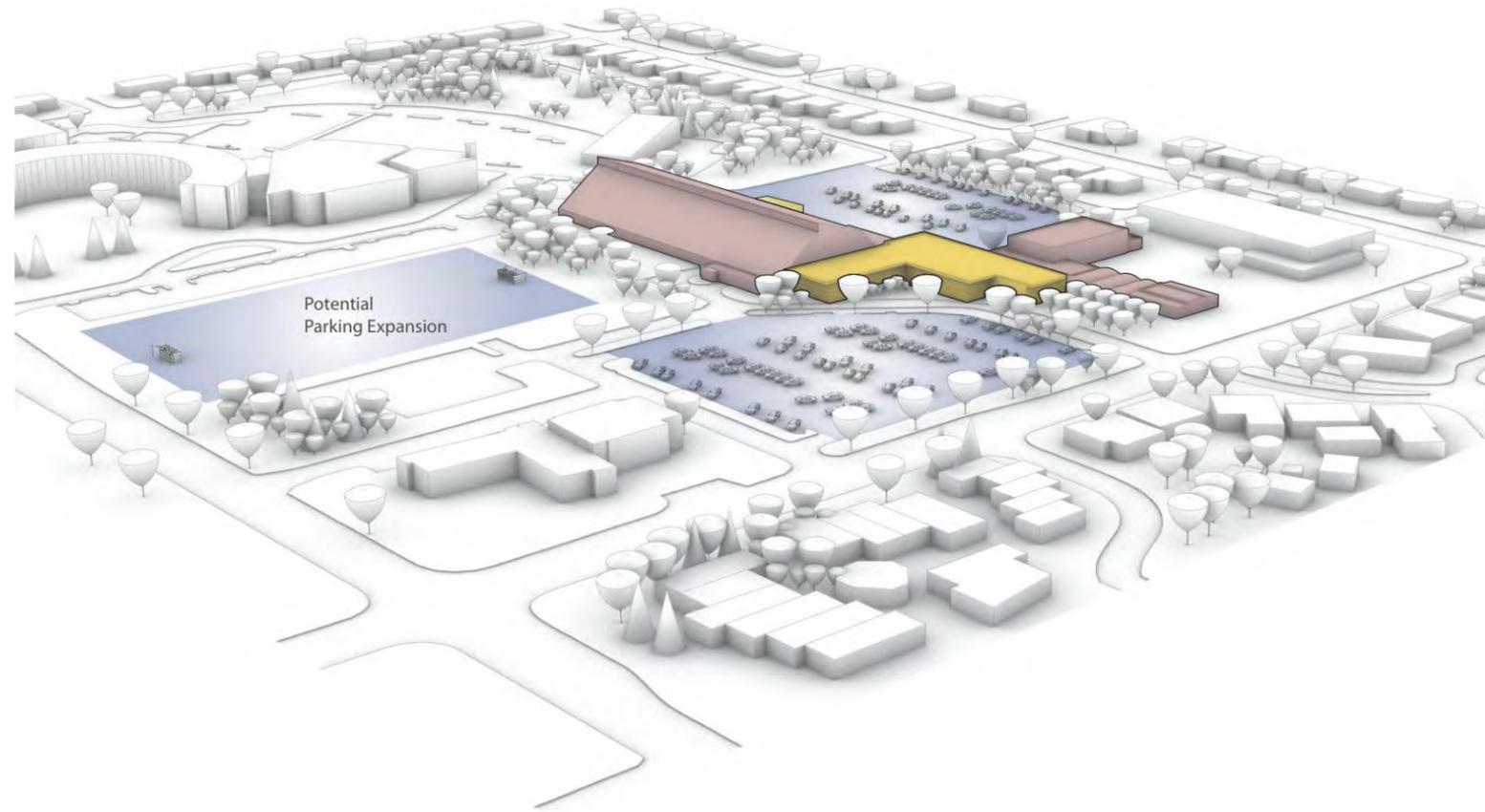
The second phase or module encompasses a leisure pool as a new and separate but attached building volume, with additional family change rooms and pool support space. It is important to note that the leisure pool module must be completed before upgrades can occur in order to avoid a complete shut-down of pool services during retrofit.

The leisure body of water - essentially designed for play - will include some 25m lanes integrated into the layout to allow for young children's swim lessons. The new pool would be fully handicapped accessible and would feature water toys and possibly a lazy river and other moving water features. The existing slide will be reconfigured to have a deceleration lane away from the competition deck. As well, consideration will be given to provide an adjustable hydraulic or other adjustable floor to aquatic tanks for therapy and teach programs.

CODE

1. CGP building area to be upgraded to current building code requirements relative to exiting, fire alarm system, fire protection (sprinklers), fire separations and other critical non-conforming conditions present within the existing building environment (e.g., structural issues as reported by structural consultant), as mentioned above. Existing exits along the east side of CGP may be affected by new additions contemplated as part of Option 2B and this will need further examination relative to Code compliance (maximum 45 m travel distance permitted).
2. Existing 2nd storey fitness area of wood/timber-frame construction will need to be addressed with an alternative solution approach to be developed to permit retention of existing combustible construction within building required to be of noncombustible construction. The existing heavy timber roof structure will be permitted under Article 3.2.2.16. with installation of sprinkler protection throughout the building. Heavy timber construction will also be possible within the new additions included in Options 2A and 2B on a similar basis.





3. New 1-2-storey construction forming “building link” between the existing facilities and providing additional pool program area on the east side of CGP, would be required to be of sprinkler-protected noncombustible construction (1-hour floor ratings) with the exception of the roof assemblies/ supporting structures which would be permitted to be of “heavy timber” construction utilizing sprinkler protection in accordance with Article 3.2.2.16.

4. New Fire Department principal entrance and coordinated response point would be established at main entrance to new building link lobby space, serving all areas of the expanded facility (complete with new fire alarm annunciator/control panel and other fire fighting facilities for overall combined building areas).

5. Existing CCC building areas could either be tied directly to the new construction (as part of overall “single building” approach) or a 2-hour rated firewall subdivision approach could be developed to effectively treat the CCC as a separate building with partial renovations/retro-fits in limited areas only (i.e., no full upgrade of existing facility). This will ultimately depend on the degree of openness and transparency desired between the new and existing facilities, in addition to any budget

limitations that may be imposed on renovation of the existing CCC building. For instance if the existing lobby areas of the CCC building were entirely open/integrated with the new construction, the CCC would be considered part of a greater single building area and would require full Code upgrading as a result (as described in Option 1 - Item 4 above).

STRUCTURAL

Upgrade and verification as noted in Option 1 also applies to these options. Additions to the buildings would likely use piled foundations, which permit the construction to be of most materials (ie. concrete, steel, wood, etc.). Expansion joints for seismic separation would need to be incorporated for linked structures.

MECHANICAL

2A: All Option 1 recommendations apply. Also, the 22,500 SF addition would require new, efficient heating systems. It is likely air conditioning would be required for a part of this space.



2B: All Option 1 and Option 2A recommendations apply. Mechanical space would be required for the new pool equipment.

ELECTRICAL

2A: Based on existing Building Analysis and the need for extended life for the facilities this option includes replacement of all existing electrical components and systems. The only exception is 2008 installed free-standing 750 kVA 347/600V unit substation located on the west side of the building. New main electrical service for Canada Games Pool and Centennial Community Center will be needed. New link between CGP and CCC will be integrated with new electrical systems installed in existing facilities.

2B: Based on existing Building Analysis and the need for extended life for the facilities this option includes replacement of all existing electrical components and systems. The only exception is 2008 installed free-standing Federal Pioneer 750 kVA 347/600V unit substation located on the west side of the building. New main electrical service for Canada Games Pool and Centennial Community Center will be needed. New link between CGP and CCC and new Leisure Pool will be equipped with new electrical systems integrated with new electrical systems installed in existing facilities.

ACOUSTICS

It is recommended that all existing and new spaces should target improved communication and comfort through the incorporation of acoustically absorptive finishes. For initial cost estimates, acoustic treatment should be applied to an area equal to the floor plan area of each space. More detailed guidance for location, thicknesses, and type of finish will be required as the design develops. The selection of the appearance of acoustic finishes will be driven by the desired aesthetics, and will directly influence the cost of acoustic materials. Typically desired performance of the acoustical materials for the various anticipated spaces are as follows:

Natatorium, Gymnasium, Martial Arts, and Childcare - NRC > 0.80

Multi-purpose rooms, Fitness Centre, Locker and Change rooms, Meeting Rooms, Lobbies, Corridors, and Offices - NRC > 0.65

Note: The NRC (Noise Reduction Coefficient) rating of a material is the average sound absorption performance, where 0.00 indicates a perfect

reflector, and 1.00 indicates a perfect absorber. More detailed spectral data is required for proper analysis of room acoustics.

Appropriately rated lay-in tile ceilings provide good acoustics for most small to medium sized spaces. Many other finishes are available with a wide range in costs. All finishes must be selected to meet humidity, impact, and other non-acoustic requirements.

Mechanical and electrical spaces should be separated from noise sensitive spaces, and preferably located slab-on-grade or above non-sensitive spaces such as storage rooms, or other mechanical/electrical spaces. All mechanical and electrical equipment should be mounted on vibration isolators to reduce the potential for structure-borne noise transfer to noise sensitive areas. We recommend allowances for vibration isolators, duct silencers, and cavity wall construction for all mechanical and electrical spaces in early design.

The selection of partitions between spaces will dictate the level of privacy or sound isolation. For any spaces requiring privacy or sound isolation/freedom from distraction, partitions should be full height with insulated cavities (fibreglass or other) and few penetrations. Depending on the adjacencies, additional material layers or cavity wall construction may be required. The existing buildings would require further review to determine the need for increased sound isolation.

It is recommended that all fitness facilities be placed at a slab-on-grade location to reduce the need for isolation of noise from dropping weights or controlling vibration and footfall impact noise from aerobic activity (aerobics classes, treadmills, etc.). Alternatively, these spaces could be located above and adjacent to spaces that are typically unoccupied or non-sensitive to noise (storage or equipment rooms). If the fitness facilities are located above occupied spaces, allowances should be included to add structure that can support floating floors and secondary ceilings framed to supporting columns only (no contact with floor structure above), plus multi-layered rubber flooring in the fitness facility of at least 25 mm thickness.

OPTION 3 (A, B, & C) – REPLACEMENT NEW FACILITY

The pricing of all options indicates that the cost of retrofit and upgrades as well as the addition of all proposed additional program spaces combined with the cost of maintenance and operations and the financial benefit or deriving revenue during construction results in options favoring a completely new building that will service the community for a full sixty or more years.

The replacement options illustrated as Option 3 below are essentially the same and feature the same planning characteristics: pool areas are

oriented to the north and east to allow for capture of indirect natural daylight without glare; the main entrance way oriented to the parking and passenger drop-off areas; and short-span low-ceiling spaces are stacked above each other to create as compact a footprint as possible. Some functional spaces such as support and mechanical and a few activity spaces Martial Arts are assumed to be on a basement level.

Each option also respects the fact that the existing facility must remain operational during construction. When the new is operational, the old will be demolished and the footprint areas reallocated to replacing lost parking or the displaced sport field.



Replacement Option 3A places the building on the north-west corner of the site, with high visibility from McBride Boulevard. The building, on the site of the all-weather sports field, would have a front entry in close proximity to existing and new parking areas. The sports field would be reconstructed in a proper north-south orientation on the east parking lot and portions of the demolished buildings footprints. The recycling depot would be relocated off site.

Replacement Option 3B places the building on the existing main parking area. This would be most disruptive during construction unless the sport field is seconded for temporary parking and restored later. The new structure would need the replacement of the CCC and the play area/park to the south east. Aquatic operations at the CGP could continue but the parking lot at 6th would be used as a construction marshalling yard. The

new stepped massing, taller than the Fire Hall and approaching 300-feet in length would be closer to 6th Avenue and the houses across the road.

Option 3C places the building behind the two existing buildings on the north-east parking lot but because of area limitations has to be built in a primary phase (the main halls) and a second phase (multi-purpose rooms and additional lobby space 'saddle-bagged' on to the main structure when the old pool has been demolished). This option sets the new building farthest back from any roads and has no impacts on surrounding uses such as the curling club or sports field, but it is in close proximity to the low-density housing to the east of the site.



OPTION 3A

CODE

1. These replacement facility options contemplate entirely new replacement facilities constructed in three separate locations on the site with subsequent demolition of the existing CGP & CCC building areas. Option 3C contemplates a phased approach to building delivery whereby the new facility will be constructed between the two existing buildings, and the existing buildings subsequently demolished upon completion of the new facility.

2. For all of these design options, Fire Department access and response points will need to be coordinated with the existing parking and new driveway layouts, such that the local Fire Department will have continuous, non-interrupted vehicular access not less than 6 m wide to within 15 m of the main entry doors to the new facility. In addition, emergency response provisions need to be coordinated to other critical areas such as exterior access to pool chemical equipment/storage areas and emergency rescue for potential injuries within interior floor areas of the new facility (i.e., upper level fitness areas, pool decks, gymnasium, etc.). New Fire Department principal entrance and coordinated response



OPTION 3B PLAN

point would be established at main entrance to new construction, serving all areas of the expanded facility (complete with new fire alarm annunciator/control panel and other fire fighting facilities for overall building areas). It is noted that the principal entrance to the new lobby of replacement Option 3C may be further than 15 m from the closest available access route and this will need to be reviewed further with the CNW Fire Department in the event this design option proceeds.

3. The new 1-2-storey facility construction would be required to be of sprinkler-protected noncombustible construction (1-hour floor ratings) in accordance with Article 3.2.2.24., with the exception of the roof assemblies/supporting structures which would be permitted to be of “heavy timber” construction utilizing sprinkler protection in accordance with Article 3.2.2.16.

