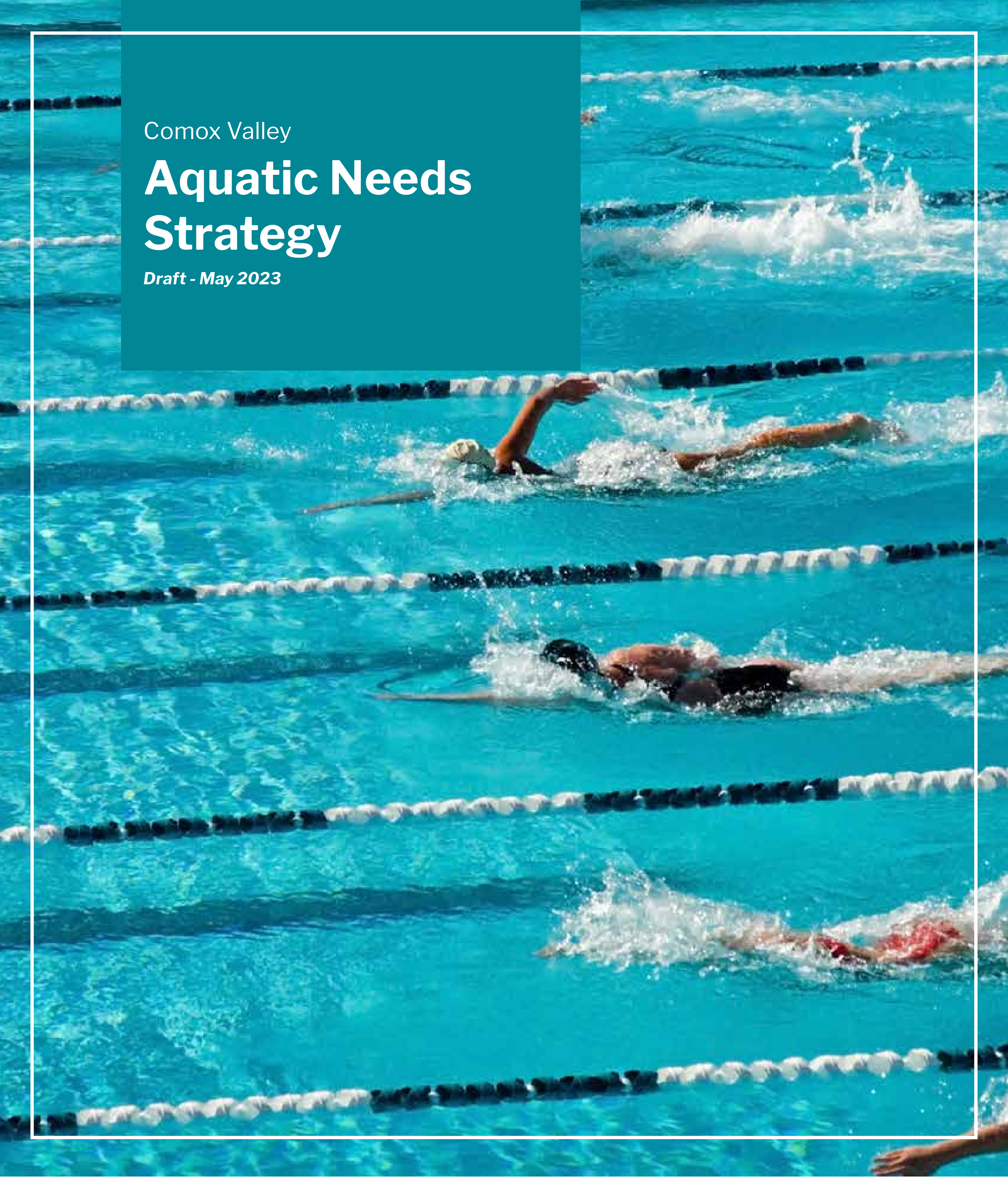
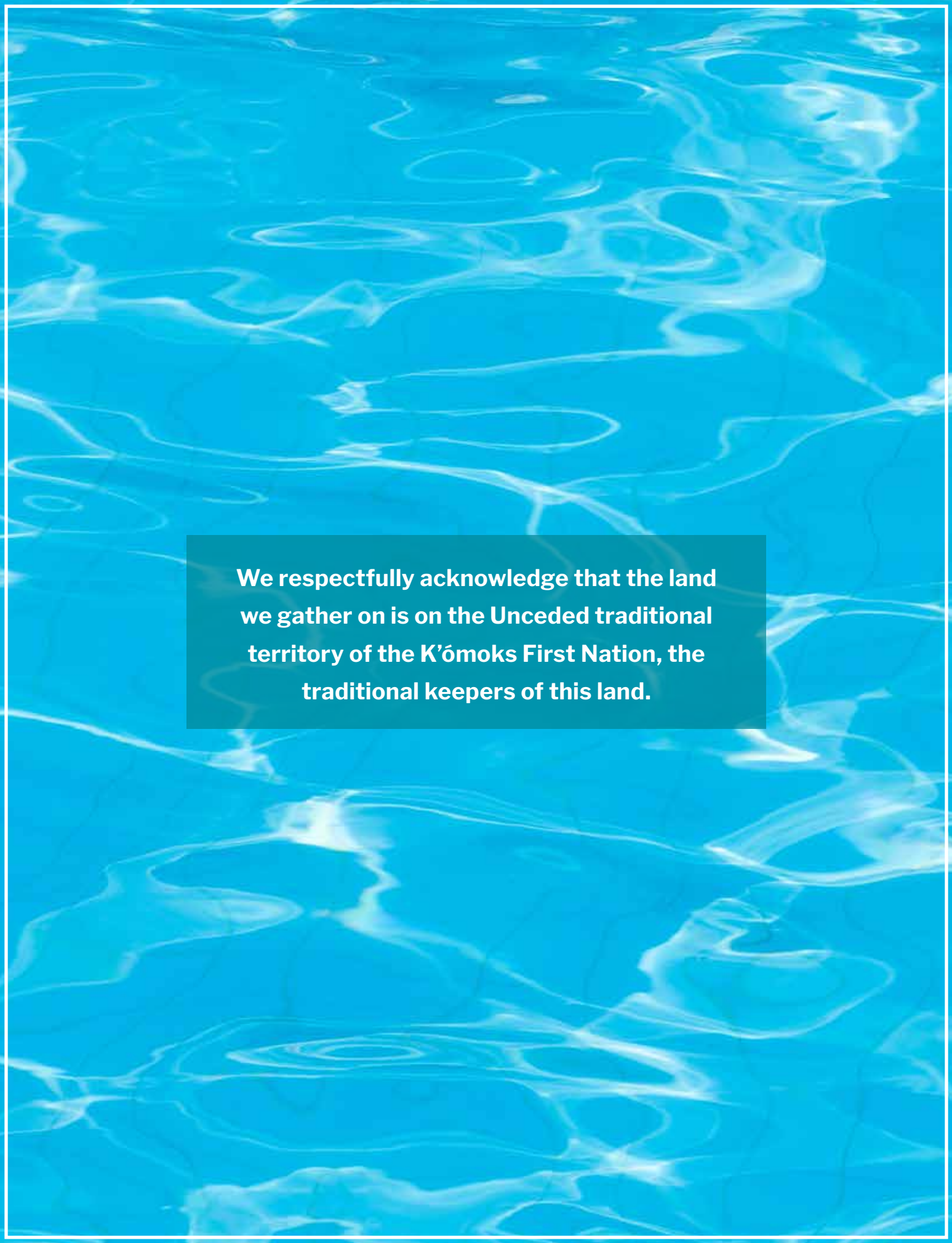
Comox Valley

Aquatic Needs Strategy

Draft - May 2023



Comox Valley Regional District



We respectfully acknowledge that the land we gather on is on the Unceded traditional territory of the K'ómoks First Nation, the traditional keepers of this land.

Executive Summary

The Comox Valley Regional District (CVRD) and the City of Courtenay enrich the lives of Valley residents and visitors through the provision of three aquatics facilities. The Comox Valley Sports Centre, Comox Valley Aquatic Centre, and the Courtenay and District Memorial Outdoor Pool have provided opportunities for residents of the region to learn to swim; improve their health and fitness; train and compete in water sport; and socialize. Due in part to the condition of the facilities as well as changes in the community and changing demands from the public and groups, the CVRD and City commissioned the development of this Aquatic Needs Strategy.

Why is an Aquatic Strategy needed?

- To develop a regional vision for aquatic facilities and services.
- To ensure equitable access and utilization of aquatic facilities and services.
- To ensure Comox Valley residents are safe in and around water.
- To encourage increasing capacity and participation in all water sports and water-based activities
- To maximize the broader social, economic and health benefits derived from aquatic facilities and services for the Region's residents and visitors.

The Strategy outlines a rationale (vision, principles, and objectives) for the investments from both the CVRD and the City in aquatics services. It also includes recommendations on the future of these three important community facilities; broad considerations on the enhancement of public aquatics provision throughout the Valley is also included. The recommendations are based on assessment of the three existing aquatics facilities; thorough research into trends in the provision of public aquatics facilities; and community input gathered through extensive surveys and discussions. Additionally, the Strategy includes a criteria-based framework to assess future infrastructure options considering cost, environmental impact, and accessibility among other important factors.

Objective 1

High quality aquatic facilities that are adaptable and responsive to community need.

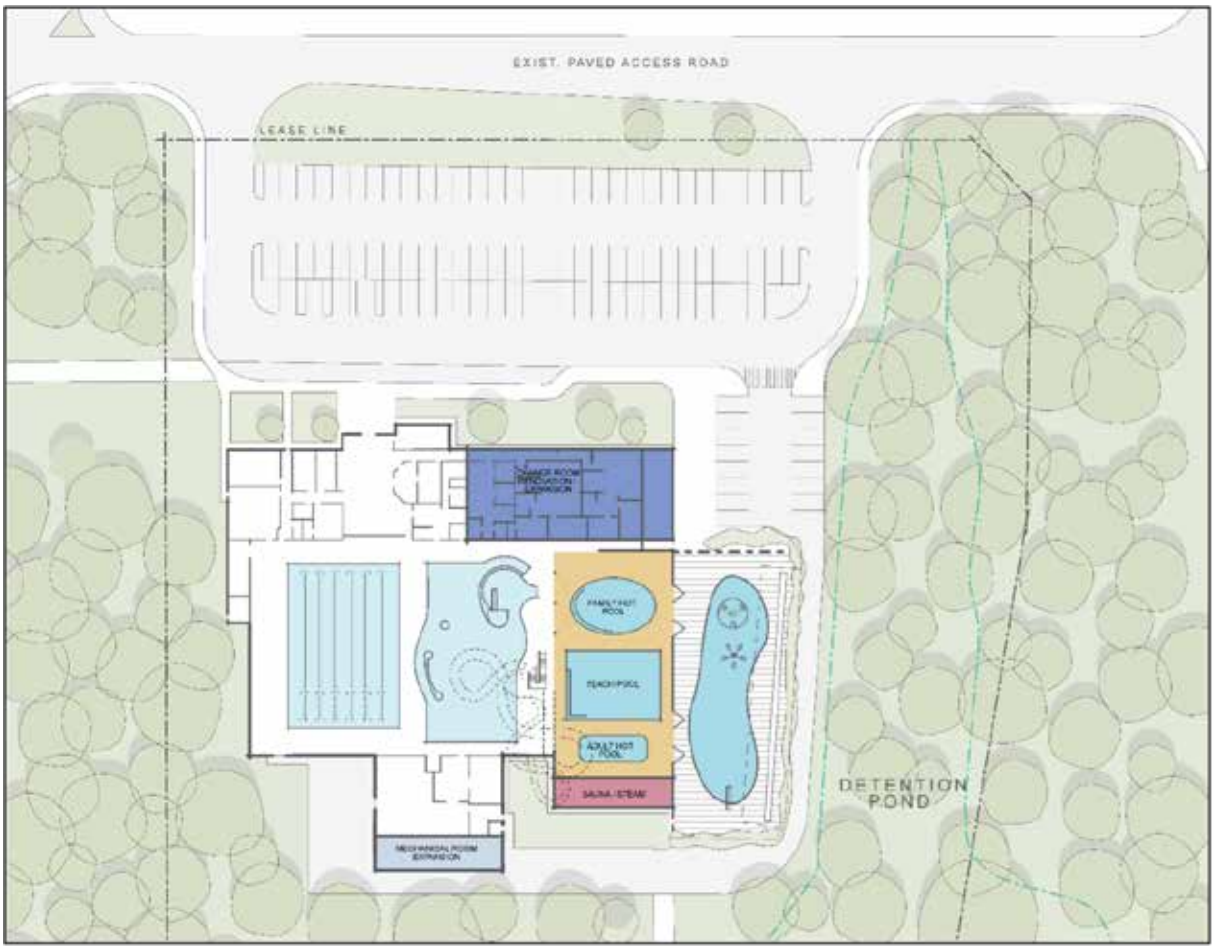
Objective 2

Provide accessible, affordable and inclusive facilities and opportunities.

Objective 3

Facilities and opportunities are well planned, maintained and managed.

Perhaps the most notable of the Strategy's recommendations is consolidating all aquatics facilities on a single site at the Comox Valley Aquatics Centre. Of the facility options reviewed, the consolidation site scored the highest using the criteria-based framework achieving the best balance of cost, enhancement to existing service levels, and investment in existing infrastructure.



Although this recommendation has been made, it is important to note that funding has not yet been committed to any of the options reviewed and that further study and assessment is still required to confirm the intentions of the CVRD and City.

Other recommendations around enhancing accessibility and sustainability of existing facilities, insights related to future programming, and setting fees and charges, among other topics, are also included.

This Strategy provides insight as to the current state of public aquatics in the Valley and outlines ways in which this valuable public service can be enhanced in the future, respecting investments already made in existing facilities and providing a recommended reinvestment option when the state of existing facilities necessitates such investment.

