

# Final Strategy Report



PROPOSED  
**VanSplash: Vancouver  
Aquatics Strategy**

NOVEMBER 2017

Vancouver Board of  
Parks and Recreation



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# Executive Summary

In 2016, the Vancouver Board of Parks and Recreation (VPB) initiated a new long range vision for the future of aquatics in Vancouver. The future vision will be informed by a core belief that along with providing opportunities for physical health and well-being, aquatic services play a key role in supporting community and personal well-being, and in enhancing social inclusion.

From beaches to pools, there is a long history of providing aquatic services within the City of Vancouver. The VPB currently operates nine indoor pools, five outdoor pools, 14 spray parks, 15 wading pools, and nearly 18 km of beaches, including Trout Lake swimming beach. In 2012 the VPB developed a Strategic Plan<sup>1</sup> with the mission to "provide, preserve and advocate for parks and recreation to benefit all people, communities and the environment."

The future vision for aquatics developed in the 2017 Vancouver Aquatic Strategy (*VanSplash*) is based upon: an understanding of the current state of existing public aquatic infrastructure (including indoor and outdoor pools, spray parks, wading pools, and beaches); public opinion gathered through a robust public engagement strategy that sought to ascertain the public's hopes and aspirations for the future of aquatics in the city; and looking worldwide for inspiration related to best practices, trends and innovations in aquatics and assessing their applicability to Vancouver's unique physical and social context.

The 2017 Vancouver Aquatics Strategy is intended to update the *2001 Aquatic Services Review* and the *2011 Pool Assessment Study* (both of which are described in the next section), and to build on the scope of the previous studies by increasing the targets and measures of success to include social inclusion and community well-being, by including

considerations related to environmental sustainability, and to expand the range of aquatic amenities within the City as a key component for inclusion in the overall vision and recommendations.

The vision and recommendations in the 2017 *VanSplash* were developed through three phases:

## PHASE 1: POLICY REVIEW, INVENTORY, AND CURRENT STATE REPORT

- *Current State Report* (Appendix 3)
- *Precedent Report* (Appendix 4)
- *Public Engagement Report* (Appendix 5)

## PHASE 2: SERVICE LEVELS AND POLICY UPDATE

- Development of draft Recommendations for service delivery and policy
- Additions to *Public Engagement Report*

## PHASE 3: FINAL STRATEGY AND IMPLEMENTATION

- *Final Strategy Report*

This report represents the final strategy for *VanSplash*, focused on providing the key recommendations for the proposed 25-year vision, with a 10-year phased implementation plan. The recommendations presented in this report are based on detailed work completed in Phases 1 and 2, and include at a high level the overall context and drivers on which the recommendations are based. However, for a fuller picture of the research and knowledge that informed and shaped the recommendations, the *Final Strategy Report* should be read in conjunction with the findings presented in the *VanSplash Current State Report*, the *VanSplash Precedent Report* and the *VanSplash Public Engagement Report*.

1. <http://vancouver.ca/files/cov/park-board-strategic-plan-presentation-20120627.pdf>

The *Current State Report* focuses on:

- the drivers for aquatic use
- aquatic delivery methods
- the regional aquatic context
- pool capacity and operational strategies future demographic trends

The report also provides an overview and evaluation of each of the Park Board's existing aquatic facilities and amenities, with realistic life cycle assessments for each (where applicable), documents unique features, and their role in service delivery.

The *Precedent Report* provides an overview of recent global aquatic trends, and provides aquatic precedent projects that are considered to be cutting edge in representing a particular trend. Precedents were considered in terms of their appropriateness and applicability to the physical and demographic context of Vancouver, and tested in terms of their ability to further the objectives and goals for the future of aquatics in Vancouver as identified by the VPB and expressed by the public during the two phases of public engagement. Ultimately, each typology was used to inform aquatic innovations that could enhance the range of aquatic experiences offered in Vancouver into the future, and helped to develop the overall 25-Year Vision.

The *Public Engagement Report* provides an overview of the strategy and process for two rounds of public engagement for *VanSplash*, and summarized in detail the feedback and insights provided by the public through outreach. The information gathered in this report summarized what we heard through over 4,500 survey responses and five facilitated focus group workshops in the first phase of engagement, and over 1,600 survey responses in the second. In Phase 1, over 150 interest groups (including user groups, community centres, neighbourhood houses,

immigrant services, City of Vancouver advisory committees, LGBTQ2 representatives, diverse advocacy groups, persons with disabilities, and seniors) were invited to attend stakeholder sessions at locations across the City. Over 60 groups were represented as participants at these sessions. The groups and individuals who were invited to attend stakeholder sessions in Phase 1 were all contacted during the second engagement phase, and were asked to share the information with others in their networks. The *Public Engagement Report* contains crucial input and feedback from the public stakeholders that, in conjunction with the *Current State Report* and the *Precedent Report*, shaped and informed the recommendations.