4. For replacement Option 3C, the impact of the new construction on the adjacent existing building areas will need to be assessed and resolved further relative to such issues as exiting from the existing buildings, construction safety measures to address public safety, Fire Department access and spatial separation during the interim phased condition on the site. An assessment of these temporary conditions and proposed solutions can be made and presented to the City of New Westminster in the future as this design concept is developed further. For instance, exiting on the east side of the CGP and north side of the existing CCC (gymnasium area) may be affected by the new facility construction and this will need further examination relative to Code compliance in the event that this design option proceeds.



OPTION 3B PLAN

STRUCTURAL

Replacement of both buildings would permit the use of various materials and overall clear spans. Piled foundations could be assumed at this stage given the existing geotechnical investigations. The proposed locations of the new buildings would not likely impact the superstructure or foundation types.

MECHANICAL

All new systems would be installed, including high efficiency heating

boilers, heat recovery ventilation, efficient plumbing fixtures, etc.

In addition, to increase the facilities' energy savings, at a minimum, the following items should be considered:

- reclaim waste energy in the sanitary discharge from the building using sewage-to-water heat pumps to generate hot water for building heating, pool heating and domestic hot water heating,
- install a ground source (geothermal) borehole system to convert energy from the ground into hot water, and
- add a solar heating system to provide hot water.



OPTION 3C – PHASE 1 PLAN

ELECTRICAL

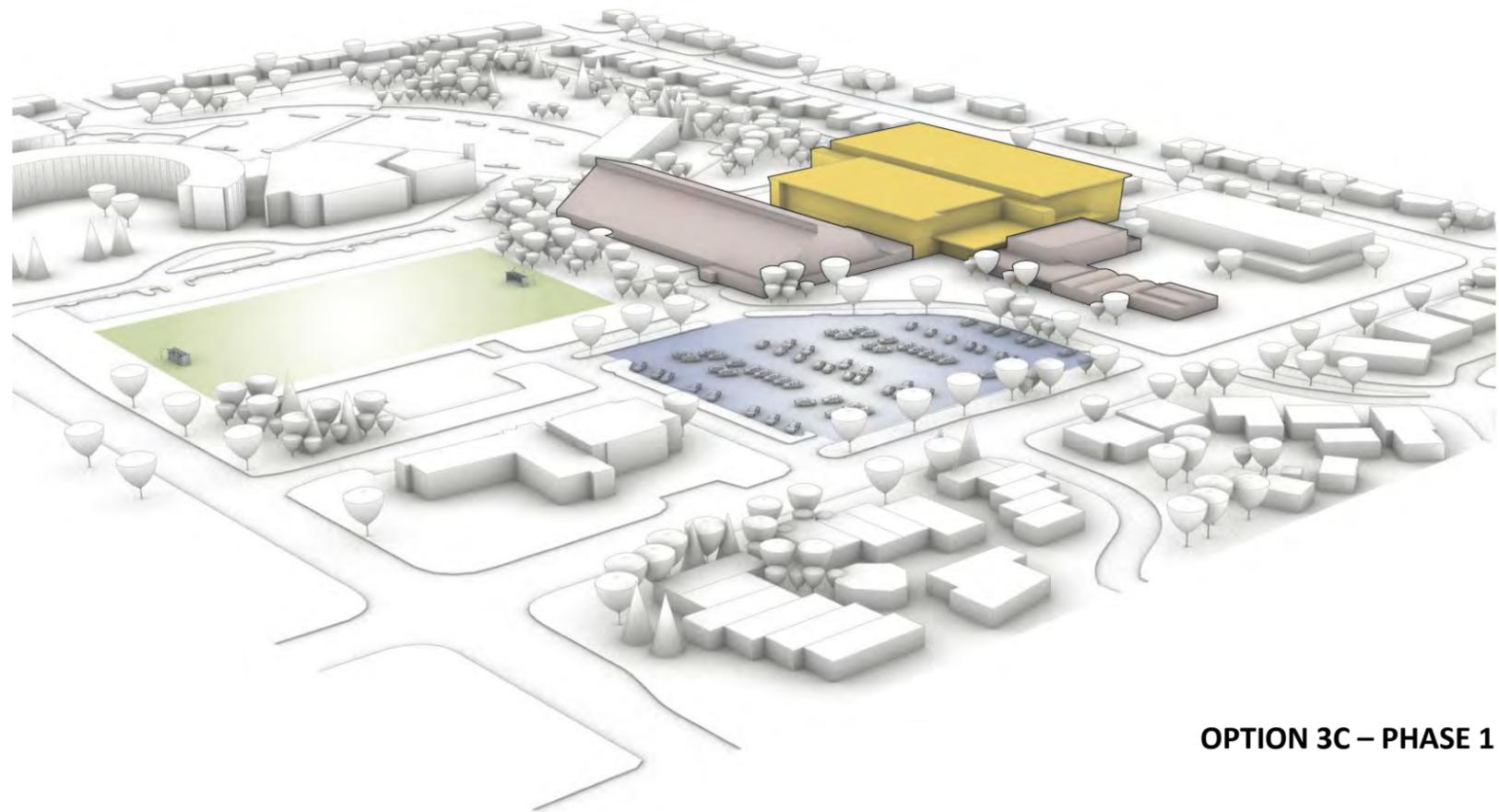
3A: The new facility will be equipped with new electrical systems. Underground electrical services will need to be relocated. Fire Hall Building service will need to be reconnected to a relocated free-standing 750 kVA 347/600V unit substation. It is expected that (subject to a final size of the new facility) the existing free-standing 750 kVA 347/600V unit substation has sufficient capacity for the new facility. Due to the relocation of the existing electrical services there will be need for some disruption to the electrical services for CGP, CCC, and Fire Hall.

3B: The new facility will be equipped with new electrical systems. Underground electrical services and the existing free-standing 750 kVA 347/600V unit substation will remain in its present location. It is expected that (subject to final size of the new facility) the existing free-standing 750 kVA 347/600V unit substation has sufficient capacity for the new facility.

v3C: The new facility will be equipped with new electrical systems. Underground electrical services will need to be relocated. Fire Hall Building service will need to be reconnected to a relocated free-standing 750 kVA 347/600V unit substation. It is expected that (subject to a final size of the new facility) the existing free-standing 750 kVA 347/600V unit substation has sufficient capacity for the new facility. Due to the relocation of the existing electrical services there will be need for some disruption to the electrical services for The Fire Hall. The new facility will be built in two phases to facilitate the continuous operation of the existing facility.

ACOUSTICS

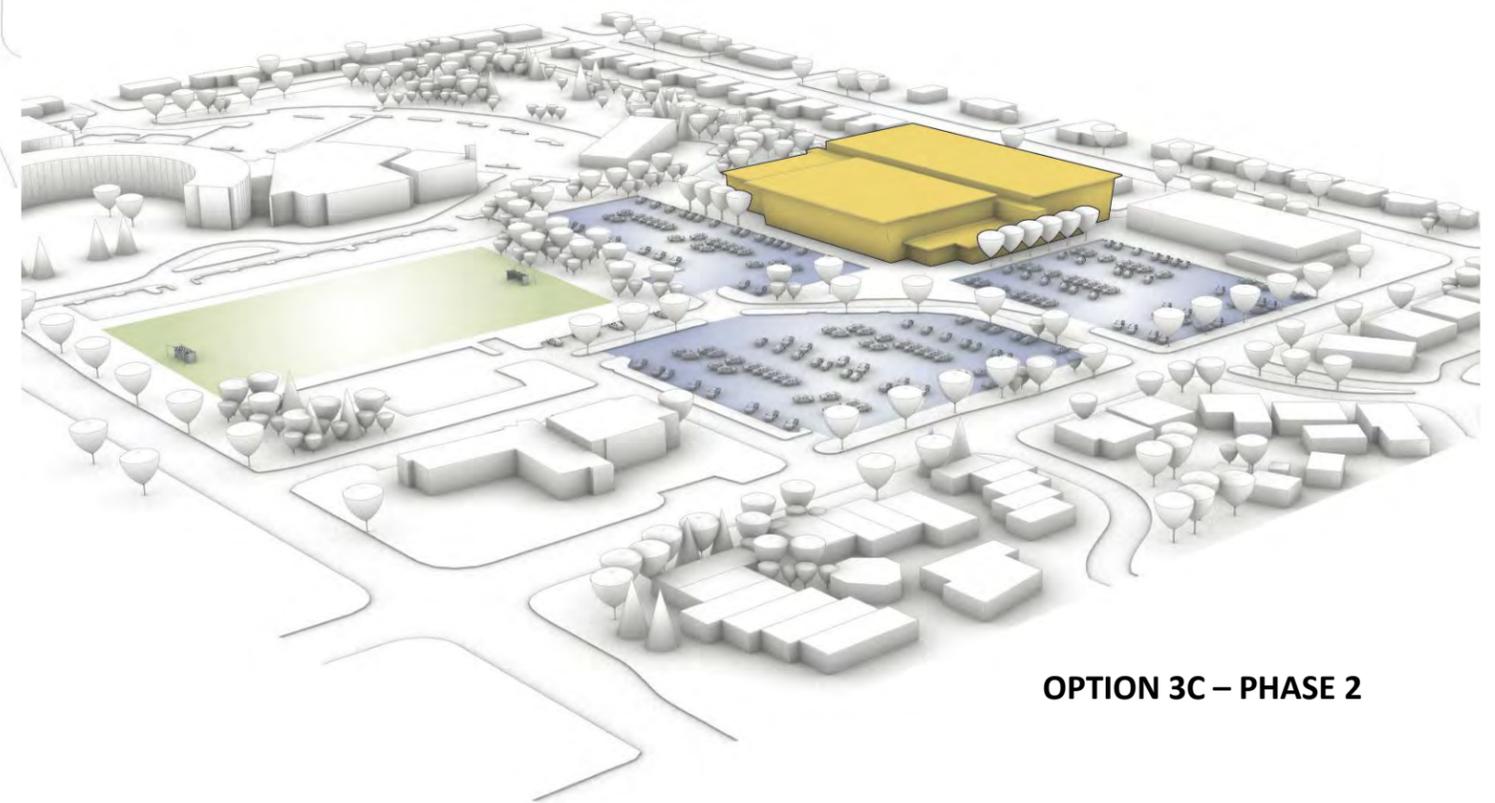
The recommendations for Option 2 are applicable to Option 3.



OPTION 3C – PHASE 1



OPTION 3C – PHASE 2 PLAN



OPTION 3C – PHASE 2

SECTION NINE – FINANCIAL ANALYSIS

CAPITAL BUDGETS AND FINANCING

The options described in the above sections of this report have been estimated for order-of-magnitude capital cost. Cost estimating in the pre-design phase is informed by the functional program, the concept diagrams (which begin to suggest potential building siting, massing and stacking with foundation and envelope implications) and site and building reports. The cost estimate at this stage is based on comparative unit cost data for similar scale and building-type buildings constructed recently. These facilities may be local or, if in other cities, cost-adjusted to reflect local economy, construction market factors, and materials sourcing.

The four options (found in Section 8 of this report) that have been costed include:

Status Quo Maintenance – Option 0

Retrofit and Upgrade Option: Upgrade building systems but not address capacity of functional issues – Option 1

Expansion Development Options: Upgrade existing structures and add additional functional space – Option 2

Replacement Development Options: Construction of a new consolidated facility followed by demolition of old – Option 3

The table below identifies the estimated construction costs for each option. It provides a breakdown for all major building components as well as escalation allowances. It does not identify the entire capital project costs. These estimates can be found in the comprehensive project cost table 5 at the end of section nine. The comprehensive cost estimate table includes 'soft' costs such as insurance, fees, development cost charges, permits, and taxes.

CONSTRUCTION COST SUMMARY

Description	Option 0 \$	Option 1 \$	Option 2A \$	Option 2B \$	Option 3A \$	Option 3B \$	Option 3C \$
A. Structural	0	2,970,300	4,262,800	6,190,800	8,965,900	8,965,900	9,324,600
B. Architectural	1,003,800	4,453,300	6,732,800	9,957,800	12,941,400	12,941,400	13,563,200
C. Mechanical	3,969,700	4,695,500	7,023,000	8,776,200	8,956,600	8,956,600	9,225,700
D. Electrical	411,600	1,313,200	1,830,200	2,562,800	3,359,300	3,359,300	3,490,800
E. General Requirements & Fees	incl.	2,014,800	2,977,300	4,123,100	4,106,800	4,106,800	4,272,500
Net Building Cost	\$5,385,100	\$15,447,100	\$22,826,100	\$31,610,700	\$38,330,000	\$38,330,000	\$39,876,800
F. Site Development	75,300	0	500,000	500,000	1,960,900	1,813,500	1,450,000
G. Ancillary Works (Demolition)	incl.	303,100	303,100	303,100	613,100	575,500	573,100
H. General Requirements & Fees	incl.	45,500	120,500	120,500	308,900	286,700	242,800
Net Construction Cost	\$5,460,400	\$15,795,700	\$23,749,700	\$32,534,300	\$41,212,900	\$41,005,700	\$42,142,700
I. Allowances							
Design Allowance	634,300	1,579,600	2,375,000	3,253,400	4,121,300	4,100,600	4,214,300
Escalation Allowance	0	0	0	0	0	0	0
Construction Allowance	922,000	1,737,500	2,112,500	2,402,400	1,360,100	1,353,200	1,390,700
Total Construction Cost	\$7,016,700	\$19,112,800	\$28,237,200	\$38,190,100	\$46,694,300	\$46,459,500	\$47,747,700
<i>New Addition</i>	0	0	23,500	42,780	113,574	113,574	113,574
<i>Renovation</i>	61,000	61,000	61,000	61,000	0	0	0
Total Gross Floor Area	61,000 sq.ft.	61,000 sq.ft.	84,500 sq.ft.	103,780 sq.ft.	113,574 sq.ft.	113,574 sq.ft.	113,575 sq.ft.
Net Building Unit Cost (\$/sq.ft.)	\$88 /sq.ft.	\$253 /sq.ft.	\$270 /sq.ft.	\$305 /sq.ft.	\$337 /sq.ft.	\$337 /sq.ft.	\$351 /sq.ft.
Net Construction Unit Cost (\$/sq.ft.)	\$90 /sq.ft.	\$259 /sq.ft.	\$281 /sq.ft.	\$313 /sq.ft.	\$363 /sq.ft.	\$361 /sq.ft.	\$371 /sq.ft.
Total Construction Unit Cost (\$/sq.ft.)	\$115 /sq.ft.	\$313 /sq.ft.	\$334 /sq.ft.	\$368 /sq.ft.	\$411 /sq.ft.	\$409 /sq.ft.	\$420 /sq.ft.