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Section 1.0

Introduction & Methodology

1.1 Why do we need an Aquatic Strategy?

The Comox Valley Regional District (CVRD) and the City of Courtenay enrich the lives of Valley residents and visitors through the provision of three aquatics facilities. The Comox Valley Sports Centre, Comox Valley Aquatic Centre, and the Courtenay and District Memorial Outdoor Pool have provided opportunities for residents of the region to learn to swim, improve their health and fitness, train and compete in water sports, and socialize. Due in part to the condition of the facilities as well as changes in the community, and changing demands from the public and groups, the CVRD and City commissioned the development of an Aquatics Strategy. The Strategy will serve as a road map, guiding the provision of aquatic facilities and services for the next 25 years.

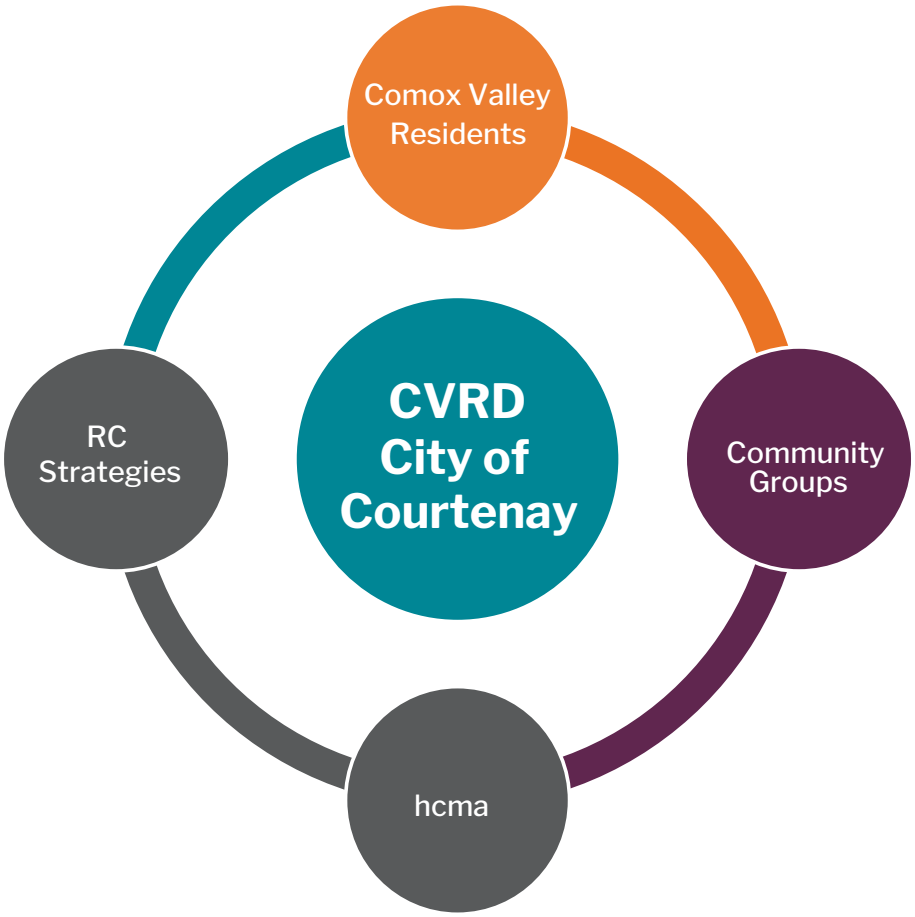
The Aquatic Strategy will:

- Define the vision for aquatic facilities and services for the Comox Valley
- Support the equitable access to facilities and services for all residents.
- Encourage increasing capacity and participation in water sports and activities.
- Ensure the efficient and effective use of resources.
- Render the aquatic infrastructure as environmentally friendly as possible.

1.2 Who is involved in the project?

The project is a partnership of two local public entities that own and operate the existing aquatic infrastructure and a consulting team retained to provide expertise. It also includes a great many local citizens and organizations that provided input to the process, as illustrated in Figure One.

Figure 1: Project Contributors and Collaborators



1.3 How has information been collected, and input gathered?

The Comox Valley Aquatic Needs Strategy has been developed based on a broad research and engagement program, which included architectural assessment to support the emerging priorities and aquatic needs in the Comox Valley (as illustrated in Figure Two). The Strategy development began with extensive learning about the current state of aquatic services in the Valley related to infrastructure, programming and service provision. The research component was complemented by a thorough engagement of residents and community collaborators and contributors.

Once the current state was defined, a strategic analysis was conducted to assess current gaps in the current system and identifying opportunities to best meet the aquatic needs of current and future Valley residents. Focus was placed on enhancing the current state to confer the most benefit from investment in aquatic services to the Regional District, the City, and the regions' residents.

Figure 2: Project Inputs and Workflow

1.4 How do we critically look at the public provision of aquatics?

For planning purposes, it is useful to divide the entire realm of available aquatic services into categories based on what motivates or "drives" the use of publicly available pools. By understanding more completely what motivates the use (i.e., which benefits the user hopes to obtain through the use) the types and amounts of aquatic services can be more finely honed and optimized. In other words, the water temperature, depth and configuration of each tank can be more precisely filtered into specific categories of use and the specialty amenities, or features, that can be provided to support each.

Indoor Aquatic Activity Types

Indoor aquatic activities generally fall into one of seven types, with can be further differentiated by whether the level of service provided is 'fundamental' or 'specialized'. For example, most pools can accommodate fundamental recreation and leisure swimming experiences; however, only facilities with specialized amenities such as water slides, dive tanks, and wave pools should be characterized as specialized. The chart below provides an overview of these activity types. More detailed descriptions of each activity type are presented on the pages that follow. A summary of the activity types is contained within Figure Three.

Figure 3: Indoor Aquatic Activity Types

Activity Type		Description
	Recreational and Leisure	Swimming for fun
		Swimming for fun with specialized amenities like waterslides, wave pools, lazy rivers, play equipment, etc.
	Skill Development	Primarily swim lessons, but also other skills taught in lesson format
	Fitness	Lane swimming and structured aquacise / fitness classes
	Sport Training	Aquatic sport club training programs
		Training requiring specialized amenities such as diving tanks, underwater sound systems, timing systems etc.
	Special Events	Pool rentals, birthday parties
		Swim meets, competitions, major tournaments, etc.
	Therapy and Rehabilitation	Therapy and rehab for those with varying abilities and those recovering from surgery or injury, zero entry access and some assisted support for access
		Specialized access systems and therapy/rehabilitation elements, separate tanks with various water temperatures
	Leadership Training	Lifeguard, aquatic instructor training, leadership and development programs

Recreational and Leisure Swimming

Individuals and groups going to the pool to swim and have fun is one of the most popular activity types, both indoors and outdoors. Motivation for participating in recreational and leisure swimming is often mixed with wanting to be active and healthy, providing some elementary levels of fitness or skill development, and at times respite from weather (cooling in the summer, heat during the winter). For most municipalities, this activity type comprises more than half of all pool visits. Little skill is required to have fun at the pool and this activity type has the fewest barriers to participation and appeals to the broadest cross-section of the public. This activity type is often a user's introduction to aquatic services and should be considered as essential. This category often accommodates drop-in participants, but also rentals (e.g., birthday parties).

Service Provision and Facility Specification Considerations

- Is one of the most basic aquatic activity types and should be accommodated at all Comox Valley pools; all pools should facilitate at least a fundamental level of recreational and leisure swimming.
- Many modern indoor pools incorporate some specialized amenities to enhance facility attractiveness and attract users from a broader catchment area. Amenities may include waterslides, wave pools, surf machines, lazy rivers, and themed aquatic play equipment.
- Recreational and leisure swimming has the fewest barriers to participation and has the widest appeal to users.
- Almost any warm water shallow tank can accommodate recreational and leisure swimming at a fundamental level. Water temperatures of between 28 – 30 degrees Celsius and water less than 1.5 m deep are most appropriate; there are no specific tank size or configuration requirements.
- Specialized amenities often involve moving water (e.g., waves or currents, waterfalls), water based fixed toys or play features, slides or swings, and floatable toys. These features require careful consideration at the program and facility design phase. Specialized amenities could also include design and/or building elements to accommodate user needs such as privacy screens for women only swims and sensory inclusive spaces.

Skill Development

Learning how to swim and water safety skills are fundamental life skills / important to physical literacy. All residents should have at least basic water skills to survive in emergency situations. Swimming skills are typically taught via lessons where students register for a series of swims with an instructor. Often highly regimented with prescribed levels of progression, skill development (i.e., swim lessons) typically begin with water safety basics and expand into higher levels of techniques and skills. The primary market for skill development is children between the ages of 4 to 12, but there are also adults that are interested in honing skills. Most of those registered in swim lessons come to the pool with an adult caregiver that may or may not also be active at the pool. This activity type does not require any specialized support amenities and therefore has a relatively low capital cost and can be accommodated at most facilities.

Service Provision and Facility Specification Considerations

- Skill development, like recreation and leisure swimming, should be considered a fundamental activity type and accommodated at all Comox Valley pools.
- Skill development requires a variety of water depths, ranging from a minimum of approximately 0.3 m to around 1.5 m to accommodate beginner-level instruction, to water more than 1.5 m for more advanced levels of swim instruction and other types of specialized skills (e.g., scuba diving).
- Water temperatures should be in the range of 28 – 30 degrees Celsius, with warmer temperatures better for children learning to swim. Temperatures should be around 32 – 34 degrees Celsius for children under 4.
- There are no specific sizes or configurations required for swim tanks, but on-deck storage is often required for some swim aids and there should be enough space to accommodate adult spectators during swim lessons, particularly in areas with line of sight on tanks and in dressing areas to assist their children.

Fitness Swimming

Fitness swimming typically accounts for the third highest volume of swims at municipal pools, behind recreational and leisure and skill development swims. Water based fitness activities are also growing in popularity due to the low-impact nature of participation. Fitness swimming can occur via drop-in through lane swimming or delivered through program as shallow or deep-water fitness classes, with socialization often an added benefit of these types of classes (e.g., aquacise). The primary market for this activity type tends to be adults and seniors, either participating individually or in groups.

Service Provision and Facility Specification Considerations

- Fitness swimming should be as easily accessible to residents as possible.
- Swim lanes should be between 2 to 2.5 m wide and ideally 25 m long to maintain consistency with swimming standards. Traditionally, the desire to incorporate lanes is what leads to the predominance of rectangular swim tanks; however, lanes are being more creatively integrated into pool designs in wave and leisure pools to not require wholly rectangular tanks.
- Water should be at least 1.2 m deep and deeper, as necessary, to accommodate other activities such as deep water running.
- Vertical walls are required at the end of each lane to support turns.
- Water temperatures should be between 28 – 30 degrees Celsius, but lower temperatures may be more appropriate for higher intensity activities and specific populations.

Sport Training

Training or league play to enhance competitive skills and abilities is typically provided by non-profit sport organizations (i.e., clubs) that rent pool space. While most participants in sport training are children or youth, higher level competition can extend up to young adults; adult and senior swim and competition clubs are also common. Aquatic sports include speed swimming, water polo, diving, underwater hockey, and synchronized swimming. Most sports require scheduled training times, often multiple times per week, and characterized by relatively few participants. Some sports operate in a team setting and feature league play (e.g., water polo). Most participants have good knowledge of how to swim prior to registering in an aquatic sport club.

Service Provision and Facility Specification Considerations

- There are typically not enough users at local levels to support sport training at every municipal pool, but at a broader catchment area (i.e., city-wide) there are often multiple clubs that require access to sport training amenities; therefore, not every municipal facility needs to accommodate sport training, but such service should be available at the city-wide level.
- Higher level sport training requires specialized amenities such as timing systems, scoreboards, underwater acoustic systems, dive tanks, and even large spectator viewing areas if hosting competitions or special events.
- Depending on the sport, sport training can be accommodated in short course (25 m with 6 to 8 lanes, minimum water depth of 1.2 m for speed swimming and deeper for other sports) or long course tanks (50 m with six to 10 lanes). Long course tanks are often required for higher levels of competition.
- Cooler water temperatures in the range of 25 to 28 degrees Celsius are preferred for sport training activities.
- Some sport programs require some dry floor space near or on the pool deck for activities.

Special Events

Special events mostly relate to aquatic events that occur outside the normal activity of a facility or sports organization / club. These events require planning, involve several users and volunteers, and often attract spectators. Special events occur infrequently and often through rentals. They can be multi-day events and often pre-empt other scheduled users of the pool (e.g., swim lessons, public swim). Special events can involve participants of all ages. Swimmers participating in special events typically have advanced skill levels and event type examples include water polo team tournaments, competitions, swim meets, and seasonal championships.

Service Provision and Facility Specification Considerations

- Smaller special events are generally local or regional in nature and include events such as tournaments organized by a single club or a few clubs and range from one to three days in duration, involving a few dozen to a few hundred participants, and attracting a few dozen to a few hundred spectators. Seating and viewing areas are important for events of all scales.
- Larger special events require more detailed planning and specialized amenities and are more likely to be hosted at a city or region-wide scale. Large events involve more participants, require support personnel (paid or unpaid), and may attract media and significant spectator numbers. These events are often multi-day and can be part of multi-sport events, as well as can be national or international in scope.
- To host larger events or national/international events, facilities must adhere to standards set by governing bodies (e.g., Swimming Canada, FINA).
- Larger special events require particular attention to be paid to things such as tank size and depth, water temperatures, timing systems, diving tanks and platforms, spectator viewing requirements, warm up areas, participant marshalling areas, and other amenities.
- Deeper water in the temperature range of 25 to 28 degrees Celsius are often appropriate for most special events.
- FINA (Federation Internationale de Natation) provides technical guidance on indoor aquatics **facility design requirements** to host national and international-level swim competitions and other special events for swimming, diving, water polo, and artistic swimming.

Therapy and Rehabilitation

Water buoyancy provides an excellent medium for activity and exercise for people with varying abilities and those recovering from illness, injury, or surgery. Water activities are low-impact and do not place undue stress on the body's joints, making aquatics an excellent therapeutic and rehabilitation exercise. As users age, water tends to become more of an attractive medium for exercise. Specific skills or abilities are not required to participate in therapy and rehabilitation activities and such activities can be organized (e.g., programmed classes), occur one-on-one with an instructor, occur via drop in, or through rentals where a third party provides instruction.