## Background

In 2002 the Park Board completed the 2001 *Aquatic Services Review*. The purpose of the review was to develop a comprehensive strategy to reconfigure the Park Board's aquatic services and facilities and to lay a foundation for a 10-15 year revitalization plan. The specific outcome of this work was to provide the Board with recommendations that would enable them to:

- operate the services and facilities in a cost-effective and fiscally sustainable manner
- meet current and future demands of the City's residential and working population
- balance the local neighbourhood services and needs with those of the City and Region as a whole

As a result of the outcomes and recommendations in the 2001 review, in 2002 the Park Board endorsed the objectives for aquatic renewal consisting of:

- One city-wide (Destination) facility (up to 800,000 swims/year)
- Two community level facilities (up to 400,000 swims/year)
- Four neighbourhood level facilities (up to 200,000 swims/year)

Subsequently, the Park Board implemented the first phase of recommendations which included:

- Building a new, city-wide destination aquatic facility at Hillcrest (2010), which replaced the Percy Norman Pool.
- Re-building Killarney pool (2006) to a community-level pool.
- Renovating Renfrew pool (2005), which was maintained as a neighbourhood-level pool.

Since 2001, the Park Board has also:

- Decommissioned two neighbourhood-based outdoor pools (Mount Pleasant and Sunset) at the end of their functional lifespan
- Co-located an outdoor leisure pool at the Hillcrest Aquatic Centre (2010).
- Decommissioned five wading pools (Norquay Park, Prince-Edward Park, Pandora, Carnarvon, and Riley Park) at the end of their functional lifespan.
- Added three new spray parks (Prince Edward Park, Norquay Park and Pandora Park).
- Converted Carnarvon and Riley Park wading pools into lawns.

In 2010, the Park Board engaged HCMA to deliver a *Pool Assessment Study* to provide an update that measured the progress made since the adoption of the 2001 aquatic strategy. The work also considered existing pool use data to lay the groundwork for future aquatic facility renewal in the City of Vancouver. The study was intended to provide a comprehensive picture of the City's current aquatic network, and to identify new trends and issues.

Working closely with aquatics and planning staff, HCMA reviewed relevant documentation, assessed the major indoor and outdoor facilities, assessed wading pools and spray parks and conducted interviews with aquatic staff across all levels. Combining this work with research into aquatic trends and best practices, the *2011 Pool Assessment Study* provided both new findings and recommended updates to the 2001 recommendations to inform the future of aquatics relative to the 10-year plan.

The 2011 study served as a touch point for services review, but did not provide an over arching strategy evaluated through a community engagement process, nor was it endorsed by the VPB as a policy. The scope of work included swim targets for indoor pools only.

*VanSplash* works to complement and extend the previous studies by including other aquatic service opportunities such as aquatic services at beaches, innovative approaches for new outdoor facilities such as natural pools or facilities for urban ocean swimming as seen in other marine cities, as well as considering the role of aquatic services in supporting well-being, social inclusion, and broader environmental sustainability targets. This *Final Strategy Report* builds on current technical knowledge and previous reports, incorporates broader City-wide aspirations, and relies upon robust public engagement to inform a new 25-year vision for aquatics in Vancouver.

## Objectives + Methodology

### OBJECTIVES

The purpose of *VanSplash* was to develop a 25-year vision and implementation plan for aquatic services that:

- Carries out a robust public engagement strategy to inform the vision and recommendations.
- Offers a comprehensive and robust community and stakeholder engagement strategy, which included an online survey.
- Frames aquatic services in the context of supporting community and personal well-being and enhancing social inclusion.
- Reviews the condition, effectiveness and performance of the Vancouver Park Board aquatic services delivery system.
- Considers current aquatic services within a 25-year time frame which accounts for projected population growth and growth centres in the city.
- Validates optimum city-wide service levels and delivery, including metrics that measure effectiveness of service delivery (e.g. swims per capita, number of users, unmet demand).
- Explores and recommends new and innovative directions to meet city-wide indoor and outdoor aquatic services delivery.
- Recommends an outdoor pool strategy, which considers the location and design of a new outdoor pool facility.
- Reviews and recommends the role of wading pools, spray parks and beaches in the aquatic system.
- Matches updated service metric(s) with an implementation plan to renew and invest in the system.
- Incorporates facility performance findings relative to greenhouse gas emissions. This is to more accurately align with City of Vancouver policy targets.<sup>1</sup>

1. Greenest City Action Plan, 2020 Target: reduce community based GHG emissions by 33% from 2007 levels, and 2050 Target: reduce GHG emissions by 80% below 2007 levels.

## METHODOLOGY

Phase 1 – 3 work was carried out as follows:

### Current State Report (Phase 1)

- Reviewed existing policy and literature provided by Park Board including: previous aquatic service and program reviews, recent facility assessments, aquatic services use numbers (2009-2015), Park Board Strategic Framework, Vancouver Sport Strategy, Healthy City Strategy, and Greenest City Action Plan.
- Reviewed City aquatic facilities including indoor and outdoor pools, whirlpools, representative spray parks and wading pools (2-3) as well as beach and waterfront sites. The team received data on operations, number of visitors, maintenance and energy use for existing pool facilities from VPB staff, with the exception of data for Britannia pool.
- Evaluated results of review and research and provided conclusions and recommendations into the *Current State Report*.

### Precedent Review (Phase 1)

- Conducted an overview of relevant global aquatic precedent projects.
- Reviewed recent global aquatic trends.
- Evaluated precedents and rated them in terms of:
  - appropriateness and applicability to the context of Vancouver
  - ability to further the objectives and goals for the future of aquatics in Vancouver as identified by the VPB and expressed by the public during the public outreach component
  - ability to complement and enhance the current and proposed range of aquatic experiences offered in Vancouver

- Evaluated results of the precedent and trend review provided conclusions and recommendations into the *Precedent Review Report*.

