"When a community has the opportunity to gather and connect, great things happen."

Quote from Vision Postcard - Public Engagement, June 2016
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1.0 Executive Summary
1.0 Executive Summary

This report summarizes the next stage in the process for the renewal of the Canada Games Pool and Centennial Community Centre. Both facilities are aging and in need of attention with significant associated costs for maintenance and repairs. The replacement of these facilities was identified by City Council as a strategic priority. This feasibility report builds upon previous studies, including the findings from the public engagement process that took place during summer 2016. The report outlines specific concept options for a new community aquatic centre and includes proposals for spatial and functional programming as well as the optimal building location on the existing site.

The public engagement process that preceded this project identified a number of different aquatic, fitness and community programmatic priorities. The key challenge of this feasibility project was formulating a building program that meets the varying needs and desires of different New Westminster residents and user groups within a reasonable budget and on the same site.

PROGRAM

In order to determine the proposed program, the decision making process was divided into three component groups:

- Base Program - meets core building functions
- Main Aquatic Tank - addresses demand capacity, programmatic needs and aquatic focus
- Additional Spaces - that meet community and fitness program priorities

To assist with the initial discussions, areas and high-level costs were provided for each program element. The decision making framework was presented in the form of a 'menu' card and city mayor, councillors and staff were asked to review and make their selection from each group of program components.
Executive Summary

These 'menu' results, along with the demand analysis study, business case, and public engagement survey results were used to determine the proposed building program. The proposed program was developed to provide:

- Community needs for aquatic and fitness programs, as identified by the public engagement survey and through consultation with city staff.
- Current and projected capacity requirements for aquatic facilities and usage trends based on the demand analysis.
- Flexibility of aquatic programming through different subdividable pool tanks that can accommodate leisure, fitness length swim and competitive swim training.
- A wide range of fitness and community program demands through a variety of multipurpose spaces. These spaces will have an emphasis on versatility e.g. multipurpose rooms of varying sizes that accommodate a wide range of programming needs, a large clear-span gymnasium that can accommodate a range of activities, and an open fitness space.
- Other social and community needs through amenities like a cafe, fitness centre, childcare and a multi-use gymnasium.

CONCEPT LAYOUT OPTIONS

Three different concept options were developed for a new community aquatic facility to replace the existing Canada Games Pool (CGP) and Centennial Community Centre (CCC). Due to site constraints, such as maintaining the existing sewer easement, all options are located in the south-east of the site and concept options were developed in line with meeting the objectives of:

- Creating a functional layout that meets best design practice, user and operational needs.
- The ability to phase construction in order to allow for continued user-service and phased funding as it becomes available.
- Embodying within the design the project vision statements from the public engagement process.

The primary strategy for the site was to introduce a series of landscaped pathways to help improve access, create cohesive green space across the site, and be programmable as an extension of the interior uses. The existing sewer easement limits will instead be used to form a north-south green link across the site that connects the Justice Institute's green space to the north with the Glenbrook Ravine Park to the south.

The proposed approach for site parking is to consolidate all parking stall requirements for the new Aquatic and Community Centre and the existing Royal City Curling Club on the site. The primary vehicular access point will be via Cumberland Street, with a secondary right-in, right-out entry/exit from East 6th Avenue. The number of parking stalls provided in the current layout options are sufficient to meet those requirements indicated by the parking demand study. If additional spaces are desired, or if the existing
sports field is to be retained on site, then a structured above or below grade parking solution will be required at additional cost to the current project estimate.

The concept options were reviewed by the sustainability consultant, mechanical, electrical and traffic engineers and their findings have been integrated within the reports. Further information can be found in the appendix.

**CAPITAL COSTING ANALYSIS**

It is anticipated that the project costs for this 10,618 sq m / 114,296 sq ft facility will be in the region of $83,550,000 based on a Preliminary Class D Estimate conducted in June 2017. These costs have been divided into $60.1 million in Phase 1 (aquatics, fitness & welcome centre) and $23.4 million in Phase 2 (community program spaces.) There would be a 5% premium added to these costs if they were to be built separately as well as an additional escalation rate allowance of 3% per annum.

Additional sustainability design features beyond LEED Gold considerations were excluded from this cost estimate pending further review and discussion regarding the City's objectives for this project. In addition, there are other cost elements that are likely to be associated with the project that are currently not accounted for in the above figure. Accordingly, it is recommended that the City include additional cost allowances in its overall financial planning for the project.

There would be an added costs of approximately $4.2-6.7 million for either above or below grade parkade if the location of the existing sports field is to be maintained on site. And approximately $2 million to relocate the existing sports field on or off-site as a synthetic surface.

**NEXT STEPS**

The objective of the feasibility process was to produce concept options that have been guided by public input, tested by careful analysis and are programmatically, functionally and financially supportable. The information contained within this report can be used to make key decisions for the future progression of this project and should be used as the basis for the commencement of schematic design.

As part of this next stage, it is recommended that the previously successful public engagement process is harnessed through the community's continued involvement. Further public and stakeholder sessions should be used to communicate the findings of this report and verify that they are still aligned with the community's needs and desires.

There are also numerous technical studies that should be completed prior to, or as part of schematic design, including but not limited to: legal and topographical surveys, geotechnical study, environmental assessment, a full transportation impact assessment and a further business case that determines the viability for a shared parking structure with the Justice Institute. Comprehensive sustainability targets for the project are also best finalized in the early next steps of the project.
2.0 Project Background

2.1 Overview
2.2 Previous Studies
2.3 Public Engagement Overview
2.4 Site Analysis
2.1 Overview

The City of New Westminster is the oldest city in Western Canada, and is currently one of the fastest growing municipalities in the region. It cherishes its diversity of cultures, compact size, and quality of life, and community recreational facilities are a key component of maintaining this identity. The Canada Games Pool (CGP) and Centennial Community Centre (CCC) are two of the City’s key facilities, providing a variety of popular and important aquatic, fitness and community programs to residents of New Westminster, as well as the surrounding Lower Mainland region.

The City is at a critical moment with regard to the CGP and CCC, built in 1972 and 1967 respectively, both facilities are aging and are in need of attention. Independent condition assessments and feasibility studies have indicated that the CGP needs to be replaced and the CCC requires functional upgrades. City Council identified the renewal of these buildings as a strategic priority. In November 2015, Council provided preliminary direction to staff to move forward with planning for the replacement of the existing Canada Games Pool. In spring/summer 2016, the City of New Westminster appointed HCMA Architecture + Design to conduct a public engagement process that included a stakeholder workshop, a statistically valid survey and community meetings to provide the City with valuable information during the planning stage. The findings from the public engagement process reinforced the importance of these facilities to the community and were used to inform the next stage of the renewal process.

This report documents the next stage of the project in which HCMA Architecture + Design were appointed to undertake a feasibility study and make recommendations regarding the replacement of the Canada Games Pool and provide options for the inclusion of the replacement of the Centennial Community Centre as part of the wider renewal of the site. As part of this study we have explored options for the spatial and functional programming of a new Aquatic and Community Centre including the optimal location on the existing site.
Project Background

Why the need for a new Aquatic and Community Centre?
The new Aquatic and Community Centre provides the City of New Westminster with the unique opportunity to develop a community asset that will:

- Reinforce the community’s cultural identity as an active healthy city by providing an important social and recreation gathering place for all its’ diverse residents.
- Provide essential services as the only indoor pool in the community as well as being an important regional asset for fitness, length swimming and competitive training.
- Provide a variety of multipurpose spaces that can be programmed for a range of fitness, training, leisure, and rehabilitation uses in order to meet both current and future demands.
- Support excellence in competitive aquatics with a facility that can uphold the legacy of the Canada Games.
- Offers an opportunity for a new, larger facility but with similar net operating costs and reduced energy consumption.
- Create a complete civic precinct with improved vehicular, cycling and pedestrian connections.
2.2 Previous Studies

Several studies were completed prior to this feasibility study including a Conditions Assessment of the existing facility in 2015. This study confirmed a substantial backlog of repairs and renewals to building systems and future maintenance commitments that are required to ensure the continued, dependable operation of the facility.

The consultant team have reviewed the previous studies as part of the feasibility process and a brief overview of the scope of some preliminary site studies are provided below:

**CANON DESIGN FEASIBILITY REPORT, NOVEMBER 2010**

In 2010 Cannon Design was commissioned by the City of New Westminster to complete a study to explore options for renewing or replacing the CGP and CCC facilities. This study included analysis of: demand and market variables; the site and existing buildings; program; and capital and operating cost implications. Cannon proposed four redevelopment scenarios that ranged from minor building upgrades to a complete replacement of existing facilities:

- Minimal upgrade of existing systems that will extend the building life by 5 to 10 years
- Retrofit existing buildings without expansion
- Retrofit existing buildings, add a new leisure pool, and connect existing buildings with a new lobby and fitness centre
- Demolish and replace existing facilities; three site layout options were suggested including a phasing plan that would allow for the continued use of existing facilities

Cannon’s report recommended the existing facilities should be demolished and replaced, with the new facilities sited on the north-west corner of the site along McBride Avenue.

△ Diagrams from Canon Design Report
In 2016, the City of New Westminster engaged Perkins + Will to lead a facilitated design workshop with the Mayor's Task Force. The first part of the workshop included context analysis, and defining recreational needs, core site and building programs and objectives. The second part of the workshop engaged the Task Force in exploring development scenarios for the site which considered residential development potential of the site in addition to replacement of the CGP and CCC.

The workshop came up with numerous outcomes for site layouts and strategies which included high-rise residential towers located on the site and underground multi-level parking with a sports field at grade above. Major considerations of site strategies included:

- Creating a strong identity with a visible landmark building fronting along East 6th Avenue
- Maintaining existing aquatics facilities during construction of new facilities
- Potential internal connection with the new facility and existing curling club
- Maintaining a sports field on site
- Providing a strong indoor - outdoor relationship with recreational facilities
- Provide green space and extend adjacent trail network into the site

No final recommendations or decisions were indicated within the report.
2.3 Public Engagement Overview

The ‘Your Active New West’ public engagement project, during May to September 2016, helped raise awareness, determine priorities around functional programming, and established guiding principles and a vision for the two facilities. This extensive process took place in order to ensure that renewed facilities would reflect the requirements, needs and identity of the New Westminster community. The process involved numerous stakeholder workshops with a variety of user groups, public open houses and an online survey.

The survey received particularly high levels of participation which resulted in a high degree of data granularity and accuracy. Some of the main findings were that:

- 98% of residents said that the aquatic or community centres were “very important” or “somewhat important” to the identity and community of New Westminster.
- Both facilities have loyal, regular users, who have high levels of satisfaction, but there are also a significant proportion of New Westminster residents who don’t regularly use the facility and these tend to be younger adults and families.
- A renewed facility would attract more people to visit, especially those aged 18-34. The age of the facility and accessibility hinders visits to both the pool and community centre.
- The survey revealed that the top three future priorities for aquatics were lessons, length swimming for fitness, and leisure swimming; for fitness they were group classes, free weights, and cardio equipment; and for community based programs they were pickleball, space to watch kids play, and tiny tot playtime.
- Different age groups and demographics seek different programs at both the pool and community centre, that are not necessarily represented by the top three priorities listed above. Therefore a new facility must accommodate varied user priorities through the provision of multipurpose spaces.

We’ve taken the findings from the public engagement process and along with the demand study, have used them to inform the proposed building program and site layout. How the findings of the public engagement have informed the concept design, will be described in more detail throughout the report.
98% of New Westminster residents said that aquatic centres and community centres are “very important” or “somewhat important” to the identity and community of New Westminster.

### The primary purpose for visitors to attend:

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Canada Games Pool</th>
<th>Centennial Community Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical fitness</td>
<td>78%</td>
<td>71%</td>
</tr>
<tr>
<td>Recreation &amp; fun</td>
<td>70%</td>
<td>67%</td>
</tr>
<tr>
<td>Instruction / learn skill</td>
<td>45%</td>
<td>40%</td>
</tr>
<tr>
<td>Socialization</td>
<td>26%</td>
<td>30%</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>20%</td>
<td>11%</td>
</tr>
</tbody>
</table>

### Issues cited by residents that limit their desire/ability to use:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Canada Games Pool</th>
<th>Centennial Community Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>The age or condition of the facility</td>
<td>27%</td>
<td>19%</td>
</tr>
<tr>
<td>It is not currently part of their routine</td>
<td>18%</td>
<td>31%</td>
</tr>
</tbody>
</table>

### If the facilities were renewed:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Canada Games Pool</th>
<th>Centennial Community Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millennials (aged 18-34)</td>
<td>62%</td>
<td>59%</td>
</tr>
<tr>
<td>Gen X (aged 35-54)</td>
<td>44%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Results from questions where respondents could provide more than one response.

3-IN-5 residents would be “more likely to visit”
2.4 Site Analysis

EXISTING BUILDINGS AND SITE CONSTRAINTS

The New Westminster Aquatic and Community Centre is to be located on the current Canada Games Pool (CGP) and Centennial Community Centre (CCC) site in New Westminster, north-east from the main city centre and north of the Fraser River. The site is bounded by McBride Boulevard to the west, Cumberland Street to the east, and East 6th Avenue to the south. The Justice Institute of British Columbia (JIBC) bounds the site along the length of northern edge of the property line. The CGP and CCC share the site with Glenbrook Fire Hall 1, located on the south-west corner of the site, and the Royal City Curling Club (RCC), located on the south-east corner of the site. The CGP and CCC will be replaced with the new Aquatic and Community Centre facilities. There is a recycling depot located to the north of the Fire Hall and an all-weather field occupying the north-west corner of the site, both of which may potentially be relocated. There is a sewer easement that divides the site, running north to south along the former watercourse through the current all-weather field and south parking lot. Residential homes are located on the east side of the site, north of the RCC along Cumberland Street. The primary frontage of the site is located at the south edge of the site along East 6th Avenue between the Fire Hall and the RCC.

POLICY CONSIDERATIONS

The following local bylaws and policies were considered as part of this study:

- New Westminster Transportation Plan: A multi-use pathway should be integrated along the north edge of the property line connecting East 7th Avenue on either side of McBride and Cumberland Street
- Zoning Bylaw No. 6680, 200: Land Use; Site Coverage; FSR; Building Height; Setbacks; and Off-Street Parking (access, number of spaces and stall and aisle dimensions).
**VEHICULAR ACCESS**

Current vehicular access to the site is served through two independent parking lots. The south parking lot is accessed off East 6th Avenue through a one-way drive with separate entrance and exit. Left turns onto East 6th Avenue are restricted between 3:30 and 6:00 pm. The east parking lot is accessed through two separate entries off Cumberland Street. The fire hall parking lot is accessed from the south parking lot and off of McBride Boulevard, which is gated and closed to the public. There is gated access to the east parking lot from the JIBC parking lot to the north, also closed to the public. See section 8.4 in the appendix for further information.

**PEDESTRIAN AND CYCLIST ACCESS**

The site is accessible to pedestrians along all four sides of the site, though this is limited along McBride due to topography. Sidewalks border the site along McBride Boulevard, East 6th Avenue and Cumberland Street and crosswalks are provided at every major intersection and across East 6th Avenue at Glenbrook Drive and Cumberland Street at East 7th Avenue. A pedestrian bridge is provided across McBride Boulevard at 7th Avenue. The City of New Westminster Transportation Plan calls for a multi-use pathway running east to west on the northern edge of the site adjacent to JIBC. This will connect East 7th Avenue between McBride Boulevard and Cumberland Street. Bus routes are connected to the skytrain and serve the site from McBride Avenue, East 6th Avenue and Cumberland Street. See section 8.4 in the appendix for further information.
FORMER WATERCOURSE
The site is situated on the former headwaters of the Glenbrook Ravine, which was fed from the north and east sides of the site and ran directly through the site to the south. This portion of the ravine was transformed in the early 1900s when a sewer line was placed along the watercourse and the site leveled. As such, the site has a historic connection to the remaining Glenbrook Ravine, located south-east of the site and draining into the Fraser River.

TOPOGRAPHY & SITE DRAINAGE
The site is located 65 metres above sea level. Though the site is nominally flat with a maximum change in grade of approximately five metres, there is a significant hill that slopes toward the site from the north-west side of the adjacent JIBC with 15+ metre change in grade, that likely fed the former headwaters of Glenrook Ravine. There is a wetland in the wooded area on the east side of the JIBC parking lot and a pond on the west side of the JIBC, both of which drain south onto the site. There is also a narrow wetland that runs along the west side of the CGP fed by drainage from the JIBC site. The current lowest point of the site is located in the south parking lot off East 6th Avenue. A water management strategy will need to be considered for the site.

LEGEND
- Former Watercourse
- Sewer Line
SUNPATH & DAYLIGHTING

The site is located within a north-west oriented city grid. The sun rises to the east (at the lower east corner of the site) and sets to the west (at the upper west corner of the site.) The south and east sides of the site bordering East 6th Avenue and McBride Boulevard enjoy the majority of direct sunlight.

ADJACENT GREEN CONTEXT

Glenbrook Ravine Park is located south-east of the site. There is a trail network throughout the park which can be accessed off of both Glenbrook Drive and Ginger Drive. Queen’s Park, which offers a wide range of cultural and recreational amenities, is located south-west of the site at the corner of McBride and East 6th Avenue. Terry Hughes Park, which offers a baseball diamond and a playground, is located north-west of the site across McBride Avenue adjacent to École Glenbrook Middle School.
3.0 Program

3.1 Decision Making Process
3.2 Demand Analysis
3.3 Proposed Program
3.4 Stakeholder Feedback
3.1 Decision Making Process

The feasibility study took place between April and June 2017 and involved regular biweekly meetings with the Mayor's Task Force, as well as two council workshops. One of the primary objectives of the study was to determine the building program and budget. Deciding on a proposed aquatic program can be a complex process, being based on a number of factors that range from demand, future needs and emerging trends, as well as a community's identity and aspirations. In order to assist the Mayor's Task Force and Council with this process, we formulated a decision making framework by breaking down programmatic components into three distinct groups: Base Program, Aquatic Tank and Optional Components.

BASE PROGRAM
The base program represents a core complement of recommended spaces that are included as best practice in almost all modern aquatic facilities. The base program includes facility support (welcome centre, social gathering space, cafe, and staff areas), changing rooms, hot pools, steam & sauna, leisure pool, and in the case of the CGP a replacement fitness centre.

AQUATIC TANK
The next category in the decision making process involved the selection of the main aquatic tank. This decision is usually based on demand capacity and programmatic needs, as well as the desired aquatic focus of the facility (e.g. competitive, leisure, wellness or fitness and training.) The aquatic focus is significant because it will determine the tank sizes and configurations, which will impact how the new building will fit on the site. It is also significant because this space is the most expensive to build and operate and as such has the largest potential impact on the project budget. Based on the initial demand analysis, four options were outlined and comparative examples were given from similar facilities in the region. One of the key decisions for the replacement of the Canada Games Pool was the decision over whether to include a new replacement 50m tank.
OPTIONAL COMPONENTS

Finally, there were several optional components to consider relating to other associated community and fitness programmatic needs, as identified by city staff and the public engagement process. Selection of these components has minimal impact on other aquatic programmatic elements, but larger spaces like a gymnasium and gymnastics centre will impact the proposed site layout options.