Service Provision and Facility Specification Considerations

- Most fundamental therapy and rehabilitation swims can be accommodated in pools that cater to other activity types.
- More specialized access systems and amenities that provide enhanced therapy and rehabilitation services should be accessible at a city-wide level, rather than at each facility.
- Facility requirements for fundamental service levels are minimal, with warm water in the range of 32 to 35 degrees Celsius and shallow water (less than 1.5 m). Water temperatures requirements do vary by condition, with those with Multiple Sclerosis requiring a lower water temperature in the range of 27 to 29 degrees Celsius.
- Facility requirements for specialized service levels are more complex, with special attention required for dressing rooms (e.g., mechanical lifts to beds or chairs), wheelchair water entry access (i.e., ramps or lifts), more circulation space on decks, warmer water temperature, and specialized water depths (e.g., movable depths). Other support amenities such as physical therapy and massage services operating in the same facility are common.

Leadership Training

Aquatic services rely on trained leaders (e.g., instructors, lifeguards). The market for leadership training tends to be teens and young adults, but those of all ages can participate in this activity type. Leadership training is almost always delivered via organized programs such as Bronze Medallion or Bronze Cross. Most municipalities in Canada are experiencing shortages of qualified leaders to maintain service levels and safe facility operation requires that individuals with these skillsets be available. While leader training is typically a small component of facility utilization, it is a vital activity type for aquatic system operation and should be accommodated to the greatest extent possible at each facility. Leadership training courses can be held at any time throughout the year and, during warmer months, can take place in outdoor environments.

Service Provision and Facility Specification Considerations

- This activity type does not need to be accommodated within every facility in the Comox Valley but should be more readily available overall at a city-wide level to encourage more participants.
- A variety of water depths, temperatures, and tank configurations are often required to support leadership training depending on specialization level.
- Some specialized support spaces, such as larger pool decks and off-deck classrooms, are often required to support this activity type.

Outdoor Aquatic Activity Types

While outdoor pools can provide all of the seven categories of aquatic service that indoor pools provide, there are two unique activity functions that apply to outdoor pools, spray parks, and wading pools – water orientation for toddlers and respite from summer heat.

Water Orientation for Toddlers

Prior to learning to swim in structured, organized programs, toddlers should be exposed to water in comfortable, safe environments. Toddler introduction to water can happen both outdoors and indoors and requires no prerequisite skills. Primary orientation usually occurs in warm, shallow water areas with gradual depth increases, either through drop-in activity or through introductory programs. Outdoor pools, wading pools, and spray parks often provide these opportunities. As developing comfort with water is considered a fundamentally basic service, these outdoor amenities should be located as close to residences as possible. Facility specifications to accommodate this activity type include significant areas with warm, shallow water, graduated depth accesses from zero to 0.4 metres, but with no dimensions or configurations of tank or splash pad area required.

Respite from Summer Heat

Unlike water orientation for toddlers that can occur either indoors or outdoors, this activity type is typically accommodated through outdoor facilities during the summertime. Indoor facilities with easy access to secured outdoor environments are also an option for meeting this activity type. Water can be used to cool off on warm summer days and this activity type requires no prerequisite skills. This activity type is provided primarily through drop in opportunities and can be delivered to all age groups. This activity type category is typically delivered at a community level, located as close to potential users and possible, with the only specification for use being warm outdoor temperatures.

Aquatic Service Facility Modes of Use

Similar to other recreation facilities, there are also three modes of pool operation as follows:

- **Drop-in**, where individuals and families decide to visit a facility and swim on a case-by-case basis.
- **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.
- **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 as summarized in Figure Four.

Figure 4: Aquatic Modes of Use

	Three Modes of Operation		
Categories of Aquatic Service	**Drop-In**	**Program**	**Rental**
Recreational Swimming	■		■
Skill Development		■	
Fitness Swimming	■	■	
Sport Training			■
Special Events			■
Therapy and Rehabilitation	■	■	■
Leadership Training		■	
Water orientation	■		
Respite from heat	■		

Economics of Pool Operation

Some important economic aspects of the delivery of aquatic services apply to aquatic facility planning.

- The **Capital Cost** of an indoor pool, unlike most other forms of buildings, correlates more directly with the volume of the facility than the floor area. This is because the deeper the water, the more air above the water is typically required, and both water depth and ceiling 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, chemical laden air above the water) associated with those volumes. Two pools with the same floor area can have significantly different construction costs if one has more deep water and higher ceilings than the other.
- The **Capital Cost** of an outdoor pool correlates more directly with the volume of water in the main tank. The deeper the tank, the more it costs to construct and the more mechanical support systems are required to filter and treat the water.
- **Operating Costs** for indoor and outdoor public pools are highly regulated and largely fixed. About 70% of the operating costs of a typical pool are relatively or completely fixed (ie. they don't vary whether there is one person swimming or 40 people swimming in the pool enclosure) and are associated with a minimum number of lifeguarding 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.
- **Operating Revenues** are almost all 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 two points, it is very important, from an economic and environmental sustainability point of view, to **operate any 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. That means a regional community should try to size its pools to meet current and short term (i.e. ten years) 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 in the short term that they collectively exceed the cost of adding to an existing pool or building another pool far into the future when the community needs it.

All of the above contextual comments are very important in the sizing and configuring of pool spaces and planning for long term aquatic needs. To ensure the right kinds and amounts of aquatic spaces are built 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 bullets above translated into a set of aquatic spaces that will optimally respond to those needs, resisting the temptation to "overbuild" spaces which won't be used for 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.
- That as many current aquatic needs are met within a context of the least amount of volume of space.
- That all pools will be operated as close to full capacity as is reasonably possible to avoid unnecessarily high subsidies per swim.

The final few points above need to be considered as decisions about any changes to aquatic service provision.

1.5 How does the public provision of aquatics benefit a community?

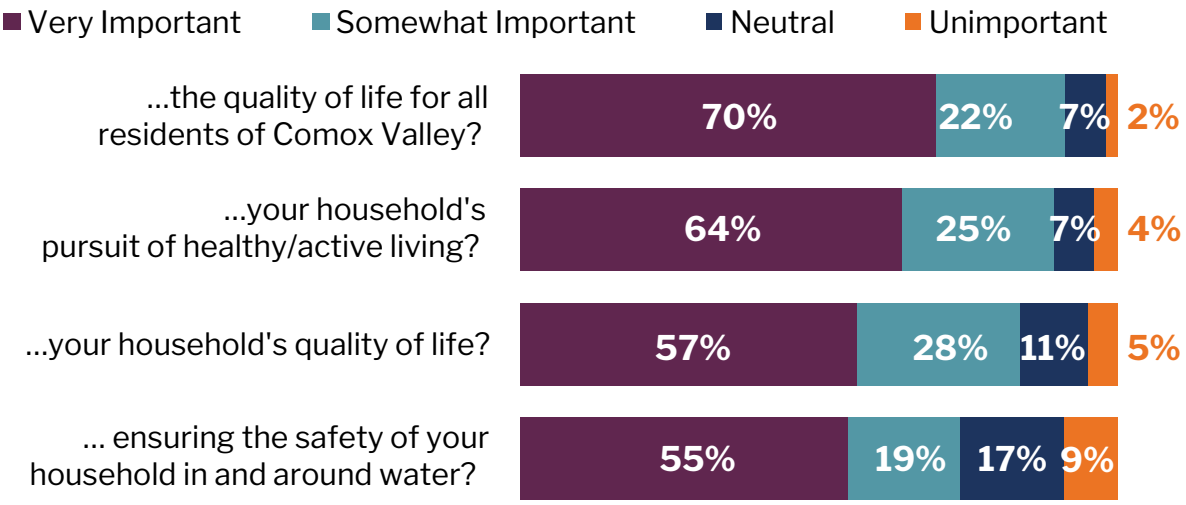
Although public aquatic facilities are among the most expensive facilities that a community can provide, almost all communities invest heavily in them because of the tremendous benefits that accrue from their use. These benefits contribute to healthy, active individuals and communities and include:

- **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 consumptive and least **likely to result in injury** because of the buoyancy of the water.
- **Rehabilitation** and **therapy services** to those with varying ability and functional limitations and those recovering from injury or surgery.
- **Social opportunities** in water or on deck that connect people and reduce feelings of isolation.
- 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 competitions.

It is for the above reasons that there is justification in public aquatic swimming facilities to subsidize the operation quite highly. In addition to taxpayers having to contribute to the capital costs of indoor and outdoor pools, the typical recovery rate[1] for a public pool is between 30% and 70%, with taxpayers paying the remainder of the operating costs.

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%.

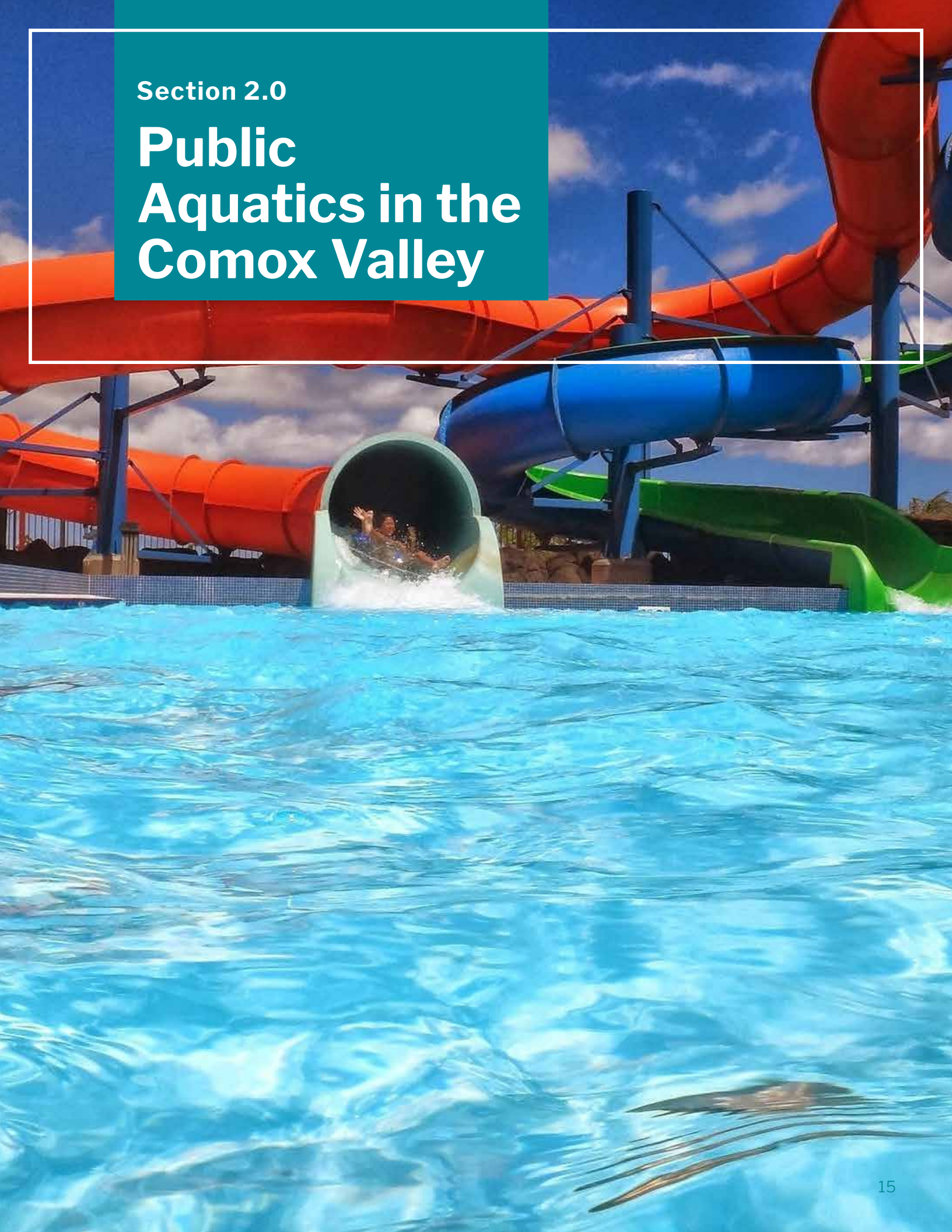
Chart 1: Values and Benefits of Aquatic Services



Recreation Facilities as Community Hubs

Having recreation amenities located in neighborhood parks and/or offering Recreation facilities with outdoor amenities, such as outdoor pools, playgrounds, parks, tennis courts, and spray parks has been proven to increase social cohesiveness of residents. Being centrally located and accessible, reduces barriers to transportation as these facilities can be easily accessed through active transportation. Generally, this may increase utilization, and encourages physical activity for all ages.

A centralized community location also provides a local activity outing with something for everyone. These facilities also provide the opportunity to connect people who may not have interacted previously, and therefore create greater sense of community.



Section 2.0

Public Aquatics in the Comox Valley

2.1 Current Facilities

The three existing public pools are shown in **Map One** along with the 19 Wing Pool that has some capacity for public use. All four are located within population centres and all are located centrally within the region. All three public pools are located within the City of Courtenay.

Details on the current state of the three public facilities are included in **Appendix A**.

Map 1: Study Area and Inventory

The current facilities are well situated within the communities they serve. As Map Three shows, population density of individuals living within a 1.5 km walking distance of the three public pools and the 19 Wing Fitness and Community Centre on the Canadian Forces Base. This distance is supported by the community survey which found the majority of Comox Valley residents (48%) thought it was acceptable to travel 10 – 20 minutes by walking to access a pool (see **Chart Two**).