### Public Engagement (Phase 1)

- Developed *VanSplash*, a branded public engagement strategy that was carried out in two phases. The first was held in the summer of 2016 and included:
  - a public survey completed by over 4,500 respondents, including 60 translated Chinese language responses, that sought broad input to shape and inform the 25-year vision and draft recommendations for service deliver
  - the receipt of 45 comments via e-mail
  - two public outreach events at Kitsilano beach and New Brighton pool over a key summer weekend in July (July 23 and 24th, 2016)
  - Five stakeholder workshops, with 60 stakeholder groups represented, to gather specific feedback on pool usage, to understand the users' likes and dislikes, and perceived barriers related to current aquatic services in Vancouver and the region.
- Evaluated results of the public engagement, and provided a summary of the results in the *Public Engagement Report*.

### Development of draft Vision and Recommendations for service delivery (Phase 2)

On the basis of the foundational work carried out in Phase 1, the consultant team began to develop the draft 25-year vision and implementation plan. The team reviewed what was working well in the current system and what was not, both from a technical and operational perspective, as well as on

the basis of input and feedback gathered through the engagement. This was considered in the context of anticipated future demographic growth and changes, desired swim capacity targets, and the wider aspirations set out by the VPB and the CoV. The team also developed a Vision statement, and a set of Guiding Principles and Goals to support the Vision, that would be supported directly by the strategic 25-Year recommendations. Refer to page 52 for the Vision, Principles and Goals.

The work in Phase 2 was developed in close and regular contact with the VPB Staff Working Group, and was presented to the Vancouver Park Board Commissioners on June 19, 2017 prior to proceeding to the next and final round of public engagement.

### Public Engagement (Phase 2)

- Building on the branding and awareness of *VanSplash* developed in the Phase 1 public engagement, the team conducted a second and final round of public engagement. The second engagement took place in the fall of 2017, to seek feedback on the draft recommendations:
  - a public survey completed by over 1,600 respondents, including 21 translated Chinese language responses, that sought input from the public on the draft 25-year vision and draft recommendations for service delivery
  - the receipt of 142 comments via e-mail
  - three public outreach events held at Killarney, Hillcrest and Vancouver Aquatic Centre indoor pools in September/October (September 27, September 30 and October 2, 2017)
- Evaluated results of the public engagement and added a summary of the results in the *Public Engagement Report*.

### Development of final Vision and Recommendations for service delivery (Phase 3)

Following the tabulation of the final engagement results the consultant team, working closely with the VPB Staff Working group and key members of staff, finalized the proposed Vision and Recommendations for service delivery. This final phase of work includes a high-level cost estimate for recommendations that are proposed as having potential for implementation within the 10-year implementation window.

Throughout all phases of the work, the consultant study team relied on the assistance of many Park Board staff and operators who contributed their time, energy and guidance in the project. In addition to the key dedicated staff and the Staff Working Group, participants included: aquatics and recreation program, operations, maintenance and management staff, and City of Vancouver Facilities Management and Planning, Urban Design and Development staff.