In order to assist with the initial discussions, areas and high-level costs were provided for each program element. The decision making framework was presented in the form of a ‘menu’ card and city mayor, councillors and staff were asked to review and make their selection from each group of program components. The table below outlines the results of this ‘menu’ process which was then used to help determine the proposed building program.

The most significant decision relating to budget and site planning revolved around whether a 50m tank should be included in the program. Aquatic tank options 1 (25m x 8 lane tank) and 2 (25m x 10 lane tanks) were sufficient to meet the demand analysis (see section 3.2), but did not meet other criteria such as programmatic needs, as well as addressing continued community identity and pride around the existing Canada Games Pool as a competitive swim facility (legacy support).
The “menu” results were a helpful tool in allowing elected officials and staff to balance the legacy support with the demand analysis in determining the appropriate size of the aquatic and community facilities. The results indicate a strong alignment on almost all areas of programming, including the 50m 8-lane tank (Option 3).
3.2 Demand Analysis

The primary goal of the demand analysis is to confirm an appropriate capacity requirement for the aquatic spaces, and what size and arrangement of pool tanks would best accommodate that capacity. Capacity in pools should be considered from two perspectives: firstly from the perspective of accommodating a certain number of swimmers on an annual basis, and secondly from the perspective of accommodating the range and quantity of desired program types. What follows is a high level analysis - the Business Case section of the report goes into more detail about the financial implications of demand and programming targets.

Determining capacity involves identifying a target for annual swims per capita. Annual swims per capita refers to the amount of times in a given year that a person visits the pool, and it is important to note that this is averaged over the entire population (i.e. 50% of the population may use the pool, and 50% not, but the combined visits between these two groups represents an average for the entire population). The goal is to ensure that the pool tanks are large enough to afford a reasonable amount of swims for the population of New Westminster. Recent data from the City of Vancouver suggests that historical use in 2014 produced an annual swim per capita of 3.4 for this population. Current usage numbers for the CGP are similar (see Business Case).

It is important to note that there are other factors which will increase the annual swim count beyond historical use including:

- Repatriation of CNW residents currently using other facilities, which was strongly indicated through the 2016 public engagement survey results.
- Expansion, new amenities, or modernization of the key activity, fitness and pool components. This is demonstrated through facilities such as Hillcrest Centre and Killarney Community Centre, which are the newest facilities in the Metro Vancouver Parks Board area and have the highest number of annual swims i.e. “Build it and they will come.”

For the purpose of this study we have used 5 annual swims per capita to offer a margin of error as well as address these other factors. The table below describes the resulting capacity, based on population data from CNW staff.

**PROJECTED DEMAND**

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2041-46</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW Population</td>
<td>71,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Assumed Annual Swims*</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total A</td>
<td>355,500</td>
<td>500,000</td>
</tr>
</tbody>
</table>

*Vancouver annual swims per capita (2014): 3.4
In determining what size and configuration of pool tank can best meet a projected annual swim count of 500,000 it is important to note that this is not an established or proven process. While rules of thumb dictating the amount of people per square feet of water do exist, it is important to note that other factors such as the depth and temperature of water will create variation in these numbers. A more reliable method of determining capacity is to benchmark the annual swim counts against other facilities in a similar geographic area and compare the corresponding tank sizes. This provides an approximate benchmark for how many annual swims a pool tank of a certain size will historically accommodate. Two other Lower Mainland facilities offer the following data:

**BENCHMARKING DEMAND**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Annual Swims*</th>
<th>Pool Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada Games Pool</td>
<td>238,000</td>
<td>8 lane 64m (50+15m) lap pool + toddler wading pool</td>
</tr>
<tr>
<td>Killarney</td>
<td>460,000</td>
<td>6 lane 35m lap pool + small leisure pool + hot pool</td>
</tr>
<tr>
<td>Hillcrest</td>
<td>674,200</td>
<td>8 lane 50m lap pool + large leisure pool + hot pool + outdoor pool</td>
</tr>
</tbody>
</table>

*Includes Lessons, Drop-in & Other programs

**COMPARATIVE AQUATIC FACILITIES**

**Killarney Community Pool**
- Natatorium: 1,317 m²
- Completion: 2006

**Hillcrest Centre**
- Natatorium: 2,456 m² (excluding outdoor pool)
- Completion: 2011
This data indicates that the proposed tank size should theoretically be larger than Killarney and smaller than Hillcrest (4,500 sq ft water area) to accommodate the projected annual swim count of 500,000. We note that this doesn’t account for the degree to which people feel these two facilities may be over or under crowded and resulting impact of the quality of the swim experience. However, it is reasonable to assume that a tank configuration that includes a 10 Lane 25m tank and a leisure pool (more total water area than Killarney) would meet the projected demand and allow for this variation.

It is important to note that while determining an appropriate capacity level is an important and critical step in selecting a pool tank size and configuration, there are other factors that should be given equal consideration. For the City of New Westminster a critical factor is the legacy use of the existing facility and the history of competitive focused use that has become a part of the identity of this facility in the community. Built for the Canada Games, the CGP does retain and continues to foster a strong legacy of 50m swimming for both competition, training and fitness use. The role of the elected officials, staff and stakeholders involved is to evaluate the value of this legacy use relative to the increased operational and capital cost of building a larger facility. As noted in the previous section, the process carried out for this project identified that the legacy support was strong enough to warrant the inclusion of 50m pool tank in the final recommended program.
3.3 Proposed Program

The following page illustrates an overview summary of the proposed program elements of the new Aquatic and Community Centre. The following pages describe each of these program components in more detail. The components have been carefully considered and selected against the objectives of meeting:

- Community needs for aquatic and fitness programs, as identified by the public engagement survey and through consultation with the Task Force, City Staff and Council (including the ‘menu’ exercise.)
- Current and projected capacity requirements for aquatic facilities and usage trends.
- Flexibility of aquatic programming through different subdividable pool tanks that can accommodate leisure, fitness and competitive swim training.
- A wide range of fitness and community program demands through a fitness centre, gymnasium and multipurpose spaces. These spaces will have an emphasis on versatility e.g. multi-purpose rooms of varying sizes that accommodate a wide range of programming needs, large clear-span gymnasium spaces that can accommodate a range of activities and adapted to other uses like gymnastics, and a large, open fitness space that can easily adapt to evolving fitness needs.
- Other social and recreational needs with amenities like a cafe space, community gathering spaces, and childcare.

PHASING OF PROGRAM COMPONENTS

In order to allow for phasing in funding and the continued operation of the existing facilities throughout construction, the program components have been grouped together to allow for a two phased build-out: Aquatic + Fitness in Phase 1 and Community Centre in Phase 2. The ‘social + operational’ components described as the ‘Welcome Centre’ would functionally and technically need to be constructed as part of Phase 1. The grouping and phasing of program components has been considered in all aspects of this feasibility study including the business case and costing - refer to section 5.0 & 6.0 for further information.
## Proposed Program Summary Table

### Aquatics - Phase 1

<table>
<thead>
<tr>
<th>Facility</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leisure</strong></td>
<td>1,888 sq.m / 20,323 sq.ft &lt;br&gt;• 2 Hot Pools with ramp (20 person capacity each) &lt;br&gt;• Leisure Pool (450 person capacity) &lt;br&gt;• Parents Viewing Area &lt;br&gt;• Ability to support program use (swim lessons, warm-up, therapy) &lt;br&gt;• Sauna &amp; Steam Rooms</td>
</tr>
<tr>
<td><strong>Program Tank</strong></td>
<td>2,174 sq.m / 23,402 sq.ft &lt;br&gt;• 54 m x 8 lanes (2.4m wide) &lt;br&gt;• 2 moveable bulkheads &lt;br&gt;• 1 moveable floor &lt;br&gt;• 1m &amp; 3m Springboards</td>
</tr>
<tr>
<td><strong>Change Rooms</strong></td>
<td>629 sq.m / 6,770 sq.ft &lt;br&gt;• Universal &lt;br&gt;• Male &lt;br&gt;• Female</td>
</tr>
</tbody>
</table>

### Social & Operational - Phase 1

<table>
<thead>
<tr>
<th>Facility</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Welcome Centre</strong></td>
<td>675 sq.m / 7,266 sq.ft &lt;br&gt;• Social Gathering Space &lt;br&gt;• Cafe &amp; Concession &lt;br&gt;• Reception &lt;br&gt;• Administration &lt;br&gt;• Washrooms &lt;br&gt;• Aquatic Support / Staff Areas &lt;br&gt;• Includes Back of House areas</td>
</tr>
</tbody>
</table>

### Community Centre - Phase 2

<table>
<thead>
<tr>
<th>Facility</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multi-purpose</strong></td>
<td>1,488 sq.m / 16,017 sq.ft &lt;br&gt;• 1 x Large (cap. 100) &lt;br&gt;• 2 x Medium (cap. 30) &lt;br&gt;• 2 x Meeting (cap. 10) &lt;br&gt;• 1 x Arts and Crafts &lt;br&gt;• 1 x Large Dance Studio (cap. 50) &lt;br&gt;• 1 x Medium Movement Studio (cap. 30)</td>
</tr>
<tr>
<td><strong>Childcare</strong></td>
<td>488 sq.m / 5,253 sq.ft &lt;br&gt;• Licensed for up to 37 Children</td>
</tr>
<tr>
<td><strong>Gymnasiums</strong></td>
<td>1,300 sq.m / 13,994 sq.ft &lt;br&gt;• 2 x High school Size Basketball Gyms &lt;br&gt;• Ability to Support Gymnastics use</td>
</tr>
</tbody>
</table>

### Total Gross Building Area

10,618 square metres / 114,295 square feet
PHASE 1

WELCOME CENTRE
The Welcome Centre is one of the key spaces to be provided as part of the first phase of works that also includes the construction of the new aquatic and fitness program components. This group of spaces includes reception, administration offices, staff rooms, washrooms and aquatic support areas. It also allows for a large lobby / circulation space with cafe and concession, that will act as the facility's main social gathering space. Our experience with similar facilities has shown that this space will be important in enhancing existing and supporting new community networks. Community and recreational buildings have become increasingly important in supporting social connectedness and the gathering spaces contained within this program component will be essential for meeting these needs. This concept was also strongly supported by the public engagement findings by addressing the desire for ‘spaces to meet people and hang out’ with ‘good food and beverage options.’ These type of spaces can also support parties and special community events. All of these needs were identified in the public engagement survey, stakeholder workshop and public events as community program priorities.

AQUATICS - LEISURE
Leisure swimming and swimming lessons were identified as the top three aquatic priorities in the public engagement survey. Providing a leisure pool will be needed in order to meet the emerging and growing needs of the New Westminster residents for leisure and wellness focused facilities. These types of facilities typically contain warmer bodies of water that better accommodate leisure swim, early years lessons, fitness and rehabilitation programs. Part of the leisure pool can also be designed to allow for separate programming e.g. lane swimming, lessons or aqua-aerobics. It could also be designed to accommodate the local swim club’s need for a separate warm up tank.

AQUATICS - PROGRAM TANK
The program includes a 50m eight [8] lane pool tank with a moveable floor and two moveable bulkheads. The pool depth can accommodate 1m and 3m springboards. The pool tank size and the flexibility offered by the moveable floor and bulkheads will meet the programmatic targets identified in the public engagement process and business case (see section 6.0). It will accommodate the same program uses found in the existing Canada Games Pool, but will address the shift in balance between program capacity for public, lessons, and competitive swim uses. A moveable floor allow the pool depth to vary so it can accommodate a wide variety of activities including aquatic fitness programs, competitions, and lessons for different ages and abilities within the same tank e.g. length swimming or training could occur at the same time as aqua-aerobics or children's swim lessons.
AQUATICS - CHANGE ROOMS
The program allows for a large universal change room, as well as separate male and female changing rooms. Best practice and current design trends provide large universal change rooms to address accessibility, inclusivity, and legislative requirements. As a competitive facility hosting swim meets and large groups, the size of change rooms will need to be considered in order to accommodate this.

PHASE 2

ENHANCED FITNESS
The existing Canada Games Pool fitness centre is popular and the proposed program would expand this to almost double the size. The majority of this space would be an open fitness studio containing cardio and weights machines as well as free weights, and stretching areas. There would also be a dedicated studio space that could be used to accommodate spin classes, which were also identified as popular future priorities in the public engagement survey. Other fitness classes would take place in the phase 2 multipurpose rooms. The expanded size of the fitness space is important to the business case model as it generates significant revenue that can be used to offset operating costs and to reduce subsidies for other program components.

MULTIPURPOSE ROOMS
The program allows for eight [8] different sized multipurpose rooms that can be used for a variety of existing and expanding programming needs, ranging from arts & crafts, dance, martial arts, cooking, fitness classes, meetings and community events. All of these uses were identified as popular future priorities in the public engagement survey, in particular tiny tot playtime program and spaces to watch kids play. Adjacent exterior landscaped areas should also be programmed accordingly to support these uses.

CHILDCARE
In addition to the childminding service that would typically be offered within an aquatic and community centre, the program also allows for a dedicated childcare space licensed for up to 37 children. The provision of additional childcare services is considered a best practice for the size of the facility and has been identified as a City priority. It is similar in size to the current offering at Queensborough Community Centre. Dedicated support spaces like washrooms, kitchenette and an outdoor playspace will be provided as part of the component. This space can be leased out to an independent non-profit organization for management.
GYMNASIUM
The gymnasium has been sized to accommodate two full size high school basketball courts (84 x 50 ft.) Over double the size of the existing Centennial Community Centre gym, it offers significant opportunity for program expansion to meet the needs expressed in the public engagement survey e.g. pickleball. This flexible space could be used for a variety of uses and programs, including those already offered at the existing community centre. Large storage rooms, directly adjacent to the gymnasium, would also be provided to house equipment that can support a variety of uses.

CONSIDERATION OF GYMNASICS CENTRE USES
Given the need to relocate gymnastics programming from the former Queen's Park Annex, we were asked to explore the provision of this space as part of the building program (approximately 10,000 sq ft). Gymnastics was not included due to the immediate requirement for gymnastics space and given the earliest completion of a new facility would be in 3+ years. It is also challenging to fit both the gymnastics centre and the additional parking requirements on the site without a structured parking solution. A separate process has now identified an alternative solution through the use of an interim sports facility, located at Queen's Park, that can be constructed quickly and will meet the gymnastics programming requirements.

However the gymnasium component of the new community aquatic centre could be constructed with a sprung floor and concealed pit that would allow flexible programmatic use and the potential for future conversion to a gymnastics centre. Additionally some of the concept site layout options were also designed to functionally and spatially accommodate long term future expansion for gymnasiums or a gymnastic centre.
## DETAILED PROGRAM SUMMARY

### 1.0 NATATORIUM - Phase I

#### 1.1 Program Water
- **1.1.1 Lap Pool 54m - 8 Lane w. Ramp, Bulkheads, Movable**
  - (bather load 370 swimmers)
  - Metres: 1100  
  - Feet: 11842
- **1.1.2 Deck Area (average width 3M, 5M on ends)**
  - Metres: 500  
  - Feet: 5383
  
  **Sub-Total**
  - Metres: 1600
  - Feet: 17224

#### 1.2 Leisure Water
- **1.2.1 Leisure Pool (bather load 450 swimmers)**
  - Metres: 450  
  - Feet: 4844
- **1.2.2 Hot Pool (20-person capacity x 2) with Ramp**
  - Metres: 90  
  - Feet: 969
- **1.2.3 Viewing Area (capacity 25 persons)**
  - Metres: 50  
  - Feet: 538
- **1.2.4 Deck Area (average width 5-6M)**
  - Metres: 540  
  - Feet: 5813
  
  **Sub-Total**
  - Metres: 1130
  - Feet: 12164

#### 1.3 Ancillary Spaces
- **1.3.1 Lifeguarding Office / First Aid**
  - Metres: 30  
  - Feet: 323
- **1.3.2 Steam Room / Sauna / On-Deck Shower**
  - Metres: 80  
  - Feet: 861
- **1.3.3 On-Deck Classroom / Party Room**
  - Metres: 70  
  - Feet: 754
- **1.3.4 Pool Storage (distributed)**
  - Metres: 140  
  - Feet: 1507
- **1.3.5 Offices**
  - Metres: 40  
  - Feet: 431
- **1.3.6 Chemical Storage (located with Pool Mechanical)**
  - Metres: 15  
  - Feet: 161
  
  **Sub-Total**
  - Metres: 375
  - Feet: 4037

**Assigned Area Sub-Total**
- Metres: 3105
- Feet: 33425

- **Pool Mechanical (40% of water area)**
  - Metres: 656  
  - Feet: 7062
- **Building Mechanical Pro-Rated 6%**
  - Metres: 226  
  - Feet: 2429
- **Walls and Structure Pro-Rated 2%**
  - Metres: 75  
  - Feet: 810
- **Circulation included in Deck Area**
  - Metres: 0  
  - Feet: 0

**Component Gross Area**
- Metres: 4062
- Feet: 43724

### 2.0 CHANGE ROOMS - Phase I

#### 2.1 Universal Change Rooms (400 bathers)
- **2.1.1 Universal Change Cubicles (with Shower) x 35**
  - Metres: 170  
  - Feet: 1830
- **2.1.2 Full-Height Locker Columns and Aisle (200 columns)**
  - Metres: 120  
  - Feet: 1292
- **2.1.3 Accessible Washrooms x 6**
  - Metres: 30  
  - Feet: 323
- **2.1.4 Vanity Stations x 5**
  - Metres: 10  
  - Feet: 108
- **2.1.5 Stroller / Wheelchair Area**
  - Metres: 10  
  - Feet: 108
  
  **Sub-Total**
  - Metres: 340
  - Feet: 3660

#### 2.2 Gender Locker Rooms (200 bathers each)
- **2.2.1 Women’s Locker Room (70 columns, 100 lockers)**
  - Metres: 50  
  - Feet: 538
2.2.3 Men’s Locker Room (70 columns, 100 lockers) 50 538
2.2.4 Men’s WCs, Showers, Vanities (3 of each) 20 215
2.2.5 Staff Universal Change Cubicles (w. Shower) x 4 20 215
2.2.6 Staff Universal Change Lockers (30 columns) 20 215
2.2.7 Custodial Closet x 3 10 108

Sub-Total 190 2045

Component Assigned Area Sub-Total 530 5705

Pro-Rated Building Mechanical / Electrical 5% 27 285
Pro-Rated Walls and Structure 3% 17 180
Component Internal Circulation 10% 56 599

Component Gross Area Total 629 6770

3.0 FITNESS CENTRE - Phase I

3.1 Fitness Centre
3.1.1 Reception 10 108
3.1.2 Stretching / Balls and Circulation 80 861
3.1.3 Cardio Machines and Circulation 700 7536
3.1.4 Strength Machines and Circulation 500 5383
3.1.5 Fitness Free Weights / Open Area and Circulation 300 3230
3.1.6 Indoor Cycling Studio 70 754
3.1.7 Convenience HC-Accessible Washrooms x 2 10 108
3.1.8 Office 10 108