Note: Option 0 costs are extracted from the Asset/Component Deficiency Report for Year 2010 prepared by the City of New Westminster, dated June 23, 2010.

Fig 9.1 Table 1 Construction Cost Summary

OPERATING BUDGETS AND IMPACTS

Historical operating budgets greatly inform our understanding of the performance and efficiency of facilities. Historical budgets are relative, both in terms of charting the year-to-year fluctuations or trends, and within the year a relative distribution of resources by category.

Expenditures communicate where resources are spent, and revenues how resources flow in. The net shortfall is the difference between revenues and expenditures and is almost universally negative for recreation facilities. This shortfall is typically covered by annual subsidization by the municipality.

Expenditures typically include all costs associated with operating a facility, such as heating, electricity, staffing, routine maintenance and custodial, pro-rated administration and security, insurance and direct overheads – all the costs of opening the doors for business. They do not typically include debt-servicing costs or rent of land or building which may appear in overall municipal budgets. Often programs and program delivery are treated on a cost-recovery basis and are segregated into a separate category or sub-budget. In the CGP / CCC case, there was not sufficient detail available to separate program delivery.

The combined operations and program delivery from the Canada Games Pool and the Centennial Community Centre in 2009 resulted in a total expenditure of \$4.6 million or \$75 per square foot or about \$800 per square metre. This was offset by revenues in the form of admissions, memberships and program registrations in the amount of \$2.6 million or \$43 per square foot (\$465 per square metre). The result was a net annual operating subsidy of about \$2.0 million or \$32 per square foot (\$345 per square metre).

In very general industry terms, about 40% to 50% of the expenditures were for operations – the aforementioned cost of opening the doors for business. The remainder could be attributed to the cost of program delivery including staffing, direct costs, promotion and, administrative overheads. This assumption was based on annual general financial statements provided by the City of New Westminster which does not differentiate between operational and program expenditures. Revenues as well are not categorized by program registrations separate from general admissions (which really applies to the pool and fitness centre only)

Centennial Community Centre	2007		2008		2009		Trend
Expenditures	(\$938,000)		(\$992,000)		(\$1,015,000)		
Revenues	\$472,000		\$508,000		\$499,000		
Net Shortfall	(\$466,000)		(\$484,000)		(\$516,000)		
Canada Games Pool	2007		2008		2009		
Expenditures	(\$3,336,000)		(\$3,412,000)		(\$3,595,000)		
Revenues	\$2,019,000		\$1,910,000		\$2,136,000		
Net Shortfall	(\$1,317,000)		(\$1,502,000)		(\$1,459,000)		
CCC / CGP Combined	2007		2008		2009		
Expenditures	(\$4,274,000)	\$70 / SF	(\$4,404,000)	\$70 / SF	(\$4,610,000)	\$75 / SF	Increasing 1.7% / Yr.
Revenues	\$2,491,000	\$41 / SF	\$2,418,000	\$40 / SF	\$2,635,000	\$43 / SF	Increasing 0.7% / Yr.
Net Shortfall	(\$1,783,000)	\$29 / SF	(\$1,986,000)	\$32 / SF	(\$1,975,000)	\$32 / SF	Increasing 1.0% / Yr.

Fig 9.3 Table 2 Historical Expenditures

HISTORICAL OPERATING BUDGETS

Further analysis looked at the respective and combined annual category items:

LABOUR AND BENEFITS

Includes full-time and auxiliary labour plus employee costs. In most contemporary facilities, labour forms about 50-60% of the annual operating budget – here again the number is inflated with program delivery labour, with the value at 72%. Labour includes administrative staff, lifeguards, maintenance and custodial staff, reception and control staff and security, if not contracted.

ENERGY

Includes electricity, other forms of heating like gas, water and waste water disposal. This value is usually 25-30% and appears by standards to be within acceptable limits for an older facility – though a new facility should yield at least a 20% reduction.

MAINTENANCE

Includes repair costs and excludes maintenance labour which is bundled with general labour. Adjusted for direct labour this value intuitively appears to be high again, underscoring an aging facility with deferred maintenance issues.

OVERHEADS AND OTHER

Includes all other line items such as supplies, communication costs,

marketing, training and often, but not in this case, facility-specific insurance. These costs appear to be pro-rated to higher costs in the other categories.

HISTORICAL OPERATING BUDGETS ANALYSIS

By category, labour - as both a per-square foot value and as a percentage - is high. Lifeguarding costs may be higher than expected due to a long narrow facility with many blind spots. Maintenance and custodial costs are certainly higher keeping an older facility operating and clean. Administration and management duplication is likely high as well. Energy use by both measures is within expected tolerances, but may be artificially low if not tracked accurately or if subsidized. Maintenance reflects that most effort goes to reactive fixing and cleaning rather than allocated to preventative maintenance as well as duplication.

Cost per operating-hour evolved by taking annual values and dividing by 5,400 annual operating hours (15 hours per day x 360 days per year). These values give a sense of what it costs to operate an average hour and what expectations or imperatives are created regarding revenues per hour.

In a redeveloped and consolidated Canada Games Pool complex, a future budget model should strive to meet two significant goals:

1. An overall 50% increase in revenues through increased water and fitness capacities, and
2. Maintain staffing and operating costs as close to current numbers in a facility that includes 70% to 85% more space than existing.

Major Components	CCC 2009	CGP 2009	Combined 2009			Cost / OP. Hr.
Labour and Benefits	(\$807,000)	(\$2,515,000)	(\$3,322,000)	\$54 / SF	72%	(\$615)
Energy	(\$27,000)	(\$232,000)	(\$259,000)	\$4 / SF	5%	(\$50)
Mainenance	(\$29,000)	(\$457,000)	(\$486,000)	\$8 / SF	11%	(\$90)
Overheads and Other	(\$152,000)	(\$391,000)	(\$543,000)	\$9 / SF	12%	(\$101)
Total	(\$1,015,000)	(\$3,595,000)	(\$4,610,000)		100%	(\$856)
Revenues						\$488
Net Shortfall						(\$368)

Fig 9.3 Table 3 Historical Budget Analysis

With these in place, overall expenditures would be reduced by a modest 15% of current budgeted, recognizing the numbers are divided by a significantly larger denominator. The 50% increase in water area and the 250% to 300% increase in fitness centre space would create the time and space inventory or capacity for potentially more use and potentially more revenue. On the expense side, use of energy to operate the building would become more efficient and staffing would be consolidated and duplication eliminated with existing personnel redirected to new roles.

The suggestion that revenues could increase by 50% should be qualified since that won't likely happen in the short-term, but gradually over a period of years. Increase in demand will happen gradually as the population and participation rate increases or market share shifts. It is unusual, if not improbable, for a community-owned recreation centre to operate with a surplus. As well, over time, expenditures will escalate due to inflation and rising energy prices.

HISTORICAL UTILIZATION AND REVENUES

The CGP facility, based on current utilization data, appears to be heavily used on an average annual user-visit count of around 400,000. This translates into about 75-80 user visits per operating-hour. User ages, based on admission fee type, suggest that the ratio of adult users is greater than the population as a whole. The facility can support approximately 120 pool users (based on 6 swimmers per lane though Health Act allows up to 350 in the main tank) and approximately 80 in the fitness centre. This suggests a normal peak load capacity of about 200, though spikes above that are common. Adding the new lanes will

increase swimmer capacity by 25% plus the leisure body of water, with a nominal capacity of 200 (actual Health Act bather-load of 600). The fitness centre tripling in size would add to a new nominal peak load capacity of over 500. Even with a target increase of usage of 50%, or 120 per hour, the facility would not feel over-crowded during peak times like the 4:00 PM to 7:00 PM time slot.

The community centre's current annual user count fluctuates around 130,000 users, which is 360 users per day or about 25 users per average operating hour. Of this the highly popular drop-in fitness movement classes constitute about half of the demand. Through user and staff consultation it was revealed that at least two additional multi-purpose rooms would be ideal for meeting current unmet-demand and projected future demand during peak periods. This would bring the total up to seven multi-purpose rooms and one gymnasium.

The revenue potential target increase of 50% from increased capacity, and improving the quality of the visitor-experience, is a credible and achievable goal. The typical pattern with new facilities will see a significant increase in the first two years of a redeveloped facility largely owing to the curiosity of infrequent visitors, but will gradually increase with a significant base of new regular users (especially to the fitness centre) as they shift their consumer habits from other facilities to the CGP. The leisure water component will experience immediate popular support from local young families, and over time as children grow, will be replaced by attrition with other new young families.

Major Components	Expanded	Replacement		Cost / OP. Hr.	
Operations Labour & Benefits	(\$1,560,000)	(\$1,710,000)	\$15 / SF	46%	(\$335) Reduced and consolidated*
Program Labour & Benefits**	(\$780,000)	(\$855,000)	\$7.5 / SF	23%	(\$165) Fluctuates with revenues
Energy	(\$520,000)	(\$570,000)	\$5 / SF	16%	(\$110) 71-87% larger building
Maintenance	(\$364,000)	(\$400,000)	\$3.5 / SF	12%	(\$75) Pro-active
Overheads and Other	(\$364,000)	(\$400,000)	\$3.5 / SF	12%	(\$75) Consolidated*
Total	(\$3,588,000)	(\$3,935,000)		100%	(\$760)
Revenues (increased 50%)**	\$3,950,000				\$760
Net Shortfall					\$0

* Labour consolidation and reduction of duplication that occurs with two facilities now: reduced management, reception, and maintenance staff. Reduction of lifeguards contingent on sightlines and distances of tanks.

** Program staff and Program Revenues fluctuate on a break-even basis. For modeling, it was assumed one-third of current staff and one-third of current revenues come from programs.

Fig 9.4 Table 4 Project Budgets Analysis

The following cost estimate for this project has been prepared by BTY Group:

OPTION 0

Refurbish building systems and fabric to the existing Canada Games Pool and Centennial Community Centre based on the CGP and CCC Building Assessment Study (2007) as well as the Asset / component Deficiency Report for Year 2010 prepared by City of New Westminster including:

- Selective mechanical and electrical systems repairs and renew;
- Selective architectural finishes repair and renew;
- Selective site improvement repair and renew

The construction costs for Option 0 is based on the Asset / component Deficiency Report for Year 2010 prepared by City of New Westminster issued on June 23, 2010 which are in 2007 dollars. An allowance has been included to escalate the 2007 costs to December 2010 costs. The scope of the remedial work identified for Option 0 is identical to the scope identified in the 2007 facilities assessment study.

OPTION 1

Renovation of the existing Canada Games Pool and Centennial Community Centre including:

- Building upgrades to comply with current building codes, handicapped access code and seismic code requirements
- Environmental and program retrofits
- Upgrade to existing mechanical and electrical systems
- Reinforce and repairs to the building structure and envelope
- Selective site revisions

OPTION 2A

Same as Option 1 with the expansion of 23,500 square feet of new space to the existing community centre.

OPTION 2B

Same as Option 2A with an additional expansion of 19,280 square feet of new space to the existing pool building.

OPTION 3A, 3B, 3C (DIFFERENT SITING)

Construction of a new building on the existing sports field including:

- Remove the existing sports field
- Construct new facility building
- Demolish the existing Canada Games Pool and Centennial Community Centre
- Remove north parking lot
- Construct two new parking lots and a new sports field

LIFECYCLE COSTS PROJECTED

The cost of a new building can be broken down into a series of building systems, each with different estimated life expectancies:

System	Percentage of Construction	Life Expectancy
Structure and Foundations	25%	50 years
Building Envelope	25%	20 years
Mechanical and Electrical	35%	20 years
Interior Finishes	15%	10 years

Over the expected 60-year life of most buildings, some systems will be replaced frequently and others perhaps once or only remediated or partially altered (i.e. structure due to changing seismic requirements). Consequently, building lifecycle costs will be lower for the first one or two decades and most often peaking in the fourth decade as multiple systems reach the end of service life at the same time.

For example

Decade	System Replacement	% of Original Construction Cost
Year 10	Finishes	15%
Year 20	Finishes, some Envelope	20%
Year 30	Finishes, Envelope, some Mechanical	30%
Year 40	Finishes, Mechanical Systems	50 %
Year 50	Finishes, some Structure, some Envelope	35%
Year 60	Finishes, Envelope	35%

In current dollars (un-escalated), over a sixty-year period lifecycle costs could be double or more of the original cost. In escalated or indexed dollars that figure could be doubled or tripled. On an annualized basis, lifecycle replacement costs typically are in the range of 2% to 4% of the original construction cost.