# Timeline

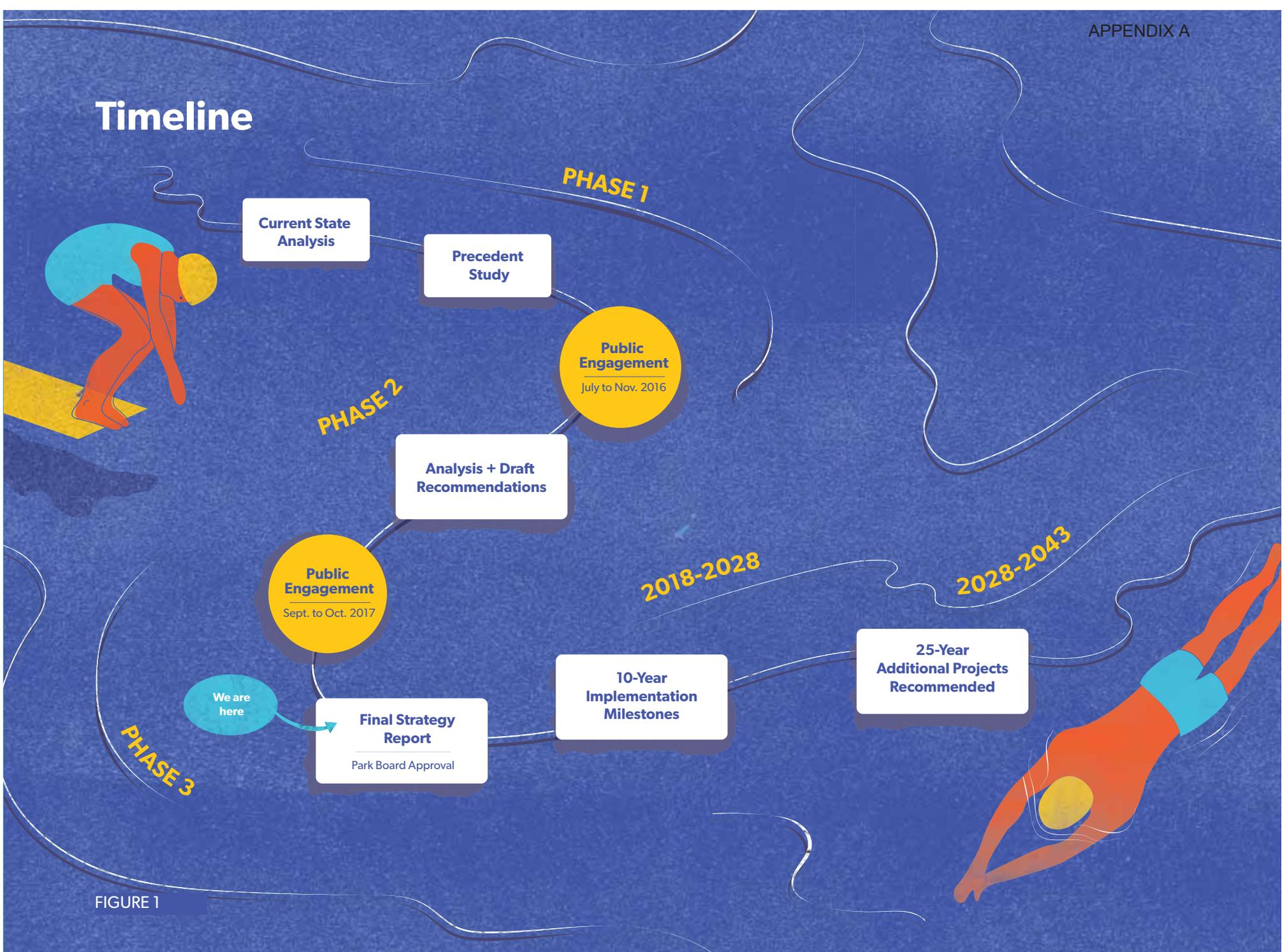


FIGURE 1



# Foundations for Planning Aquatic Services

# 1

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## Introduction

This section presents contextual information from the *Current State Report* outlining and defining the various aspects of aquatic services planning. This information is intended to provide a foundation for viewing and evaluating the current state analysis of aquatic services in Vancouver as well as the impact of the subsequent recommendations. Further detail is found in Appendix 2, 3, and 4.

## Benefits of Aquatic Services

Public aquatic facilities can transform and bring together communities — they offer opportunities for fitness, a place for community to gather and for families to spend time together; however, public aquatic facilities are among the most expensive facilities that a community can provide for its residents. Almost all communities invest heavily in them because of the tremendous benefits that accrue from their use. These benefits contribute to healthy, active individuals and communities and include:

- Water safety – learning how not to drown (one of the most basic of human needs and public services especially for communities close to natural waterways)
- Learning and improving skills in swimming, diving and other water sports
- Fitness and conditioning in a medium that is least likely to result in injury (due to the buoyancy of the water)
- Rehabilitation and therapy services to those with disabilities, injury, or frailty
- Social opportunities in water or on deck that connect people and reduce feelings of isolation

- Family opportunities to come together in a recreational setting conducive to use by all family members
- Mixing segments and subsets of the community with an activity that is worldwide and appeals to people of all ages and abilities
- Leadership training for young people
- Extensive volunteering opportunities
- Special events that rally community identity, spirit, and pride
- Sport tourism opportunities associated with swim meets and other competitive aquatic events (synchronized swimming, diving, water polo, etc)

The incredible range of community and individual opportunities that aquatic amenities offer is the rationale and incentive for the high level of subsidization of public aquatic swimming facilities. The typical recovery rate<sup>1</sup> of capital costs for an indoor pool is between 30% and 70% with the remainder of the operating costs funded through municipal taxes.

Given the increasing understanding of the value and importance of the social aspects of aquatics, when looking at the current facilities and aquatic services in the last section of the *Current State Report*, the team showed quantitative data related to usage numbers but tried to capture more difficult-to-measure targets such as social inclusion, community building, wellness, and sustainability for each facility.

It should also be noted that a large range of the aquatic benefits, including water safety, fitness, social and family opportunities, mixing of diverse members of the community, building community spirit etc can also be gained through the use of beaches. Natural ocean beaches are one of the singular and defining aquatic experiences that distinguish Vancouver from the majority of other urban centres in Canada.

1. Recovery rate is the proportion of all operating costs that are recovered from users through user fees. The complement of recovery rate is subsidy rate. They both add to 100%.

# Drivers of Aquatic Use

What makes aquatic services so important, and what inspires and guides recommendations around the design of new amenities and the enhancement of existing aquatic opportunities, is related, to a large degree, by reasons why people want to take part in aquatic experiences.

People are motivated to use aquatic services for a wide variety of reasons; however, the industry understands, and current research for this study confirms, that some of the most important drivers for use are as follows, in no particular order:

## 1. Learning not to Drown

The first steps in learning to swim appear to be the most important. As more and more skill is gained, the numbers involved tend to drop. Swimming is a life skill, so most parents want to ensure that their children learn this skill early in order to be safe around water for the remainder of their lives.

## 2. Fitness + Wellness

Water buoyancy makes activity in the water an ideal path to gaining fitness and overall feelings of wellness. Therapy aspects of aquatics such as warm water pools, sauna, steam, and therapeutic sprays help to meet this driver, which develops as a driver in early adulthood and becomes more important as adults age.