Component Assigned Area Sub-Total 1680 18085

Pro-Rated Building Mechanical / Electrical 5% 84 904
Pro-Rated Walls and Structure 2% 35 380
Component Internal Circulation 10% 176 1899

Component Gross Area Total 1976 21268

4.0 FACILITY OPERATIONS - Phase I

4.1 Front-of-House Functions
4.1.1 Reception / Control Desk 30 323
4.1.2 Administration Offices 50 538
4.1.3 Copy / Office Storage 20 215
4.1.4 Food Concession Café 40 431
4.1.5 First Aid Room 9 97

Sub-Total 149 1604

4.2 Back-of-House Functions
<table>
<thead>
<tr>
<th>Component</th>
<th>Square Metres</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.2 Storage / Staging Area</td>
<td>20</td>
<td>215</td>
</tr>
<tr>
<td>4.2.3 Waste / Recycling Management</td>
<td>10</td>
<td>108</td>
</tr>
<tr>
<td>4.2.4 Maintenance Shop</td>
<td>20</td>
<td>215</td>
</tr>
<tr>
<td>4.2.5 Custodial Storage</td>
<td>10</td>
<td>108</td>
</tr>
<tr>
<td>4.2.6 Facility Operations Office</td>
<td>10</td>
<td>108</td>
</tr>
<tr>
<td>4.2.7 Staff Room</td>
<td>21</td>
<td>226</td>
</tr>
<tr>
<td>4.2.8 Staff WC, Shower and Lockers x 2</td>
<td>30</td>
<td>323</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>131</strong></td>
<td><strong>1410</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Assigned Area</th>
<th>Square Metres</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>280</strong></td>
<td><strong>3014</strong></td>
</tr>
</tbody>
</table>

| Component Circulation / WCs 15%                | 46            | 499         |
| Pro-Rated Building Mechanical / Electrical 5% | 29            | 312         |
| Pro-Rated Walls and Structure 3%              | 20            | 212         |
| **Component Gross Area Total**                | **675**       | **7266**    |

### 5.0 COMMUNITY CENTRE MULTI-PURPOSE / GYMNASIUM - Phase II

<table>
<thead>
<tr>
<th>Component</th>
<th>Square Metres</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Multi-Purpose Studios and Gymnasiums</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1.1 Large Multi-Purpose Room (sub-dividable; cap. 100)</td>
<td>220</td>
<td>2368</td>
</tr>
<tr>
<td>5.1.2 Medium Multi-Purpose Room (2 x capacity 30)</td>
<td>140</td>
<td>1507</td>
</tr>
<tr>
<td>5.1.3 Meeting Rooms x 2 (capacity 10 each)</td>
<td>40</td>
<td>431</td>
</tr>
<tr>
<td>5.1.4 Arts and Crafts Room</td>
<td>80</td>
<td>861</td>
</tr>
<tr>
<td>5.1.5 Large Studio (capacity 50)</td>
<td>230</td>
<td>2476</td>
</tr>
<tr>
<td>5.1.6 Medium Multi-Purpose Studio (capacity 30)</td>
<td>140</td>
<td>1507</td>
</tr>
<tr>
<td>5.1.7 Double Gym (HS-size basketball courts; sub-dividable)</td>
<td>1220</td>
<td>13133</td>
</tr>
<tr>
<td>5.1.8 Gymnasium Storage</td>
<td>80</td>
<td>861</td>
</tr>
<tr>
<td>5.1.9 Multi-Purpose / Group Fitness Storage (distributed)</td>
<td>80</td>
<td>861</td>
</tr>
<tr>
<td>5.1.9 Offices</td>
<td>40</td>
<td>431</td>
</tr>
<tr>
<td><strong>Component Assigned Area Sub-Total</strong></td>
<td><strong>2270</strong></td>
<td><strong>24437</strong></td>
</tr>
</tbody>
</table>

| Program                                        |               |             |
| Pro-Rated Building Mechanical / Electrical 5%  | 114           | 1222        |
| Pro-Rated Walls and Structure 2%              | 48            | 513         |
| Component Internal Circulation 15%            | 358           | 3849        |
| **Component Gross Area Total**                | **2789**      | **30020**   |

### 6.0 CHILDCARE - Phase II

<table>
<thead>
<tr>
<th>Component</th>
<th>Square Metres</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Licensed Childcare Spaces (37 children x 142 gsf / child)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1.1 Childcare Age/Function-Specific Rooms x 4</td>
<td>344</td>
<td>3703</td>
</tr>
<tr>
<td>6.1.2 Kitchen / Laundry</td>
<td>20</td>
<td>215</td>
</tr>
<tr>
<td>6.1.3 Staff / Storage</td>
<td>20</td>
<td>215</td>
</tr>
</tbody>
</table>
### 6.1.5 Fenced Outdoor Play Area (equal to 50% of interior area) not in building area total

<table>
<thead>
<tr>
<th>Component</th>
<th>Assigned Area</th>
<th>Sub-Total</th>
<th>Pro-Rated Building Mechanical / Electrical 5%</th>
<th>Pro-Rated Walls and Structure 3%</th>
<th>Component Internal Circulation 15%</th>
<th>Gross Area Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>394</td>
<td>20</td>
<td>12</td>
<td>62</td>
</tr>
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</table>

#### TOTAL GROSS BUILDING AREA

<table>
<thead>
<tr>
<th>Phase</th>
<th>Gross Area Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>7,341</td>
</tr>
<tr>
<td>Phase II</td>
<td>3,277</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10,618</td>
</tr>
<tr>
<td></td>
<td>35,275</td>
</tr>
<tr>
<td></td>
<td>114,295</td>
</tr>
</tbody>
</table>
3.4 Stakeholder Feedback

As part of the feasibility study the project team conducted in person interviews with several of the key site and programming stakeholders. The scope of this study did not include engagement with the public, in part because of the highly compressed schedule, however the project team did present and had a discussion with the Parks and Recreation Committee to obtain feedback that was representative of general public opinion. Recommendations for further engagement are included in the Next Steps section of this report.

Key feedback from stakeholders included:

**Mayors Task Force**
The Mayors Task Force was the key consultation group during the feasibility process. Biweekly meetings took place throughout the project to obtain feedback on the following issues and this feedback influenced the final proposals:
- Project process and methodology
- Study and report content
- Program components, and
- Design objectives

**Parks and Recreation Committee**
This group was generally enthusiastic about the project moving forward, and offered the following specific feedback:
- Favour 50m tank over 25m tank
- Favour 8 lane tank over 10 lane tank
- Support for the inclusion of Gymnastics programming
- Extent of available grant funding would influence degree to which optional components could be included.
- “Build it Right” for today and future needs

**CGP & CCC Staff**
Staff also strongly supported the need for a new facility, and provided detailed feedback on the nature of programming and how it could be accommodated in the new facility. Key themes from this discussion included:
- Size of the Fitness Centre - it was noted that the current space is undersized for the demand, and that fitness (across all types) was a key programming component that draws people to this facility. Staff were strongly supportive of including the enhanced fitness space component in the final programming.
- Ability to meet Aquatic programming demands - it was noted there is a strong demand for aquatic programming, particularly swim lessons. Staff identified current facility constraints and wait lists for swim lesson programs.
• Staff noted a desire to include Gymnastics to take advantage of operational efficiencies and benefits of being collocated with other uses, as demonstrated in other facilities across Metro Vancouver e.g. West Vancouver Community Centre.

Justice Institute
The Justice Institute (JI) was consulted as a key stakeholder on the site. City staff have had ongoing conversations with the JI about how to resolve the site-wide deficiency in parking spaces and the JI reiterated their willingness to participate in this discussion. Additional feedback included:
• JI Students use fitness space.
• They anticipate a shortage in Gymnasium space at JI facility for training purposes.
• Parking continues to be an ongoing challenge.

Hyack Swim Club
We presented the current analysis and various tank options to the President of the Hyack Swim Club. The feedback about the desires of the club’s membership were consistent with the feedback received from Hyack during the public engagement sessions in 2016. Specific to the material presented in this meeting, he noted the following:
• Maintain their desire for a competition focused facility with a 50m tank (Option 4 + warm up / warm down tank).
• Indicated that the 50m 8 lane tank (Option 3) would maintain status quo if there was also a warm up tank / warm down tank.
• During the public engagement sessions, the Hyack Swim club issued a white paper outlining their needs. It was confirmed that this white paper still represented their interests.

Fire Hall
The Fire Hall occupies one corner of the site, and staff were able to clarify their site access and circulation requirements for emergency vehicles. Their current arrangement includes 17 stalls within the overall site parking lot that are dedicated to their use. They expressed their desire to maintain this arrangement. Their interaction with the rest of the site and facilities is limited.

Royal City Curling Club
The curling club is a long term tenant on the site and their membership makes use of the general site parking lots. They expressed a desire to ensure that good sight lines and pedestrian routes to their facility were maintained. They noted that having increased circulation to the new facility will benefit exposure to their sport. The curling club is also interested in diverting waste heat from their ice-making plant to the pool mechanical systems. The project team reviewed their mechanical system and further recommendations on this specific topic are included in the Sustainability and Mechanical sections of this report.
4.0  Concept Design

4.1  The Vision
4.2  Test Fit
4.3  Pedestrian & Cycle Access
4.4  Vehicle Access & Parking
4.5  Concept Options
4.6  Sustainability Strategy
4.7  Technical Overview
4.1 The Vision

The 2016 public engagement process received substantial input from a wide range of different users and through these discussion a number of themes began to emerge that were developed into 10 vision statements. These vision statements have influenced the concept site planning and should also be considered in later schematic and detailed design stages. The concept options in this report have begun to address this vision through a number of spatial design strategies that are described below.

The different aquatic and community centre uses should be linked by a large lobby/circulation space which will form the social heart of the building through providing a gathering space that physically and visually connect different uses. The design should use lots of glazing to create a light and bright environment as well as provide views into the different program spaces and outwards into the surrounding site.

The site concept should consider enhancing connections between the facility and the wider pedestrian and cycle network, as well as using it to create cohesive green space across the site. One device to achieve this in the concept options is through the introduction of a green link pathway that runs north-south and utilizes the area of the existing sewer easement in the in-filled Glenbrook Ravine (that is problematic to build on). Hard landscaping surrounding the building can also be programmed to relate to internal programmatic uses.

The range and flexibility of spaces provided in the proposed program will allow for a variety of different uses and users so that it becomes a multi-generational facility that is accessible to all. As described within section 3.0, the aquatic program has been carefully considered against meeting both emerging leisure needs and existing competitive swim and teaching requirements so that the legacy of Canada Games Pool is continued into the next generation. This study has also considered long-term future needs by considering phasing, providing flexible spaces for a wide variety of recreational programs, and options for future expansion or conversion.

During schematic and detailed design special attention should also be paid to creating a truly inclusive and accessible facility for all ages, genders, income, cultural practices, physical and mental abilities. During the next stage of the project, consideration should be given to providing an energy efficient facility without compromising the ability to provide comfortable environments.

Finally, as the design develops through schematic design it should consider the site location and layout so that a strong street presence and active frontage is created in order that the new facility continues to be a source of community pride. A distinct, yet sensitive design should be used to help promote the new Aquatic and Community Centre as a destination building for residents.
Dear City Council,

The renewed aquatic and community facilities should be......

... an integrated and connected aquatic, fitness and community complex.

... a social hub and community destination.

... designed to accommodate future needs.

... a highly sustainable development.

... light, bright and create comfortable environments.

... physically and demographically accessible to all.

... multi-generational and flexible for mixed-uses.

... located within a park & connected to the wider network of green spaces.

... built upon the success and high caliber of the existing competitive swim & teaching facilities, while balancing emerging leisure needs.

... linked to the wider transportation network.

▲ Vision Statements from the Public Engagement Report
4.2 Test Fit

Given the limitation placed on the site by the sewer easement that bisects it in half, a series of test fit studies were conducted for each of the three possible areas that the building could be located. These studies quickly determined that the most viable location of the proposed Aquatic & Community Centre is in the south-east corner of the site (Area C.)

PRELIMINARY SITE STUDY - AREA A

Area A tested siting the new facilities on the north-west corner of the site fronting along McBride Avenue. The major advantages of this building location includes the continued operation of both CGP and CCC facilities during construction, and the potential for shared parking opportunities with the JIBC. However, more critically, the size of this area cannot accommodate the full building program.

PRELIMINARY SITE STUDY - AREA B

Area B tested siting the new facilities on the north-east corner of the site. The major advantage of this building location is that the full program build out is possible, however siting the building in this location would not allow for continued operation of the CGP during construction and limits the opportunities for shared parking opportunities with the JIBC.

PRELIMINARY SITE STUDY - AREA C

Area C tested siting the new facilities on the south edge of the property along East 6th Avenue between the existing Fire Hall and RCC. Major advantages of this building location include opportunities for parking sharing with the JIBC, the continued operation of the CGP, cohesive urban design, and a strong street presence along East 6th Avenue. This site strategy also offers the opportunities for either the temporary relocation of the CCC or phasing options that allow its continued operation during construction.
4.3 Pedestrian & Cycle Access

In considering options for the design of the new community aquatic centre, the following access strategies were embedded within the design in order to provide a comprehensive and cohesive pedestrian, vehicular and cycle network across the entire site:

- Reinstate the memory of the old Glenbrook ravine and former watercourse with a woodland trail. This path will link the Justice Institute green space to the north-west, with the Glenbrook Ravine trail network to the south-east of the site.
- Improve and extend the existing pedestrian and cycle path across the north of the site so it links with the wider network.
- Provide a secondary east-west path midway across the site to link the new facility with transit stops on McBride Boulevard.
- Create an improved streetscape along East 6th Avenue and McBride Boulevard that enhances pedestrian routes to the facility.
- Provide adequate end-of-trip bicycle parking facilities as part of support for sustainable modes of transport.
4.4 Vehicle Access & Parking

The proposed approach for site parking is to consolidate all parking stall requirements for the new Aquatic and Community Centre and existing Royal City Curling Club (RCC) on the site through the same access route. The primary vehicular access point will be from Cumberland Street, with a secondary right-in, right out entry/exit from East 6th Avenue.

The parking demand study has indicated that the full build-out of program requires approximately 423 spaces - please refer to the Parking Demand and Site Transportation Considerations study in the appendix for further detailed information on this calculation. This includes the spaces required to meet the RCC’s needs, with another additional 37 spaces provided in a separate parking area for the Fire Hall.
The proposed concept design shows that this demand can be met through surface parking stalls with buffer landscaping that includes trees and stormwater retention features like bioswales and rain gardens. The current site layouts require the relocation of the existing sports field (and possibly the recycling depot) to another site - refer to section 4.6 (page 46) for further information.

If the CNW parking by-law were to be met then it would require a structured above or below grade parking solution at significant additional cost to the current proposals. Refer to section 5.0 for further information.

Both the location of the proposed parking and the preliminary study on the potential for shared parking with JIBC indicate that this is a viable opportunity that should be explored during the next stage of the project. Refer to the tables below and the parking and transportation report in the appendix.

<table>
<thead>
<tr>
<th>Facility</th>
<th>GFA (Square Feet)</th>
<th>Required CNW Bylaw (5 stalls / 1,000 sq. ft)</th>
<th>Demand Approach (3.2 stalls / 1,000 sq. ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Aquatic &amp; Community Centre</td>
<td>117,340</td>
<td>587</td>
<td>375</td>
</tr>
<tr>
<td>Royal City Curling Club*</td>
<td>23,500</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>TOTAL</td>
<td>140,840</td>
<td>635</td>
<td>423</td>
</tr>
</tbody>
</table>

*Calculated at 8 spaces per ice sheet, CNW Zoning Bylaw 6680, 2001 Section 150.17-18

▲ Parking Demand, Urban Systems

<table>
<thead>
<tr>
<th>Time Period</th>
<th>School Year</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday Morning (8 AM – 12 noon)</td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
<tr>
<td>Weekday Early-Mid Aft. (12 noon – 4 PM)</td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
<tr>
<td>Weekday Late Aft. (4 PM – 7 PM)</td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
<tr>
<td>Weekday Evenings</td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
<tr>
<td>Weekends</td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
</tbody>
</table>

▲ Peak Parking Usage, Urban Systems
4.5 Concept Options

The following three concepts were developed for a new Aquatic and Community Centre to replace the existing Canada Games Pool (CGP) and Centennial Community Centre (CCC). All options are located in the south-east of the site (Area C from section 4.2) and integrate the proposed pedestrian, cycle and vehicle access as described in section 4.3 and 4.4. Concept options were developed in line with meeting the objectives of:

- Creating a functional layout that meets best design practice, user and operational needs.
- Allowing for the ability to phase construction in order to allow for continued user-service and phased funding as it becomes available.
- Realizing the project vision statements, developed from the public engagement process - refer to section 4.1.

To allow for a phased construction process, the proposed program has been grouped into two separate components: the new aquatic, fitness, and welcome centre spaces and other community uses - refer to section 3.3. The Mayor's Task Force confirmed the requirement for the CGP to remain accessible to the community throughout construction until the new facility is operational, and this became a key design parameter. The concept options also consider ways for the CCC to remain operational during the construction, although it was noted that, unlike aquatic uses, there may be opportunities for some of these programs to be temporarily relocated during the construction period e.g. to the new interim sports facility in Queen's Park.

The pros and cons of each approach are outlined in the following section and a summary illustration for the footprints of all three options is shown on the opposite page.

**Impact of retaining the existing recycling depot and sport field**

The proposed concept options currently assume the removal and relocation of the existing recycling depot and sports field to elsewhere in the City. If they are to be maintained, between 143 to 167 stalls would be lost to the sports field. There would be approximately 42 stalls lost to maintain the existing recycling depot. Due to some efficiencies with a shared drive aisles, there would be a total loss of approximately 167 to 189 stalls from the current parking layouts to retain both the sports field and recycling depot in concept options 1 & 2. Concept option 3 cannot accommodate retaining both the sports field and recycling depot due to insufficient space for a vehicular circulation route. Therefore in all concept options, a multi-level parking structure, or below grade parking solution, would be required to meet the required parking demand if the existing sport field is to be retained on site. This would result in additional project costs - refer to section 5.0. Given the minimal amount of spaces lost to retain the recycling depot, a further parking layout efficiency study during schematic design may reveal that these can be accommodated elsewhere on site.
OPTION 1 - CONCEPT SITE PLAN

OPTION 2 - CONCEPT SITE PLAN

OPTION 3 - CONCEPT SITE PLAN

LEGEND
- Proposed Building Location
- Multi-use Pathway
- Plaza & Walkway
- Greenscaping & Bioswales
- Parking & Roadway
- Entry
- Sewer Easement
- Property Line
- Existing Buildings - CCC / CGP
- Existing All-Weather Field & Recycling
Concept Option 1

Concept Option 1 sites the building along the south edge of the site, with the aquatic and fitness spaces located on the east, connected to the community program spaces to the west by a generous lobby/social space that runs north-south. The gymnasium and childcare could open out directly onto the adjacent green-link pathway, which is also overlooked by the multipurpose spaces on the level above. Listed below are the significant pros and cons:

Pros

- Continued operation of the CGP throughout construction.
- Strong, active and welcoming street frontage to East 6th Avenue - a variety of different programmatic uses will be visible from the street.
- There is more opportunity to create visual impact and connection to the surrounding neighbourhood.
- Legible and generous green link/pathway, honouring the memory of the former Glenbrook Ravine. This will help create a cohesive site and links the facility to the surrounding area, and green spaces.
- Stronger pedestrian connections through a secondary pathway that links the facility to the transit stops on McBride Avenue as well as the residential area to the east.