In addition to the Capital Cost of a building is the Life-Cycle Cost, or incremental and timely replacement of critical building systems over time to ensure that the facility remains 'equivalent-to-new' and operating at peak efficiency at all times. Sometimes described as minor capital projects as they occur in annual budgets, Life-Cycle Cost reflects the building system service life schedules which differ by type and described earlier. For example this means over forty years, mechanical systems could be replaced once, but over the same timeframe the roof could be replaced three times.

BTY Group estimates that for the expected service life of a new CGP/CCC the amounts for system replacement for the New Build Option 3A over time would be about \$19.5 million, and when added to the initial Capital Cost of \$86.0 million results in a total Life-Cycle cost of \$105.5 million. For the Expansion Option 2B, the systems replacement budget would be \$32.8 million when added to the projected \$70.4 million in Capital Cost, results in a total Life-Cycle Cost of \$103.2 million, a variance from Option 3A of about 2%. All values have been calculated in Present Value.

This implies that over time, the re-used older structure will require additional upgrades to remain on par with the replacement schedule of the New-Build facility, which over an extended period of time become relatively equal. Otherwise stated, the New Build option costs more than the renovation and Expansion option at the outset, but less over the entire life of the building. Not accounted for in dollar terms are the functional efficiency compromises that are inherent with older buildings.

Item Description	Option 2B (Present Value*)	Option 3A (Present Value*)
Initial Capital Cost		
A. Land Cost (excluded)	0	0
B. Project Cost (Hard & Soft Costs)	70,352,000	86,018,000
Sub-total Initial Capital Cost	70,352,000	86,018,000
Life Cycle Costs	0	0
C. Maintenance, Repair, Replacement, Energy Costs for 40 Years	32,810,900	19,490,900
Total Life Cycle Cost (2010 Dollars)	\$103,162,900	\$105,508,900

Notes:

*A 5% nominal discount rate has been used to calculate the present value of future cash flows.

LIFE CYCLE COST ANALYSIS	Option 2B - Expansion (Renovate existing CGP & CCC, add new leisure pool and fitness centre)		Option 3A - New Build (Demolish existing buildings and rebuild new CGP & CCC)	
	Estimated Cost \$	Present Value \$	Estimated Cost \$	Present Value \$
Discount Rate:	5%			
Life Cycle Period:	40 years			
A. INITIAL COSTS	2010 \$	2010 \$	2010 \$	2010 \$
Land Cost (excluded)	0	0	0	0
Project Cost				
Renovation to CGP - Deficiencies Report June 23, 2010	7,253,900	7,253,900		
Renovation to CCC - Deficiencies Report June 23, 2010	1,676,100	1,676,100		
Other System Upgrades to the existing CGP & CCC	15,354,000	15,354,000		
New Additions - Pool and Fitness Buildings	20,133,000	20,133,000		
New Construction - New Build CGP & CCC			54,308,000	54,308,000
Debt Servicing Cost	25,935,000	25,935,000	31,710,000	31,710,000
TOTAL INITIAL COST (A) :		\$70,352,000		\$86,018,000
B. LIFE CYCLE COSTS (40 years)	2011-2050 \$	2010 \$	2011-2050 \$	2010 \$
B1. Repair and Replacement Costs	55,658,800		29,650,300	
B2. Annual Maintenance Cost	15,671,200		12,005,200	
B3. Energy Costs (Gas & Electricity)	22,527,500		17,257,700	
TOTAL LIFE CYCLE COST (B) :		\$32,810,900		\$19,490,900
C. SUMMARY				
TOTAL INITIAL & LIFE CYCLE COSTS (A + B)		\$103,162,900		\$105,508,900
Variance				\$2,346,000 2%

PROJECT COST ESTIMATE

The estimated project capital cost is summarized as follows:

	Option 0	Option 1	Option 2A	Option 2B	Option 3A	Option 3B	Option 3C
A. LAND COST	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1 Land	0	0	0	0	0	0	0
2 Legal Fees	0	0	0	0	0	0	0
B. CONSTRUCTION	\$5,460,000	\$15,796,000	\$23,750,000	\$32,534,000	\$41,213,000	\$41,006,000	\$42,143,000
1 Building	5,385,000	15,447,000	22,826,000	31,611,000	38,330,000	38,330,000	39,877,000
2 Site Development (Allowance)	75,000	349,000	924,000	923,000	2,883,000	2,676,000	2,266,000
C. ALLOWANCES	\$1,556,000	\$3,318,000	\$4,488,000	\$5,655,000	\$5,481,000	\$5,454,000	\$5,605,000
1 Design Contingency (Design & Program Changes)	634,000	1,580,000	2,375,000	3,253,000	4,121,000	4,101,000	4,214,000
2 Post Tender Change Order Contingency	922,000	1,738,000	2,113,000	2,402,000	1,360,000	1,353,000	1,391,000
D. PROFESSIONAL FEES	\$707,000	\$2,156,000	\$3,184,000	\$4,308,000	\$5,267,000	\$5,242,000	\$5,385,000
1 Programming	10,000	29,000	42,000	57,000	70,000	70,000	72,000
2 Architectural	353,000	1,076,000	1,590,000	2,150,000	2,629,000	2,616,000	2,688,000
3 Structural	63,000	191,000	282,000	382,000	467,000	465,000	477,000
4 Mechanical	125,000	382,000	565,000	764,000	934,000	929,000	955,000
5 Electrical	63,000	191,000	282,000	382,000	467,000	465,000	477,000
6 Quantity Surveying	31,000	96,000	141,000	191,000	233,000	232,000	239,000
7 Other Consultants and Disbursements	62,000	191,000	282,000	382,000	467,000	465,000	477,000
E. MUNICIPAL & CONNECTION FEES	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1 Development Cost Charges	0	0	0	0	0	0	0
2 Building Permits	0	0	0	0	0	0	0
F. MANAGEMENT & OVERHEAD	\$298,000	\$812,000	\$1,200,000	\$1,623,000	\$1,984,000	\$1,975,000	\$2,029,000
1 Project Management Fee	175,000	478,000	706,000	955,000	1,167,000	1,162,000	1,194,000
2 Project Insurance	70,000	191,000	282,000	382,000	467,000	465,000	477,000
3 Project Commissioning, Move-In	53,000	143,000	212,000	286,000	350,000	348,000	358,000
G. PROJECT CONTINGENCY	\$909,000	\$148,000	\$219,000	\$297,000	\$363,000	\$361,000	\$371,000
SUB-TOTAL	\$8,930,000	\$22,230,000	\$32,841,000	\$44,417,000	\$54,308,000	\$54,038,000	\$55,533,000
H. FURNISHINGS, FITTINGS & EQUIPMENT	\$140,000	\$382,000	\$565,000	\$764,000	\$934,000	\$929,000	\$955,000
SUB-TOTAL	\$9,070,000	\$22,612,000	\$33,406,000	\$45,181,000	\$55,242,000	\$54,967,000	\$56,488,000
I. DEBT SERVICING COST	\$0	\$13,203,000	\$19,506,000	\$26,381,000	\$32,255,000	\$32,095,000	\$32,983,000
J. HARMONIZED SALES TAX (Full Rebate)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SUB-TOTAL PROJECT COST	\$9,070,000	\$35,815,000	\$52,912,000	\$71,562,000	\$87,497,000	\$87,062,000	\$89,471,000
K. ESCALATION (Exclude)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL PROJECT COST (December 2010 Dollars)	\$9,070,000	\$35,815,000	\$52,912,000	\$71,562,000	\$87,497,000	\$87,062,000	\$89,471,000

Note: Option 0 costs (construction, allowances, professional fees and project contingency) are extracted from the Asset/Component Deficiency Report for Year 2010, prepared by the City of New Westminster, dated June 23, 2010. Fig 9.5 Table 5 Project Cost Estimate

SECTION TEN - RECOMMENDATIONS

Cannon Design's recommendation is in support of the new construction Option 3 built on the sports field / recycling depot site. The new building represents the most appropriate functional response to meeting pent-up current demand and anticipated future demand. This option represents the best value for investment, the greatest ability to meet future increased demand and the best siting of the building.

Currently pool and community centre programs are over-subscribed and people are turned away. The fitness centre is almost always operating at capacity likely resulting in a loss to other public or private fitness facilities. The population of New Westminster is expected to increase in the next twenty years to between 85,000 to 95,000 people or between 23% and 44% increase in population. This could be expected to result in a corresponding increase in demand.

The new building would be displacing the all-weather sports field which would be rebuilt in a proper north-south orientation on the old pool site. The remainder of the site would be required for parking, and a shortfall would still occur. The GVRD sewer trunk line cuts through the site from north-west to south-east reducing the footprint in the upper corner of the sports field, necessitating the relocation of the recycling centre. The new building location would be highly visible from McBride Boulevard and would be easily accessible on foot or from the regional trail system.

The building footprint would be a compact and efficient with low height – short span spaces stacked over each other. A generous and welcoming lobby and efficient circulation system would accommodate controlled movement effectively.

Existing facilities even if technically upgraded would have significant functional short-comings. By current standards, the main pool tank should be a 10-lane, 52-metre tank with movable bulkhead. The existing tank has 8-narrow lanes and is 67-metres in length with two bulkheads creating a small unusable residual area. The large deck areas which used to accommodate Canada Games spectator seating has been replaced by tot and hot pools and, incompatible corralled fitness equipment areas and games areas.

The mezzanine fitness centre is open to the adjacent pool climate creating stifling humidity and accelerated deterioration of equipment. Locker rooms and support spaces are substandard and under-sized. While the Centennial Community Centre is pleasing in appearance the spaces are too few, under-sized and with environmental problems.

The new and enlarged facilities would accommodate 25% more lanes for the same water area. A separate pool with warm variable depth water would accommodate the currently under-served children as well as a growing senior population attracted to warmer, shallow water. Fitness facilities would more than triple in size approaching the contemporary standard of 20,000 SF. The new fitness centre would be climate-controlled with views to the exterior and to the interior, proper acoustic controls and the latest technology. Multi-purpose rooms would increase in number and size and locker rooms would be modernized and include significantly more family / disabled change rooms.

One of the greatest benefits of consolidating the two facilities into one would be the single-point of access control. One admissions counter instead of two would allow for staff to be re-allocated to more meaningful tasks or a reduction in operating costs.

The estimated cost of construction for the new aquatic and community centre would be \$38 million with an additional \$3 million in site costs and design and construction allowances increasing the cost to almost \$47 million. The addition of soft costs including fess, allowances and overheads and taxes increases the project amount to \$54.3 million.

The new building options are nonetheless still the preferred and recommended options since the life-cycle costs associated with the entire facility is considerably extended (see Appendix). As well, the annual operating subsidy for the project is proportionally reduced for new construction in relation to additions and renovations.



APPENDIX A- STAKEHOLDER CONSULTATION SUMMARIES

1. General Staff

Monday April 26 12:00-1:15

Invited: management and all levels of staff including front desk, maintenance

Attended: Ramona Manzer, Anita Thomas, David Creighton, Anne Malm, Hilary Knowles, Kevin Donald, Eric Dalla Paeg, Hanna Kellock

Key Points:

- Pool, lessons, fitness at capacity at key times
- Family change not large enough; would like 2 saunas and 2 hot pools at diff't. temps.
- Peak parking issues
- Fitness would like to access rehab market, sport groups, more classes
- New: influx of teen users (mainstream youth)
- Lane swim regionally popular
- Fitness sees other local as competition, not other municipalities; many new private gyms, some as large as 20,000 SF; staff see 20,000 SF as their target size too
- Pool sees other municipal pools as the competition, ie City Centre in Coquitlam
- CGP admission higher, but quality and staff keeps clientele; private under-price to attract
- Estimated half of swim lesson registrants out of municipality
- Separate tickets now for pool and CCC – should be reciprocal
- Want to open earlier, no comment on staying open later
- Need more repair and maintenance space, including a paint shop
- Need more and better office space (some as low as 70 SF)
- Functional problems at CCC: location of locker rooms, WCs
- MPR's used for fitness, hobby classes and pre-school
- Group fitness (movement) very popular in gym (gym no longer used for court sports)
- Need at least one more 30-person movement studio (sprung floor)

- Table tennis popular in CGP – should remain plus offered in public space
- Pool would like to expand (possibly with a tenant) wellness services, testing, spa
- No food services now but high priority (brand franchise, not a mom-and-pop)
- Pool needs more lanes - a 10-lane 52m would be ideal
- Need quieter adult areas for pool and fitness
- Disabled access through-out a high priority
- Scheme from 10 years ago had good hot pools but leisure component not

2. Pool Users

Monday April 26 1:30-2:30

Invited: Hyack Swim Club, Water Runners, Length Swimmers, High Performance Athletes, Water Polo

Attended: Neil Gibbard, Mark Bottrill, John Blake

Key points:

- 25 to 35 people come every day at noon to swim laps
- Overcrowding at times of day, esp. 4-7 PM
- 25m swim usually 2 per lane
- Not enough storage on deck; pool ropes pool condition
- Estimated 25% of pool users also use fitness during same visit
- Weekends see many tri-athletes training here
- Lighting in the facility is really poor; not enough day-lighting; poor air quality
- Locker s and security suspect
- Swim club gets 8-lanes and maximizes it: need more lanes; 10 would be ideal
- Hyack operates a 12-month a year program
- Swim team has no connection to fitness but needs a dryland training area (lost to waterslide; use Martial Arts area in CCC now)
- Morning 5:15 AM is the only 50-metre lane swim time
- Public wants 25m tanks, swim clubs would prefer 50m
- Hyack is creating its own capital campaign