## 3. Socialization

This also includes all ages and can be met through a variety of aquatic experiences, but seems to become more important as adulthood progresses. It is a very important driver among seniors.

## 4. Fun, Relaxation + Diversion

This motive applies to all ages, and can be met by an enormous (and growing!) range of aquatic experiences. This driver may start with preschoolers and focus on children, but is an aspect of swimming and aquatic usage that applies to all ages and all demographics. It can range from quiet contemplation to the spectacle of aquatic activities such as wave riding or high diving/jumping. It includes the social aspects of play opportunities for tweens, "seeing and being seen", and can be individual or a group social experience. It takes on a multitude of different dimensions and includes such things as "people watching" and just dwelling in a positive environment.

## 5. Competition/Training

The rigour and structure of training and then testing skill against others (initially in children) and against oneself (especially in adults and seniors) is a strong motivator for many.

## 6. Other

Others access aquatic services for reasons including: getting a job, recovering from a medical event or illness, and gaining satisfaction from volunteering. All of these motives need to be considered when planning for developing and managing aquatic services in the public sector.

## Nine Categories of Aquatic Services

After developing a clear understanding of why people want to take part in aquatic experiences, or the drivers of aquatic use, the next strategic question became: What type of aquatic uses provide an opportunity to meet those drivers?

There are nine categories of aquatic services under which existing services are assessed and future needs determined. Each category represents a certain type of facility/water condition that would be required, and each requires a slightly different configuration of aquatic spaces, water temperature, or operation to deliver the service. Almost all aquatic services and needs can be categorized under the nine headings as listed in Figure 2.

RECREATION	SKILL DEVELOPMENT	FITNESS
<ul style="list-style-type: none"> <li>• Fun and leisure</li> <li>• Includes watching</li> </ul>	<ul style="list-style-type: none"> <li>• Swim lessons primarily</li> <li>• Other skills taught in lesson format</li> </ul>	<ul style="list-style-type: none"> <li>• Lane swimming</li> <li>• Aquasize classes</li> </ul>
SPORT TRAINING	SPECIAL EVENTS	THERAPY + REHABILITATION
<ul style="list-style-type: none"> <li>• Aquatic sport club training sessions</li> <li>• Synchronized swimming, water polo, others</li> </ul>	<ul style="list-style-type: none"> <li>• Swim meets</li> <li>• Diving competitions</li> </ul>	<ul style="list-style-type: none"> <li>• Those who are injured, frail, or have disabilities are active in water because it supports their body weight</li> <li>• Either in a program or individual</li> </ul>
LEADERSHIP DEVELOPMENT	WATER ORIENTATION	THERMAL RESPITE
<ul style="list-style-type: none"> <li>• Bronze Medallion</li> <li>• Bronze Cross</li> <li>• NLS Courses</li> <li>• Swim instructor training</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunities for young people to gradually get used to being in water</li> </ul>	<ul style="list-style-type: none"> <li>• Water as a medium to cool off in hot weather</li> </ul>

FIGURE 2 : Nine categories of aquatic services.

## Three Modes of Pool Operation

Lastly, after understanding why people are motivated to experience aquatics, and categorizing what the range of aquatic activities are that meet these motivations, we considered how aquatic amenities could be provided to meet the nine swim categories. For the purposes of this research, aquatics were considered to operate under three modes, as follows:

### 1. DROP-IN

Where individuals and families decide to visit an aquatic amenity on a case by case basis.

### 2. PROGRAM

Where users pre-commit, through a registration process, to a series of uses that typically involve some instruction or leadership, and are scheduled at a predetermined time.

### 3. RENTAL

Where a group rents some aquatic space and then controls the users and uses of that space.

The nine categories of aquatic service are typically accommodated within the three modes of operation (Figure 3). These modes require different kinds of support areas in a pool but can be combined so that more than one occurs in a pool tank at the same time. Understanding the nine categories of aquatic service and how they are met within the three modes of operation was important to the assessment of existing aquatic facilities and in planning for all aquatic amenities and services in Vancouver for the future.

CATEGORIES OF AQUATIC SERVICE	DROP-IN	PROGRAM	RENTAL
RECREATION	✓		✓
SKILL DEVELOPMENT	✓	✓	
FITNESS	✓	✓	
SPORT TRAINING			✓
COMPETITIONS			✓
THERAPY + REHABILITATION	✓	✓	✓
LEADERSHIP TRAINING		✓	
WATER ORIENTATION	✓	✓	
THERMAL RESPITE FROM HOT/COLD	✓		

FIGURE 3 : Accommodating categories of aquatic service within 3 modes of operation.