Map 3: Population Density within 1.5 KM Walking Proximity to a Pool

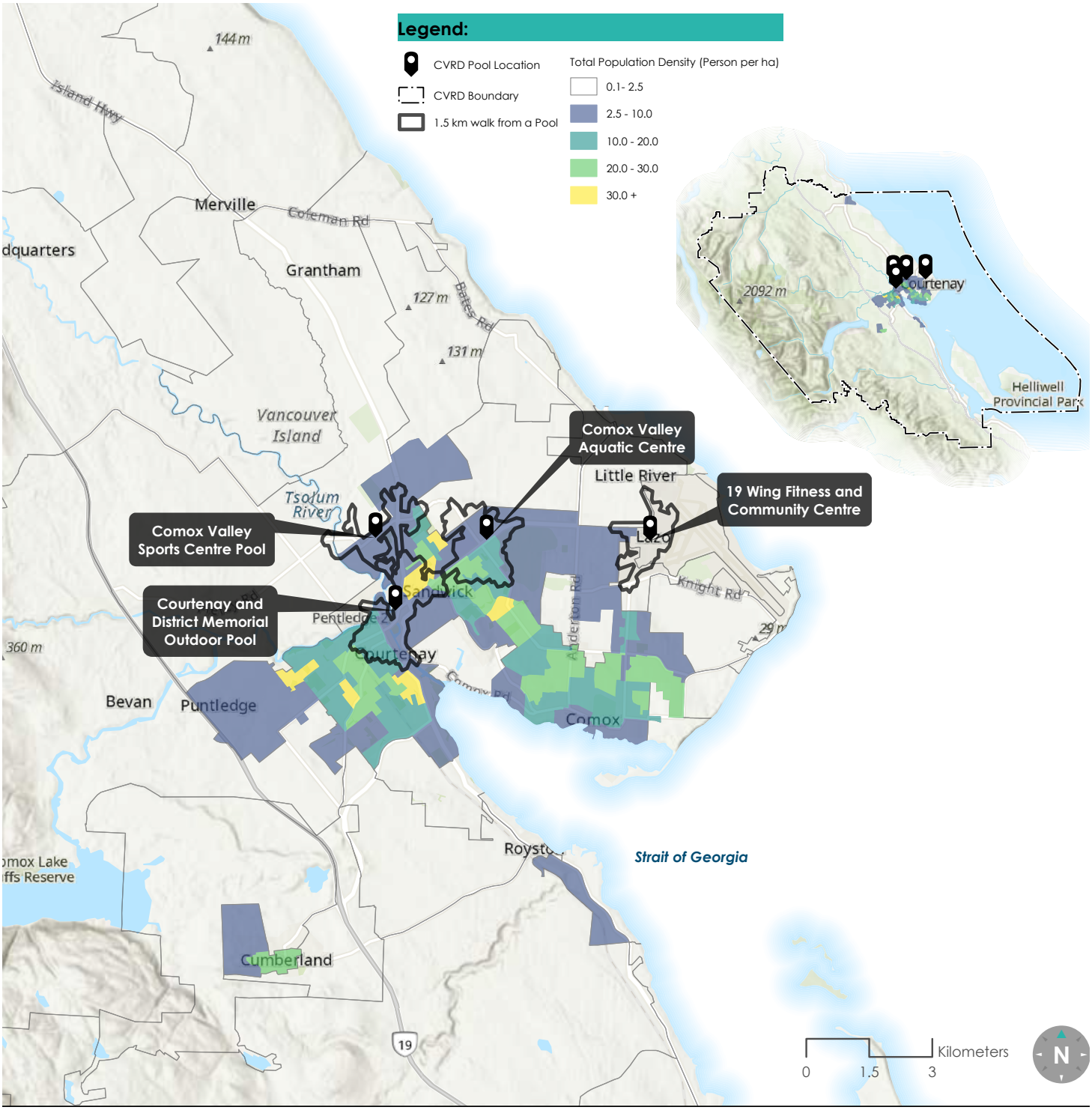
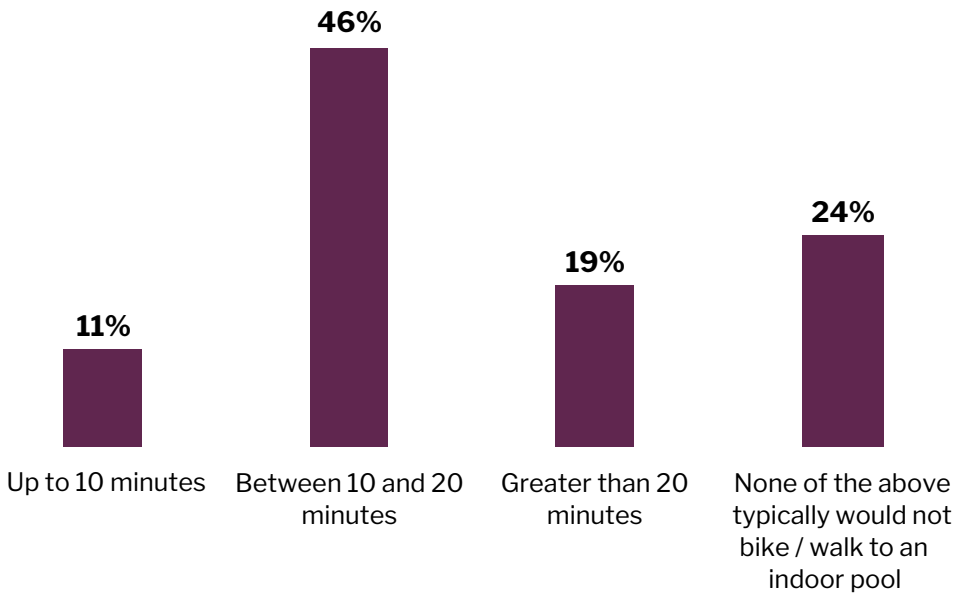
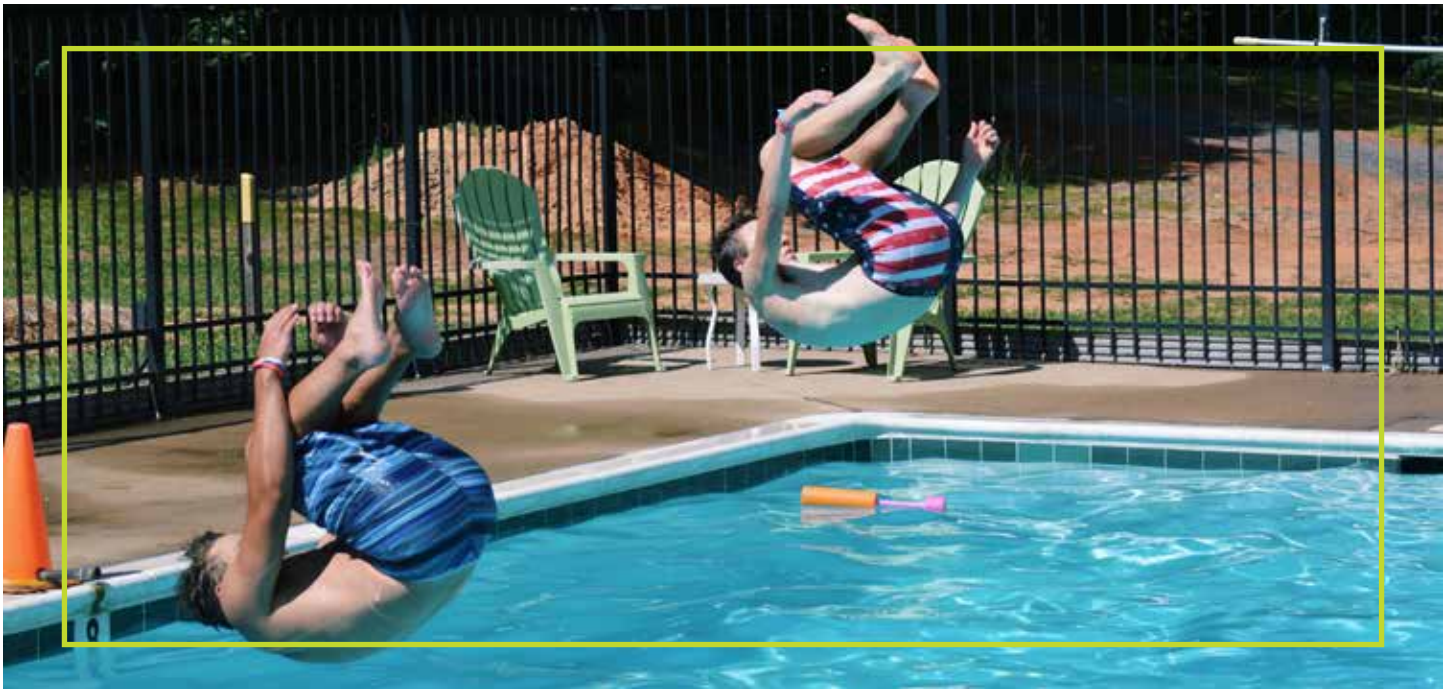


Chart 2: Acceptable Travel Time to a Pool (by bike or foot)



Expanding the scope of access, **Map Four** shows, population density of individuals living within a 25 km driving distance of the three public pools and the 19 Wing Fitness and Community Centre on the Canadian Forces Base. This distance is supported by the community survey which found the majority of Comox Valley residents (65%) thought it was acceptable to travel 10 – 20 minutes by car or bus to access a pool (see **Chart Three**).



Map 4: Population Density within 25 KM Driving Proximity to a Pool.

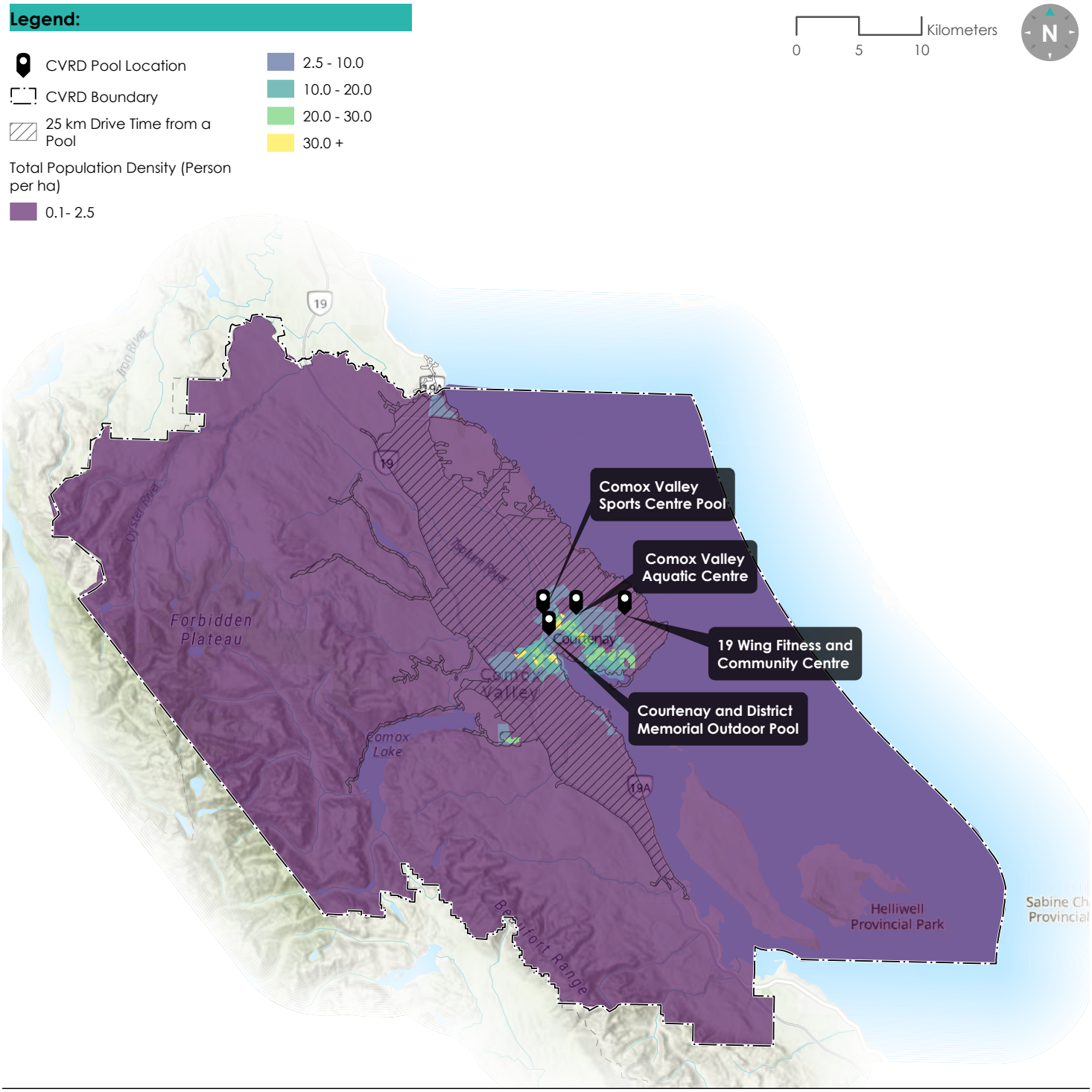


Chart 3: Acceptable Travel Time to a Pool (by car or bus)

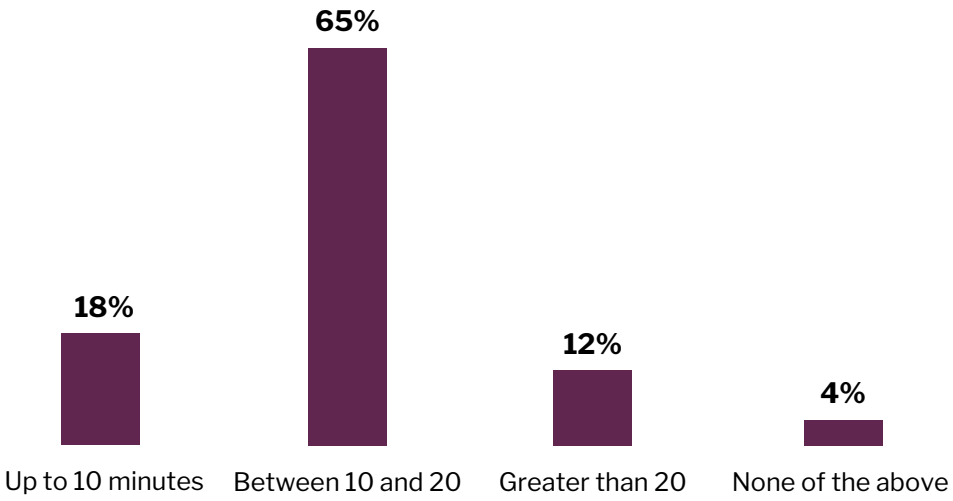


Photo from: **www.comoxvalleyrd.ca/services/transit**

2.2 Community Context

In 2022 the total population of the Comox Valley is estimated to be about 73,000. The most recent census results, summarized in Figure Five, show that the three urban areas and the K'ómoks First Nation reserve constitute about 66% of the total regional population, while the three Electoral Areas make up the remaining 34%.