Cons

- Would require the temporary relocation of Centennial Community Centre programs and services throughout the construction period.

This phasing strategy would assume two phases:
1. Dismantle the CCC and construct all program components of the new facility. The CGP remains in operation and CCC programs and services are temporarily relocated during construction.
2. Dismantle the CGP and replace with parking and associated landscaping.

There would be 435 parking stalls provided in this option which would be sufficient to meet the parking demand approach.
Concept Option 2

Concept Option 2 also includes the north-south green-link pathway but re-orients the lobby/social space to run east-west across the site with the aquatic program spaces to the south, fronting East 6th Avenue, and the community program spaces to the north. The full variety of programmatic uses will only be visible from the north-south green link pathway and not from the street.

Pros

• The main advantage of this option is the ability for a phased construction that allows the continued operation of both the CGP and CCC.
• Offers the Royal City Curling Club a generous green space in front of their main entrance and a better connection to parking.
• Increased green space north of the building as part of the north-south green link. This is located adjacent to the community program spaces, providing opportunities for associated activities e.g. childcare outdoor play and indoor-outdoor connection between multipurpose room and gymnasiums.

Cons

• Slightly reduced street presence compared to option 1 - only aquatic uses will be visible from East 6th Avenue.
• The lobby/social space disconnects and potentially weakens the secondary east-west pathway connection with the residential neighbourhood.
• Retaining operations of both facilities during construction will place significant parking and traffic pressures on this site.

This phasing strategy would assume three phases:

1. Construct the aquatics, fitness and welcome centre (lobby/social space) components of the proposed facility + associated parking and landscaping on the west side of the site. Both the CGP and CCC remain in operation
2. Dismantle the CGP and construct the community program components, while the CCC remains in operation.
3. Dismantle the CCC and replace with parking and landscaping

There would be 426 parking stalls provided in this option which would be sufficient to meet the parking demand approach.
OPTION 2 - PHASE 1

OPTION 2 - PHASE 2

OPTION 2 - COMPLETE BUILDOUT
Concept Option 3

Option 3 is similar to option 2 in that it also locates the aquatic and fitness components on the south of the site, connecting the community related program elements via a lobby/social space that runs east-west. However the lobby-social space is wider and less linear in arrangement. Other pros and cons include:

**Pros**
- The main advantage of this option is that it provides a construction phasing strategy that will allow for full construction of the new facilities as well as the continued operation of the CGP and CCC during the works. The new facility is effectively built around the existing buildings.

**Cons**
- Slightly reduced street presence compared to option 1 - only aquatic uses will be visible from East 6th Avenue.
- The lobby/social space disconnects and potentially weakens the secondary east-west pathway connection with residential neighbourhood.
- Reduced size and legibility of the north-south green links/pathways that bisect the site.
- Higher visibility of the parking area from East 6th Avenue due to less green space buffer between the Royal City Curling Club and new aquatic components.
- Retaining operations of both facilities during construction will place significant parking and traffic pressures on this site.

**This phasing strategy would assume two phases:**
1. Construct all program components of the new facility around the existing CGP and CCC buildings on the west side of the site. The CGP and CCC remain in operation throughout construction.
2. Dismantle the CGP and CCC and replace with parking and associated landscaping.

There would be 450 parking stalls provided in this option which would be sufficient to meet the parking demand approach.
Emerging Massing & Character

The new Aquatic and Community Centre is an opportunity to provide a vibrant and welcoming building that reflects the identity of the New Westminster community. A unique architectural form will help to establish the facility as a destination building. The emerging vision for the facility builds upon the principles from the public engagement process (refer to section 4.1) to create a warm and inviting centre. Highly glazed external and internal facades will ensure visual connections between the street and the activities within the facility, in order to encourage engagement and participation. The above image illustrates the opportunity to reference and re-interpret the existing roof forms of the CGP & CCC in a contemporary way, while also respecting the legacy of these popular facilities and surrounding institutional and residential context.

The concept sketches on both these pages show the emerging building massing for concept option 1, but the principles of building height, character and response to the site also apply to the other options.
SUMMARY

The three concept options described within this section provide a variety of approaches to the phasing of a new facility on the site that maintains continued operation of the existing Canada Games Pool throughout construction. All options respond to site constraints and provide a building with active street frontage that is also integrated into the natural features of the site and wider network of trails, pathways and road systems. Concept Option 1 has the key advantage of maximized street presence, while Options 2 and 3 have advantages in terms of phasing and their connection to the proposed multi-use green pathway that transects the site. Moving forward, Council should address the viability of temporarily moving the CCC programs to an alternate facility during construction. The availability of funding may also indicate whether phasing will be required for the different components of the new Aquatic and Community Centre.
4.6 Sustainability Strategy

From early stages of project commencement, the project team have been actively engaged with City stakeholders with a view to facilitating discussion towards the Sustainability Strategy for the Canada Games Pool development.

In May 2017, project team members attended the City’s Energy Management Committee meeting to discuss a framework for development as the project progresses. From this meeting, two key themes emerged:

1. DISTRICT WIDE ENERGY STRATEGY
A number of potential opportunities were identified in evaluating the feasibility of a District Energy system for the wider site, and the role of this new building within a wider energy network.

It is recommended that a separate business case study be commissioned which can evaluate the energy demand profiles of both the proposed Canada Games Pool and the existing surrounding buildings to gauge the potential suitability of a district energy/heat network.

LEGEND

1. Glenbrook Firehall #1
2. Royal City Curling Club
3. Justice Institute of British Columbia
4. Glenbrook Ravine
2. BUILDING SCALE STRATEGY

a. **Target Setting:** We strongly recommend that defined targets/objectives related to the building's sustainability strategy and operational performance are set by the City of New Westminster prior to the commencement of Schematic Design stage. Building level sustainability strategies can be more effectively achieved when implemented in line with an agreed project objective. These targets should align with existing policy goals at the City level, where relevant (for example Greenhouse Gas (GHG) emissions reduction %).

b. **Pool Operations:** A number of initiatives related to the building's aquatic centre operations are recommended for further development, outlined below:
   - Use of glass media for pool water filtration
   - Hydrogen peroxide as chemical treatment to offset chlorine use
   - Explore the use of Ultraviolet (UV) light technology to improve air and water quality and reduce chemical use
   - Implementing heat recovery from pool backwash processes

c. **Energy & Water Conservation:** It is recommended that the approach to building energy and water reduction will be pursued in accordance with a tiered conservation-based approach, summarized as:

1. **Demand Reduction Strategies:** Assess passive design measures that seek to reduce building energy and water demands. As a result of their heating and cooling demands, aquatic centres have a significant energy demand all year long. Assessing the 'core' elements of the building as early as possible - including form, orientation, envelope efficiency and glazing level - is a key to highlighting the potential energy savings relative to each design decision. Similarly, a number of measures related to the rainwater detention and retention can considerably lower the overall water demand of the project.

2. **Reclamation Strategies:** Identify opportunities for reclamation of 'waste' resources that can be harvested for re-use within the building. Aquatic centres can be divided into different areas each with its own indoor climate requirements relating temperature and humidity (pool areas, changing rooms, entrance hall etc.) The use of a Heat Recovery Ventilation (HRV) system can significantly lower the ventilation heat losses, therefore save an important amount of energy by reducing the overall building's heating demands. Additionally, greywater recycling strategies can be harvested to optimize the water consumption of the project and limit the amount of discharged water.

3. **Renewable Generation:** Assess renewable generation opportunities available for the site given its microclimatic features. Renewable energy can be generated using sunlight, geothermal
heat, wind, or water among other natural sources. The feasibility of renewable energy generation that assists in meeting energy demand and lowering operating costs should be examined on a project-specific basis.

We recommend that a dedicated performance study is undertaken for the three site layout concept options currently proposed, evaluating anticipated energy consumption in addition to daylighting levels. The findings from this study can be used to better inform decision making round the future schematic design.

Current City policy requires all new buildings, including civic, that are over 500 sq m, to target LEED Gold certification. At the time of this report, the City of New Westminster was reviewing their Green Building Policy as part of their wider sustainability mandate for reduction in building energy use and improved environmental performance. However a cost allowance for LEED Gold certification has been included in the overall project costs. Additional sustainability measures may result in additional costs. The City should continue to confirm their sustainability objectives prior to commencement of schematic design so they can be appropriately considered within the proposed design. The higher the energy efficiency target, the more critical early integration of passive design approaches will become.
4.7 Technical Overview

MECHANICAL OVERVIEW
The mechanical engineer (AME Group) have completed a feasibility study of the proposed concept layouts. The report provides an overview of the design approach which considers water safety requirements and the long lifespan of aquatic buildings that results in the need for robust, flexible, easily maintainable, and cost efficient systems. Further detail is provided for the plumbing, fire suppression and high efficiency HVAC systems, including the need for different zones (based on operating temperature and humidity, hours of operation and serviceability of the systems), as well as an overview of heat recovery options as part of the wider sustainability objectives.

The considerations for the Pool mechanical systems are also outlined in the report. System choices are based on operation, maintainability, safety in use and handling, and overall water and air quality. The minimum standards are set by the Provincial Health Act, but industry standards are somewhat higher for most facilities. The different parts of the systems are evaluated based the principles of Turnover Rates (to meet or exceed minimum industry standards), Temperature (each pool will require different water temperatures), Pool Pumps, Water Features (each require a dedicated pump and lifeguard master control point), Pool Water Heating System, Filters, Chemical Disinfection (medium pressure UV to reduce amount of Chlorine required), Pool Piping, and Pool Tank & Fittings.

The report also outlines a number of energy saving and conservation features which should be considered within the mechanical system, including:
- Ground source heat pump
- High performance envelope construction + low e-glazing and shading devices
- Ventilation Air /Relief Heat Recovery System
- Thermostatically controlled exhaust fans for heat recovery in mechanical and electrical rooms
- Water conservation fixtures e.g. HE flush, low flow faucets
- Solar panels for heating building, pool and domestic hot water
- Geo-exchange systems (expensive)
- Lower water consumption regenerative media pool filter
- Heat recovery from adjacent curling club ice plant
- Pool covers (if appropriate from an operations standpoint)
- Passive design for operational efficiencies in natatorium environment
- District Energy

Refer to the full report in the Appendix for further information.
ELECTRICAL OVERVIEW
The electrical engineer (AES Engineering Ltd) have completed a feasibility study for electrical services based on the proposed concept layouts. The new 12.47kV service connection for the proposed community aquatic centre will originate from an existing junction vault JV100. The Utility would arrange for the conduit installation past the Curling Club to the City property. The Subdivision and Development Control Bylaw requires new developments to fund the cost of undergrounding the overhead electrical and communications lines on the adjacent roads. There is an overhead City electrical pole line along East Sixth Avenue, adjacent to this site that would be impacted by this Bylaw.

The building would require a unit substation which would consist of a 2500kVA transformer stepping down the 12.47kV to 600Y/347V. The main bus would be a 3000A board which would provide power to mechanical loads. Step down transformers from 600V to 208Y/120V would be used to provide power for lighting.

The report also gives a brief overview of the impact of the different phasing options within each concept. Refer to the full report in the Appendix for further information.

TRAFFIC & PARKING OVERVIEW
The traffic engineer (Urban Systems) analyzed the current parking provision, peak parking demand and supply, transit connections and existing vehicular, pedestrian and cycle access. This data along with analysis of the CNW parking by-law against the ITE Parking Generation Manual were used to calculate the future parking stall requirements for the new community aquatic facility (based upon the program areas outlined in section 4.4.) The preliminary parking layouts, circulation and access routes were initially reviewed and the traffic engineer’s comments integrated into the final concept options.

The report focuses on the concept option 1 but also includes preliminary review of alternative site layout options 2 & 3. It also includes commentary relating to the impact of retaining the current recycling depot and sports field and the potential for parking synergies with the justice institute.

Refer to the Appendix for further information.
5.0 Capital Costing Analysis
5.0 Capital Costing Analysis

It is anticipated that the project costs will be approximately $83,550,000 based on a Preliminary Class D Estimate conducted in June 2017. This estimate includes typical contingencies that are reflective of the early stage of the project development and assumes a construction start in the year 2020. Class D estimates have a degree of variability that reflects the early stage of the design process.

Additional sustainability design features beyond LEED Gold considerations were excluded from this cost estimate pending further review and discussion regarding the City's objectives for this project. In addition, there are other cost elements that are likely to be associated with the project that are currently not accounted for in the above figure. Accordingly, it is recommended that the City include additional cost allowances in its overall financial planning for the project. These allowances should be adjusted over time as more certainty with respect to the project design and other site conditions is achieved.

Considering the option to develop the project in two phases, the project costing can be broken down into each phase as follows:

- **Phase 1** (aquatics, fitness & welcome centre) $60.1 million
- **Phase 2** (community program spaces) $23.4 million
- **Total** $83.5 million

Should the project proceed under a phased construction scenario, a 5% premium should be added to the entire project cost, as well as an additional escalation rate allowance of 3% per annum.

Listed below are additional cost estimates to address some of the issues described in this report but considered to be beyond the scope of the current project:

- Approximately $4.2 - $6.7 million for either above or below grade structured parking for 167 stalls if the existing sports field location is to be maintained on site (excludes soft costs)
- Approximately $2 million to relocate the existing sports field either on or off site, as a new synthetic sports field (excluding land costs and contingency)
6.0 Business Case
6.0 Business Case

Due to their age, the current Canada Games Pool and Centennial Community Centre have high operating costs, mainly resulting from maintenance and repairs. The buildings are also becoming functionally obsolete as their design does not meet current community demand, leisure needs, or accessibility needs. The business case shows that a new combined facility provides an opportunity to double the size of the amenities being offered to the community, while keeping operating subsidies close to the same level they were at with the old facilities.

LIFECYCLE ANALYSIS

A previous feasibility report conducted by Cannon Design in 2010, included lifecycle costing analysis by BTY Group for three key options: renovation of building systems and fabric in the existing CGP and CCC to meet current standards, renovation and expansion with new aquatic and community spaces, and construction of a new aquatic and community centre. The analysis concluded that the new build option has higher capital costs at the outset than the renovation and expansion options, but there are less associated costs over the entire life of the building. This analysis didn’t take into consideration functional efficiencies that can be achieved with newer buildings and it’s anticipated that further savings may be found though this. The new building also represents the most appropriate functional response to meeting current and future demands as demonstrated by the public engagement survey.
The below tables summarize the business case conducted as part of this 2017 study and is explained in more detail in the following business case analysis.

**PHASED APPROACH**

**PHASE 1 - NEW AQUATICS & FITNESS**

<table>
<thead>
<tr>
<th></th>
<th>Existing CGP</th>
<th>Phase 1 - Aquatics + Fitness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Area</td>
<td>49,000 sq ft</td>
<td>80,000 sq ft</td>
</tr>
<tr>
<td>Revenue</td>
<td>$1.8 million</td>
<td>$2.7 million</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>$4.2 million</td>
<td>$5.5 million</td>
</tr>
<tr>
<td><strong>Annual Subsidy</strong></td>
<td><strong>$2.4 million</strong></td>
<td><strong>$2.8 million</strong></td>
</tr>
</tbody>
</table>

+ $500,000 annual subsidy for CCC
+ Capital maintenance Costs for CCC

**PHASE 2 - NEW COMMUNITY & GYMNASIUM**

<table>
<thead>
<tr>
<th></th>
<th>Existing CCC</th>
<th>Phase 2 - Community + Gym</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Area</td>
<td>21,000 sq ft</td>
<td>35,000 sq ft</td>
</tr>
<tr>
<td>Revenue</td>
<td>$500,000</td>
<td>$800,000</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>$1.0 million</td>
<td>$1.1 million</td>
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<tr>
<td><strong>Annual Subsidy</strong></td>
<td><strong>$500,000</strong></td>
<td><strong>$300,000</strong></td>
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</table>

**COMPLETE BUILD**

<table>
<thead>
<tr>
<th></th>
<th>Existing CGP + CCC</th>
<th>Full Buildout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Area</td>
<td>70,000 sq ft</td>
<td>115,000 sq ft*</td>
</tr>
<tr>
<td>Revenue</td>
<td>$2.3 million</td>
<td>$3.5 million</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>$5.2 million</td>
<td>$6.6 million</td>
</tr>
<tr>
<td><strong>Annual Subsidy</strong></td>
<td><strong>$2.9 million</strong></td>
<td><strong>$3.1 million</strong></td>
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</tbody>
</table>

* rounded from 114,295 sq ft
New Westminster Canada Games Pool – New Facility
Business Case Analysis

The business plan section of this report was prepared for information purposes only and projections are subject to changing variables and conditions. Operating costs will be sensitive to world pricing for energy and labour agreements, among other factors. Revenue targets can only be met if schedule, program offerings and pricing along with corresponding increase in actual demand can be generated. Consequently, the analysis and interpretation of the data is only intended for planning purposes only and represent realistic and conservative estimates.

1.1 Space Program Area Analysis

The existing Canada Games Pool facility is approximately 4,550 square metres or 49,000 square feet in gross area. The summary space list below illustrates the functional distribution of space in the new facility for the purposes of analyzing and apportioning operating costs. The spacelist has been organized into a Phase I that in essence is a larger and modern replacement for the existing Canada Games Pool and a Phase II that adds community centre functions to the complex, replacing the adjacent Centennial Community Centre.