- Lanes too narrow – not to FINA standards
- Mertha pools highly thought of
- Hyack 2 hours in the morning and 2:30 to 6:30 or 4:00 to 7:00 PM; not much latitude to change times with kids and their families
- Hyack 150 inc club here (registration stable) and 100 in Coquitlam (25m)
- Would like to see a 50m long-course in evenings
- 2 competitions hosted per year, January and May
- Touch pads a current problem; would like to see all electronics-friendly
- Team has conflicting needs with swim lessons – better ropes and bulkhead would solve
- Storage biggest need of swim users; not on decks
- Taking fitness off the deck would give swim club the dryland space it needs
- Shallow end too shallow

3. Fitness

Monday April 26 2:45-4:00

Invited: Fitness Programmers, Personal Trainers, Rehabilitation Businesses, Aquafit Instructors, Fitness Instructors, Healthy Heart Program

Attended: Sandy Earle, Ann Parkinson, Christal Fraser, Patrice Allen, Kari Negraaiff, Bob Hindley

Key Points:

- Estimates 8,000 SF now (usable 6,000 SF); need more cardio, strength machines, free weights (largest growth area due to benefits) and stretching areas; spread out now
- Area staffed from 1:00 PM to closing
- Aquafit limited time slots – could increase
- Hot pool and sauna big perks with clients
- Various known athletes train at CGP
- Healthy Hearts in CCC gym now – sees crossover with fitness
- Would like an environmental barrier (ie glass wall) separating fitness from pool humidity
- Clientele likes friendly and helpful staff – a unique offering not offered by competition
- Need a spin studio

- Need more 30-person multi-purpose studios
- Extending hours (ie 24-hours) not likely
- Makeshift shop now; need proper repair room
- Cleanliness an issue; clean-ability of older building doubtful
- Need staff work spaces and locker room, lounge
- Consultation / testing rooms needed in fitness
- Would like a warmer-water zero-entry pool for rehab and kids use
- Moveable floor in pool tank a good idea
- No space in fitness centre for things like throwing medicine balls
- 40-metre sprint track a wish-list item
- Like yoga rooms at Bonsor and Port Moody
- Would like to see one-stop physio / massage tenant
- A bookable suite of 4 consult / treatment rooms plus a small waiting area would allow special medical practitioners to be based P/T at CGP

4. Social Services

Monday April 26 5:00-5:45

Invited: AA, Fraser Valley Narcotics Anonymous, Last Door, Purpose Society, Family Services of Greater Vancouver

Attended: None

5. Special Interest Groups

Monday April 26 6:00-7:00

Invited: PAVA, Retired Government Employees, Telus Retired Employees, Mustang Association, Justice Institute, Douglas College, Disabled Groups, School Groups, Photography Club, Sapperton Fish and Game

Attended: Elmer Rudolph, Linda Jackson, Fred Bennett

Key Points:

- BC Gov't. retired employees rent Rainbow Room one a month for functions (100 attendees of a membership of 900)
- River Room poor acoustics, acoustic separation, poor electrical service, poor air quality but staff are excellent (all 3 groups agreed)

- Telus retired employees rent River Room 7 times a year 9AM-1PM; 30-50 people; catered lunch – no need for on-site kitchen; 30 years in this location
- Personal property in locking cabinets goes missing even though only staff have keys
- Sapperton Fish and Game also using River Room for 30 years, 10 evening meetings per year for 25 members; come from as far as Fraser Valley, Surrey
- Mostly business meetings but 2 socials per year (75 attendees)
- Would see loss of ‘friendliness’ or intimacy if combined with CGP
- Projection equipment issues; have to use white wall
- River Room capacity of 100 is adequate

6. Pool Staff:

Wednesday May 5 2:00-3:15

Invited: Instructional Supervisors, Aquatic Supervisors, Lifeguards, Swim Lesson Instructors

Attended: Chris Jouan, Andie Crump, Caite Bovay, Deidre Campbell, Trevor Linden, Lisa Coleman, Nancy Barberie, Nick Hardy

Key Points:

- Would like a self-contained shallow end with movable floor 15m x 18m okay for teaching young kids to swim; warmer water, disabled access
- Turn over 100 people away each registration cycle for swim lessons
- Accessible 10-lane 52m required
- Ideal 1m depth for lessons, 1.5m for rehab
- 10-15 year-olds in New Westminster under-served; access to deep end and mid; not enough to do; access restrictions
- Narrow lane widths a safety and practical problem
- Water treadmill on wish list
- Viewing area will always be needed for shallow pool (parents close, but not on deck)
- Surrey Rec Centre has bleachers on deck attached to walls; capacity 400 for swim meet athletes and family
- Wish list Family Hot Tub

- More offerings for parents while their kids are in lessons (less crowded fitness, wifi in lobby, concurrent classes and fitness)
- Food and beverage concession needed
- Larger staff change rooms needed 75 female staff, 50 male – up to 40 at one time at shift overlap; storage for wet swimwear, wetsuits
- Need 20 family change rooms in the facility at minimum based on client feedback
- Need family washrooms in lobby and on pool deck
- Need deck showers
- Pool to fitness visual connect not important unlike vice versa
- Slide is very popular and by staff
- Can lose the 10-m board – limited demand; no more than 7m
- Need windows and better air handling

7. Community Services

Wednesday May 5 3:30-4:30

Invited: Youth Services, Seniors, Daycare & Preschool programming, New Westminster Families

Attended: Abby, Gina, Andrew, Harry, Jesse, Noah, JJ, Will and Amy (grade 8 students, staff)

Key points:

- CGP needs a social hang-out space (lobby, games room with table tennis, lounge)
- Youth group, school trips to the pool
- Needs better lighting and daylight; gloomy; too humid
- Dive area of pool popular with adolescents
- Like warm shallow water just to hang-out in
- Should be 2 saunas at different temperatures; steam room; youth access
- Climbing wall or at least bouldering wall for school kids who arrive without swimwear or don't swim to give them something to do
- Lounge overlooking the pool
- Waterslide and pool rope fun but not open frequently enough
- Floating toys like islands, and water cannons would attract more youth

- More lanes would reduce crowding and create more room for fun
- Phased redevelopment (shut-down may cost CGP clientele)
- Large gym popular – filled with energy; kids parties (rentals) in gym on weekends
- Change rooms in CCC too small
- Daycare in CCC needs a kid-sized WC
- Natural cross-ventilation doesn't work anymore
- Natural light and ventilation better than mechanical
- Flooring issues throughout both facilities
- Connection of buildings with common area seems like a good idea
- CCC programs more for local kids, CGP more for region – should be both
- Indirect daylight into gym desirable

8. **Martial Arts / Dance**

Wednesday May 5 5:30-6:30

Invited: Judo Club, Butukokam Karate Club, Aikido, Madhu Singh Dance, Irish Dance

Attended: Kevin Thorneloe, Dave Stiemer, Michel Deildal, Daniel Jennings, Kathleen Carlsen and Ralph

Key points:

- Each group need individual secure storage
- Martial arts more mirrors with protective plywood covers
- Judo doesn't want mirrors for safety
- Judo mat is covered for other users
- Wood floor next to mats would create more needed space
- Change rooms not needed – most martial arts participants come and leave dressed; should be centrally located regardless; 4 shower heads now okay, room for 20 to change
- More mat space needed (mats provided by Judo at their expense), doubling would be ideal, 4m wider
- Ceilings should be 10-feet or higher
- Dance uses River Room – would like a sprung floor
- Dance 28 classes now, 12-17 participants
- Handicapped access in CCC
- Dance area for parents to watch (in doorway now)

- Problem: tap shoes in River Room above yoga in the Judo Room: scheduling, acoustics
- Not enough rooms, especially on weekends
- Existing rooms have storage within; need individual program storage
- Cubbies for shoes in larger multi-purpose rooms

9. **Sports Teams**

Wednesday May 5 7:00-7:45

Invited: Salmonbellies, New West Minor Lacrosse, Royal City Youth Soccer, New Westminster Minor Softball, Royal City Curling Club, Sapperton Rovers Rugby

Attended By: Lindsay Hruby (RCCC)

Key Points:

- RCCC has 600 members (declining membership) on 6 sheets built in 1965
- Own the building, city owns the land
- Usually rent room at CCC for board meetings
- Curlers use north-east parking lot: development should consider parking for senior curlers as close to entry as possible (especially since last draw ends at 11PM)
- Would like to see CGP and CCC linked
- Curling used 48 spaces (8 x 6 sheets), not counting overlap between draws; as many as 18 cars park on the east side of the RCCC, reducing pressure on CGP lots



**CANADA GAMES
POOL &
CENTENNIAL
COMMUNITY
CENTRE**

**New Westminster,
BC**

November 9, 2010

Program Estimate #1

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T:\1-cp\11-5948\program estimate

1.0 INTRODUCTION

The estimate presented in this report is intended to provide a realistic assessment of the direct and indirect construction costs for the proposed Canada Games Pool and Centennial Community Centre in New Westminster, BC.

This estimate is strictly an indication (order of magnitude) of the final project cost. The estimated costs contained in this report are based upon building unit costs appropriate for this type of building applied to program areas prepared by Cannon Design. The estimated costs are not based upon detailed design or tender documentation that would allow the project to proceed to a fixed price tender call. The estimate provides a reasonable cost envelope within which the project strategy and design can be developed. Further estimates based on more detailed design information may, however, vary from this baseline.

In order to maintain the budget parameters established in this report, BTY strongly recommends that further cost estimates be prepared at major design stage milestones to track and monitor the cost of the proposed design.

2.0 PROJECT DESCRIPTION

Option 0

Refurbish building systems and fabric to the existing Canada Games Pool and Centennial Community Centre based on the Asset / Component Deficiency Report for the Year 2010 prepared by the City of New Westminster including:

- Mechanical and electrical systems repairs;
- Architectural finishes repairs;
- Site improvements repairs.

The construction costs in the Deficiency Report were in 2007 dollars and have been carried in this report, without adjustment, as December 2010 costs.

This option does not include any seismic upgrade of the existing buildings.

Option 1

Renovation of the existing Canada Games Pool and Centennial Community Centre, including:

- Building upgrades to comply with current building codes, handicapped access code and seismic code requirements;
- Upgrade to existing mechanical and electrical systems;
- Reinforcing and repairs to the building structure and envelope.

Option 2A

Same as Option 1 with the addition of 23,500 square feet of new space to the existing community centre.

Option 2B

Same as Option 2A with an additional expansion of 19,280 square feet of new space to the existing pool building.

Option 3A

Construction of a new building on the existing sports field including:

- Removing the existing sports field;
- Constructing the new building;
- Demolishing the existing Canada Games Pool and Centennial Community Centre;
- Removing the north parking lot;
- Constructing two new parking lots and a new sports field.

2.0 PROJECT DESCRIPTION (continued)

Option 3B

Construction of a new building on the existing south parking lot including:

- Removing the existing south parking lot;
- Constructing the new building;
- Demolishing the existing Canada Games Pool and Centennial Community Centre;
- Constructing two new parking lots.

Option 3C

Construction of a new building in two-phases including:

- Removing the existing north parking lot;
- Constructing most of the major parts of the new building in Phase 1;
- Demolishing the existing Canada Games Pool;
- Constructing the remaining part of the new building in Phase 2;
- Demolishing the existing Centennial Community Centre;
- Constructing two new parking lots.

3.0 EXECUTIVE SUMMARY

The current estimated cost for the project is summarized as follows:

Item	Option 0 \$	Option 1 \$	Option 2A \$	Option 2B \$
A. Land Cost	0	0	0	0
B. Construction	5,460,000	15,796,000	23,750,000	32,534,000
C. Allowances	1,556,000	3,318,000	4,488,000	5,655,000
D. Professional Fees	707,000	2,156,000	3,184,000	4,308,000
E. Municipal & Connection Fees	0	0	0	0
F. Management & Overhead	298,000	812,000	1,200,000	1,623,000
G. Project Contingency	909,000	148,000	219,000	297,000
H. Furnishings, Fittings & Equipment	0	0	0	0
I. Debt Servicing Cost	5,214,000	12,980,000	19,176,000	25,935,000
J. Harmonized Sales Tax (Full Rebate)	0	0	0	0
Sub-Total Project Cost	\$14,144,000	\$35,210,000	\$52,017,000	\$70,352,000
K. Escalation	0	0	0	0
Total Project Cost (Dec. 2010 Dollars)	\$14,144,000	\$35,210,000	\$52,017,000	\$70,352,000

Item	Option 3A \$	Option 3B \$	Option 3C \$
A. Land Cost	0	0	0
B. Construction	41,213,000	41,006,000	42,143,000
C. Allowances	5,481,000	5,454,000	5,605,000
D. Professional Fees	5,267,000	5,242,000	5,385,000
E. Municipal & Connection Fees	0	0	0
F. Management & Overhead	1,984,000	1,975,000	2,029,000
G. Project Contingency	363,000	361,000	371,000
H. Furnishings, Fittings & Equipment	0	0	0
I. Debt Servicing Cost	31,710,000	31,552,000	32,425,000
J. Harmonized Sales Tax (Full Rebate)	0	0	0
Sub-Total Project Cost	\$86,018,000	\$85,590,000	\$87,958,000
K. Escalation	0	0	0
Total Project Cost (Dec 2010 Dollars)	\$86,018,000	\$85,590,000	\$87,958,000

4.0 AREAS

The gross floor area of the project provided by Cannon Design is:

Location	Gross Floor Area		
	New Addition	Renovations	Total
Option 0			
Aquatic Centre	0 sq.ft.	35,857 sq.ft.	35,857 sq.ft.
Community Centre	0 sq.ft.	25,143 sq.ft.	25,143 sq.ft.
Total Gross Floor Area	0 sq.ft.	61,000 sq.ft.	61,000 sq.ft.
Option 1			
Aquatic Centre	0 sq.ft.	35,857 sq.ft.	35,857 sq.ft.
Community Centre	0 sq.ft.	25,143 sq.ft.	25,143 sq.ft.
Total Gross Floor Area	0 sq.ft.	61,000 sq.ft.	61,000 sq.ft.
Option 2A			
Aquatic Centre	0 sq.ft.	35,857 sq.ft.	35,857 sq.ft.
Community Centre	23,500 sq.ft.	25,143 sq.ft.	48,643 sq.ft.
Total Gross Floor Area	23,500 sq.ft.	61,000 sq.ft.	84,500 sq.ft.
Option 2B			
Aquatic Centre	19,280 sq.ft.	35,857 sq.ft.	55,137 sq.ft.
Community Centre	23,500 sq.ft.	25,143 sq.ft.	48,643 sq.ft.
Total Gross Floor Area	42,780 sq.ft.	61,000 sq.ft.	103,780 sq.ft.
Option 3A			
Aquatic Centre	53,786 sq.ft.	0 sq.ft.	53,786 sq.ft.
Community Centre	59,789 sq.ft.	0 sq.ft.	59,789 sq.ft.
Total Gross Floor Area	113,575 sq.ft.	0 sq.ft.	113,575 sq.ft.
Option 3B			
Aquatic Centre	53,786 sq.ft.	0 sq.ft.	53,786 sq.ft.
Community Centre	59,789 sq.ft.	0 sq.ft.	59,789 sq.ft.
Total Gross Floor Area	113,575 sq.ft.	0 sq.ft.	113,575 sq.ft.
Option 3C			
Aquatic Centre	53,786 sq.ft.	0 sq.ft.	53,786 sq.ft.
Community Centre	59,789 sq.ft.	0 sq.ft.	59,789 sq.ft.
Total Gross Floor Area	113,575 sq.ft.	0 sq.ft.	113,575 sq.ft.