Figure 5: Population Summary in 2021 Census

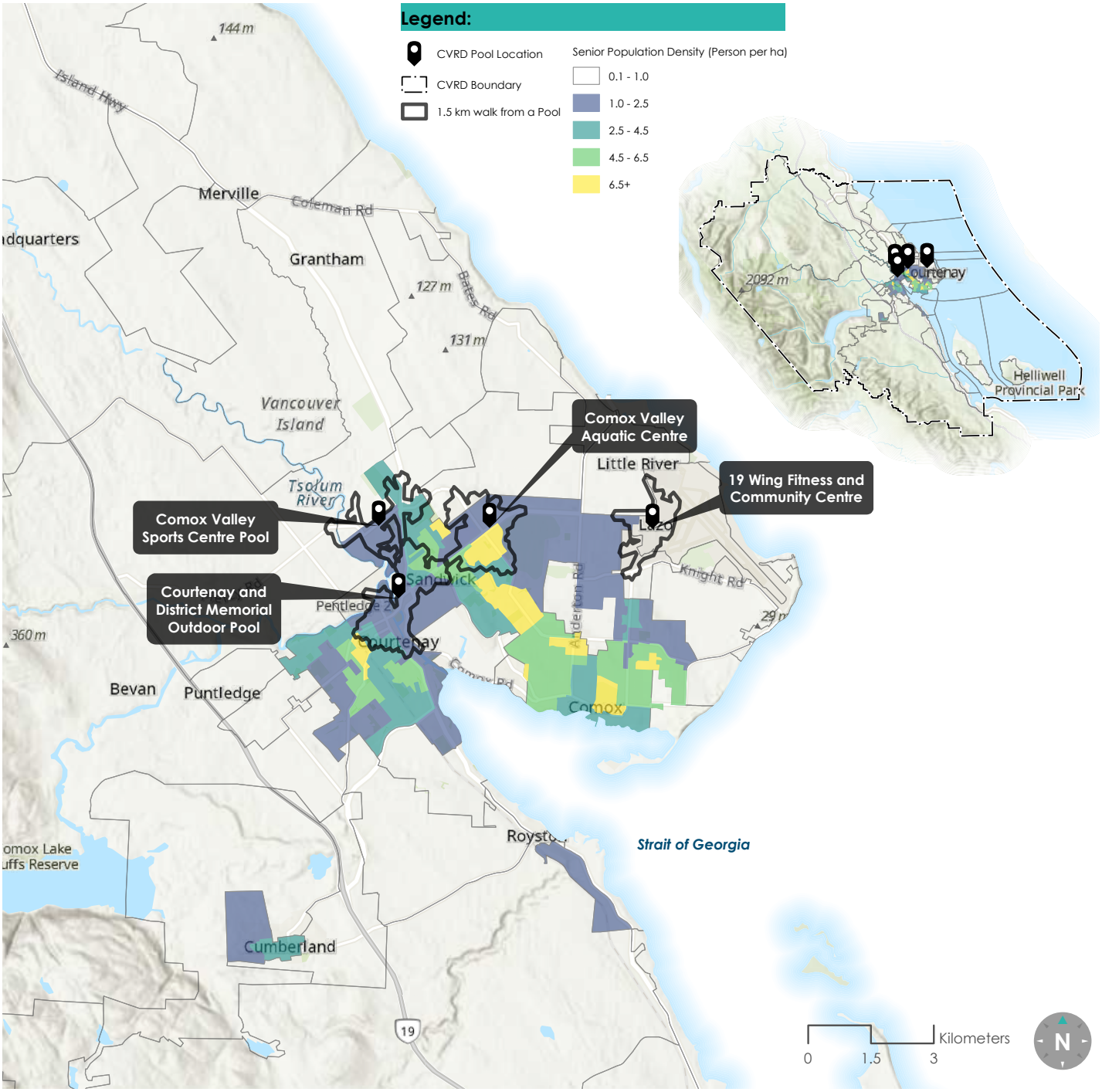
Jurisdiction	Population in 2016	Population in 2021	Increase (2016 - 2021)
Courtenay	25,639	28,420	10.8%
Comox	14,028	14,806	5.5%
Cumberland	3753	4447	18.5%
K'ómoks First Nation	222	291	31.1%
Electoral Area A	7,213	7,926	9.9%
Electoral Area B	7,095	7,392	4.2%
Electoral Area C	8,617	9,158	6.8%
Totals	66,567	72,440	8.9%

As Figure Five shows, the Courtenay, K'ómoks First Nation and Electoral Area A are growing faster than the average while Electoral Areas B and C and Comox are growing more slowly. Please see **Appendix B** for a detailed over of demographic characteristics surrounding each of the three community aquatic facilities.

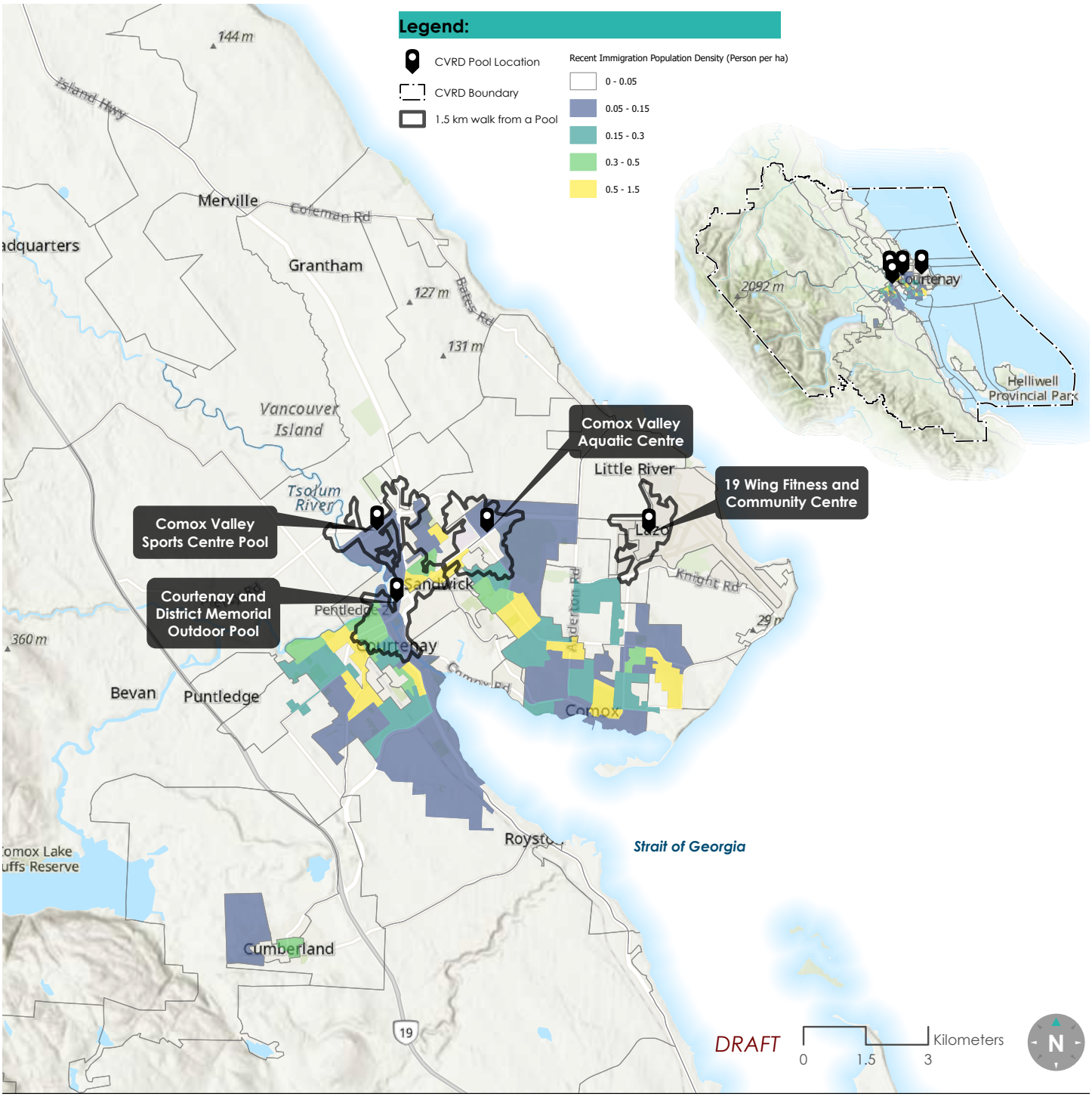
One aspect of the demographic makeup of the region that will be a significant factor in influencing leisure behaviour patterns is age. The current population of the region is older than average BC population makeup, and the population profile is estimated to continue to be older over the next ten years. This suggests more growth in the aquatic service categories of rehabilitation and therapy, fitness and recreation with a strong social dimension of each. It also suggests less growth in such categories of swim lessons, sport training, competitions, water orientation for toddlers and leadership training. **Map Five** shows the proximity to aquatic facilities of older adult residents.

The 2010 CVRD Regional Growth Strategy shows continued growth to an estimated 88,500 residents by 2030. So far, growth has progressed as estimated and is on track to match that estimate. If growth were to continue at an average 1.6% annually over the next two decades, as the Regional Growth Strategy suggests, and the last five years shows, the population could reach almost 100,000 by 2040. Across British Columbia and Canada, immigration a significant driver of population growth. Recent Census data (Statistic Canada, 2022) found that 80% of Canada's population growth was due to immigration. In the Comox Valley immigrant population accounts for 13% of the total regional population. Map Five shows recent immigrant population density within 1.5 km walking proximity to a pool. This is an important consideration as we know that New Canadians require unique supports to access services and become engaged in their new communities.

Map 5: Older Adult Population Density within 1.5 KM Walking Proximity to a Pool



Map 6: Recent Immigrant Population Density within 1.5 KM Walking Proximity to a Pool



2.3 Aquatic Trends

The following aquatic trends have been synthesized from aquatics strategies that the consultants have completed in BC over the past five to ten years. It is suggested that they will likely influence behaviour patterns in the Comox Valley in at least the short-term foreseeable future.

Equity and Inclusion

- Inclusion and accessibility are top of mind for most municipalities and considerations should be holistically engaged with throughout the entire lifespan of a facility and throughout program planning. Furthermore, considerations for accessibility and inclusion should begin from the moment a potential user considers going to a facility; from transportation to outdoor features and the entrance way to using the change rooms and then finally entering the swimming pool and engaging in activity.
- Pools often function as community hubs and important gathering places for those of all ages, cultures, and backgrounds.
- Recreation can contribute to improving the lives of people through the delivery of services and programs that are designed to address inequities and barriers to participation. Pools should incorporate abundant socialization areas, including specialized areas for Indigenous placemaking, community events and meetings, and unprogrammed open spaces for spontaneous socialization and participation.

Case Study: Wascana Pool, Regina Saskatchewan

Wascana Pool renewal is currently ongoing with the planned opening in Summer 2023. The renewed outdoor aquatic facility will be an inclusive, vibrant community space with several recreational elements. A new accessible playground and spray pad is also under development, which will be located next to the pool facility with free access for everyone. The facility also features a welcoming public art installation. A local Anishnaabe-Saulteaux artist from The Key First Nation was selected to design the gate that will greet Regina residents when they visit the renewed Wascana Pool. The art installation is a public facing metal art insert that not only provides security to the building, but beautifies its entrance.

Sustainability

- Modern facilities are being designed to be multi-use, blend indoor and outdoor environments, and capitalize on surrounding services. Benefits of designing multi-use spaces include the opportunity to create operational efficiencies, attract various users and procure multiple sources of revenue.
- Pools are unique given the high levels of energy and water needed to operate in northern climates such as Calgary's. Utilizing green building design standards (e.g., LEED) and incorporating leading edge technologies to reduce energy consumption, prevent heat loss, and lower water consumption can help to offset a pool's overall environmental impact. Renewable energy generation technologies can also be incorporated to generate electricity and to warm water.
- Many aquatic facilities in Canadian municipalities are nearing end-of-life and significant reinvestment is required to meet changing user expectations and provide quality environments for aquatic activities, preferring to go to newer or more feature-equipped facilities. Municipalities must also compete with the private sector in the form of hotels or resorts that may have newer or more attractive amenities.

Case Study: Borden Pool, Edmonton Alberta

The Borden Park Natural Swimming Pool (NSP) is the first chemical–free public outdoor pool to be built in Canada. The NSP replaces an existing pool built in the 1950s with a seasonal pavilion and landscaped pool precinct with the capacity of 400 swimmers. At the NSP, the challenge of water quality control, essential to any public bathing facility, is compounded by the scale and the technical demands required to achieve an environmentally healthy and natural filtration process.

Case Study: Hebburn Central Community Hub, Newcastle, UK

The facility offers a wide range of leisure elements including a six lane 25m pool, teach pool, fitness suite, dance studio, sports hall, external 3G artificial pitch and children's play area. These are integrated alongside a community library and customer service centre providing public access to key resources and administration, as well as digital media and event spaces.

Taking inspiration from the community's industrial heritage, the design solution for Hebburn Central utilizes technologies and fabrication methods which are synonymous with Hebburn's engineering and ship building heritage. Extensive use of off-site modular fabrication and the use of standardized large-format steel paneling allowed the design team to create a highly efficient envelope system. This approach also helped to improve the quality of workmanship and reduce levels of waste. Throughout the course of the project 98% of site waste was diverted from landfill and 99% of the construction labour was sourced from within 40 kms of site.

Health and Safety

- Aquatic exercise is growing in popularity due to its low impact nature and health benefits.
- Swimming lessons are and will continue to be popular, particularly for children. However, aquatic literacy is increasingly being viewed as key to physical literacy overall and more users – including adults – are interested in skill development.
- Wellness and therapy users are one of the fastest growing user groups for pools.
- COVID-19 has and will continue to impact facility operations and, increasingly, public health is a fundamental consideration for facility design – as well as operations.