Space Program Summary for the New Aquatic Centre

<table>
<thead>
<tr>
<th>Phase</th>
<th>Space Type</th>
<th>Gross Area</th>
<th>Percentage</th>
<th>Square Metres</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Natatorium - Component Gross Area</td>
<td>38%</td>
<td>4062</td>
<td>43726</td>
<td></td>
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<tr>
<td></td>
<td>Change Rooms - Component Gross Area</td>
<td>6%</td>
<td>629</td>
<td>6770</td>
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<tr>
<td></td>
<td>Fitness Centre - Component Gross Area</td>
<td>19%</td>
<td>1976</td>
<td>21268</td>
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<tr>
<td></td>
<td>Facility Operations - Component Gross Area</td>
<td>6%</td>
<td>675</td>
<td>7266</td>
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<tr>
<td></td>
<td>Facility Assigned Area Total</td>
<td></td>
<td>5595</td>
<td>60230</td>
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<tr>
<td></td>
<td>Facility Gross Building Area Total</td>
<td>69%</td>
<td>7341</td>
<td>79030</td>
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<tr>
<td></td>
<td>Net-to-Gross Ratio</td>
<td></td>
<td>1.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assigned Area Percentage</td>
<td></td>
<td>76%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Community Centre / Gyms - Component Gross Area</td>
<td>26%</td>
<td>2789</td>
<td>30020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Childcare - Component Gross Area</td>
<td>5%</td>
<td>488</td>
<td>5255</td>
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<td></td>
<td>Facility Assigned Area Total</td>
<td></td>
<td>2664</td>
<td>28678</td>
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<tr>
<td></td>
<td>Facility Gross Building Area Total</td>
<td>31%</td>
<td>3277</td>
<td>35275</td>
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<td></td>
<td>Net-to-Gross Ratio</td>
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<td></td>
<td>Assigned Area Percentage</td>
<td></td>
<td>81%</td>
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<tr>
<td></td>
<td>Phase I and Phase II Gross Building Area</td>
<td>10618</td>
<td>114,295</td>
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</tr>
<tr>
<td></td>
<td>Net-to-Gross Ratio</td>
<td></td>
<td>1.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assigned Area Percentage</td>
<td></td>
<td>78%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In a combined Phase I and II facility, the aquatic component would represent about 39% of facility gross area. In a Phase I only scenario, the aquatic component represents 55% of gross area. Fitness would be allocated 27% and 19% respectively and non-revenue generating support spaces the remainder of the facility at 18% and 12% respectively. Community centre spaces would add about 30% more area to the total project area.
Acknowledging the distinction of space types is important as each of the three major activity groupings, aquatic, fitness and community centre will have different operating costs, different levels of utilization and different potential for revenues and cost recoveries.

1.2 Current Canada Games Pool Financial Performance

Current demand, attendance and revenues are summarized in the table on the next page and the operating expenditures on the page following. Note: This is for the Canada Games Pool only and does not include the Centennial Community Centre, which has its own separate annual report.

Total annual user visits to the existing Canada Games Pool has been in recent years in the order of 460,000. Of this total, 238,000 or 52% are visits to the pool and the remainder is for fitness (some double counting in each if users are there for both). This translates into 3.4 annual pool user visits per capita, though only about 1.7 user visits per capita would be for public swim and lane swim with the remaining 1.7 user visits per capita from swimming lesson programs and swim club use.

Currently, the Canada Games Pool is limited in its ability to expand programming despite having the equivalent of 16-lane 25-metre lanes plus a residual non-standard-sized area in the 67-metre tank. The greatest impediment to increasing City programming is the amount of prime time allocated to rentals, specifically the Hyack Swim Club. The club currently uses between 4 and 12 lanes for 18 hours per week or almost 50% of weekday prime time hours for a total of 130 lane-hours per week (lanes multiplied by hours: about 33% of the total weekday primetime inventory) while only providing about 6% of total annual revenues.

Public lane swimming also uses a minimum of 4 lanes per hour during weekday (with additional lanes open during late evening and daytime. Consequently, swimming lessons are currently limited to only three days per week and in only 4 lanes during weekday prime time (but also offered mornings two days a week plus Saturday). Public swim and family swim times during weekday prime time are limited to 6 hours per week plus an additional 10 hours per week starting at 1 or 2PM and ending by 4PM.

Current annual revenues for the three previous years are in the order of $1.8 million, with just over half of the revenues coming from the aquatics area and the remainder from the fitness centre. This is slightly lower when compared with the Vancouver average and at $71 / square foot of water area is substantially below the $90-110 / SF Vancouver average for pools. Revenues have actually dropped by about 11% from about $2.0 million annually for the three years preceding the 2010 CGP master plan report, this despite annual increases in admission rates. Annual CGP attendance has also dropped 18% from 560,000 for the 2007-2009 period to the present, despite population increase.

Current operating expenditures result in a three-year average of $4.2 million for a net operating subsidy requirement of $2.4 million annually. This is an increase of almost $500,000 in seven years, attributable to rising staffing costs and energy costs and most significantly, increasing maintenance and capital replacement costs. Currently, the operating cost per square foot averages almost $87/SF overall and net subsidy at $52/SF for the entire facility, both slightly higher than the Vancouver averages of $80/SF and $40/SF respectively.

About 71% of current operating cost is staffing and management costs (operational, program and lifeguarding). About 10% each are costs for energy use, maintenance and for fixed overhead costs.

A new aquatic facility will be much larger but economies of scale will see operating expenditures increasing proportionally less while a new building will be more energy efficient and require substantially less maintenance for the next few decades. A new and larger facility will also have potential for increased use and revenues resulting in a proportionally lower rate of subsidy.
### BUSINESS CASE

#### CURRENT REVENUES ANALYSIS - AVERAGED 2014-2016

<table>
<thead>
<tr>
<th>Membership Total</th>
<th>4,400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership Scans Fitness</td>
<td>139,230</td>
</tr>
<tr>
<td>Membership Scans Pool</td>
<td>81,770</td>
</tr>
<tr>
<td>Membership Annual Total Scans</td>
<td>221,000</td>
</tr>
<tr>
<td>Membership Revenues Fitness 63%</td>
<td>$459,500</td>
</tr>
<tr>
<td>Membership Revenues Pool 37%</td>
<td>$270,100</td>
</tr>
<tr>
<td>Membership Total Revenues</td>
<td>$730,000</td>
</tr>
<tr>
<td>Drop-In Scans Fitness 63%</td>
<td>82,530</td>
</tr>
<tr>
<td>Drop-In Scans Pool 37%</td>
<td>48,470</td>
</tr>
<tr>
<td>Drop-In Annual Total Scans</td>
<td>131,000</td>
</tr>
<tr>
<td>Drop-In Revenues Fitness 63%</td>
<td>$258,300</td>
</tr>
<tr>
<td>Drop-In Revenues Pool 37%</td>
<td>$151,700</td>
</tr>
<tr>
<td>Drop-In Total Revenues</td>
<td>$410,000</td>
</tr>
<tr>
<td>Program Annual Total Participants</td>
<td>9,700</td>
</tr>
<tr>
<td>Program Gate Count Fitness</td>
<td>0</td>
</tr>
<tr>
<td>Program Gate Count Pool</td>
<td>78,000</td>
</tr>
<tr>
<td>Program Total Scans</td>
<td>78,000</td>
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<tr>
<td>Program Revenues Fitness</td>
<td>0</td>
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<tr>
<td>Program Revenues Pool</td>
<td>$499,000</td>
</tr>
<tr>
<td>Program Revenues</td>
<td>$499,000</td>
</tr>
<tr>
<td>Hyack Swim Club Membership</td>
<td>160</td>
</tr>
<tr>
<td>Hyack / Rentals Annual Gate Count</td>
<td>30,000 30,000</td>
</tr>
<tr>
<td>Hyack / Rentals Revenues</td>
<td>$70,000</td>
</tr>
<tr>
<td>Other Revenues</td>
<td>$112,000</td>
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<tr>
<td>Centennial Community Centre</td>
<td>50</td>
</tr>
<tr>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>ANNUAL USER COUNT TOTAL</strong></td>
<td>460,000</td>
</tr>
<tr>
<td><strong>ANNUAL GROSS REVENUES</strong></td>
<td>$1,821,600</td>
</tr>
</tbody>
</table>

#### Final

- **Number of users, not visits**
- **Based on facility stat counts**
- **Based on facility stat counts**
- **Actual 2014-2016 average**
- **Pre-rated revenue**
- **Pre-rated revenue**
- **Averages 53 / visit; gross revenue over annual user visits**
- **Actual 2014-2016 average**
- **Pre-rated revenue**
- **Pre-rated revenue**
- **Averages 53 / visit**
- **Number of users, not visits**
- **No fitness programs at CGP**
- **Lessons, aquafit, etc.* Users x 8 visits per program**
- **From annual financial report**
- **Uses 33% of primetime lane-hours weekdays (25% of tank)**
- **6% of total revenues**
- **Lockers, sales, vending, etc.**
- **Multi-Purpose and Gymnasiums not included in existing CGP**
- **All types to CGP**
- **Estimate provided by staff**
- **Pre-rated gross revenues**
- **Estimate provided by staff**
- **Based on pop., 71,000**
- **Pre-rated gross revenues**
- **Gross revenues / gate count**
- **Area take-off**
- **Pre-rated revenues over area**
- **Area take-off**
- **Net area, not gross**
- **Including $spin**

---

*David Hewko*

Planning & Program Management
## NEW WESTMINSTER - CANADA GAMES POOL - Final
### Current Expenditures Analysis - Averaged 2014-2016

<table>
<thead>
<tr>
<th>Labour Costs</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Salaries</td>
<td>23.4%</td>
<td>$993,000</td>
<td>F/T management and staff</td>
</tr>
<tr>
<td>Auxiliary Salaries (incl. Lifeguards)</td>
<td>31.3%</td>
<td>$1,330,000</td>
<td>F/T lifeguards, instructors, etc.</td>
</tr>
<tr>
<td>Overtime</td>
<td>0.2%</td>
<td>$10,000</td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td>16.5%</td>
<td>$700,000</td>
<td>From annual report</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$3,013,000</td>
<td>20% increase since 2007-2009</td>
</tr>
<tr>
<td>Energy Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>3.4%</td>
<td>$143,000</td>
<td>From annual report</td>
</tr>
<tr>
<td>Electricity (internal transaction)</td>
<td>2.8%</td>
<td>$120,000</td>
<td>From annual report</td>
</tr>
<tr>
<td>Water and Sewer</td>
<td>2.0%</td>
<td>$87,000</td>
<td>From annual report</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$350,000</td>
<td>12% lower than 2007-2009</td>
</tr>
<tr>
<td>Maintenance (all types)</td>
<td>3.6%</td>
<td>$153,000</td>
<td>Current expenditures</td>
</tr>
<tr>
<td>Scheduled and unscheduled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renovations and Upgrades</td>
<td>6.9%</td>
<td>$294,000</td>
<td>Capital expenditures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$447,000</td>
<td>Stable over recent years</td>
</tr>
<tr>
<td>Fixed and Variable Overheads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool Chemicals</td>
<td>1.5%</td>
<td>$65,000</td>
<td>From annual report</td>
</tr>
<tr>
<td>Custodial Supplies</td>
<td>1.6%</td>
<td>$70,000</td>
<td>From annual report</td>
</tr>
<tr>
<td>Program Supplies</td>
<td>1.6%</td>
<td>$70,000</td>
<td>From annual report</td>
</tr>
<tr>
<td>Misc. (office costs, internal costs)</td>
<td>4.3%</td>
<td>$210,000</td>
<td>From annual report</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$416,000</td>
<td>About 25% more than 2007-2009</td>
</tr>
<tr>
<td><strong>Overheads, Reserves and Internal Transfers Total</strong></td>
<td>$4,246,000</td>
<td></td>
<td>20% increase since 2007-2009</td>
</tr>
</tbody>
</table>

### Area Distribution

<table>
<thead>
<tr>
<th>Assignable Area Fitness SF</th>
<th>16.3%</th>
<th>8,000</th>
<th>Measured from plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignable Area Aquatics SF</td>
<td>45.6%</td>
<td>12,400</td>
<td>Measured from plan</td>
</tr>
<tr>
<td>Assignable Area Other SF</td>
<td>15.3%</td>
<td>7,500</td>
<td>Locker rooms, offices, etc.</td>
</tr>
<tr>
<td>Grossing Factors SF</td>
<td>22.8%</td>
<td>11,200</td>
<td>Mech., circulation, walls, WCs</td>
</tr>
<tr>
<td>Gross Building Area SF</td>
<td></td>
<td>49,112</td>
<td>Provided by client</td>
</tr>
</tbody>
</table>

### Expenditures Pro-Rated by Area

| Labour Cost / SF | $61.76 | Comparable to Metro average |
| Energy Cost / SF | $7.13  | Comparable to Metro average |
| Maintenance Costs / SF | $9.10  | Higher than Metro average |
| Overheads Costs / SF | $8.47  | Higher than Metro average |
| Average Operating Cost / SF | $86.46 | Slightly higher than Metro avg. |

### NET REVENUE COST / SF / YEAR

| $-49.38 | Higher than Metro Vanc avg. |

### Annual Subsidy Cost

| -$2,425,000 |       |       |       |
1.3 Demand-Drivers: Rationale for Demand Increase

A number of factors will drive an increase in demand for services at the new Aquatic and Fitness Centre. Chiefly among them are three factors:

- Real population increase
- Repatriation of clientele for recreation services in New Westminster
- Expansion, new amenities and modernization of the key activity components: fitness and the pool

According to the City’s Planning Department, the population of New Westminster is projected to increase from the current 71,000 to about 100,000 by the years 2041-2045. Much of this growth will be focused in two concentrated areas, the Sapperton Green area near Braid Skytrain station and in the downtown core area. This will be almost entirely attributable to net in-migration (as opposed to natural birthrate). This represents a 43% increase in population in the next two decades.

The second area of growth in demand will occur when the new aquatic centre facility is completed and local residents that may currently be using facilities such as Burnaby, Coquitlam and Surrey will once again be attracted to facilities in New Westminster owing to expanded program offerings, convenient scheduling and the environment of a new, modern facility. While the exact number is speculative, the fact is that CGP is experiencing 100,000 fewer annual visits than prior to 2010 (or an 18% reduction), despite the population increasing almost 10% (65,000 to 71,000). If that demand could be repatriated and adjusted for the current population demand at CGP would increase by 25-30% before future population growth.

The third factor contributing to increased demand will be an increase in participation rate: meeting the pent-up or unmet demand inherent in the local community. Currently, families are turned away as swimming lessons quickly fill up or families choose not to attend family swims because the weekday times offered don’t work with many families schedules or the pool offerings are limited in their potential for ‘fun’. The fitness centre is so popular that users experience overcrowding and wait times to use equipment during peak times of day.

The addition of a leisure tank has the potentially to virtually double the number of bathers allowed in the facility by the BC Health Act, and the new play-water can remove those functions from the main tank allowing for more programs. The fitness centre doubling in size will have capacity to absorb demand during any time of day. In essence the doubling in size of these functions from the ‘supply-side’ perspective would allow the City to absorb all of the projected demand identified above.

1.4 Projected Operating Budget

*Phase I New Aquatic and Fitness Centre Redevelopment Operating Budget Business Case*

Future projections of operating costs and revenue targets were based on historical operating data from Canada Games Pool facility annual financial reports from 2014-2016, and understanding the performance and operating costs of new buildings and regional comparative data from other Metro Vancouver aquatic and multi-purpose facilities. The intent being future projections would reflect both the unique characteristics and service delivery priorities of New Westminster as well as being in alignment with other similar facilities in the region. In addition, New Westminster’s current and projected population were considered as well as the participation rate per capita.

Often operating cost projection models will be based on a gradual or stepped increase in demand over a period of successive years. In this case however pent-up demand on both the fitness and aquatic fronts suggest the new aquatic centre could reach new required target attendance numbers in the first or second year, rapidly plateauing before the demand curve flattens to correspond with the gradual future
increase in population. This means instead of a graduated increase in usage, the new aquatic centre would likely experience an immediate and significant increase in attendance, usage and revenues.

In developing a business case, operating costs are modeled first and revenues follow. Reason being, future operating costs reflect accurate and predictable unit costs for labour, energy consumption and overheads. These unit costs are then multiplied by the total square-footage of the new and larger facility with adjustments made for economies of scale, efficiencies, location and population factors, and other variables.

In the Phase I scenario, the facility increases in size from about 49,000 sf to approximately 80,000 sf, an increase of about 60%. However, the business case proposes that Phase I operating costs should only increase by 20%. Most of the savings will be in a dramatic reduction in maintenance and repairs and annual capital expenditures. Conversely, most of the increase will be in labour – specifically more lifeguards owing to an almost 50% increase in water area and increased bather load (note that the Health Act prescribes lifeguarding requirements based on bather load). The new facility would be significantly larger but new building and pool mechanical systems as well as an energy-efficient building envelope would result in a lower operating cost per square foot.

While costs for staff, energy use and overheads for the fitness component and the aquatic component have not been historically tracked separately at Canada Games Pool, the fitness component traditionally will be less expensive to operate (as well as generating the highest revenue per square foot of any type of recreation activity). Fitness is less expensive to operate owing to a simpler environment to heat, cool and energize, as well as having minimal staffing. (Note: the unique environment at CGP due to lack of separation from natatorium impacts current costs).

Revenue modeling in this report reflects the goal of maximizing annual income from admissions and program registrations in order to minimize shortfall or annual subsidy. Noting that the facility increases in size by 60% including the fitness centre doubling in size, the business case projects a net increase of about 10% in the annual subsidy after Phase I – providing aggressive new attendance and revenue targets can be met. This includes assumptions regarding changing space allocations to existing uses.

The Phase I model projects attendance and subsequently revenues from memberships and from drop-ins for combined aquatics and fitness to increase by over 50%. Of this $1,100,000 annual amount $660,000 of the membership revenues will come from the aquatics side and $440,000 from the fitness side, similar to the current pro-rated distribution. Drop-ins ($720,000 per year) will need to increase to $240,000 for aquatics membership use and $480,000 for drop-in. It should be noted that even though the water area will only be increasing by less than 50%, according to the BC Health Act the bather load of a leisure pool is three-times greater than a program tank, meaning the overall bather capacity of the pools will have the capacity to more than double existing.

Another key revenue driver will be an increase in cost across the board to use the facility. Current average cost per membership or drop-in visit is $3 (revenue divided by attendance). Building a new facility presents a one-time opportunity to increase fees with the rationale that there is greater value offered to the consumer. The current average cost per membership or drop-in visit of $3/visit is low compared with other Metro Vancouver municipalities and with new attractive and modern facilities, the City of New Westminster would be better positioned to yield more revenues from higher charges. The business case assumes that the average cost per visit will be increased from $3/visit to $4/visit.