5.0 PROJECT COST ESTIMATE

The estimated project capital cost is summarized as follows:

	Option 0	Option 1	Option 2A	Option 2B	Option 3A	Option 3B	Option 3C
A. LAND COST	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1 Land	0	0	0	0	0	0	0
2 Legal Fees	0	0	0	0	0	0	0
B. CONSTRUCTION	\$5,460,000	\$15,796,000	\$23,750,000	\$32,634,000	\$41,213,000	\$41,006,000	\$42,143,000
1 Building	5,385,000	15,447,000	22,626,000	31,611,000	39,330,000	38,830,000	39,877,000
2 Site Development (Allowance)	75,000	349,000	924,000	923,000	2,883,000	2,876,000	2,766,000
C. ALLOWANCES	\$1,556,000	\$3,318,000	\$4,488,000	\$6,656,000	\$5,481,000	\$5,464,000	\$6,606,000
1 Design Contingency (Design & Program Changes)	634,000	1,580,000	2,375,000	3,253,000	4,121,000	4,101,000	4,214,000
2 Post Tender Change Order Contingency	922,000	1,738,000	2,113,000	3,403,000	1,360,000	1,353,000	1,391,000
D. PROFESSIONAL FEES	\$707,000	\$2,156,000	\$3,184,000	\$4,308,000	\$5,267,000	\$5,242,000	\$5,386,000
1 Programming	10,000	29,000	42,000	57,000	70,000	70,000	72,000
2 Architectural	353,000	1,076,000	1,590,000	2,150,000	2,629,000	2,616,000	2,688,000
3 Structural	65,000	191,000	282,000	392,000	467,000	465,000	477,000
4 Mechanical	125,000	382,000	565,000	764,000	934,000	929,000	955,000
5 Electrical	63,000	191,000	282,000	382,000	467,000	465,000	477,000
6 Quantity Surveying	31,000	96,000	141,000	191,000	233,000	232,000	239,000
7 Other Consultants and Disbursements	62,000	191,000	282,000	382,000	467,000	465,000	477,000
E. MUNICIPAL & CONNECTION FEES	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1 Development Cost Charges	0	0	0	0	0	0	0
2 Building Permits	0	0	0	0	0	0	0
F. MANAGEMENT & OVERHEAD	\$298,000	\$812,000	\$1,200,000	\$1,623,000	\$1,984,000	\$1,975,000	\$2,029,000
1 Project Management Fee	175,000	476,000	706,000	955,000	1,167,000	1,162,000	1,194,000
2 Project Insurance	70,000	191,000	282,000	382,000	467,000	465,000	477,000
3 Project Commissioning, Move-In	53,000	145,000	212,000	286,000	350,000	348,000	358,000
G. PROJECT CONTINGENCY	\$909,000	\$148,000	\$219,000	\$297,000	\$363,000	\$361,000	\$371,000
SUB-TOTAL	\$9,930,000	\$22,230,000	\$32,841,000	\$44,417,000	\$54,308,000	\$54,039,000	\$55,533,000
H. FURNISHINGS, FITTINGS & EQUIPMENT	\$140,000	\$382,000	\$666,000	\$764,000	\$934,000	\$929,000	\$956,000
SUB-TOTAL	\$9,070,000	\$22,612,000	\$33,406,000	\$45,181,000	\$55,242,000	\$54,967,000	\$56,489,000
I. DEBT SERVICING COST	\$0	\$13,203,000	\$19,506,000	\$26,381,000	\$32,265,000	\$32,095,000	\$32,983,000
J. HARMONIZED SALES TAX (Full Rebate)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SUB-TOTAL PROJECT COST	\$9,070,000	\$35,815,000	\$52,912,000	\$71,562,000	\$87,497,000	\$87,062,000	\$89,471,000
K. ESCALATION (Exclude)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL PROJECT COST (December 2010 Dollars)	\$9,070,000	\$35,815,000	\$52,912,000	\$71,562,000	\$87,497,000	\$87,062,000	\$89,471,000

Note: Option 0 costs (construction, allowances, professional fees and project contingency) are extracted from the Asset/Component Deficiency Report for Year 2010, prepared by the City of New Westminster, dated June 23, 2010.

6.0 DEFINITIONS

The estimate for the project has been prepared and summarized in the following categories. The scope of work covered within each category is as follows:

A. Land Cost:

These costs include the acquisition of the site and associated fees, service obligations and property purchase tax.

B. Construction:

This category encompasses all direct and indirect construction costs including building(s), associated site development work and general contractor's general requirements and fee.

C. Allowances

Allowances for cost increases as the design is developed and/or the work is carried out on site.

D. Professional Fees:

Within this section professional fees have been estimated for the primary design team consultants including: the architect, structural, mechanical & electrical engineers, and the quantity surveyor. Other specialist consultants and an allowance for disbursements are also included. Where available, all consultant fees have been calculated based on the current schedule of recommended charges published by the professional associations.

E. Municipal & Connection Fees:

This section includes an estimate for all project related fees and charges required by the CITY OF NEW WESTMINSTER and other authorities having jurisdiction as part of the development. These costs include Development Cost Charges (DCC's), Building Permits, levies and associated legal and survey fees.

F. Management & Overhead:

The project management fee is charged by a company or individual providing project management services. The Owner's Planning and Administrative cost covers the owner's project-related management costs. Provisions are also included for project insurance, commissioning the facility prior to handover and move-in costs.

G. Project Contingency:

This allowance is provided as an owner's contingency to cover changes to non-construction items.

H. Furnishings, Fittings & Equipment:

The Furnishings, Fittings & Equipment estimate for the project is excluded in this estimate.

I. Debt Servicing Cost:

The amount shown is the interest payable based on paying off the capital cost over a 20-year period at a rate of 5% compounded annually.

J. Harmonized Sales Tax:

The amount is adjusted to reflect rebates available to certain types of project.

7.0 CONSTRUCTION COST SUMMARY

Description	Option 0	Option 1	Option 2A	Option 2B	Option 3A	Option 3B	Option 3C
	\$	\$	\$	\$	\$	\$	\$
A. Structural	0	2,970,300	4,202,800	6,190,800	8,965,900	8,965,900	9,324,600
B. Architectural	1,003,800	4,453,300	6,732,800	9,957,800	12,941,400	12,941,400	13,563,200
C. Mechanical	3,969,700	4,695,500	7,023,000	8,776,200	8,956,600	8,956,600	9,225,700
D. Electrical	411,800	1,313,200	1,830,200	2,562,800	3,359,300	3,359,300	3,490,800
E. General Requirements & Fees	incl.	2,014,800	2,977,300	4,123,100	4,106,800	4,106,800	4,272,500
Net Building Cost	\$5,385,100	\$15,447,100	\$22,826,100	\$31,610,700	\$38,330,000	\$38,330,000	\$39,876,800
F. Site Development	75,300	0	500,000	500,000	1,960,900	1,813,500	1,450,000
G. Ancillary Works (Demolition)	incl.	303,100	303,100	303,100	613,100	575,500	573,100
H. General Requirements & Fees	incl.	45,500	120,500	120,500	308,900	286,700	242,600
Net Construction Cost	\$6,460,400	\$15,795,700	\$23,749,700	\$32,534,300	\$41,212,900	\$41,005,700	\$42,142,700
I. Allowances							
Design Allowance	634,300	1,579,800	2,375,000	3,253,400	4,121,300	4,100,600	4,214,300
Escalation Allowance	0	0	0	0	0	0	0
Construction Allowance	922,000	1,737,500	2,112,500	2,402,400	1,360,000	1,353,200	1,390,700
Total Construction Cost	\$7,016,700	\$19,112,000	\$28,237,200	\$38,190,100	\$46,694,300	\$46,459,500	\$47,747,700
New Addition	0	0	23,500	42,780	113,574	113,574	113,574
Renovation	61,000	61,000	61,000	61,000	0	0	0
Total Gross Floor Area	61,000 sq. ft.	61,000 sq. ft.	84,500 sq. ft.	103,780 sq. ft.	113,574 sq. ft.	113,574 sq. ft.	113,575 sq. ft.
Net Building Unit Cost (\$/sq. ft.)	\$88 /sq. ft.	\$258 /sq. ft.	\$270 /sq. ft.	\$305 /sq. ft.	\$337 /sq. ft.	\$337 /sq. ft.	\$351 /sq. ft.
Net Construction Unit Cost (\$/sq. ft.)	\$90 /sq. ft.	\$258 /sq. ft.	\$281 /sq. ft.	\$313 /sq. ft.	\$363 /sq. ft.	\$361 /sq. ft.	\$371 /sq. ft.
Total Construction Unit Cost (\$/sq. ft.)	\$115 /sq. ft.	\$313 /sq. ft.	\$334 /sq. ft.	\$368 /sq. ft.	\$411 /sq. ft.	\$409 /sq. ft.	\$420 /sq. ft.

Note: Option 0 costs are extracted from the Asset/Component Deficiency Report for Year 2010 prepared by the City of New Westminster, dated June 23, 2010.

This report has been prepared at the request of Cannon Design and is the exclusive property of BTY Group. The information must be treated as confidential and not to be disclosed, reproduced or permitted to be disclosed to any party without the prior consent of BTY Group.

8.0 EXCLUSIONS

The estimate specifically **excludes** the following:

- Land costs
- Legal fees and expenses
- Municipal Charges and connection fees
- Owner's planning and administration costs
- Removal of hazardous materials
- Loose furnishings and equipment
- Unforeseen ground conditions and associated extras
- Off-site works
- Accelerated schedule
- Erratic market conditions, such as lack of bidders, proprietary specifications
- Cost escalation past December 2010

9.0 TAXES

The Harmonized Sales Tax (H.S.T.) for this project is fully rebatable.

10.0 ESCALATION

No cost escalation allowance has been included in the estimate beyond 2010. BTY strongly recommends that the client establish a separate budget to cover the escalation cost from the date of this estimate to the mid-point of construction for the project. Our current projected escalation rates are shown below.

Current BTY Group Forecast	2011	2012	2013
	3%	4%	4%

11.0 PRICING

The estimate has been priced at current rates taking into account the size, location and nature of the project. The unit rates utilized are considered competitive for a project of this type, bid under a stipulated lump sum form of tender in an open market, with a minimum of five (5) bids, supported by the requisite number of sub-contractors.

The estimate allows for labour, material, equipment and other input costs at current rates and levels of productivity. It does not take into account extraordinary market conditions, where bidders may be few and may include in their tenders disproportionate contingencies and profit margins.

12.0 RISK MITIGATION

In order to maintain the budget parameters established in this report, BTY strongly recommends that further cost estimates are prepared at major design stage milestones to track and monitor the cost of the proposed design as it evolves. The major milestone estimates are typically carried out at the Program, Schematic Design, Design Development, 50% Working Drawings, 75% Working Drawings and 95% Working Drawings stages.

13.0 CONTINGENCIES

Design Allowance

A design contingency allowance of Ten Percent (10%) has been included in the estimate to cover modifications to the program, increasing detail and coordination of the design as it proceeds through the design development stages. This allowance should be re-considered as the design proceeds, being ultimately reduced to zero at the tender stage.

Construction Allowance

A Three Percent (3%) and Ten Percent (10%) construction allowance has been included in the estimate for new additions and renovation work respectively. This allowance is to cover post-tender change orders.

Project Contingency

An allowance of Five Percent (5%) of the soft costs (items D to F on section 5.0) has been included in the project cost plan to cover changes to non-construction items, such as professional fees.