LEVEL	DESCRIPTION + PROVISION STANDARD	PRIMARY AQUATIC SERVICE CATEGORIES DELIVERED
<b>NEIGHBOURHOOD</b>	Pools with a 25 m six lane tank providing basic aquatic services for a local area of 60,000 to 90,000 residents, with capacity for about 200,000 swims per year.	<ul style="list-style-type: none"> <li>• Skill Development</li> <li>• Fitness Swimming</li> </ul>
<b>COMMUNITY</b>	A multi-tank pool with more specialized aquatic services serving one quarter to one half of the City, with capacity for about 400,000 swims per year.	<ul style="list-style-type: none"> <li>• Skill Development</li> <li>• Fitness Swimming</li> <li>• Therapy and Rehab</li> </ul>
<b>CITY-WIDE (DESTINATION)</b>	Much more comprehensive multi-tank pools serving all residents of the City, centrally located and easily accessible from all parts of the City, with capacity for about 750,000 to 800,000 swims per year.	<ul style="list-style-type: none"> <li>• Skill Development</li> <li>• Fitness Swimming</li> <li>• Therapy and Rehab</li> <li>• Recreational Swimming</li> <li>• Sport Training</li> <li>• Leadership Training</li> <li>• Special Events</li> </ul>
<b>ALL-INDOOR AMENITIES</b>	The entire inventory of indoor pools should be located such that the vast majority of residents have an indoor pool within about 2-3 km of their residence. (A 3 km radius identifies the area of approximately a 30 minute walk, 15 minute cycle, or 10 minute drive.)	
<b>OUTDOOR AMENITIES</b>	Targets to be established in phase 2 + 3 work.	

FIGURE 4 : Three levels of geographic pool study.

CATEGORIES OF AQUATIC SERVICE	INDOOR AQUATIC AMENITIES			OUTDOOR AQUATIC AMENITIES			
	CITY	COMMUNITY	NEIGHBOURHOOD	OUTDOOR	WADING	SPRAY PARK	BEACHES
<b>1 RECREATION + SOCIALIZING</b>	✓	✓	✓	✓	✓	✓	✓
<b>2 SKILL DEVELOPMENT</b>	✓	✓	✓	✓			✓
<b>3 FITNESS</b>	✓	✓	✓	✓			✓
<b>4 SPORT TRAINING</b>	✓	✓	✓	✓			✓
<b>5 SPECIAL EVENTS</b>	✓	✓		✓			✓
<b>6 THERAPY + REHABILITATION</b>		✓	✓	✓			
<b>7 LEADERSHIP DEVELOPMENT</b>	✓	✓		✓			✓
<b>8 WATER ORIENTATION</b>	✓	✓	✓	✓	✓	✓	✓
<b>9 THERMAL RESPITE</b>	✓	✓	✓	✓	✓	✓	✓

FIGURE 5 : Accommodating categories of aquatic service within different types of aquatic amenities

## Three Geographic Levels of Pool Supply

In Vancouver, like in many large urban centres, there are multiple aquatic amenities and each specializes in terms of which of the nine categories of aquatic service it is focused on meeting. This strategy to service delivery is further enhanced by an approach based on different pools that operate at different geographic levels, or within different sized markets. In the *2001 Aquatics Review*, three levels of pool supply were formalized and adopted, as summarized in Figure 4. The three levels are categorized as neighbourhood, community and city-wide destination pools. The later phases of this vision strategy will include recommendations and set proposed targets related to the location and frequency of outdoor amenities to complement and support the indoor amenities targets established in 2001.

The nine categories of aquatic service can be met by a range of the levels and types of indoor and outdoor aquatic spaces that exist in Vancouver, but all aquatic amenities don't need to deliver all nine categories. Indeed, a systems approach is required, where specific types of pools and aquatic amenities are positioned to focus primarily on specific categories of aquatic service so that all categories can be optimally served.

Figure 5 summarizes the relationship between both indoor and outdoor aquatic amenities and their specialization in terms of offerings related to the nine category of service.

It is worth noting that in the *2001 Aquatics Review*, there was a special mention about competition uses. It suggested that although the City's indoor pools should accommodate swim club training, there was little need at that time for a more specialized competition pool, as UBC and other short and long course tanks were well positioned to host the few competitions that are held each year in the region. Since then, other pools in the region have been added or replaced with some additional capability to host aquatic sport competitions, the most significant examples of which are the new recently opened Grandview Pool in South Surrey, the UBC Aquatic Centre, and the Minoru Pool (containing 2-25 m pools) in Richmond slated to open early 2018.

# Maximum Pool Capacity

## Maximum capacity of indoor pools

For water less than 1.5m (5ft) deep, indoor pools have a capacity to deliver up to 65 swims per year for each square foot\* of water surface area

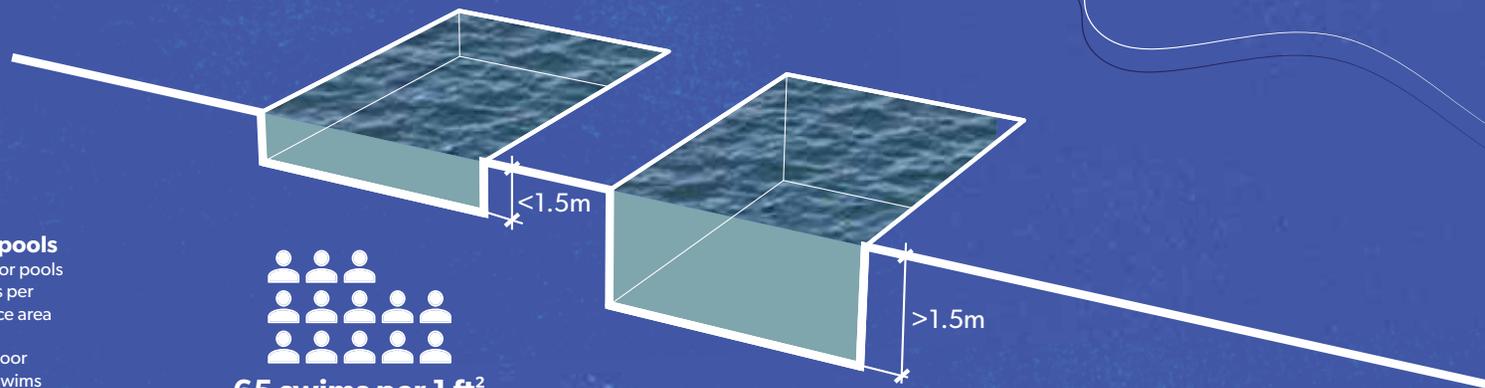
For water more than 1.5m (5ft) deep, indoor pools have a capacity to deliver up to 25 swims per year for each square foot\* of water surface area based on year round operation (or total days or hours).