Program revenues likely would only increase by about 20% as the number of lanes in the lane pool is not being increased, with efficiencies gained by restructuring the schedule and resolving prime time access inequities. The bottom line is in Phase I, total revenues from all sources in the new facility should increase from the low $1.82 million annually to a new threshold of $2.8 million per year and net subsidy from $2.4 million to $2.7 million.
## Projected Revenues Analysis - Post Redevelopment

<table>
<thead>
<tr>
<th>Membership Revenues</th>
<th>2,100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership Revenues Fitness 60%</td>
<td>$660,000</td>
</tr>
<tr>
<td>Membership Revenues Pool 40%</td>
<td>$440,000</td>
</tr>
<tr>
<td>Membership Revenues Fitness 60%</td>
<td>$1,100,000</td>
</tr>
<tr>
<td>Membership Revenues Pool 40%</td>
<td></td>
</tr>
<tr>
<td>Drop-in Scans Fitness 33%</td>
<td>66,000</td>
</tr>
<tr>
<td>Drop-in Scans Pool 67%</td>
<td>134,000</td>
</tr>
<tr>
<td>Drop-in Total Revenues</td>
<td>200,000</td>
</tr>
<tr>
<td>Program Annual Total Participants</td>
<td>12,000</td>
</tr>
<tr>
<td>Program Gate Count Fitness</td>
<td>0</td>
</tr>
<tr>
<td>Program Gate Count Pool</td>
<td>96,000</td>
</tr>
<tr>
<td>Program Total Scans</td>
<td>96,000</td>
</tr>
<tr>
<td>Program Revenues Fitness</td>
<td>$0</td>
</tr>
<tr>
<td>Program Revenues Pool</td>
<td>$25,000</td>
</tr>
<tr>
<td>Program Revenues</td>
<td>$625,000</td>
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<tr>
<td>Hyack / Rentals Annual Gate Count</td>
<td>30,000</td>
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<tr>
<td>Hyack / Rentals Revenues</td>
<td>$85,000</td>
</tr>
<tr>
<td>Other Revenues</td>
<td>$150,000</td>
</tr>
<tr>
<td>Centennial Community Centre</td>
<td>0</td>
</tr>
<tr>
<td>Food Concession - New Revenues</td>
<td>$150,000</td>
</tr>
<tr>
<td>Childcare</td>
<td></td>
</tr>
<tr>
<td><strong>ANNUAL USER COUNT TOTAL</strong></td>
<td>556,000</td>
</tr>
<tr>
<td><strong>ANNUAL GROSS REVENUES</strong></td>
<td>$2,830,000</td>
</tr>
<tr>
<td>Total Estimated Annual Fitness Visits</td>
<td>264,000</td>
</tr>
<tr>
<td>Total Estimated Fitness Revenues</td>
<td>$1,138,902</td>
</tr>
<tr>
<td>Total Estimated Annual Pool Visits</td>
<td>397,000</td>
</tr>
<tr>
<td>Annual Pool User Visits per Capita</td>
<td>5.6</td>
</tr>
<tr>
<td>Total Estimated Pool Visit Revenues</td>
<td>$1,691,098</td>
</tr>
<tr>
<td>Average Revenue Per User Visit</td>
<td>$4.31</td>
</tr>
<tr>
<td>Fitness Usable Area SF</td>
<td>18,100</td>
</tr>
<tr>
<td>Fitness Revenue Per Square Foot</td>
<td>$62.92</td>
</tr>
<tr>
<td>Pool Program Water Area SF</td>
<td>11,800</td>
</tr>
<tr>
<td>Pool Leisure Water Area Total SF</td>
<td>5,800</td>
</tr>
<tr>
<td>Pool Revenue Per Water SF</td>
<td>$96.09</td>
</tr>
</tbody>
</table>

- **Membership**: 50% increase, and includes use of new gyms & fitness studios
- **Drop-in**: pro-rated revenue
- **Shift memberships**: averages $3 / visit
- **Hyack size capped**: and shifted to leisure water creating more capacity
- **Gate Count**: users x 8 visits per program
- **Centennial Community Centre**: net revenue from new function
- **Space made available rent free**
- **Based on increased demand**: increased by 17%
- **Includes programs and Hyack**: increased by 15%
- **More than doubling**: down, but more capacity and ability to absorb future growth
- **43% increase projected**
<table>
<thead>
<tr>
<th>Labour Costs</th>
<th></th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Salaries</td>
<td>18.0%</td>
<td>$993,000</td>
</tr>
<tr>
<td>Auxiliary Salaries (incl. Lifeguards)</td>
<td>42.3%</td>
<td>$2,330,000</td>
</tr>
<tr>
<td>Overtime</td>
<td>0.2%</td>
<td>$10,000</td>
</tr>
<tr>
<td>Benefits</td>
<td>12.7%</td>
<td>$700,000</td>
</tr>
<tr>
<td><strong>Total Labour Costs</strong></td>
<td></td>
<td><strong>$4,033,000</strong></td>
</tr>
<tr>
<td>Energy Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>3.8%</td>
<td>$210,000</td>
</tr>
<tr>
<td>Electricity (internal transaction)</td>
<td>4.4%</td>
<td>$240,000</td>
</tr>
<tr>
<td>Water and Sewer</td>
<td>1.6%</td>
<td>$87,000</td>
</tr>
<tr>
<td><strong>Total Energy Costs</strong></td>
<td></td>
<td><strong>$537,000</strong></td>
</tr>
<tr>
<td>Maintenance (all types)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduled and unscheduled</td>
<td>2.8%</td>
<td>$153,000</td>
</tr>
<tr>
<td>Renovations and Upgrades</td>
<td>1.1%</td>
<td>$60,000</td>
</tr>
<tr>
<td><strong>Total Maintenance</strong></td>
<td></td>
<td><strong>$213,000</strong></td>
</tr>
<tr>
<td>Fixed and Variable Overheads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool Chemicals</td>
<td>1.8%</td>
<td>$100,000</td>
</tr>
<tr>
<td>Custodial Supplies</td>
<td>2.5%</td>
<td>$140,000</td>
</tr>
<tr>
<td>Program Supplies</td>
<td>5.1%</td>
<td>$280,000</td>
</tr>
<tr>
<td>Misc. (office costs, internal costs)</td>
<td>3.8%</td>
<td>$210,000</td>
</tr>
<tr>
<td><strong>Total Fixed and Variable Overheads</strong></td>
<td></td>
<td><strong>$730,000</strong></td>
</tr>
</tbody>
</table>

**Overheads, Reserves and Internal Transfers Total**  

|              |       | **$5,113,000** |

**Area Distribution**

| Assignable Area Fitness SF | 22.6% | 18,100 |
| Assignable Area Aquatics SF | 41.8% | 33,400 |
| Assignable Area Other SF | 10.9% | 8,700  |

**Grossing Factors SF**

| Grossing Factors SF | 24.8% | 19,800 |

**Gross Building Area SF**

| Gross Building Area SF | 79,984 |

<table>
<thead>
<tr>
<th>Expenditures Pro-Rated by Area</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour Cost / SF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Cost / SF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance Costs / SF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overheads Costs / SF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Operating Cost / SF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NET REVENUE COST / SF / YEAR**

<table>
<thead>
<tr>
<th>NET REVENUE COST / SF / YEAR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Subsidy Cost</td>
<td><strong>-$11.30</strong></td>
</tr>
</tbody>
</table>

Better than Metro Vanc avg.
Phase II in essence involves a further expansion to Phase I that includes all functions included in the Centennial Community Centre, except the Indoor Cycling studio that was already included in Phase I, and eliminates duplicated areas such as lobby and reception and, front-of-house and back-of-house functions. The Phase II expansion includes new functions not found in Centennial including a licensed 37-child Childcare component and a second gymnasium. The new building would be a total of 115,000 sf - an increase of 130% over the existing Canada Games Pool of which 35,000 sf added in Phase II. The programs offered at Centennial Community Centre would be relocated to the new facility and the old complex demolished.

The number of multi-purpose spaces found in Centennial would be replicated at the expanded Canada Games Pool, but no new additional multi-purpose spaces added. Given the current high degree of scheduled use of the existing facilities, net increase of community center programs in the new aquatic centre would be negligible unless scheduling efficiencies can be achieved. Consequently, the current approximate $600,000 per year in program revenues would be transferred as well as $1.1 million in operating costs (a modest reduction reflecting economies in the new facility). For simplicity in the following tables, the revenues and expenditures from Centennial Community Centre were retained as discrete line items rather being rolled up into the new aquatic centre categories.

New net revenues of $150,000 have been projected from the food concession café have been including in the business case but no revenues are anticipated from the Childcare component as it was assumed the space would be made available rent-free to a not-for-profit childcare operator.

The bottom line is from Phase I to Phase II, total revenues from all sources in the new facility should increase to a new annual threshold of almost $3.5 million per year from $2.4 million and net subsidy from $2.92 million to $3.14 million. This latter increase however presents no new subsidy cost to the City of New Westminster as the current approximate $500,000 per year subsidy to the existing Centennial Community Centre would be transferred to the Canada Games Pool complex upon the decommissioning of the old community centre.
## NEW WESTMINSTER NEW AQUATIC AND COMMUNITY CENTRE - PHASE I AND II

### Projected Revenues Analysis - Post-Redevelopment

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Membership Total</strong></td>
<td>2,100</td>
<td></td>
</tr>
<tr>
<td>Membership Scans Fitness 60%</td>
<td>198,000</td>
<td>Membership 50% increase, and includes use of new gyms &amp; fitness studios</td>
</tr>
<tr>
<td>Membership Scans Pool 40%</td>
<td>132,000</td>
<td></td>
</tr>
<tr>
<td>Membership Annual Total Scans</td>
<td>330,000</td>
<td></td>
</tr>
<tr>
<td>Membership Revenues Fitness 60%</td>
<td>$660,000</td>
<td>Pro-rated revenue</td>
</tr>
<tr>
<td>Membership Revenues Pool 40%</td>
<td>$440,000</td>
<td>Pro-rated revenue</td>
</tr>
<tr>
<td>Membership Total Revenues</td>
<td>$1,100,000</td>
<td>Averages $3 / visit</td>
</tr>
<tr>
<td>Drop-In Scans Fitness 33%</td>
<td>66,000</td>
<td>Drop-Ins 50% increase including fitness studios &amp; gym use</td>
</tr>
<tr>
<td>Drop-In Scans Pool 67%</td>
<td>134,000</td>
<td></td>
</tr>
<tr>
<td>Drop in Annual Total Scans</td>
<td>200,000</td>
<td></td>
</tr>
<tr>
<td>Drop-In Revenues Fitness 33%</td>
<td>$237,600</td>
<td>25% increase; functions removed and shifted to leisure water creating more capacity</td>
</tr>
<tr>
<td>Drop-In Revenues Pool 67%</td>
<td>$482,400</td>
<td>Users x 8 visits per program</td>
</tr>
<tr>
<td>Drop-In Total Revenues</td>
<td>$720,000</td>
<td></td>
</tr>
<tr>
<td>Program Annual Total Participants*</td>
<td>12,000</td>
<td></td>
</tr>
<tr>
<td>Program Gate Count Fitness</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Program Gate Count Pool</td>
<td>96,000</td>
<td></td>
</tr>
<tr>
<td>Program Total Scans</td>
<td>96,000</td>
<td></td>
</tr>
<tr>
<td>Program Revenues Fitness</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>Program Revenues Pool</td>
<td>$625,000</td>
<td></td>
</tr>
<tr>
<td>Program Revenues</td>
<td>$625,000</td>
<td>Average $5.25 / visit</td>
</tr>
<tr>
<td>Hyack Swim Club Membership</td>
<td>160</td>
<td>Hyack size capped and usage compressed into fewer hours</td>
</tr>
<tr>
<td>Hyack / Rentals Annual Gate Count</td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>Hyack / Rentals Revenues</td>
<td>$85,000</td>
<td>Rate increased 20%</td>
</tr>
<tr>
<td>Other Revenues</td>
<td>$150,000</td>
<td></td>
</tr>
<tr>
<td>CCC Membership Scans Transferred</td>
<td>35,000</td>
<td></td>
</tr>
<tr>
<td>CCC Drop-ins Transferred</td>
<td>37,000</td>
<td>Net of Spin (in fitness above)</td>
</tr>
<tr>
<td>CCC Rentals / Other Transferred</td>
<td>3,000</td>
<td>Net of Spin (in fitness above)</td>
</tr>
<tr>
<td>Food Concession - New Revenues</td>
<td>$150,000</td>
<td></td>
</tr>
<tr>
<td>Childcare</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ANNUAL USER COUNT TOTAL

**731,000**

### ANNUAL GROSS REVENUES

**$3,483,000**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Estimated Annual Fitness Visits</td>
<td>264,000</td>
<td>Based on increased demand</td>
</tr>
<tr>
<td>Total Estimated Fitness Revenues</td>
<td>$1,138,902</td>
<td>Increased by 37%</td>
</tr>
<tr>
<td>Total Estimated Annual Pool Visits</td>
<td>392,000</td>
<td>Includes programs and Hyack</td>
</tr>
<tr>
<td>Annual Pool User Visits per Capita</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>Total Estimated Pool Visit Revenues</td>
<td>$1,691,098</td>
<td>Increased by 90%</td>
</tr>
<tr>
<td>Average Revenue Per User Visit</td>
<td>$4.21</td>
<td>About 15% increase</td>
</tr>
<tr>
<td>Fitness Usable Area SF</td>
<td>18,100</td>
<td>More than doubling</td>
</tr>
<tr>
<td>Fitness Revenue Per Square Foot</td>
<td>$62.92</td>
<td>Down, but more capacity and ability to absorb future growth</td>
</tr>
<tr>
<td>Pool Program Water Area SF</td>
<td>11,800</td>
<td></td>
</tr>
<tr>
<td>Pool Leisure Water Area Total SF</td>
<td>5,800</td>
<td></td>
</tr>
<tr>
<td>Pool Revenue Per Water SF</td>
<td>$96.09</td>
<td>50% increase projected</td>
</tr>
<tr>
<td>Community Centre Annual Visits</td>
<td>95,000</td>
<td>Assumed no real increase at this location</td>
</tr>
<tr>
<td>Comm. Ctr. / Childcare Usable SF</td>
<td>30,300</td>
<td></td>
</tr>
<tr>
<td>Community Centre Annual Revenues</td>
<td>$650,000</td>
<td>25% increase but net of Spin</td>
</tr>
<tr>
<td>Comm. Ctr. Revenue Per SF</td>
<td>$21.45</td>
<td>Area increases more than revenue</td>
</tr>
</tbody>
</table>
**NEW WESTMINSTER NEW AQUATIC AND COMMUNITY CENTRE - PHASE I AND II**

**Projected Expenditures Analysis - Post-Redevelopment**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular Salaries</td>
<td>16.6%</td>
<td>$1,100,000</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Auxiliary Salaries (incl. Lifeguards)</td>
<td>48.8%</td>
<td>$3,230,000</td>
<td>150% increase, most for leisure water plus CCC staff</td>
</tr>
<tr>
<td>Overtime</td>
<td>0.2%</td>
<td>$10,000</td>
<td>No change</td>
</tr>
<tr>
<td>Benefits</td>
<td>10.6%</td>
<td>$700,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total Labour</strong></td>
<td></td>
<td><strong>$5,040,000</strong></td>
<td>60% increase</td>
</tr>
<tr>
<td>Energy Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>3.2%</td>
<td>$210,000</td>
<td>50% more water area</td>
</tr>
<tr>
<td>Electricity (internal transaction)</td>
<td>3.9%</td>
<td>$260,000</td>
<td>Doubling</td>
</tr>
<tr>
<td>Water and Sewer</td>
<td>1.3%</td>
<td>$87,000</td>
<td>Unchanged due to efficiencies increases by about 50%</td>
</tr>
<tr>
<td><strong>Total Energy</strong></td>
<td></td>
<td><strong>$557,000</strong></td>
<td></td>
</tr>
<tr>
<td>Maintenance (all types)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduled and unscheduled</td>
<td>3.6%</td>
<td>$238,000</td>
<td>Pro-rated increase</td>
</tr>
<tr>
<td>Renovations and Upgrades</td>
<td>0.9%</td>
<td>$60,000</td>
<td>Modest for first 5-10 years</td>
</tr>
<tr>
<td><strong>Total Maintenance</strong></td>
<td></td>
<td><strong>$298,000</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed and Variable Overheads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool Chemicals</td>
<td>1.5%</td>
<td>$100,000</td>
<td>50% pro-rated increase</td>
</tr>
<tr>
<td>Custodial Supplies</td>
<td>2.1%</td>
<td>$140,000</td>
<td>pro-rated with building size</td>
</tr>
<tr>
<td>Program Supplies</td>
<td>4.2%</td>
<td>$280,000</td>
<td>Increase includes CCC programs</td>
</tr>
<tr>
<td>Misc. (office costs, internal costs)</td>
<td>3.2%</td>
<td>$210,000</td>
<td>75% increase</td>
</tr>
<tr>
<td><strong>Total Overheads</strong></td>
<td></td>
<td><strong>$730,000</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Overheads, Reserves and Internal Transfers Total</strong></td>
<td></td>
<td><strong>$6,625,000</strong></td>
<td>60% increase over current</td>
</tr>
<tr>
<td>Area Distribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignable Area Fitness SF</td>
<td>15.7%</td>
<td>18,100</td>
<td>Based on program</td>
</tr>
<tr>
<td>Assignable Area Aquatics SF</td>
<td>29.0%</td>
<td>33,400</td>
<td>Based on program</td>
</tr>
<tr>
<td>Assignable Area Other SF</td>
<td>33.1%</td>
<td>38,100</td>
<td>Locker rooms, offices, etc. plus new Gyms, MPR, Childcare, etc.</td>
</tr>
<tr>
<td>Grossing Factors SF</td>
<td>23.1%</td>
<td>26,600</td>
<td>Mech', circulation, walls, WCs</td>
</tr>
<tr>
<td>Gross Building Area SF</td>
<td></td>
<td>115,259</td>
<td></td>
</tr>
<tr>
<td><strong>Expenditures Pro-Rated by Area</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour Cost / SF</td>
<td></td>
<td>$43.73</td>
<td>Lower than Metro average</td>
</tr>
<tr>
<td>Energy Cost / SF</td>
<td></td>
<td>$4.83</td>
<td>Lower than Metro average</td>
</tr>
<tr>
<td>Maintenance Costs / SF</td>
<td></td>
<td>$2.59</td>
<td>Lower than Metro average</td>
</tr>
<tr>
<td>Overheads Costs / SF</td>
<td></td>
<td>$6.33</td>
<td>Comparable with Metro average</td>
</tr>
<tr>
<td>Average Operating Cost / SF</td>
<td></td>
<td>$57.48</td>
<td>Slightly lower than Metro avg.</td>
</tr>
<tr>
<td><strong>NET REVENUE COST / SF / YEAR</strong></td>
<td></td>
<td><strong>$8.04</strong></td>
<td>Better than Metro Vanc. average</td>
</tr>
<tr>
<td>Annual Subsidy Cost</td>
<td></td>
<td><strong>-$3,142,600</strong></td>
<td></td>
</tr>
</tbody>
</table>
7.0 Next Steps
7.0 Next Steps

The objective of the feasibility process was to produce a building program and concept options that have been guided by public input, tested by careful analysis and are programmatically, functionally and financially supportable. The information contained within this report can be used to make key decisions for the future progression of this project and should be used as the basis for the commencement of schematic design.

As part of the next stage in the process we would recommend that the findings of this report be reported back to the community for their input, as a continuation of the previous successful public engagement process. The public engagement initiated momentum for the project and this public support should be harnessed and respected through their continued involvement. Both public events and the previously identified stakeholder groups should be consulted, e.g. the Hyack Swim Club.