14.0 DOCUMENTATION

The following documentation was used as the basis for preparing this estimate:

Drawing	Description	Date
Documentation	Redevelopment Feasibility Report	June 22, 2010
	Asset / component Deficiency Reports for Year 2010 prepared by City of New Westminster	June 23, 2010

14.0 APPENDIX I

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**CANADA GAMES
POOL &
CENTENNIAL
COMMUNITY
CENTRE**

**New Westminster,
B.C.**

November 9, 2010

Life Cycle Cost Analysis

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1.0 INTRODUCTION

In July 2010, BTY Group was retained by the City of New Westminster to undertake a Life Cycle Cost Analysis for the proposed redevelopment of the Canada Games Pool & Centennial Community Centre. This study was to include an analysis of Life Cycle Costing to determine the total life cycle costs in 2010 Dollars over a period of 40 years for the following two proposed development options:

Option 2B – Complete deficiency repairs as detailed by City of New Westminster, upgrade existing building systems and construct new additions to accommodate a new leisure pool and fitness centre as per the design concepts prepared by Cannon Design. The total program area for both new and existing spaces will be 103,780 sq.ft.

Option 3A – Complete new construction as per the design concepts prepared by Cannon Design. The total program area will be 113,575 sq.ft.

2.0 EXECUTIVE SUMMARY

BTY Group has estimated the 40-year Life-Cycle Cost for the buildings as follows:

Item	Description	Option 2B (Present Value*)	Option 3A (Present Value*)
Initial Capital Cost			
A.	Land Cost (excluded)	0	0
B.	Project Cost (Hard & Soft Costs)	70,352,000	86,018,000
Sub-total Initial Capital Cost		70,352,000	86,018,000
Life Cycle Costs			
C.	Maintenance, Repair, Replacement, Energy Costs for 40 Years	32,810,900	19,490,900
Total Life Cycle Cost (2010 Dollars)		\$103,162,900	\$105,508,900

Notes:

*A 5% nominal discount rate has been used to calculate the present value of future cash flows.

3.0 METHODOLOGY

This Life Cycle Cost analysis includes elements of capital costs, periodic replacement costs, preventive maintenance, minor repairs and energy costs.

The replacement costs for new buildings are estimated based on the building system descriptions prepared by the consultants during the feasibility study stage of this project. The repair and replacement costs for the existing buildings are based on the Asset / Component Renewal Report for Year 2011 to 2050 prepared by the City of New Westminster, dated June 23, 2010.

The yearly maintenance cost includes all activities to keep a building in good working order, and the energy cost includes all expenses related to the purchase, generation, distribution, and conservation of energy and source fuels necessary to operate a building.

They are estimated based on the utility cost information provided by the city, and historical cost data of buildings of similar nature and size.

Operating costs such as security, staffing and administration, etc. are excluded from this cost exercise.

A rate of 2% has been included in the Life Cycle Costing exercise to cover cost escalation for repair, replacement and maintenance costs.

A rate of 1.5% has been included in the Life Cycle Costing exercise to cover cost escalation for energy costs.

Future cash flows have been discounted to Present Value to allow comparison of the options to be made in 2010 dollars. A 5% nominal discount rate has been applied for this purpose.



November 9, 2010

LIFE CYCLE COST ANALYSIS		Option 2B - Expansion (Renovate existing CGP & CCC, add new leisure pool and fitness centre)		Option 3A - New Build (Demolish existing buildings and rebuild new CGP & CCC)	
Discount Rate: <input type="text" value="5%"/>					
Life Cycle Period: <input type="text" value="40"/> years					
		Estimated Cost \$	Present Value \$	Estimated Cost \$	Present Value \$
A. INITIAL COSTS		2010 \$	2010 \$	2010 \$	2010 \$
Land Cost (excluded)		0	0	0	0
Project Cost					
Renovation to CGP - Deficiencies Report June 23, 2010		7,253,900	7,253,900		
Renovation to CCC - Deficiencies Report June 23, 2010		1,676,100	1,676,100		
Other System Upgrades to the existing CGP & CCC		15,354,000	15,354,000		
New Additions - Pool and Fitness Buildings		20,133,000	20,133,000		
New Construction - New Build CGP & CCC				54,308,000	54,308,000
Debt Servicing Cost		25,935,000	25,935,000	31,710,000	31,710,000
TOTAL INITIAL COST (A) :			\$70,352,000		\$86,018,000
B. LIFE CYCLE COSTS (40 years)		2011-2050 \$	2010 \$	2011-2050 \$	2010 \$
B1. Repair and Replacement Costs		55,658,800		29,650,300	
B2. Annual Maintenance Cost		15,671,200		12,005,200	
B3. Energy Costs (Gas & Electricity)		22,527,500		17,257,700	
TOTAL LIFE CYCLE COST (B) :			\$32,810,900		\$19,490,900
C. SUMMARY					
TOTAL INITIAL & LIFE CYCLE COSTS (A + B)			\$103,162,900		\$105,508,900
Variance					\$2,346,000 2%

Option 2B – Estimate Details

OPTION 2B - EXPANSION

GFA (sq.ft.):	103,780
Annual Maintenance Escalation Rate:	2.00%
Energy Escalation Rate:	1.50%
Discount Rate:	5.00%

Item Description	Year										Year														
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
SECTION B1 - REPAIR AND REPLACEMENT																									
A1 EXTERIOR ENCLOSURE Existing CGP & CCC (based on Renewal Report June 2010)																									
A1 EXTERIOR ENCLOSURE Existing CGP & CCC (based on Renewal Report June 2010)																									
A3 EXTERIOR ENCLOSURE Existing CGP & CCC (based on Renewal Report June 2010)		260,971	7,376	191,264	190,485	6,019	56,775	16,287		663,455	548,487	239,767	10,449	20,392			67,851	4,693	758,575		107,201	48,925			
B1 PARTITIONS & DOORS Existing CGP & CCC (based on Renewal Report June 2010)	91,376	1,286					2,103			26,359	26,887	3,348					5,243								
B2 FINISHES Existing CGP & CCC (based on Renewal Report June 2010)	110,282	167,124	300,776	118,704	147,207					132,155	143,045	87,672	436,455	79,922	91,469		34,604	322,989	50,286	707,687	413,818	711,242	896,323		
B3 FITTINGS & EQUIPMENT Existing CGP & CCC (based on Renewal Report June 2010)	190,630	14,463	4,753	47,482		10,325				9,829	16,449	14,572		12,147	481,881	470,831		4,935		27,684	1,119,066	53,869		105,482	
C1 MECHANICAL Existing CGP & CCC (based on Renewal Report June 2010)	66,169	43,870	109,752	60,529	48,151	7,639	617,263	75,523	32,879	114,734		171,233	146,200	287,526	149,179		87,162	761,404	280,208	625,086	238,615	15,035	723,567	210,765	
C2 ELECTRICAL Existing CGP & CCC (based on Renewal Report June 2010)	1,575	192,836	6,556		25,580	2,581		8,144			4,112	109,459	107,895	136,314	28,111	6,443	12,977			9,824	9,990	51,368			
D1 SITEWORK Existing CGP & CCC (based on Renewal Report June 2010)		502,980			8,527			43,433		7,531	40,330	68,561			18,666			1,765		17,079		46,502			
D2 NEW ADDITIONS New Additions (Leisure Pool & Fitness Building)	0	0	0	0	0	0	0	0	0	0	0	65,642	0	330,188	0	0	0	0	2,307,084	76,912	0	0	0	3,096,904	
SECTION B1 - TOTAL REPAIR AND REPLACEMENT (ESCALATED)	460,000	1,183,500	429,200	418,000	419,900	26,600	676,100	143,400	32,900	954,100	230,800	1,069,000	930,300	856,500	789,700	477,300	140,000	1,158,900	2,642,300	2,222,800	1,781,500	985,200	1,668,800	3,413,200	
SECTION B2 - ANNUAL MAINTENANCE COST (ESCALATED)	259,500	264,600	269,900	275,300	280,800	286,500	292,200	298,000	304,000	310,100	316,300	322,600	329,000	335,600	342,300	349,200	356,200	370,600	378,000	385,500	393,200	401,100	409,100		
SECTION B3 - ENERGY COST (ESCALATED):	415,100	421,300	427,700	434,100	440,600	447,200	453,900	460,700	467,600	474,600	481,800	489,000	496,300	503,800	511,300	519,000	526,800	534,700	542,700	550,800	559,100	567,500	576,000	584,600	
TOTAL ESCALATED COST - SECTION B1, B2 & B3 (FUTURE VALE):	1,134,600	1,869,400	1,126,800	1,127,400	1,141,300	760,300	1,422,200	902,100	804,500	1,738,800	1,028,900	1,880,600	1,755,600	1,695,900	1,643,300	1,345,500	###	2,056,900	3,555,600	3,151,600	2,726,100	1,945,900	2,645,900	4,406,900	
TOTAL DISCOUNTED COST (PRESENT VALUE):	1,080,600	1,695,600	973,400	927,500	894,200	567,300	1,010,700	610,600	518,600	1,067,500	601,600	1,047,200	931,000	856,500	790,500	616,400	446,300	854,700	1,407,100	1,187,800	978,500	665,200	861,400	1,366,400	

Item Description	Year										Amount \$					
	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044						
SECTION B1 - REPAIR AND REPLACEMENT																
A1 EXTERIOR ENCLOSURE Existing CGP & CCC (based on Renewal Report June 2010)											0					
A1 EXTERIOR ENCLOSURE Existing CGP & CCC (based on Renewal Report June 2010)											0					
A3 EXTERIOR ENCLOSURE Existing CGP & CCC (based on Renewal Report June 2010)	430,849		165,581			1,542,116				268,759	82,240	154,306	846,545	6,689,369		
B1 PARTITIONS & DOORS Existing CGP & CCC (based on Renewal Report June 2010)		53,531	12,518				19,201					29,374		271,227		
B2 FINISHES Existing CGP & CCC (based on Renewal Report June 2010)	109,944		58,447		158,829	575,204	524,007	178,278	1,343,172	98,072	718,346		699,199	9,415,258		
B3 FITTINGS & EQUIPMENT Existing CGP & CCC (based on Renewal Report June 2010)		83,862	7,948			963,498	818,855	44,569	9,630			144,483	40,335	4,711,947		
C1 MECHANICAL Existing CGP & CCC (based on Renewal Report June 2010)	1,641,019		50,927	461,953	159,101	1,140,342		398,772	930,351	776,600	788,432	243,675	1,313,601	2,084,977	615,416	15,477,674
C2 ELECTRICAL Existing CGP & CCC (based on Renewal Report June 2010)	15,137	71,145	81,826	16,146		565,894	23,609	89,139	19,969		35,536	36,121	95,765	100,837	1,864,889	
D1 SITEWORK Existing CGP & CCC (based on Renewal Report June 2010)	2,669,957		35,068			76,107					33,291		19,668	3,589,465		
D2 NEW ADDITIONS New Additions (Leisure Pool & Fitness Building)	0	0	0	90,160	3,507,316	0	0	0	0	4,059,316	0	105,616	0	13,639,138		
SECTION B1 - TOTAL REPAIR AND REPLACEMENT (ESCALATED)	4,866,900	208,500	412,300	568,300	3,825,200	4,863,200	1,366,500	730,000	2,303,100	5,202,700	1,657,800	529,900	1,593,000	3,791,600	629,800	\$55,658,800
SECTION B2 - ANNUAL MAINTENANCE COST (ESCALATED)	417,300	425,700	434,200	442,900	451,700	460,700	470,000	479,400	488,900	498,700	508,700	518,900	529,200	539,800	550,600	\$15,671,200
SECTION B3 - ENERGY COST (ESCALATED):	593,400	602,300	611,400	620,500	629,800	639,300	648,900	658,600	668,500	678,500	688,700	699,000	709,500	720,100	730,900	\$22,527,500
TOTAL ESCALATED COST - SECTION B1, B2 & B3 (FUTURE VALE):	5,877,600	1,236,500	1,457,900	1,631,700	4,906,700	5,963,200	2,485,400	1,868,000	3,460,500	6,379,900	2,855,200	1,747,800	2,831,700	5,051,500	1,911,300	\$93,857,500
TOTAL DISCOUNTED COST (PRESENT VALUE):	1,735,700	347,800	390,500	416,200	1,192,100	1,379,800	547,700	392,000	691,700	1,214,400	517,600	301,800	465,600	791,100	285,100	\$32,810,900

Option 3A – Estimate Details



**CANADA GAMES
POOL &
CENTENNIAL
COMMUNITY
CENTRE**

**New Westminster,
BC**

November 9, 2010

**Program Estimate #1
(Cost Plan)**

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T:\1-cp\11-5948\program estimate

Description	Quantity	Unit	Rate	Amount
Option 1				
A. Structural				
Allowance for reinforcing existing foundations - Aquatic Building	35,857	sq.ft.	12.50	448,200
Ditto - Community Building	25,143	sq.ft.	4.00	100,600
Allowance for full seismic upgrade - Aquatic Building	35,857	sq.ft.	35.00	1,255,000
Ditto - Community Building	25,143	sq.ft.	25.00	628,600
Allowance for misc. structural works required for pool renovations (re & re existing pool slabs, new mech. Mezz. Etc.) - Aquatic Building	35,857	sq.ft.	15.00	537,900
Ditto - Community Building		assume not req'd		

Total Structural	\$2,970,300
-------------------------	--------------------

1.0 OPTION 1 COST PLAN

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Description	Quantity	Unit	Rate	Amount
Option 1				
B. Architectural				
Allowance for necessary works to the exterior envelope (new roof covering, repairs & partial replacement of exterior walls & windows) for extending the building life - Aquatic Building	35,857	sq.ft.	20.00	717,100
Ditto - Community Building	25,143	sq.ft.	20.00	502,900
Allowance for interior renovations (new pool tiles, new pool equipment, new partitions, new doors and millwork etc.) - Aquatic Building	35,875	sq.ft.	67.00	2,403,600
Allowance for interior renovations (new partitions, new finishes, new doors and millwork etc.) - Community Building	25,143	sq.ft.	33.00	829,700

Total Architectural **\$4,453,300**

Description	Quantity	Unit	Rate	Amount
Option 1				
C. Mechanical				
Allowance for new building mechanical (new plumbing, sprinklers, HVAC and Controls) - Aquatic Building	35,857	sq.ft.	41.00	1,470,100
Ditto - Community Building	25,143	sq.ft.	38.00	955,400
Allowance for new pool mechanical system - 50m pool	1	sum	1,000,000	1,000,000
Allowance for solar heating	1	sum	250,000.00	250,000
Allowance for sanitary waste heat reclaim	1	sum	200,000.00	200,000
Allowance for geothermal	1	sum	820,000.00	820,000

Total Mechanical **\$4,695,500**

Description	Quantity	Unit	Rate	Amount
Option 1				
D. Electrical				
New power system, new grounding, new fire alarm, new light fixtures, new emergency lighting and new telecommunications and security - Aquatic centre	35,857	sq.ft.	24.00	860,600
Ditto - Community Building (except the outdoor substation & the 600V distribution)	25,143	sq.ft.	18.00	452,600

Total Electrical **\$1,313,200**

Description	Quantity	Unit	Rate	Amount
Option 1				
E. Site Development				
Assume no changes to the existing parking and landscaping				excl.
Assume no changes to the existing infrastructure (roadwork, power line, sanitary & storm systems etc.)				excl.