Case Study: Millennium Park, Castlegar, British Columbia

Opened in 2014, the Natural Swimming Ponds are the key project for the City of Castlegar's 23 hectare Millennium Park. This recreational space consists of a series of ponds adjacent to the Columbia River designed to bring residents and visitors to the river's edge and provide a safe, fun swimming area. Designed with a 'natural aesthetic', the ponds blend into the shoreline and offer active water and play opportunities to a wide range of park users, views out across the river, beach areas for picnics and leisure, integrated with other park activities both present and future.

Participation Trends

- Youth activity preferences have been shifting over time towards individual pursuits and unstructured sporting activities like swimming.
- Increasing demand for drop-in activities to better accommodate youth and adults that lack interest or ability to participate in organized and/or competitive leagues.
- Aquatics generally will likely experience an increased demand in the coming years including swim lessons, therapeutic programs, individual fitness, spontaneous and unstructured activities.
- As adults are living longer and remaining active longer, demand may increase for programs and activities designed for older adults such as low-impact activities, skill development programs, and more casual, social-oriented drop-in programs – all of which aquatics can accommodate.
- Affordability has been and will continue to be an important barrier hindering participation rates in recreational pursuits.

Case Study: Wilmot Park Splash Pad, Fredericton New Brunswick

Wilmot Park splash pad in Fredericton was the first of its' kind in Atlantic Canada, features a barrier free, zero entry throughout with over 40 different elements in unique zones that align with childhood development pathways to zones for young adults and adult users.

User Expectations

- A common trend experienced across all recreation facilities (including aquatic facilities) has been a shift in the expectations of users. Users are continuing to seek out enticing, engaging facilities that offer a variety of amenities. Users expect that facilities will be comfortable places for all ages and cultures. They also expect that facilities will encourage participation to encourage community integration, well-being, and social cohesion. Specific to aquatic facilities, users demonstrate that facilities are more than just a place to swim, they are now destinations to gather, socialize and have fun.
- Many municipalities are choosing to close outdoor pools, partly due the fact that the net subsidy per swim in an outdoor pool is typically much higher than for indoor pools due to weather and high shut down and reopening costs. As a result communities are seeking alternative outdoor swimming experiences for residents. Popular options include nature based outdoor swimming opportunities, as is the case in the Comox Valley, and for many communities splash pads are becoming the new 'neighbourhood pool'. A key trend has become communities deciding to replace aging community outdoor pools and/or wading pools with splash pads to meet the leisure needs of residents at the community level. These low intervention developments are also cost and environmentally efficient options that meet the expectations and needs of residents for leisure aquatic experiences and respite from heat.

Case Study: Sorlandsbadet Pool, Lyngdal, Norway

Lyngdal is a small town with a long tradition in tourism and as the commercial centre of the region. The city is located in the southernmost part of Norway, where the climatic conditions are good. Sørlandsbadet was designed to meet various needs. In a small place like Lyngdal, it was not possible to create a niche water park concept and target only specific users. It depended on having a good local and regional founda- tion and use. At the same time, it had to be attractive for the tourism sector, specifically in relation to families with young children.

The current facilities consist of three main pools. A competition pool that meets the needs of school swimming and activities, along with diving towers with platforms at heights of one, three and five metres. There is a wave pool with a counter current channel, which is mostly designed with children and youth in mind. There is also have a cold pool with water directly from the Rosfjord, which is seawater. There are two hot tubs, one indoor and one outdoor. The facility is designed so that it is situated right on the beachfront on the beautiful Rosfjord. Outdoors, there is an artificial pool island and water attractions, as well as five outdoor slides. The entire exterior of the facility is a large glass wall, where all users can enjoy the view of the fjord.

2.4 Assessment of Current Supply and Demand for Aquatic Services

Demand is a function of the amount of people who swim and the frequency in which they swim. Essentially, demand is the number of desired swims over a specified timeframe in each area. If there is an overabundance of pool supply and no participation barriers, then it could be assumed that demand equals the number of actual swims. However, if pools appear to be in short supply, then demand is likely greater than the actual number of swims measured currently.

Supply is the total amount of swims that a pool, or a system of pools, can comfortably accommodate over a specified duration. The number of swims a pool can accommodate is impacted by the type of activity occurring within a facility. For example, recreational and leisure activities in a pool can accommodate more swimmers at a given time, than swim training activities conducted by a swim club.

There are many ways to determine the capacity of a pool. To determine an absolute maximum capacity, the amount of people that can legally fit into an aquatic's enclosure (i.e., per fire code) can be multiplied depending on how often the visitors turn over which could be based on an average visit duration.

While it is important to operate within the public health standards, it is not realistic to expect a public aquatic facility to reach its legal maximum potential visits based on building codes, especially since most activity types require adequate space for each participant. Therefore, an alternative approach to determining supply is assessing the *'practical'* capacity of a pool.

This alternative method assumes that the number of swims an aquatic facility can practically accommodate depends on the amount of water surface area and water depth. While it makes sense intuitively that a large tank has a higher capacity than a smaller tank, water depth plays an important factor. More people can safely use a shallow tank than a deep tank of the same size, therefore some smaller tanks might have higher capacities than bigger tanks. As referred to earlier, public pools should provide a variety of activity types, each requiring different amounts of buffer space between participants. For water shallower than 5 feet, a multiplier of 65 annual swims per square foot of water surface is applied. For water 5 deep or deeper, 25 swims per square foot, per year is used. These figures have been developed and refined over the past four decades based on observations and operational experience and have proved useful to many municipalities across Canada. These figures account for appropriate programming balances between the seven activity types and assume a typical number of operating hours each week.

Determining Capacity

The capacity of the existing four indoor and outdoor aquatic facilities to deliver many or all of the nine categories of aquatic service relates to:

- The amount of surface area of the existing pool tanks.
- The depth of water in those pool tanks.
- Programming and scheduling of the tanks (i.e., different uses can result in different amounts of use in the same water surface area and depth).
- The total hours available each year.

Given a few standard assumptions about the above four bulleted criteria, which are noted in **Appendix C**, the total capacity for aquatic service can be measured by the formula noted below:

- For water less than 5 feet 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 5 feet deep, indoor pools have a capacity to deliver up to 25 swims per year for each square foot of water surface area.
- For outdoor pools, the capacity follows the above formulae, and is prorated for the reduced hours of operation annually.
- For a pool with limited access by the general public, the capacity follows the above formulae, and are prorated for the reduced hours of availability.

Figure Six summarizes all existing physical capacity for aquatics in the Comox Valley. The totals have been calculated using previously noted proprietary formulae developed by the consultants over the past four decades of pool planning (see **Appendix C** for further explanation).

Figure 6: Summary of Existing Annual Capacity to Accommodate Aquatic Services

Facility	Comox Valley Sports Centre	Comox Valley Aquatic Centre	Courtenay Memorial Outdoor Pool	19 Wing Base Pool (Public Access)	Totals
Total	272,000 swims per year	350,000 swims per year	37,828 swims per year	100,000 swims per year	759,828 swims per year

Characteristics of Current Aquatics Services and Spaces

To project future rates of indoor and outdoor swimming in the Comox Valley it is important to note that in Canada virtually all urban centres have swim rates in public pools in the range of 4 to 10 times the community's population, or 4-10 swims per capita, which breaks down to 4-8 swims per capita for indoor swims and 1-2 swims per capita for outdoor swims. Where a community falls within that range typically relates primarily to the number, quality and variety of indoor and outdoor pools that are accessible to the public and secondarily to the size of the community. In communities with fewer older facilities, not conducive to meeting some of the categories of aquatic service, they are usually in the lower half of that range. In communities with lots of excess capacity, all in high quality pools which offer a wide range of environments optimized to meet all categories of aquatic service, the community usually realizes swim rates in the upper half of that range. That said, the larger the urban centre, the fewer swims per capita it is likely to realize. The only occasions that the consultants have measured swim rates at or slightly above the nine (9) swims per capita level, has been in very small communities with high quality multi-use indoor and outdoor aquatic facilities. However, no markets larger than the Comox Valley region have exceeded the eight (8) annual swim per capita range and almost all of them are between four (4) and six (6) swims per capita.

As Figure Seven shows, the Comox Valley currently realizes about 3.9 swims per capita (assuming a total population of 72,000 in 2019). It summarizes all existing use of indoor and outdoor aquatics in Comox Valley in 2019, the last year before COVID changed behaviour patterns.

Figure 7: Current Documented Swims in Comox Valley in 2019

Use Type	Comox Valley Sports Centre Pool	Comox Valley Aquatic Centre	Courtenay Memorial Outdoor Pool	19 Wing Base Pool (public use portion)	Totals
Program	2000	40,712	1000	10,000	53,712
Drop-in	42,934	125,747	11,753	20,000	200,434
Rental	5056	11,496	2500	5000	24,052
Total	49,990	177,955	15,253	35,000	278,198

Figures Six and Seven show that the **existing indoor pools are operating about 37%** of capacity, which is less than optimal and relatively uneconomic as noted in a previous section. As usage starts to approach 100% of capacity, the quality of each swim can start to degrade due to crowding or conflicts between categories of use. Operating at about 85 to 95% of available capacity is an ideal situation. The outdoor pool operates about 40% of capacity, which is quite typical of outdoor pools in western Canada, but again, is less than optimal and uneconomic in terms of the net subsidy per swim.

Capacity Scenarios:

- Loss of Public Access to 19 Wing Base Pool: If public access to the 19 Wing Base Pool was removed from the regional inventory, and the projected 35,000 annual public swims at the facility were displaced to the remaining indoor facilities; the indoor pools would be operating at 40% capacity.
- Loss of Outdoor Pool: If the Memorial Outdoor Pool was removed from the regional inventory, and the 15,000 annual swims were displaced to the indoor pools; the indoor pools would be operating at 38% capacity.

In both scenarios the regions indoor pools would still be operating below the recommended 85 % capacity for operational efficiency.

Chart 4: Aquatic Activity in Indoor and Outdoor Facilities (Community Survey, 2022)

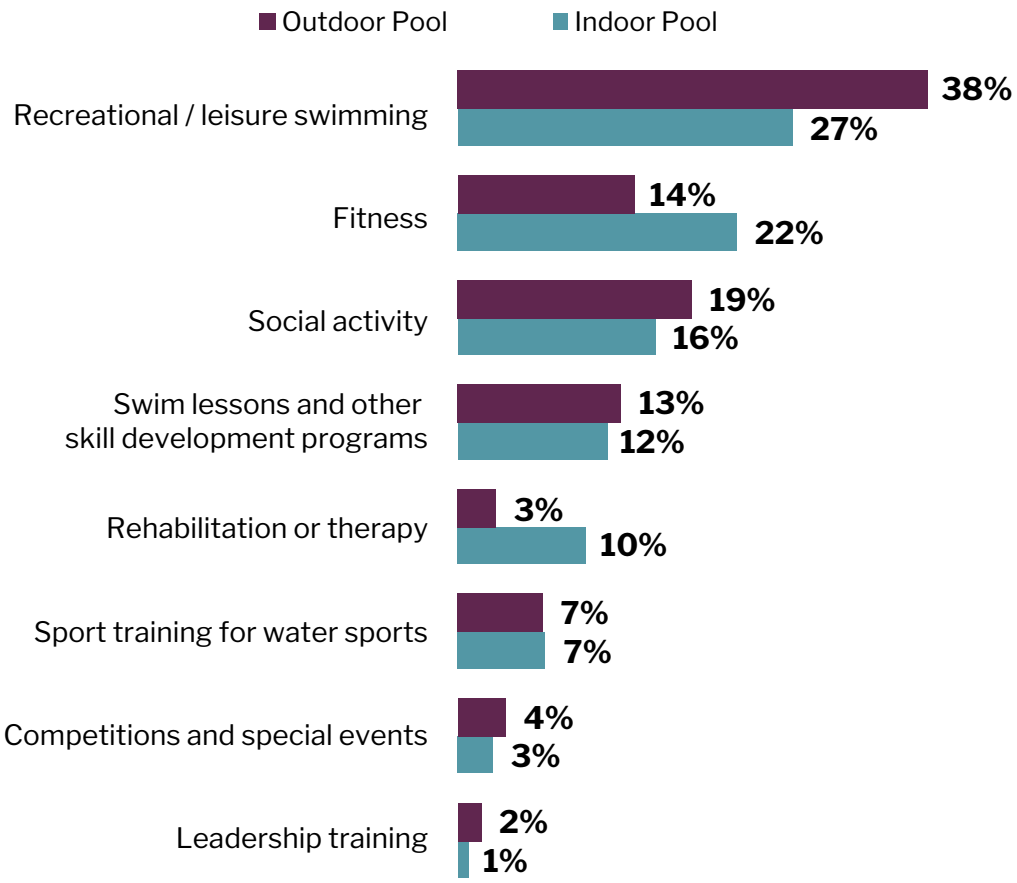


Figure Eight, takes the totals from Figure Seven and combines them with an analysis of pool operating schedules and discussions with pool staff. It provides a rough estimate of how the current swims break down by category of aquatic service. To support this Chart Four shows the self-identified participation by activity type as reported by the community survey.