The following studies should also be completed prior to commencement of schematic design:

- Legal & topographical site surveys - this will be especially important in terms of confirming the exact locations of the sewer easement and existing buildings.
- Geotechnical report and surveys - the ground conditions are currently unknown but as the site of the former Glenbrook Ravine, is infill materials will be present and the soil conditions need to be assessed to gain a better understanding of any associated excavation and foundation costs.
- Environmental Assessment Report - this will also help in the understanding of costing relating to any issues surrounding the proposed facility location.
- A full transportation impact assessment (TIA) - to determine the wider effects of a new expanded facility on the site, such as intersection treatments and required signalizing.
- In order to determine the direction prior to commencing schematic and detailed design, the City should also consider conducting a business case study for structured parking, that includes the option for a shared facility with the Justice Institute.
- Determine the sustainability targets for the project as part of the City’s wider green building objectives.
- Determine Relocation options for all-weather playing field and recycling depot.
8.0 Appendix

8.1 Costing Estimate Report
8.2 Electrical Report
8.3 Mechanical Report
8.4 Parking & Transportation Report
8.1 Costing Estimate Report

- CONFIDENTIAL -
Report Excluded
8.2 Electrical Report
AES Engineering
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2.0 CONFORMANCE .................................................................................................................................................................. 2  
3.0 ELECTRICAL SERVICE ........................................................................................................................................................ 2  
  3.1 New Electrical Service......................................................................................................................................... 2  
4.0 EXISTING SITE CONDITIONS .............................................................................................................................................. 3
1.0 INTRODUCTION

The intent of this study is to determine the feasibility of providing electrical services for the proposed new aquatics center to replace the existing Canada Games Pool, located along Cumberland Street between East Sixth Avenue and East Eighth Avenue in New Westminster. This site is adjacent the Justice Institute of BC. Architectural options have been provided by HCMA Architecture + Design.

2.0 CONFORMANCE

The following lists the current edition of some applicable codes and regulations that apply to the electrical design:

- National Building Code 2012
- ASHRAE 90.1 – 2010
- Illumination Engineering Society of North America (IESNA)
- 2015 Canadian Electrical Code

Note that the ASHRAE 90.1-2010 has more stringent requirements on the total connected lighting load and lighting control than previous editions. Consideration shall be given during the design of the new space, such that the lighting systems provide adequate illumination while meeting the energy requirements.

3.0 ELECTRICAL SERVICE

3.1 NEW ELECTRICAL SERVICE

The new 12.47kV service connection will originate from an existing junction vault JV100 illustrated in Figure 1. The Utility would arrange for the conduit installation past the Curling Club to the City property. The Subdivision and Development Control Bylaw requires new developments to fund the cost of undergrounding the overhead electrical and communications lines on the adjacent roads. There is an overhead City electrical pole line along East Sixth Avenue, adjacent to this site that would be impacted by this Bylaw.
The building would require a unit substation which would consist of a 2500kVA transformer stepping down the 12.47kV to 600Y/347V. The main bus would be a 3000A board which would provide power to mechanical loads. Step down transformers from 600V to 208Y/120V would be used to provide power for lighting.

4.0 EXISTING SITE CONDITIONS

The three options proposed by HCMA Architecture + Design allow for a phased construction process. Of these three options, option 1 would require the demolition of the existing facility to allow for the gymnasium courts to be constructed. Options 2 and 3 avoid the existing footprint, which may facilitate a smoother transition between the two aquatic centers.
- This page has been deliberately left blank -
8.3 Mechanical Report
AME Group
NEW AQUATIC CENTRE
FEASIBILITY STUDY – NEW
WESTMINSTER
PROJECT NO.: 009B-065-17

MECHANICAL DESIGN REPORT
JUNE 30, 2017

PREPARED FOR:
HCMA Architecture + Design
400 - 675 W Hastings Street,
Vancouver, BC V6B 1N2

ATTN:
Paul Fast, Architect AIBC, MRAIC
Principal
T 604.732.6620
E pfast@hcma.ca

PREPARED BY:
Harold Stewart, LEED AP
Principal
E haroldstewart@AMEgroup.ca

1100 – 808 West Hastings Street
Vancouver, BC V6C 2X4
T 604-684-5995
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   2.4 POOL MECHANICAL SYSTEMS ..................................................................................................................... 5

3. SUSTAINABILITY STRATEGIES .......................................................................................................................... 8
AME consulting Group was commissioned by HCMA on behalf of the City of New Westminster to provide mechanical consulting for the feasibility of a replacement recreation centre for the Canada Games Aquatic Centre and the nearby recreation building. The purpose of the report is to outline the conceptual thoughts for the mechanical systems for a facility of this nature.

The facility has multiple options for spaces and orientation with the following major occupancies:

1.1 Phase 1
   .1 Natatorium with up to 5 bodies of water.
   .2 Changing facilities
   .3 Fitness and multi-purpose spaces
   .4 Facility operation areas.

1.2 Phase 2
   .1 Community centre Gyms.
   .2 Child care facilities.

This report is based on many similar facilities designed by AME and best practice from across North America.

This report has been prepared by the AME Consulting Group for the exclusive use of HCMA Architecture + Design and the design team. The material in this report reflects the best judgment of the AME Consulting Group with the information made available to them at the time of preparation. Any use of a third party may make of this report, or any reliance on or decisions made based upon the report, are the responsibility of such third parties. The AME Consulting Group accepts no responsibility for damages suffered by any third party as a result of decisions made or actions taken based upon this report.
2. **DESIGN APPROACHES**

Large recreation facilities have longer lifespans than other building types and as such require mechanical systems to be more robust. The systems need to be flexible in nature and easily maintainable. As large Aquatic Centres are expensive to operate, it is extremely important that reducing the impact on these costs are considered for the entire mechanical system.

In aquatic centres, safety for the patrons is also a paramount issue. Choosing the correct levels of chemical treatment and the use of secondary systems must be considered. Water clarity serves both a safety function and enhances the bather experience. Clear, odorless water has to be the goal.

2.1 **Plumbing**

The plumbing systems would be designed to meet the current codes and standards. Domestic hot water would be produced by heat recovered on site and topped up from the boiler system in the facility. Hot water systems should include low or ultra low flow devices such as shower heads and aerators.

Piping systems would utilize stainless steel, polypropylene and/or cross-linked polyethylene in place of the traditional copper to extend the piping lifespan. Piping systems will be broken down in zones for specific areas allowing for easier maintenance.

Plumbing fixtures would be heavy commercial grade made from materials such as vitreous china, stainless steel and composites for longevity and maintainability. They would be low flow for sustainability reasons.

2.2 **Fire Suppression**

A fire suppression system will be required and would be designed to meet all requirements in NFPA. Any alternate solutions defined by the Code Consultant will be incorporate into this design. Typical alternate solutions would include sprinklers in place of fire separations in localized areas, removal of sprinklers over bodies of water and relaxation of fire separations from pools to the basement mechanical spaces.

2.3 **HVAC Systems**

Typically, these facilities would utilize heat recovery chillers for the primary heating of the facility, including pool water, domestic hot water pre-heating and building heat loss. The heat recovery is a by-product of the pool dehumidification requirement and the removal of heat in main exhaust (both require chilled water). This process enables the building to meet current code requirements for pool heating from recovered heat in the building. Gas fired boilers or similar supplemental heating would be required for peak season building heating and pool heating during filling.

The central plant would strive for very high efficiencies in the chillers and boilers to meet the sustainability targets that may be required.

From the central plant, low temperature hot water and chilled water are distributed to air handling systems in different locations throughout the facility. The air handling systems would be divided up according to the areas served. The Natatorium would be a separate system as would the change rooms and the gymnasiums. The fitness and multipurpose areas could be combined with the gym systems but generally these areas are served from separate systems.
When determining the need for separate air handling units, consideration is given to space operating temperature and humidity, hours of operation and serviceability of the systems. Air quality of the spaces need to be taken into consideration as it dictates the material of construction. As an example, Natatorium units see considerably more contaminates than other units requiring these units to be fabricated with more robust materials such as aluminum, epoxy coatings etc.

Smaller areas within these air systems would have individual zone control for comfort conditioning and energy efficiencies. Very small zones can be combined under a single control when load profiles are very close to the same.

These systems would also be selected to be as efficient as possible within realistic cost for the product.

Locations such as entrance vestibules, mechanical rooms and service spaces would be heated and cooled as required from small unitary components connected to the heating and cooling piping. Data and electrical rooms are typically only cooled and pressurized be dedicated systems.

All major mechanical systems will be equipped with Direct Digital Control (DDC) systems. This will include all equipment located in this project.

2.4 Pool Mechanical Systems

Pool systems are critical to the success of any aquatic facility. System choices are based on operation, maintainability, safety in use and handling, and overall water and air quality. The minimum standards are set by the Provincial Health Act but industry standards are somewhat higher for most facilities. The following parts of the systems are evaluated based on these principals:

Turnover Rates:

A pool turnover rate is the time it takes to circulate a volume equal to that of the entire pool through the filtration system. Turnover rates are dictated by usage (bather load), pool temperatures and the ratio of pool volume to bather load. A higher turnover rate provides better filtration and more consistent chemical balancing of the pools – even under high bather loads.

The following table compares the current Act minimum turnover rates for the various pool types with industry standard turnover rates. In general, the pool water circulation systems will be designed to provide turnover rates that meet or exceed industry standards.

<table>
<thead>
<tr>
<th></th>
<th>Health Act Minimum Turnover rates</th>
<th>Recommended Turnover rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lap Pool</td>
<td>6 Hrs</td>
<td>4-6 Hours</td>
</tr>
<tr>
<td>Leisure Pool</td>
<td>2 Hrs</td>
<td>1-2 Hrs</td>
</tr>
<tr>
<td>Hot Pool/Cold Pool</td>
<td>30 minutes</td>
<td>10-15 minutes</td>
</tr>
</tbody>
</table>

The number of filters required is dependent on the selected turnover rate for an individual pool and the type of filter selected. For an example 50m lap pool, moving from a 6 hour turnover to a 5 hour turnover
typically results in an additional high-rate sand filter being required, whereas often no additional filters are required for a regenerative media system.

**Temperatures:**

The following table shows typical temperatures for the different types of pools:

<table>
<thead>
<tr>
<th>Pool Type</th>
<th>Recommended Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lap Pool</td>
<td>29°C (84°F)</td>
</tr>
<tr>
<td>Leisure Pool</td>
<td>32°C (90°F)</td>
</tr>
<tr>
<td>Hot Pool</td>
<td>40°C (104°F)</td>
</tr>
<tr>
<td>Cold Pool</td>
<td>10°C-12°C (50°F-55°F)</td>
</tr>
</tbody>
</table>

**Pool Pumps:**

Three-phase, base-mounted, centrifugal pumps will be selected for the primary pool circulation pumps, and will be specified with epoxy coated wetted fittings. As discussed above, pumps will be selected to meet the selected turnover rate when the pool filters are dirty. This will allow for increased (faster) turnover rates when the filter is in a clean condition, such as following a backwash.

**Water Features:**

Each water feature will have an associated, dedicated pump or pumps. Smaller volume pumps will be constructed of corrosion-proof, reinforced thermoplastic with an integral strainer. Larger pumps will be base-mounted, end-suction type, similar to the filter pumps.

A master control panel will be provided at the lifeguard station, allowing deck-level control of the water features by lifeguards. In addition, supplementary emergency stop buttons will be located strategically throughout the pool area to shut off all water features in case of a bather emergency, potential or real.

**Pool Water Heating Systems:**

The pool heat will be provided by the central facility heating plant. Pool heating systems would be capable of heating the pools to operating temperature in the following time frames:

<table>
<thead>
<tr>
<th>Pool Type</th>
<th>Time Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Pool</td>
<td>6 hours to 40°C (104°F)</td>
</tr>
<tr>
<td>Leisure Pool</td>
<td>48 hours to 32°C (90°F)</td>
</tr>
<tr>
<td>Lap Pool</td>
<td>72 hours to 29°C (84°F)</td>
</tr>
<tr>
<td>Cold Pool</td>
<td>6 hours to 10°C-12°C (50°F-55°F)</td>
</tr>
</tbody>
</table>
Filters:

There are at least five different types of filters available in the North American commercial market today: Hi-rate horizontal or vertical sand filters, multi-layer sand filters, vacuum diatomaceous earth (D.E.) filters, and regenerative media filters are the most common.

A meeting will be held in the near future with facility and municipal staff to discuss and evaluate the filtration options. A system comparison matrix will help evaluate the proper system for the facility.

Chemical Disinfection:

Primary disinfection will be provided by a form of chlorine. This is in keeping both with health code requirements and good engineering practice as chlorine is the most effective, wide-ranging sanitizing chemical available.

Chlorine use also produces powerful by-products, including mono-, di-, and tri-chloramines when chlorine reacts with organic compounds. These by-products can cause respiratory, eye, and skin irritation for bathers and pose an ongoing water maintenance concern. To address these issues, a dedicated form of secondary disinfection is required.

Different types of chlorine (and accordingly chlorine feed equipment) are available, with different sanitizing effects, storage requirements, and consequences for overall water quality and appearance. Each also has particular pH control requirements.

In addition, medium pressure UV is recommended as a secondary oxidizer as it has a proven track record of reducing water borne trichloramines and lower the amount of chlorine required to maintain proper operating concentrations.

Pool Piping:

Pool piping shall be addressed and specified differently, depending on whether it is above grade and below grade. Below grade piping shall be concrete encased Schedule 40 PVC, while above grade piping shall be Schedule 80 PVC.

Pool Tank and Fittings:

Following filtration and chemical treatment of the pool water, it will be supplied back to the pool through inlet fittings. Depending on the layout of the pool, these inlet fittings will be on either the floor entirely, or a combination of the floor and the walls. The inlet fittings will be spaced such that they achieve the required turnover rates, supply clean water to all areas of the pool and scour the pool bottom to promote the suspension of solids so they can be picked up by both the main drain and/or skimming system.

The main drains would be designed to ANSI / APSP-7: American National Standard for suction entrapment avoidance in swimming pools. As part of that compliance, despite only drawing a portion of the overall flowrate, the main drains are sized for 100% of the filtration rate.

The gutter system will draw the remaining portion of the pool return water not drawn through the main drains. The gutter will be designed to provide continuous skimming of the pool surface. The gutter pipe will be sized to accept the instantaneous surge volume resulting from bathers entering the pool.
For each separate pool, the gutter pipe will dump into a surge tank that creates a buffer for the filtration system from the varying bather loads.

3. **SUSTAINABILITY STRATEGIES**

The following energy saving and conservation features should be considered for the mechanical systems:

1. Ultra-low greenhouse gas footprint will result in utilizing a ground-source heat pump for heating and cooling the building.

2. High performance envelope construction is encouraged with shading devices and low-e window coatings.

3. **Ventilation Air/Relief Heat Recovery System:**
   - Heat recovery from natatorium exhaust and building relief/exhaust to ventilation air.
   - Dehumidification heat recovery.

4. Thermostatically controlled exhaust fans for heat removal in mechanical room and electrical rooms.

5. Water conserving plumbing fixtures and plumbing trim to be used where applicable to conserve water and reduce the waste load on the municipal sewer systems. These fixtures will be:
   - High efficiency flush valve toilets with sensor activated flush.
   - Low flow sink faucets with metered sensors

6. Solar panels will be installed as a source of supplemental heating for the building, pool and domestic hot water. This requires careful management so as to not negatively impact other heat recovery systems.

7. The option of having a geo-exchange system will be reviewed in the future. We suspect, however, that this option will not be cost effective due to the amount of heat recovery available from normal system choices. The geo-exchange system may only amount to a heat rejection capacity equivalent to the cooling tower.

8. Regenerative media filter are proposed as efficient pool filters. These have lower water consumption. This also results in requiring less energy input to heat the pool water.

9. Connection to the adjacent curling club to make use of the rejected heat from the ice plant.

10. Although generally not used in public facilities, pool covers should be reviewed for suitability and energy savings.

11. “Passive Pool” standards should be explored to provide insight to operational efficiencies within the natatorium.
.12 District energy options can be explored with the other facilities in the area such as the Justice Institute.

.13 Envelope performance recommendations:

.1 A maximum glazing to gross wall ratio of 40% is recommended. The heating dominated nature of this building will require exceptional insulation performance if aggressive energy efficiency targets are to be met. For non-residential occupancy, the current ASHRAE 90.1 requirements for 40% glazing are as follows:

.1 Code wall performance: $U=0.0148 \text{ W/m}^2\text{C} (0.084 \text{ Btu/hr·sqft·°F})$. Steel stud construction would require R13 cavity insulation plus R3.8 continuous insulation to accomplish this.

.2 Code glazing performance: $U=0.100 \text{ W/m}^2\text{C} (0.57 \text{ Btu/hr·sqft·°F})$ for fixed glazing and $U=0.118 \text{ W/m}^2\text{C} (0.67 \text{ Btu/hr·sqft·°F})$ for operable glazing. This is an overall assembly rating including the frame.

.2 We recommend significantly improving on the performance requirements in order to contribute to energy savings over time. As such, we recommend exceeding wall performance by approximately 50%. We also recommend glazing with the following performance: $U=0.067 \text{ W/m}^2\text{C} (0.38 \text{ Btu/hr·sqft·°F})$ for fixed and operable units, and a Solar Heat Gain Coefficient of 0.4.

As time passes there will be more options for energy optimizing and operational savings. These would be explored as and when available.

END OF REPORT
8.4 Parking & Transportation Report

Urban Systems
Date: June 28, 2017
To: Paul Fast, HCMA, Kim Winston, HCMA
cc: Kristen Dyck, HCMA
From: Jeremy Finkleman
File: 4237.0002.01
Subject: Parking Demand & Site Transportation Considerations: Canada Games Pool / Centennial Recreation Centre Proposed Redevelopment

INTRODUCTION

This memo summarizes Urban Systems recommendations for parking supply and access associated with the proposed redevelopment of the Canada Games Pool and Centennial Community Centre property in New Westminster. Redevelopment of the site would result in the removal of the existing Canada Games Pool, Centennial Community Centre, a recycling depot, and an all-weather field and the construction of a new 117,340 square foot (10,812 square metre) aquatic / recreation centre. No changes to the Royal City Curling Club rink or Glenbrook Firehall are proposed.

The land use information on which the parking supply analysis has been undertaken was provided by HCMA in April-May, 2017.

CURRENT CONDITIONS

As shown in Figure 1, the Canada Games Pool and Centennial Community Centre are located on a site in upper New Westminster bounded by E Sixth Avenue (S), Cumberland Street residential properties (E), the Justice Institute of British Columbia (N), and McBride Boulevard (W). In addition to the pool and community centre, the site includes a recycling depot, an all-weather field, the Glenbrook Firehall and the Royal City Curling Club.

Figure 1: Site Location
Parking and Vehicular Access

As shown in Figure 2, the site is served by two separate parking lots that do not interconnect. The south parking lot accommodates 150 public parking stalls plus an additional 17 stalls adjacent to the fire hall reserved for exclusive use by the fire department. The south lot is accessed exclusively via a one-way driveway from E Sixth Avenue at Glenbrook Drive. An outbound driveway is provided adjacent to the fire hall onto E Sixth Avenue. Southbound left turn movements onto E Sixth Avenue are restricted between 3:30 and 6 PM.