65 swims per 1 ft<sup>2</sup>



25 swims per 1 ft<sup>2</sup>



## Maximum capacity of outdoor pools

For water less than 1.5m (5ft) deep, outdoor pools have a capacity to deliver up to 20 swims per year for each square foot\* of water surface area

For water more than 1.5m (5ft) deep, outdoor pools have a capacity to deliver up to 7 swims per year for each square foot\* of water surface area based on four months of operation (or total days or hours).



20 swims per 1 ft<sup>2</sup>



7 swims per 1 ft<sup>2</sup>

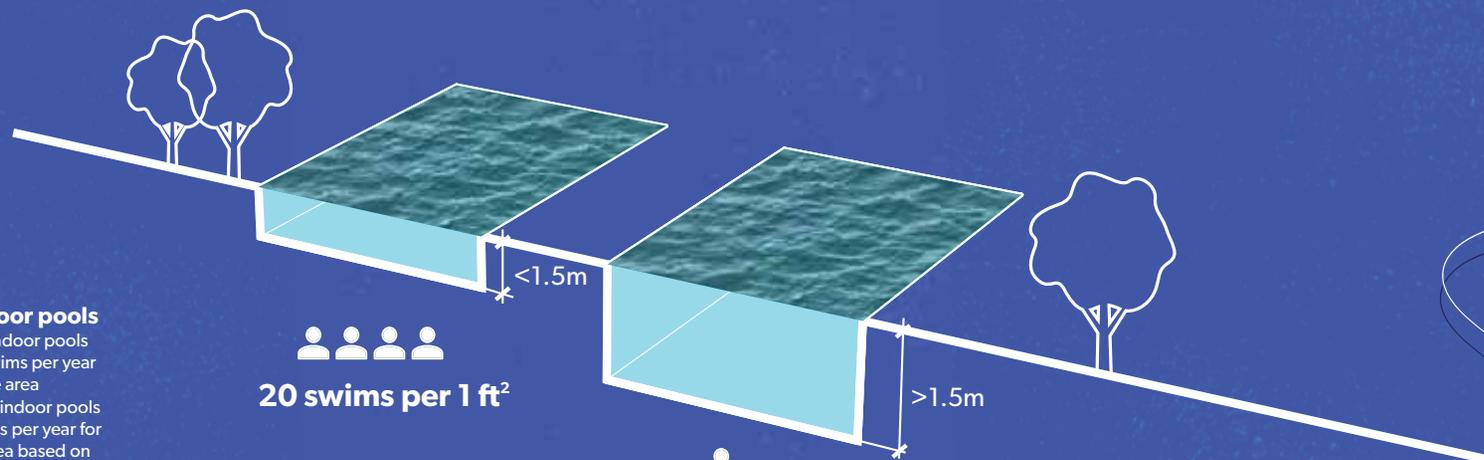


FIGURE 6

<sup>1</sup> It should be noted that this is not "legal capacity" which is specified in the Swim Pool Regulations under BC's Health Act, and which results in higher capacity than the formula above. In fact, while legal capacity divides pools into water less than and more than 1.5 m deep, it focuses on instantaneous capacity rather than annual capacity. The above definition of capacity relates to a typical public pool which must deliver a variety of categories of aquatic service in a typical 5,000 hours per year municipal operating format.

\*square foot of water surface area is a standard unit of measurement for measuring capacity and revenues

# Standard Capacity

## INDOOR POOLS

The capacity of indoor pools to deliver many or all of the nine categories of aquatic services they are required to meet, relates to:

- The amount of surface area of the pool tank or tanks
- The depth of water in the pool tank or tanks
- Programming and scheduling of the tank or tanks (i.e. different uses can accommodate different totals in the same water surface area and depth)
- The total hours available each year

The indoor pools are available for use about 100 hours each of 49 weeks each year; for a total of approximately 4,900 hours. For such a facility, which attempts to balance all of the nine categories of aquatic service, experience has shown the total capacity for aquatic service can be measured by the formula noted at Figure 6.

## OUTDOOR POOLS

Outdoor pools typically only operate about 100 days per year and operate for fewer hours each day. Also, they are subject to inclement weather which can reduce attendance. Therefore, the formula used to understand the capacity of outdoor pools is noted at Figure 6.

## WADING POOLS, SPRAY PARKS + BEACHES

As with outdoor pools, use is much more subject to weather. It is much more difficult to determine the capacity of wading pools, spray parks, and beaches for the following reasons.