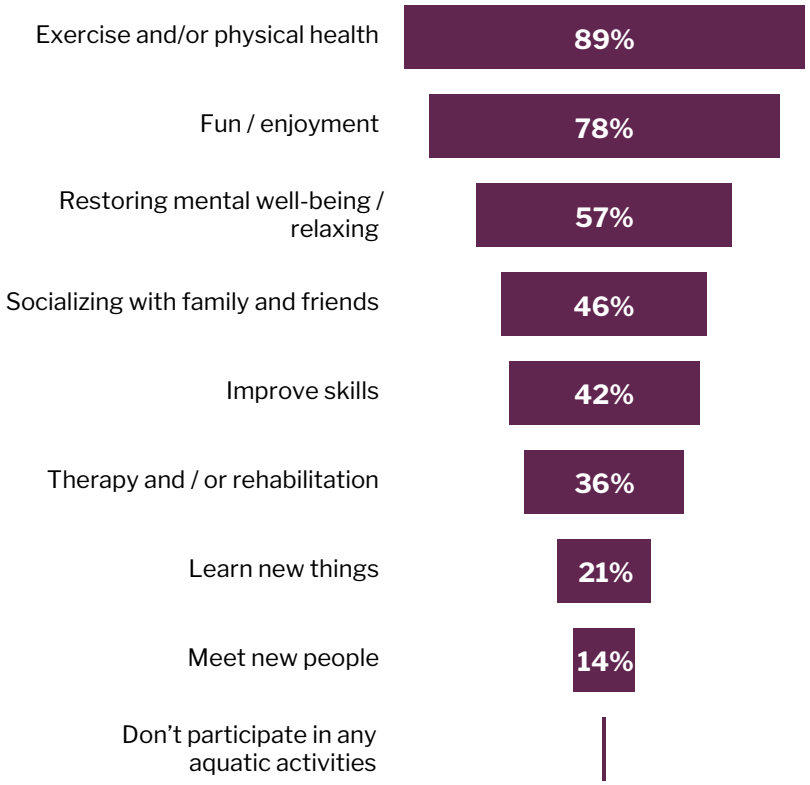
Figure 8: Summary of Estimated Existing Use of Aquatic Amenities

Facility	Comox Valley Sports Centre Pool	Comox Valley Aquatic Centre	Courtenay Memorial Outdoor Pool	19 Wing Base Public Access to Pool	Totals	Percent of Use
Recreational Swimming	37,434	99,347	8085	10,000	154,866	56%
Skill Development	2000	34,312	489	10,000	46,801	17%
Fitness Swimming	4000	24,000	4159	10,000	42,159	15%
Sport Training	5056	11,496	2500	5000	24,052	9%
Special Events	100	6400	0	0	6,500	2%
Therapy and Rehab	1000	2000	0	0	3,000	1%
Leadership Training	400	400	20	0	820	0%
Total	49,990	177,955	15,253	35,000	278,198	100%

*Recreational swims at the Memorial Outdoor Pool include all swims associated with respite from summer heat category of service. And water orientation for toddlers is accommodated in the separate wading pool which is not included in these calculations.

Chart 5: Main Reasons For Participating In Aquatic Activities (Community Survey, 2022)

Projecting Demand for Aquatic Services



The totals in Figures **Six** and **Eight** show that residents of CVRD are currently swimming at a rate of about 3.9 swims per capita which is very much at the low end of what is anticipated. It shows there is lots of room for growth in the swim rate, and that there is existing capacity to accommodate it. The consultants suggest that if the quality and types of aquatic spaces were altered to focus more on current demand and need for aquatic service it would be prudent to assume that the current swim rate of 3.9 per capita per year could be easily raised to at least five (5) swims per capita per year. That means that there is currently latent demand for public indoor and outdoor swimming in the region for about 80,000 additional swims or an increase of about 29% in the short term.

Based on current trends in types of aquatic behaviour, most of these 80,000 additional aquatic uses will likely be in such categories as therapy/rehab, fitness, and recreational swimming.

Setting a target of at least five (5) swims per capita per year also suggests that as the population grows, there will be a need to accommodate roughly five (5) more swims per capita or about 5000 swims for every 1000 additional residents in the longer-term future. Based on the current capacity of all existing publicly available pools in the region, this suggests that the **population would have to more than double before additional aquatics capacity will be needed**. That will not happen in the next twenty years.

Conclusions About Supply vs Demand for Aquatic Services

The forgoing analysis shows quite clearly that the existing facilities are used to less than half the capacity for use and that this is an uneconomic level of use. There is clearly more capacity than is currently needed. However, residents have become accustomed to the luxury of having lots of unused capacity even if there are a few conflicts of use during prime times. So, the current issue is not one of need for more capacity. It is, instead, a need for different capacity. Changes to existing supply of aquatic services need to be focused on several factors including:

- **Sustainability of capacity** – Some spaces, like the Memorial Outdoor Pool are rapidly approaching the end of their functional lifespan and replacing the assets will be more cost effective than trying to invest in the current assets.
- **Environmental Factors** – Reducing the environmental footprint of existing aquatic assets is likely worth the capital investment required to achieve environmental goals and will likely be necessary if those goals are to be achieved.
- **Operating Efficiencies** – Some capital investment in existing assets will have the "trade off" of reducing the net public investment per swim. While public swims realize public goals and deliver public goods, there is no reason to waste limited available resources to achieve those goods.
- **Significant Increases in the Quality of Public Swims** – As above, new or renovated spaces will enhance the quality of existing assets which will enhance the quality of swimming experience, which will in turn realize more public benefit.
- **Small Increases in the Quantity of Public Swims** – Even though there is lots of excess capacity within the public pool system within the CVRD, the existing amenities don't meet all current needs. So, investment can be justified to realign some spaces to better focus on aquatic service categories where there is some latent demand.

Conclusion:

The City of Courtenay and the Comox Valley Regional District should invest strategically to increase the quality, efficiency, and sustainability of existing aquatic assets.

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Section 3.0

Projected Demand for Aquatic Services

3.1 Demand for Aquatic Opportunities

It is clear that there are currently about 278,000 public swims in four facilities within the regional market. However, as the previous section concludes, there is at least another 80,000 swims of latent demand currently in the market that better facilities would attract and accommodate. That means that total demand is currently about 360,000 swims or about five (5) swims per capita.

Over time this total will grow as the population grows and will equate to about five (5) swims per capita for the foreseeable future. By 2030, if the population reaches 88,500 as projected by the Regional Growth Strategy, the total would be about 440,000 swims. Ten years later, if growth were to continue at a rate of about 1.6% (the rate experienced over the past five years and the rate the Regional Growth Strategy anticipates) the population could be about 100,000 which would result in about 500,000 swims. This is still well short of available current capacity which is about 50% more than that. So, more capacity won't be required for at least two decades and likely much longer.

Key Finding:

Additional capacity for aquatic services in the Comox Valley will not be required for at least two decades. However, if demand increases and the projected swims per capita is met, then capacity should be recalculated to determine if additional capacity is needed.

Section 4.0

A Recommended Aquatic Strategy for the Comox Valley

4.1 Aquatic Strategic Foundations

The development of an Aquatic Strategy compliments and aligns with the existing planning and policy work of the Comox Valley Regional District and the City of Courtenay, including parks and recreation specific planning as well as the broader strategic direction of City Council and the Regional District Board. It is also informed by the evidence-based analysis of the current state of aquatics in the region contained within this report, and by the thorough community engagement conducted as part of this study.

Strategic Foundations

City of Courtenay Parks and Recreation Vision

Parks and recreation in Courtenay support a healthy, engaged, and inclusive community with a high quality of life. Key features are the diverse parks, interconnected trails for all ages and abilities, natural areas throughout the City, and multi-use and accessible spaces for indoor and outdoor recreation. The City is forward-thinking and addresses trends and emerging needs in parks and recreation.

Comox Valley Regional District Vision

The Comox Valley Regional District is a partnership of three electoral areas and three municipalities providing sustainable services for residents and visitors to the area. The local governments work collaboratively on services for the benefit of those living and visiting the diverse urban and rural areas of the Comox Valley.

Aquatic Strategy Vision for Comox Valley

Aquatic facilities and services offered to residents and visitors of the Comox Valley encourage a healthy, active and connected community.

Aquatic Strategy Principles

The Comox Valley Regional District and the City of Courtenay are committed to improving the health and wellbeing of residents by influencing the provision of opportunities to be active. The guiding principles in relation to the provision of aquatic facilities and services are:

- **Community Health and Wellbeing:** Aquatic facilities and services enable residents to be active and engaged in their community.
- **Environmental Sustainability and Mitigation:** Aquatic facilities and services are planned, built, and operated in a manner that encourages a sustainable future provision, and mitigation of environmental impacts.
- **Accessible and Inclusive:** Aquatic facilities and services are welcoming and are planned, built, and operated in a manner that removes barriers to participation.
- **Service Excellence:** Aquatic facilities and services continue to a diverse offering of aquatic opportunities and contribute to a high quality of life for residents.
- **Financial Responsibility:** Aquatic facilities and services maximize the value of community resources by actively managing human and financial resources and where possible alleviate duplication of effort between the City and Regional District.

4.2 Aquatic Strategy Objectives

The following objectives have been developed to guide the delivery of aquatic services, facility management and future investment:

Objective 1 High quality aquatic facilities that are adaptable and responsive to community need.

Objective 2 Provide accessible, affordable and inclusive facilities and opportunities.

Objective 3 Facilities and opportunities are well planned, maintained and managed.

Recommended Strategic Action

Based on the engagement, key research findings and provision analysis provided within this report, the above three strategic objectives have been developed for the future provision of aquatic facilities and services. To support those objectives the following actions have been developed.

Timeframe	Cost
Short: 0 – 2 years	$
Medium: 3 – 5 years	$$
Long: 6 – 10 years	$$$

Strategic Objective #1: High quality aquatic facilities that are adaptable and responsive to community need.

Recommended Action	Description	Timeline	Cost
Feasibility Study	Based on the analysis contained within the Aquatic Facility Plan section of this report; develop a feasibility study to explore the consolidation of aquatic facilities at one site. Incorporate public consultation to evaluate design and program options for the proposed aquatic complex.	Medium	$$
Accessibility	Complete accessibility audits to determine potential opportunities for enhancement of existing facilities, and to ensure compliance with the Accessible British Columbia Act & Regulation (2022).	Short	$
Sustainability	Align the management and operations of aquatic facilities with the principles and targets set out in the region's sustainability and climate action plans.	Ongoing	$$

Strategic Objective #2: Provide accessible, affordable, and inclusive facilities and opportunities.

Recommended Action	Description	Timeline	Cost
Fees and Charges	Work in collaboration with regional partners to ensure fees and charges for aquatic facilities and services are set at an affordable level that supports participation and ensure consistency throughout the region for financial assistance programs. Consider the introduction an all-inclusive aquatic pass to access all facilities in the Comox Valley.	Ongoing	$
Range of Programs and Services	Work in collaboration to ensure a range of aquatic programs and services that are offered at the regional facilities support the health and wellness needs of the community taking into consideration: • demographics of the region • programming trends, such as wellness and rehabilitation • programs that support social and cultural diversity, such as women only swims	Ongoing	$
Transportation	Work collaboratively and with relevant departments to assess public transit access to aquatic facilities and services. Ensure that facilities are well serviced during prime times.	Ongoing	$
Service Level	Service level of five (5) indoor swims per capita and 0.5 swims per capita outdoors shall be adopted.	Short	$

Strategic Objective #3: Facilities and opportunities are well planned, maintained and managed.

Recommended Action	Description	Timeline	Cost
Data Collection	Work collaborative to collect relevant customer and facility data to support future planning and performance analysis.	Short	$
Performance Measures	Work collaboratively to develop annual performance measures for aquatic facilities and services	Ongoing	$
Asset Management Planning and Resource Allocation	Utilize condition assessments on all aquatic centres to develop reserve funding which aligns with City Council's and R.D. Board's operational and renewal budgets.	Ongoing	$$
Operational Efficiencies	Adopt new technology and modern approaches to improve customer service and operational efficiencies in aquatic facilities and services.	Ongoing	$

Section 5.0

Infrastructure/ Capital Project Options

5.1 Capital Options

In order to make progress toward the Vision outlined in the previous section, some capital investment options are presented and evaluated.

The key parameters guiding the proposed options include, but are not limited to:

- No overall increase in water area/capacity is required
- Desire for enhanced leisure and wellness experiences
- New/better facilities will respond to some latent demand and increase annual swims marginally
- Alignment with universal accessibility requirements
- Alignment with broader environmental sustainability objectives and corporate climate action plans

Option 1 – Maintain Status Quo ($16.5 M)

This option focuses on managing the ongoing, necessary maintenance items in each facility without any significant programming or design interventions. It assumes that the current standard of service provision (program offerings and quality of experience) will not be significantly altered. Some operational and energy efficiencies may be realized through optimization of mechanical systems that require replacement. The scope for this option will be determined by the facility condition assessment reports completed to date. This highest risk component of this approach will be the Outdoor Pool, which is nearing end of life and for which a "status quo" approach may not be realistic for much longer.

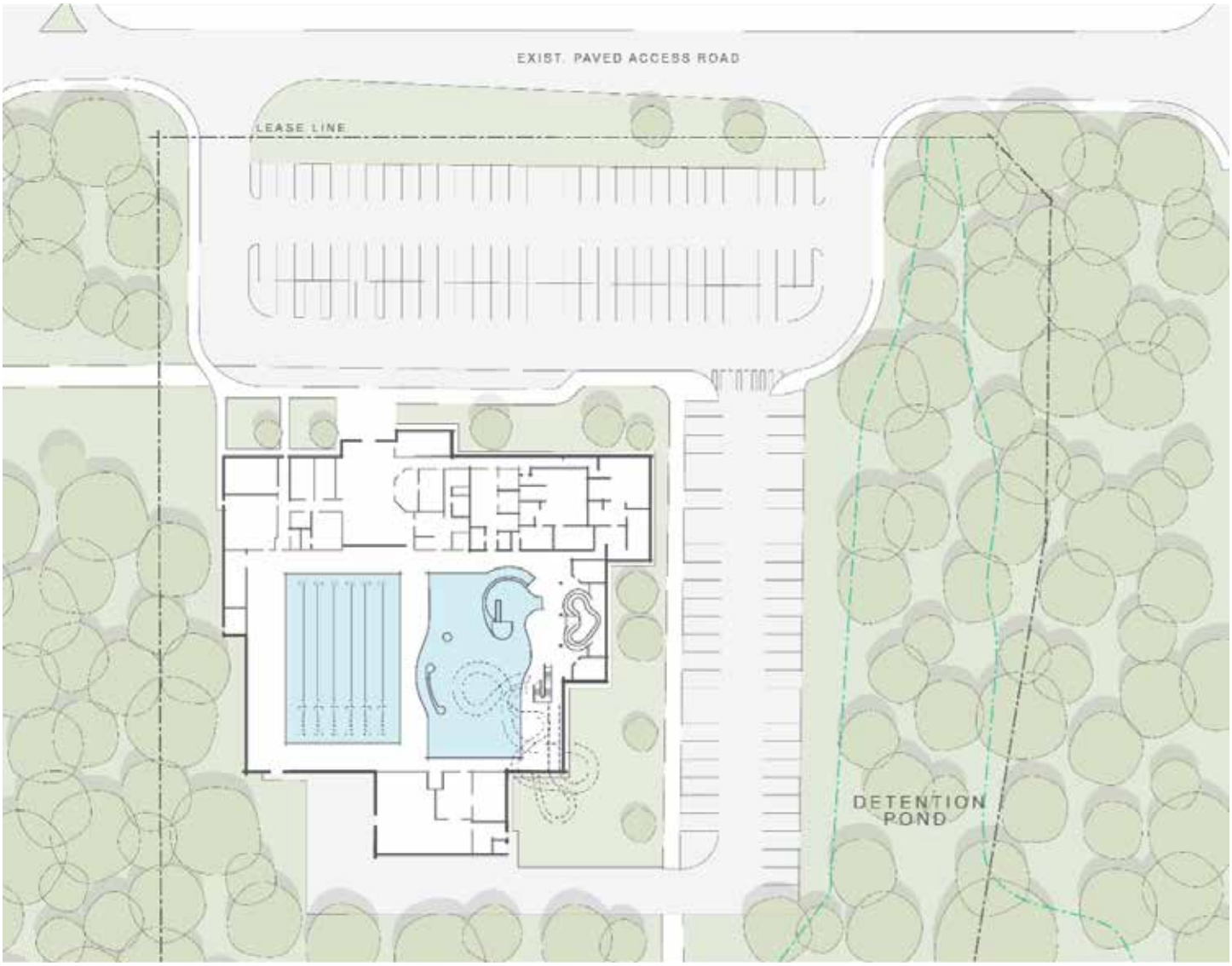
Outdoor Pool ($1.0M) – some investment will be required to deal with the most pressing items identified in assessments completed to date. The replacement of the main drains and resolution of the leak issue should be a high priority.