The east parking lot accommodates 124 stalls and is accessed from Cumberland Street at Seventh Avenue. A secondary access is provided onto Cumberland Street midblock between Seventh and E Sixth Avenues.

An additional small parking lot is provided for the firehall with direct access to/from McBride Boulevard. The firehall parking lot is not open to the public. Flow through is restricted to McBride Boulevard by automatic gates.

Figure 2: Site Access and Parking
Excluding firehall-related parking, both parking lots provide a total of 274 stalls that serve the community centre, pool, curling rink, recycling depot, and all-weather field. As shown in Tables 1 and 2, parking at the site is provisioned at a rate of 3.4 stalls per 1,000 square feet GFA.

### Table 1: Current Facility Size

<table>
<thead>
<tr>
<th>Facility</th>
<th>Gross Floor Area (Sq. Ft)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada Games Pool</td>
<td>41,000</td>
<td>Cannon Design</td>
</tr>
<tr>
<td>Centennial Rec Centre</td>
<td>17,000</td>
<td>Cannon Design</td>
</tr>
<tr>
<td>Curling Rink</td>
<td>23,500</td>
<td>CAD Measurement</td>
</tr>
<tr>
<td><strong>COMBINED</strong></td>
<td><strong>81,500</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2: Parking Provision Rate

<table>
<thead>
<tr>
<th>Combined Facility Size</th>
<th>81,500 sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Provision</td>
<td>274 stalls</td>
</tr>
<tr>
<td>Parking Provision Rate</td>
<td>3.4 stalls / 1,000 sq. ft.</td>
</tr>
</tbody>
</table>

*While parking provision at the site is shared between facilities, for phasing purposes an understanding of parking needs for the curling rink is required. New Westminster’s Zoning Bylaw 6880, 2001 (150.17-18) notes the curling rink requires a parking provision of 8 stalls per ice sheet or 48 stalls in total.

**Active Transportation and Public Transit**

The site is well connected to New Westminster’s broader cycling and pedestrian networks. Sidewalks are provided on all sides of adjacent streets serving the site with well-marked crosswalks at the Cumberland Street / Seventh Avenue, Cumberland Street / E Sixth Avenue, Glenbrook Drive / E Sixth Avenue and McBride Boulevard / E Sixth Avenue intersections. The site is located along the Seventh Avenue Crosstown Greenway. A pedestrian/cycling overpass connects the site across McBride Boulevard to Glenbrook Middle School.

Regular bus service connects the site to Uptown New Westminster and the SkyTrain network. The site is served by route 155, which serves the E Sixth Avenue corridor between 22nd Street and Braid SkyTrain Stations. Service is provided seven days a week at 15 to 30 minute frequencies. Route 155 service is supplemented by Route C4, which provides local service along E Sixth Avenue and Cumberland Street. The primary bus stop for the site is located on E Sixth Avenue at Glenbrook Drive and includes benches and bus shelters.
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Date: June 28, 2017
File: 4237.0002.01
Subject: Parking Demand & Site Transportation Considerations: Canada Games Pool / Centennial Recreation Centre Proposed Redevelopment
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USAGE PATTERNS

Typical peak parking demands for aquatic centres tend to occur during weekday evening and weekend morning public swims. Peaks can also occur during special events such as swim meets. Conversations undertaken as part of this work with facility managers at the Canada Games Pool and Centennial Community Centre confirmed this typical utilization pattern. The following trends were identified:

- During the school year, the Canada Games Pool experiences peak utilization in the late afternoon and evening periods on weekdays (3:30 to 9 PM) and from morning to early evening on weekends (9 AM to 7 PM on Saturdays, 11 AM to 7 PM on Sundays). In July and August the facility is consistently busy on weekdays between 5:30 AM and 9 PM.
- The Centennial Community Centre experiences peak utilization on weekdays between 9 and 11 AM and again between 4:30 and 6:30 PM. Usage patterns are consistent through the year.

The following parking issues were highlighted by facility managers:

- The parking lot has been used as an overflow area for Justice Institute parkers, reducing parking opportunities for pool and community centre users. Recently, a three hour maximum time restriction was implemented on weekdays to prevent all day Justice Institute parkers from using the lot. Preliminary observations by facility managers note that this approach has been successful in preserving parking for facility users. Special events at the Justice Institute, such as police graduations, result in heavy parking overflow to the study site lot. Events such as these occur about ten times a year.
- Heavy parking demand is observed during weekday evenings when the all-weather field is in use or during large tournaments at the curling rink. During periods when parking demand exceeds lot capacity, parking overflows to on-street space along Cumberland Street.

PEAK PARKING DEMAND AND SUPPLY

The ITE Parking Generation Manual notes a parking demand rate of 3.2 stalls / 1,000 square feet for recreation centres. Recreation centres are stand-alone public facilities similar to and including YMCAs. These often include classes and clubs for adults and children; a day care or nursery school; meeting rooms; swimming pools and whirlpools; saunas; athletic courts; exercise classes; weightlifting and gymnastics equipment; and a restaurant or snack bar. The Parking Generation Manual does not have a standalone rate for aquatic centres. It is noted that the range of rates provided in the ITE Manual for recreation centres is significant (1.4 to 7.4 stalls / 1,000 sq. ft GFA) and that the average rate is based on only seven studies.

For context, the ITE rate is compared with parking demand rates for recreation centres and standalone aquatic centres primarily within Metro Vancouver. As part of a submission for the Grandview Heights Aquatic Centre in Surrey, Bunt and Associates recorded peak period parking demand at six recreation centres (which may include pools) and an additional three primarily aquatic centres in both suburban and urban locations (shown in Appendix 1). Weighted parking demand rates at the sites averaged 3.0 and 3.1 stalls per 1,000 sq. ft. for recreation centres and primarily aquatic centres, respectively. These rates are well aligned with ITE Parking Generation Manual averages and the current parking provision rate at the study site discussed above (3.4 stalls / 1,000 square feet).
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Date: June 28, 2017
File: 4237.0002.01
Subject: Parking Demand & Site Transportation Considerations: Canada Games Pool / Centennial Recreation Centre Proposed Redevelopment
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By contrast, the City of New Westminster’s Zoning Bylaw 6680, 2001 (150.17) notes:

For community centres and components thereof, unless otherwise herein specifically designated, one parking space shall be provided for each 200 square feet (18.58 square metres) of net floor area.

This results in a parking provision rate of 5 stalls per 1,000 square feet.

Total parking supply for the Canada Games Pool redevelopment is displayed in Table 3 according to the City’s bylaw (5 stalls per 1,000 square feet) and separately according to empirical demand observations at similar facilities and the ITE Parking Generation Manual (3.2 stalls per 1,000 square feet). Parking requirements for the existing curling club are calculated at 8 stalls per ice sheet as per the City’s Zoning Bylaw and are in addition to stalls provisioned as a result of the redevelopment. Applying the City’s requirements results in a need to provision 635 total parking stalls at the site, while only 423 stalls are required according to empirical demand observations.

Table 3: Parking Requirements at Site

<table>
<thead>
<tr>
<th>Facility</th>
<th>GFA (Square Feet)</th>
<th>Required CNW Bylaw (5 stalls / 1,000 sq. ft)</th>
<th>Demand Approach (3.2 stalls / 1,000 sq. ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Aquatic &amp; Community Centre</td>
<td>117,340</td>
<td>587</td>
<td>375</td>
</tr>
<tr>
<td>Royal City Curling Club*</td>
<td>23,500</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>635</td>
<td>423</td>
</tr>
</tbody>
</table>

*Calculated at 8 spaces per ice sheet, CNW Zoning Bylaw 6680, 2001 Section 150.17-18

In our view, the City’s Zoning Bylaw rates are out of line with the current parking provision rate at the site (3.4 stalls per 1,000 square feet), the ITE parking generation rate (3.2 stalls per 1,000 square feet), and parking demands at similar facilities in Metro Vancouver (3.0-3.1 stalls per 1,000 square feet). Moreover, given that the site is well integrated into the surrounding neighbourhood with good walking, cycling, and transit connectivity, a proportion of site visitors will likely access the site using alternative transportation modes. Further, while on-street parking is restricted on McBride Boulevard and E Sixth Avenue near the site, unrestricted on-street parking is available on Cumberland Street and local roads to the east, which can provide relief during unusually high demand periods. As such, it is our view that the parking supply for the Canada Games Pool redevelopment be provisioned at a rate of 3.2 stalls per 1,000 square feet GFA, in lieu of bylaw requirements.
PROPOSED PARKING SUPPLY

Appendix 2 illustrates the preferred aquatic / recreation centre redevelopment concept (Option 1) site parking layout (plan provided by HCMA June 7, 2017). A total of 433 parking stalls are provided, excluding stalls associated with the firehall. This supply is 10 stalls in excess of the 423 stalls required during peak demand periods, according to empirical observations. While it is recognized that total stalls provisioned fall short of the bylaw requirements, overflow on-street parking is available on nearby Cumberland Street in rare circumstances where demand exceeds supply.

Redevelopment of the site will result in a net increase in parking provision at the firehall from 17 stalls currently to 37 stalls. These stalls are not assumed to be available to the public and are in addition to the 433 parking stalls noted above.

For general use and office buildings, the City of New Westminster’s Zoning Bylaw 6680, 2001 (150.72) requires 1 handicapped parking space for every 25 spaces provided up to the first 100 spaces and 1 parking space for every 50 parking spaces provided subsequently. As per the bylaw, 12 designated handicapped parking spaces are required at the site. The site plan notes a total of 13 designated handicapped parking stalls, which is in excess of the bylaw’s requirements.

In addition, approximately 10 pick-up/drop-off stalls (not included in the supply) are provided in the parking lot and a further 8 along westbound E Sixth Avenue.

Alternative site redevelopment concept options 2 and 3 (displayed in Appendix 3) were briefly reviewed as part of this exercise. Concept options 2 and 3 provide 426 and 450 public parking stalls, respectively. Parking provision for both alternative options is in excess of the 423 stalls required during peak demand periods, according to empirical observations.

PARKING LAYOUT AND ACCESS IMPLICATIONS

The parking layout has been optimized by orienting the parking bays east-west along the longer axis of the lot. Internal vehicle circulation is clear with 90-degree intersections throughout, one internal north-south drive aisle and two internal east-west drive aisles.

As shown in Figure 3, primary vehicular access is provided at the Cumberland Street / Seventh Avenue intersection, with a secondary right-in/right-out access provided at E Sixth Avenue / Ginger Drive. Full movement access at E Sixth Avenue / Ginger Drive is likely not possible due to the proximity of the McBride Boulevard signal. A full transportation impact assessment is required to verify the need for this access restriction. Vehicular access to and from the site is consistent across all concept options.

For the preferred option (Option 1), two passenger pick-up/drop-off zones are proposed to serve the building’s two primary entrances. The primary pick-up/drop-off zone is located adjacent to the northern building entrance along the southern internal drive aisle and is facilitated by a counter-clockwise circulation pattern to / from the primary parking lot entrance at Cumberland Street / Seventh Avenue. A secondary pick-up/drop-off zone is located along westbound E Sixth Avenue and will serve the building’s southern entrance.
A designated service driveway is provided at the current midblock access to Cumberland Street, south of
the main vehicle entrance.

While the site layout and building access differs for Options 2 and 3, both alternative options similarly
provide two passenger pick-up/drop-off zones and efficient internal circulation.

**Figure 3: Site Circulation (Option 1)**

It is recognized that redeveloping the site and re-orienting the parking lot will place additional traffic pressure
on the Cumberland Street / E Sixth Avenue four-way STOP intersection as well as the primary and
secondary site accesses. **A full transportation impact assessment (TIA) is required to determine
whether current intersection treatments are adequate or whether changes, such as signalizing the
Cumberland Street / E Sixth Avenue intersection and/or the addition of auxiliary lanes, are required.**
**While a right-in/right-out configuration at the E Sixth Avenue / Ginger Drive access has been
assumed in this submission, a TIA is additionally required to validate this assumption.**
NON-AUTO ACCESS AND BICYCLE PARKING

Site layout for the three concept options supports non-auto forms of access in the following ways:

- In option 1, one of the two primary building entrances is oriented directly to E Sixth Avenue, providing pedestrians and cyclists direct streetfront access to the building without needing to navigate the parking lot; building entrances in options 2 and 3 are accessed from the street via an internal pathway and similarly provide pedestrians and cyclists with access to the facility without needing to cross a parking lot;
- Building entrances for all redevelopment options are within 150 m of a bus stop;
- The aquatic / recreation centre and curling rink are in close proximity to each other, resulting in excellent pedestrian connectivity between the two facilities;
- As shown in Figure 4 for option 1, designated pedestrian and cycling links on the north side of the building and on the east side of the north-south drive aisle connect the facility to off-site corridors. These include connections to the pedestrian overpass across McBride Boulevard and the east-west Crosstown Greenway along the north side of the parking lot. Similar levels of pedestrian and cycling connectivity are provided in options 2 and 3.

Figure 4: Major Pedestrian Circulation (Option 1)
Bicycle Parking

Adequate end-of-trip bicycle facilities are integral in bolstering active transportation mode share to the site and reducing overall demand for parking. New Westminster’s Zoning Bylaw 6680, 2001 (155.2) requires community centres to supply a minimum of 1 long term bicycle parking space for each 500 square metres (5,382 square feet) and 6 short term bicycle parking spaces for each 1,500 square metres (16,146 square feet) of floor area used for assembly purposes. At 117,340 square feet (10,812 square metres), the new recreation centre building will require, at minimum, 22 long-term and 44 short term bicycle parking spaces.

Long term bicycle parking spaces are to be provided in a bicycle storage facility or in individual bicycle lockers while short term bicycle parking facilities refer to bike racks.

IMPACT OF RETAINING THE CURRENT RECYCLING DEPOT AND ALL-WEATHER FIELD

The above review assumes that the current recycling depot and all-weather field will be replaced as part of the site redevelopment. Table 4 displays the impact of retaining the recycling depot and all-weather field on parking provision on site. Retaining the all-weather field results in a parking stall reduction of 165 stalls (depending on concept option). Retaining the recycling depot results in a parking stall reduction of 42 stalls and potentially reduces the firehall parking lot. Retaining both site elements reduces on-site parking provision to 244 stalls, far below the 423 stalls required during peak demand periods, according to empirical observations.

Table 4: Parking Impact of Retaining the Recycling Depot and All-Weather Field (Option 1)

<table>
<thead>
<tr>
<th>Facility</th>
<th>Stalls Lost</th>
<th>Remaining Stalls</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-Weather Field</td>
<td>-165</td>
<td>268</td>
</tr>
<tr>
<td>Recycling Depot</td>
<td>-42</td>
<td>391</td>
</tr>
<tr>
<td>All-weather Field +</td>
<td>-189</td>
<td>244</td>
</tr>
</tbody>
</table>

The all-weather field and recycling depot result in their own associated parking demand, which will add further pressure to the remaining on-site parking supply.

In addition, retaining either or both of these site elements will require a reconceptualization of internal site driveways, pathways, and parking, which may further reduce on-site parking provision beyond what has been indicated above.

As a result, retaining either or both the current recycling depot and the all-weather field will likely require the construction of a parking structure to accommodate parking demand on-site.
PARKING SYNERGIES WITH THE JUSTICE INSTITUTE SITE

Opportunities for leveraging parking supply at the Justice Institute of British Columbia were explored through this study. Conversations with the facility managers at the Justice Institute, Canada Games Pool, and Centennial Recreation Centre revealed potential opportunities that could be of benefit to all parties.

Table 5 contrasts peak parking demand for the Justice Institute, the Canada Games Pool, and Centennial Recreation Centre based on conversations with facility managers. Facility usage patterns at the proposed aquatic / recreation centre is assumed to be similar to the existing pool and recreation centre facilities on site.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>School Year</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday Morning (8 AM – 12 noon)</td>
<td>PEAK</td>
<td>PEAK</td>
<td>PEAK</td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
<tr>
<td>Weekday Early-Mid Aft. (12 noon – 4 PM)</td>
<td>PEAK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekday Late Aft. (4 PM – 7 PM)</td>
<td>PEAK</td>
<td></td>
<td></td>
<td>PEAK</td>
<td>PEAK</td>
</tr>
<tr>
<td>Weekday Evenings</td>
<td>PEAK</td>
<td></td>
<td></td>
<td>PEAK</td>
<td></td>
</tr>
<tr>
<td>Weekends</td>
<td>PEAK</td>
<td></td>
<td></td>
<td>PEAK</td>
<td></td>
</tr>
</tbody>
</table>

As an academic institution, parking demand at the Justice Institute peaks during the weekday day time period. Heavy parking demand is experienced between approximately 8 AM and approximately 3:30 PM. By 4 PM, demand for parking begins to drop and by 5 PM, the parking lot is reported to be at approximately 50% capacity. Usage at the Justice Institute parking lot was reported at 25% or less on weekday evenings and all day on weekends.

Seasonally, facility usage is higher when school is in session (September to early December; January to April), with much lower usage during the Christmas holiday and summer periods.

During peak times, parking demand can exceed supply. Overflow vehicles tend to park in unrestricted zones along Cumberland Street. Three hour parking restrictions on the study site lot prevent most JI-oriented overflow vehicles from using the study site.
By contrast facility usage at the Canada Games Pool peaks during the weekday after school periods and on weekends during the school year. Heavy all-day weekday and weekend use was identified at the pool through the summer. The mid-morning and late-afternoon were identified as peak demand periods for the community centre, with consistent usage patterns through the year.

Contrasting peak parking demand periods at the adjacent sites present opportunities to better utilize limited parking resources. Strategies to best optimize parking between the two sites may include but are not limited to the following:

- Improved pedestrian connectivity between the Justice Institute and aquatic / recreation centre parking lots to enable flow-through
- Informational signage at both sites informing parkers of overflow options at the adjacent site
- Removal of the three hour maximum parking limit for select parking stall areas within the aquatic / recreation centre lot. Select unrestricted areas should be located further away from the aquatic centre and closer to the JI facility
- Explore the potential to create an internal driveway connecting the two lots which will better facilitate the optimization of parking supply between the sites.

CLOSURE

We trust this memorandum satisfies your requirements. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

URBAN SYSTEMS LTD.

Jeremy Finkleman, MCIP RPP
Transportation Planner

jf
Appendix 1: Recreation Centre / Community Centre & Aquatic Centre Peak Parking Demand Rates

Source: Bunt, 2012
## Recreation Centre/Community Centre & Aquatic Centre Peak Parking Demand Rates

### Exhibit 2

### Bunt Parking Demand Studies Summary

<table>
<thead>
<tr>
<th>Location</th>
<th>Use</th>
<th>Facilities</th>
<th>Floor Area (GFA)</th>
<th>Parking Demand (stalls)</th>
<th># stalls per 1,000 sq.ft</th>
<th>% per stall</th>
<th># stalls per 100 sq.m</th>
<th>% per stall</th>
<th>Source / Comments</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Exhibit 2</em> S:\PROJECTS\4428-05 Grandview Heights Aquatic Complex\Deliverables\Parking Tech Memo\Exhibit 2 6/26/2012</td>
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