- Much more of each use is focused on the areas surrounding the aquatic amenity (e.g. beaches, deck and park space surrounding the spray areas) than in the water itself

- For beaches and spray parks, the concept of water surface area becomes much more nebulous
- There are no industry standards about how to calculate the capacity of these amenities

In addition, use is much more subject to weather. However, in the case of spray parks and beaches, understanding capacity of use may be slightly less relevant in determining their role in the future vision. Both play a very important role in providing aspects of the benefits, drivers and categories of aquatic services; however, their capacity of use is much less fixed than pools. While recommendations regarding targets for geographic locations for spray parks and potential amenities enhancements to beaches is considered in the strategy, capacity of use was not a key driver. Rather, recommendations were focused on ways to increase public enjoyment through improvements to the experiential aspects. In the case of beach-going, the vision considers enhancements to the categories of aquatics (i.e. programs added and/or rentals opportunities increased) offered at beaches rather than on achieving a greater capacity of use.

In other words, while capacity of use formulas are particularly helpful when designing new indoor or outdoor pool facilities or when renovating existing facilities as they help to determine ideal size and design to ensure that the overall range of aquatic facilities can be expected to contribute to reaching an overall swim/capita target, they are less relevant in terms of beaches and spray parks.

## Economics of Pool Operation

To frame a holistic understanding of the context within which aquatic facilities operate, some important economic aspects of the delivery of aquatic services also need to be understood and considered along with the drivers, categories of use, and modes of aquatic operation:

- The capital cost of an indoor pool, unlike most other forms of buildings, correlates more directly with the volume of the facility rather than the floor area. This is because, the deeper the water, the more air above the water is typically required. Both water depth and air height are very important and costly considerations when developing an indoor pool as both require large amounts of mechanical systems (water treatment systems which vary with the volume of water, and HVAC systems for handling highly humid air containing chemical substances) associated with those volumes. Two pools with the same floor area can have significantly different construction costs if one has deeper water and higher ceilings than the other.
- Operating costs for indoor public pools are closely related to regulations and largely fixed. About 70% of the operating costs of a typical pool are relatively or completely fixed (i.e. they don't vary significantly whether there is one person swimming or 40 people swimming in the pool enclosure). Operating costs are associated with a minimum required number of life guarding staff, water quality systems, management staff, insurance, utilities, and staffing a customer service control point—none of which vary directly with the volume of use.
- Generally, water shallower than 1.5 m deep is more economical for service delivery than deeper water. Legally, when calculating instantaneous capacity for use, shallow water allows three times more use per square meter of surface area. Also, shallower water is less expensive to operate and can usually be provided in an enclosure with

a lower ceiling which also allows for reduced energy costs. Time lapse photography studies in pools typically show that shallow water areas of a pool tank are used about five times more intensely than deep water and correlates to use for fun, relaxation and socialization. Many patrons come to pools specifically for shallow water opportunities.

- Operating revenues are variable. In other words, if use increases by 10%, operating revenues go up roughly 10% as the revenue associated with swims in each category of aquatic service is largely constant on a per swim basis.

Because of the previous points, it is very important, from an economic and environmental sustainability point of view, to operate a pool as close to full capacity as is reasonably possible. A pool operating at a fraction of its total capacity has a high operating cost, a low operating revenue, and a very high net subsidy and energy consumption per swim. A pool operating close to its full capacity has a high operating cost, a high operating revenue, and a much lower net subsidy and energy consumption per swim. Another way of viewing this relationship is to acknowledge that every additional swim a pool is able to generate will trigger more operating revenue than operating cost and won't increase energy consumption proportionately.

This means that typically, from an economic perspective, pools should be sized to meet current and short term future needs, and not the needs of the very long term future, as "overbuilding" capacity in the short term to meet long term needs will likely result in operating subsidies per swim that are so high they collectively exceed the cost of adding to the existing pool or building another pool in the future when the community needs it.

Pools economics should also be considered from a social sustainability perspective, as touched on in the introductory sections and Section 3 of this report.

## Summary of Planning Context

All of the above contextual factors (benefits and drivers of aquatic use, categories of service, modes of aquatic operation, and the geographic levels of pool supply) play an important role in the sizing and configuration of pool spaces and strategic planning to meet long term aquatic needs. In order to ensure the right kinds and amounts of aquatic spaces are built in the future, it is important to consider:

- The proportion of total aquatic use that will be generated in each of the three modes of operation.
- The proportion of total swims that will be generated in each of the nine categories of aquatic service.
- The total swims that result from the first two bullet points above translated into a set of aquatic spaces that will optimally respond to those needs and resist the temptation to “overbuild” spaces which won’t be used for 10-20 years or more.
- While providing all core aquatic services, attempt to fill gaps in the supply left by other existing pools in the region and not duplicate service in categories which are more specialized and represent fewer swims.
- As many current and short term needs are met within a context of the least amount of volume of space.
- All pools will be operated as close to full capacity as is reasonably possible to avoid unnecessarily high subsidies per swim.
- When considering means to balance the previous points, strive to design facilities with a balance of water depths that maximize aquatic use (revenue), understanding that very shallow water and deep water offer limited opportunities for use compared with waist-deep water, combined with leisure features, which provides the greatest revenue potential (refer to Figures 6 on the previous page).
- The potential role of beaches and ocean swimming in meeting aspects of aquatic use.
- The role that new and innovative aquatic service amenities may play in meeting desired outcomes for future aquatic use.