Total Site Development

Description	Quantity	Unit	Rate	Amount
Option 1				
F. Ancillary Works				
Allowance for selective demolitions - Aquatic Building	35,857	sq. ft.	6.00	215,100
Ditto - Community Building	25,143	sq. ft.	3.50	88,000

Total Ancillary Works *\$303,100*

2.0 OPTION 2A COST PLAN

Description	Quantity	Unit	Rate	Amount
Option 2A				
A. Structural				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	48.69	2,970,300
New structure to Link Building (lobby and fitness) - footing foundations, concrete floor, steel roof	23,500	sq.ft.	55.00	1,292,500

Total Structural **\$4,262,800**

Description	Quantity	Unit	Rate	Amount
Option 2A				
B. Architectural				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	73.00	4,453,300
New Link Building (lobby and fitness) - curtain wall cladding, flat roofing, interior finishes similar other community centres	23,500	sq.ft.	97.00	2,279,500

Total Architectural **\$6,732,800**

Description	Quantity	Unit	Rate	Amount
Option 2A				
C. Mechanical				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	76.98	4,695,500
New mechanical systems similar other community centres	23,500	sq.ft.	45.00	1,057,500
Allowance for solar heating	1	sum	250,000.00	250,000
Allowance for sanitary waste heat reclaim	1	sum	200,000.00	200,000
Allowance for geothermal	1	sum	820,000.00	820,000

Total Mechanical **\$7,023,000**

Description	Quantity	Unit	Rate	Amount
Option 2A				
D. Electrical				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	21.53	1,313,200
New electrical systems similar other community centres	23,500	sq.ft.	22.00	517,000

Total Electrical **\$1,830,200**

Description	Quantity	Unit	Rate	Amount
Option 2A				
E. Site Development				
Allowance for hard and soft landscaping associated with the new Link Building	1	sum	500,000.00	500,000
Assume no changes to the existing infrastructure		excl.		

Total Site Development **\$500,000**

Description	Quantity	Unit	Rate	Amount
Option 2A				
F. Ancillary Works				
Allowance for selective demolition to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq. ft.	4.97	303,100

Total Ancillary Works **\$303,100**

Description	Quantity	Unit	Rate	Amount
Option 2B				
A. Structural				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq. ft.	48.69	2,970,300
New structure to 2nd Pool (leisure pools & support) - footing foundations, concrete floor, steel roof	19,280	sq. ft.	100.00	1,928,000
New structure to Link Building (lobby and fitness) - footing foundations, concrete floor, steel roof	23,500	sq. ft.	55.00	1,292,500

3.0 OPTION 2B COST PLAN

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Total Structural **\$6,190,800**

Description	Quantity	Unit	Rate	Amount
Option 2B				
B. Architectural				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	73.00	4,453,300
New 2nd Pool Building (leisure pools & support) - curtain wall cladding, sloped roofing, interior finishes similar other aquatic centres	19,280	sq.ft.	118.00	2,275,000
Extra over for new water slide and 10m diving tower	1	sum	950,000	950,000
New Link Building (lobby and fitness) - curtain wall cladding, flat roofing, interior finishes similar other community centres	23,500	sq.ft.	97.00	2,279,500

Total Architectural **\$9,957,800**

Description	Quantity	Unit	Rate	Amount
Option 2B				
C. Mechanical				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	76.98	4,695,500
New building mechanical systems similar other community centres	19,280	sq.ft.	65.00	1,253,200
Extra over for pool mechanical to 2nd pool (leisure pool and hot tubs)	1	sum	500,000.00	500,000
Allowance for solar heating	1	sum	250,000.00	250,000
Allowance for sanitary waste heat reclaim	1	sum	200,000.00	200,000
Allowance for geothermal	1	sum	820,000.00	820,000
New mechanical systems similar other community	23,500	sq.ft.	45.00	1,057,500

Total Mechanical **\$8,776,200**

Description	Quantity	Unit	Rate	Amount
Option 2B				
D. Electrical				
Renovation to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq.ft.	21.53	1,313,200
New electrical systems similar other community	19,280	sq.ft.	38.00	732,600
New electrical systems similar other community	23,500	sq.ft.	22.00	517,000

Total Electrical **\$2,562,800**

Description	Quantity	Unit	Rate	Amount
Option 2B				
E. Site Development				
Allowance for hard and soft landscaping associated with the new Link Building	1	sum	500,000.00	500,000
Assume no changes to the existing infrastructure		excl.		

Total Site Development **\$500,000**

Description	Quantity	Unit	Rate	Amount
Option 2B				
F. Ancillary Works				
Allowance for selective demolition to the existing Aquatic and Community Buildings (as per Option 1)	61,000	sq. ft.	4.97	303,100

Total Ancillary Works				\$303,100
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4.0 OPTION 3A COST PLAN

Description	Quantity	Unit	Rate	Amount
Option 3A				
A. Structural				
New structure to Aquatic Centre - footing foundations, concrete floor, steel roof	53,786	sq.ft.	100.00	5,378,600
Ditto to Community Centre	59,789	sq.ft.	60.00	3,587,300

Total Structural

\$8,965,900

Description	Quantity	Unit	Rate	Amount
Option 3A				
B. Architectural				
New Aquatic Building - curtain wall cladding, sloped roofing, interior finishes similar other aquatic centres	53,786	sq.ft.	125.00	6,723,300
Ditto to Community Centre	59,789	sq.ft.	104.00	6,218,100

Total Architectural

\$12,941,400

Description	Quantity	Unit	Rate	Amount
Option 3A				
C. Mechanical				
New building mechanical systems - Aquatic Building	53,786	sq.ft.	65.00	3,496,100
Ditto to Community Centre	59,789	sq.ft.	45.00	2,690,500
Pool Mechanical - 50m Competitive pool, leisure pool and Hot Tubs	1	sum	1,500,000.00	1,500,000
Allowance for solar heating	1	sum	250,000.00	250,000
Allowance for sanitary waste heat reclaim	1	sum	200,000.00	200,000
Allowance for geothermal	1	sum	820,000.00	820,000

Total Mechanical **\$8,956,600**

Description	Quantity	Unit	Rate	Amount
Option 3A				
D. Electrical				
New building mechanical systems - Aquatic Building	53,786	sq.ft.	38.00	2,043,900
Ditto to Community Centre	59,789	sq.ft.	22.00	1,315,400

Total Electrical **\$3,359,300**

Description	Quantity	Unit	Rate	Amount
Option 3A				
E. Site Development				
Allowance for two new parking lots	74,183	sq.ft.	10.00	741,800
Allowance for new gravel sports field	79,900	sq.ft.	9.00	719,100
Allowance for other hard and soft landscaping	1	sum	500,000.00	500,000
Assume no changes to the existing infrastructure		excl.		

Total Site Development **\$1,960,900**

Description	Quantity	Unit	Rate	Amount
Option 3A				
F. Ancillary Works				
Complete demolitions - Aquatic Building	35,857	sq.ft.	9.00	322,700
Ditto - Community Building	25,143	sq.ft.	7.00	176,000
Remove existing gravel sports field	79,900	sq.ft.	0.50	40,000
Remove existing north parking lot	74,400	sq.ft.	1.00	74,400

Total Ancillary Works **\$613,100**

Description	Quantity	Unit	Rate	Amount
Option 3B				
A. Structural				
New structure to Aquatic Centre - footing foundations, concrete floor, steel roof	53,786	sq.ft.	100.00	5,378,600
Ditto to Community Centre	59,789	sq.ft.	60.00	3,587,300

5.0 OPTION 3B COST PLAN

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Total Structural	\$8,965,900
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Description	Quantity	Unit	Rate	Amount
Option 3B				
B. Architectural				
New Aquatic Building - curtain wall cladding, sloped roofing, interior finishes similar other aquatic centres	53,786	sq.ft.	125.00	6,723,300
Ditto to Community Centre	59,789	sq.ft.	104.00	6,218,100

Total Architectural **\$12,941,400**

Description	Quantity	Unit	Rate	Amount
Option 3B				
C. Mechanical				
New building mechanical systems - Aquatic Building	53,786	sq.ft.	65.00	3,496,100
Ditto to Community Centre	59,789	sq.ft.	45.00	2,690,500
Pool Mechanical - 50m Competitive pool, leisure pool and Hot Tubs	1	sum	1,500,000.00	1,500,000
Allowance for solar heating	1	sum	250,000.00	250,000
Allowance for sanitary waste heat reclaim	1	sum	200,000.00	200,000
Allowance for geothermal	1	sum	820,000.00	820,000

Total Mechanical **\$8,956,600**

Canada Games Pool & Centennial Community Centre
Program Estimate #1

November 9, 2010

Description	Quantity	Unit	Rate	Amount
Option 3B				
D. Electrical				
New building mechanical systems - Aquatic Building	53,786	sq.ft.	38.00	2,043,900
Ditto to Community Centre	59,789	sq.ft.	22.00	1,315,400

Total Electrical **\$3,359,300**

Canada Games Pool & Centennial Community Centre
Program Estimate #1

November 9, 2010

Description	Quantity	Unit	Rate	Amount
Option 3B				
E. Site Development				
Allowance for two new parking lots	131,350	sq.ft.	10.00	1,313,500
Allowance for other hard and soft landscaping	1	sum	500,000.00	500,000
Assume no changes to the existing infrastructure		excl.		

Total Site Development **\$1,813,500**

Description	Quantity	Unit	Rate	Amount
Option 3B				
F. Ancillary Works				
Complete demolitions - Aquatic Building	35,857	sq.ft.	9.00	322,700
Ditto - Community Building	25,143	sq.ft.	7.00	176,000
Remove existing south parking lot	76,800	sq.ft.	1.00	76,800

Total Ancillary Works			\$575,500
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6.0 OPTION 3C COST PLAN

Description	Quantity	Unit	Rate	Amount
Option 3C				
A. Structural				
New structure to Aquatic Centre - footing foundations, concrete floor, steel roof	53,786	sq.ft.	100.00	5,378,600
Ditto to Community Centre	59,789	sq.ft.	60.00	3,587,300
Premium cost for phasing	1	sum	358,700.00	358,700

Total Structural

\$9,324,600

Description	Quantity	Unit	Rate	Amount
Option 3C				
B. Architectural				
New Aquatic Building - curtain wall cladding, sloped roofing, interior finishes similar other aquatic centres	53,786	sq.ft.	125.00	6,723,300
Ditto to Community Centre	59,789	sq.ft.	104.00	6,218,100
Premium cost for phasing	1	sum	621,800.00	621,800

Total Architectural

\$13,563,200

Description	Quantity	Unit	Rate	Amount
Option 3C				
C. Mechanical				
New building mechanical systems - Aquatic Building	53,786	sq.ft.	65.00	3,496,100
Ditto to Community Centre	59,789	sq.ft.	45.00	2,690,500
Pool Mechanical - 50m Competitive pool, leisure pool and Hot Tubs	1	sum	1,500,000.00	1,500,000
Allowance for solar heating	1	sum	250,000.00	250,000
Allowance for sanitary waste heat reclaim	1	sum	200,000.00	200,000
Allowance for geothermal	1	sum	820,000.00	820,000
Premium cost for phasing	1	sum	269,100.00	269,100

Total Mechanical **\$9,225,700**

Description	Quantity	Unit	Rate	Amount
Option 3C				
D. Electrical				
New building mechanical systems - Aquatic Building	53,786	sq.ft.	38.00	2,043,900
Ditto to Community Centre	59,789	sq.ft.	22.00	1,315,400
Premium cost for phasing	1	sum	131,500.00	131,500

Total Electrical **\$3,490,800**

Description	Quantity	Unit	Rate	Amount
Option 3C				
E. Site Development				
Allowance for two new parking lots	95,000	sq.ft.	10.00	950,000
Allowance for other hard and soft landscaping	1	sum	500,000.00	500,000
Assume no changes to the existing infrastructure		excl.		

Total Site Development **\$1,450,000**

Description	Quantity	Unit	Rate	Amount
Option 3C				
F. Ancillary Works				
Complete demolitions - Aquatic Building	35,857	sq.ft.	9.00	322,700
Ditto - Community Building	25,143	sq.ft.	7.00	176,000
Remove existing north parking lot	74,400	sq.ft.	1.00	74,400

Total Ancillary Works **\$573,100**