There is little value in pursuing any remedial work to the change rooms (at the scale indicated by the RDH report) without substantially altering the layout to address significant issues with the layouts and address accessibility needs. If this facility is to be operated for the foreseeable future, this option should allow for a new change room facility to be constructed.

Sports Centre ($7.5M) – based on reports completed to date, the primary focus would be on the replacement of any components nearing or at end of life (HVAC and roofing). Air handlers could be replaced with more efficient units, and insulation added to the roof during the re-roofing process which would help address the GHG reduction priority.

Aquatic Centre ($8.0M) – the investment in this facility would be related to the items identified in the 2021 FCA report. Figure Nine illustrates the current site conditions at the Aquatic Centre.

Figure 9: Existing Aquatic Centre site conditions



Option 2 – Consolidation at Aquatic Centre Site

This option suggests that as the Outdoor Pool and Sports Centre reach end of life, they are replaced as an addition to the existing Aquatic Centre. At a high level, this option captures the following benefits:

- Operational efficiencies (staffing, energy systems)
- Capital cost efficiencies (shared change facilities and mechanical/support spaces)
- Opportunity to address emerging community priorities with a new facility design

It should be noted that there are ongoing capital maintenance items (as identified in the FCA reports and option 1) that will influence the costs of all Option 2 phases. Some of the FCA identified items may be included as part of one of the phases, others will need to be captured as a separate cost/project. This will need to be coordinated in future analysis to arrive at a true total cost for work required at this facility.

This option is broken down into three potential phases:

Option 2A – Wellness Expansion at Comox Valley Aquatic Centre ($ 25.8 M)

This option shows how the Aquatics infrastructure currently located at the Comox Valley Sports Centre can be replaced at the Comox Valley Aquatic Centre site by expanding the facility on that site. Figure Ten shows how that could happen.

Figure 10: Option 2A - Expansion of the Comox Valley Aquatic Centre

This option adds the current uses being accommodated at the Sports Centre to the Aquatic Centre site, with a distinct focus on the provision of wellness related amenities. This option would be located to the north of the existing centre. The concept study will determine how feasible it is to consolidate the sports centre uses in this location. It would include the following:

- Therapy/Teach Pool (approx. 15mx15m) suitable for aquafit, therapy and rehab uses, lesson programming etc. Water temperature would be warmer than the 25m pool, and cooler than the leisure pool.
- Additional sauna and steam rooms to build out a more comprehensive wellness zone.
- Addition of a second, larger hot pool. This would allow the two hot pools to be run at different temperatures.
- Additional deck lounging space
- Modest expansion to existing pool mechanical space for additional filters and boilers
- Potential reconfiguration and expansion of existing change rooms to accommodate the increased bather load

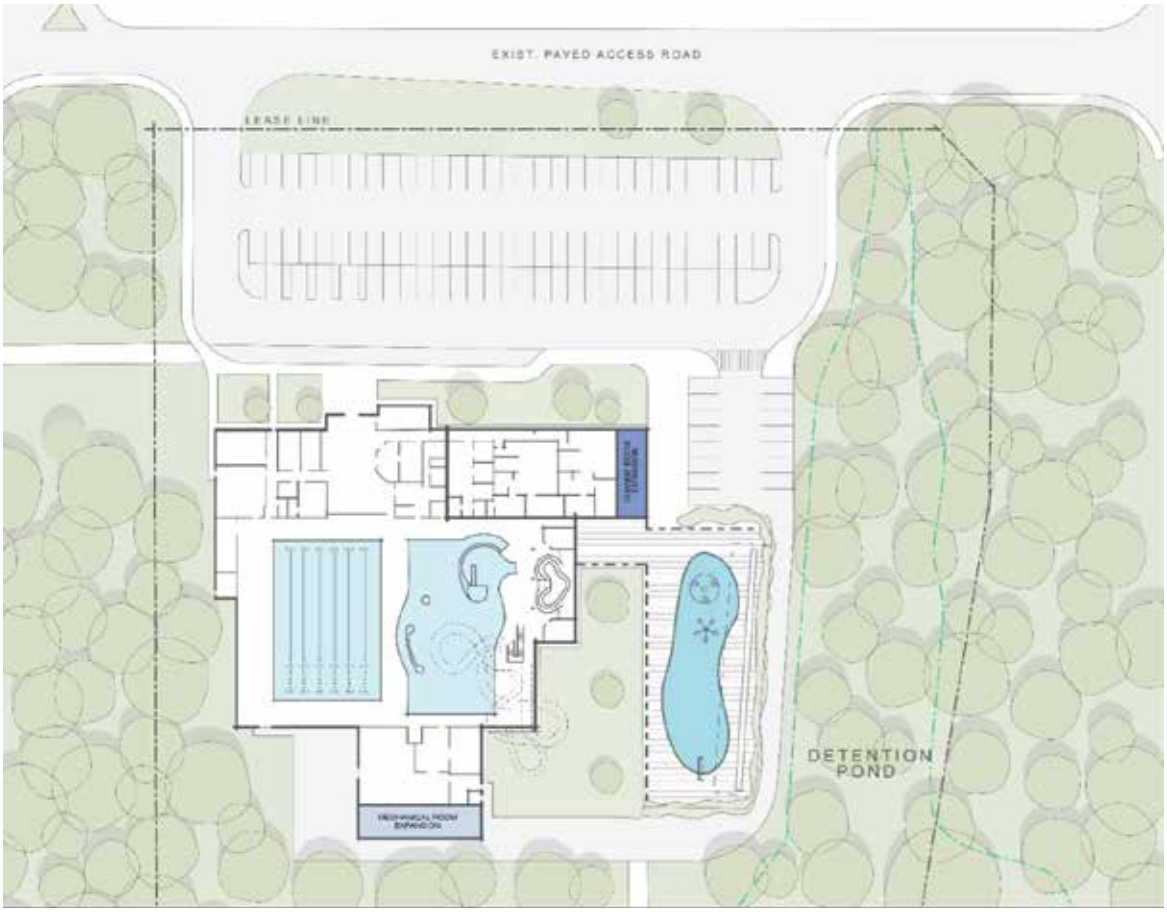
These amenities would create a distinct wellness zone that would complement the existing leisure focus of the centre and take some of the pressure off the main 25m tank, allowing it to support competitive and fitness uses.

This option would serve some currently unmet need in the community and would result in an estimated 10-20 percent increase in the total number of swims each year in the short term and would provide sufficient capacity to accommodate total population growth in the region for the next several decades. It would also increase the quality of many or most of the current swim visits.

Option 2B – Outdoor Pool Expansion at Comox Valley Aquatic Centre ($12 M)

This option would relocate and replace the existing Courtenay Memorial Outdoor Pool at the Comox Valley Aquatic Centre site. Figure Eleven shows one option for this project.

Figure 11: Option 2B – Outdoor Pool Added to the Aquatic Centre



This option would place the existing Courtenay and District Memorial Outdoor Pool with a new outdoor pool on the parking area to the north of the Aquatic Centre building where it would be accessed through the building's control zone. It would include the following:

Freeform outdoor leisure pool with water features, zero entry and enough consistent 900mm water depth to support some swim lesson programming, fitness swimming and swim training. Equivalent water area to current outdoor pool.

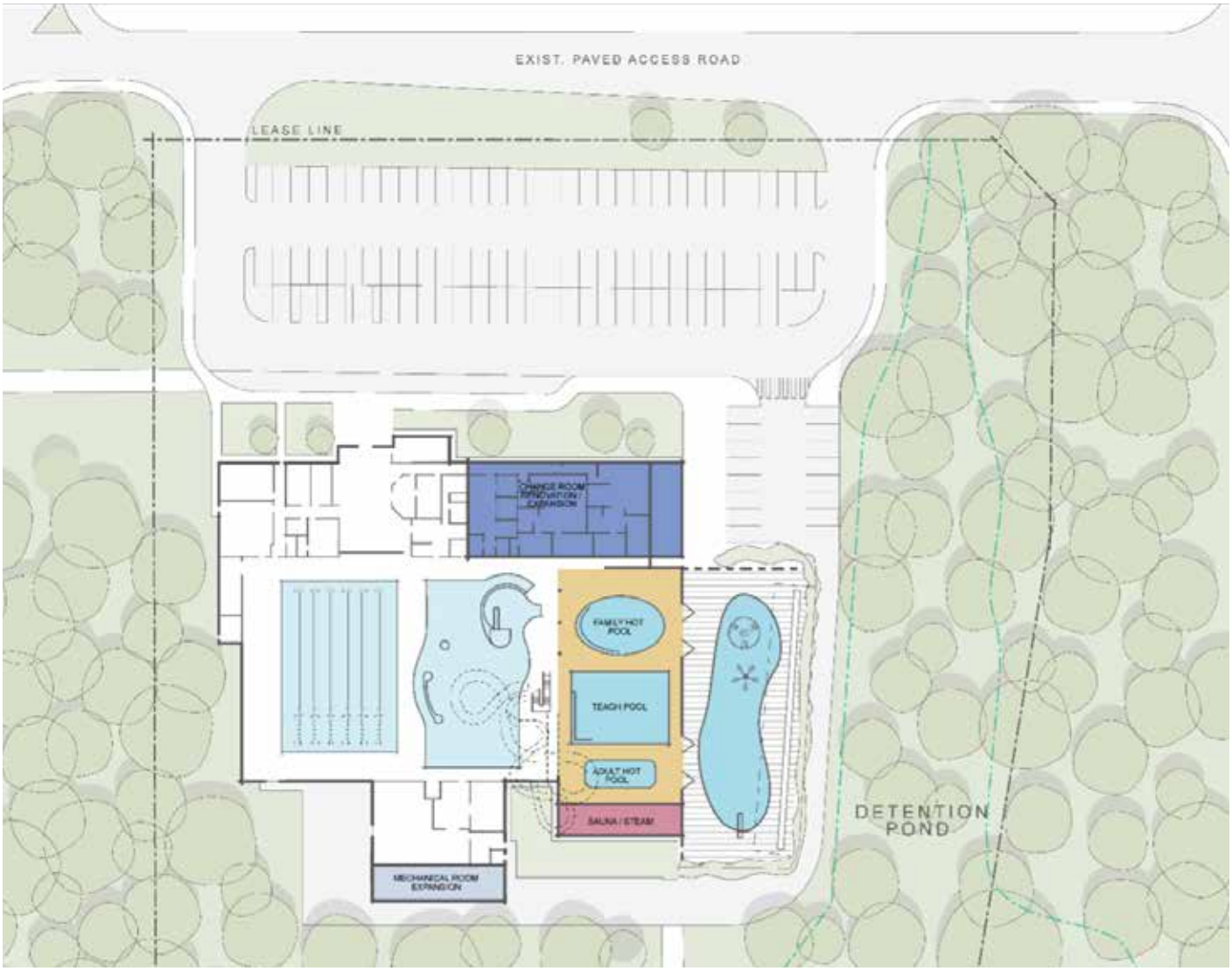
- Potential reconfiguration and expansion of existing change rooms to accommodate the increased bather load.
- Modest expansion to existing pool mechanical space for additional filters and boilers.
- Shade structure, picnic tables etc.
- Spray pad

The result of this option would be a slight increase in the total number of outdoor swims due to an increased quality of swim experience, but because outdoor swimming represents such a small proportion of total swims, the overall total number of swims would increase a very small amount. Therefore, the main benefits of this option would be increased quality of outdoor swimming, efficiencies in operation, environmental benefits (e.g. energy savings) and sustainability.

Option 2C – Wellness and Outdoor Pool Expansion at Comox Valley Aquatic Centre ($35 M)

In this option both the outdoor pool and the indoor pool at the Sports Centre would be relocated and replaced on the Comox Valley Aquatic Centre site. Figure Twelve shows how this could happen.

Figure 12: Option 2C – Indoor and Outdoor Pool Additions to the Aquatic Centre Site



The combined wellness provisions mentioned in option 2A, and the outdoor pool mentioned in option 2B would be added to the Aquatic Centre site in this option. The additional functions would be located to north of the existing facility and would require reconfiguration of the current parking and access road. The concept study will determine how feasible it is to consolidate both the Sports Centre pool and the existing outdoor pool uses in this location. It would include the following:

- Therapy/Teach Pool (approx. 15mx15m) suitable for aquafit, therapy and rehab uses, lesson programming etc. Water temperature would be warmer than the 25m pool, and cooler than the leisure pool.
- Freeform outdoor leisure pool with water features, zero entry and enough consistent 900mm water depth to support some swim lesson programming. Equivalent water area to current outdoor pool.
- Shade structure, picnic tables etc.
- Spray pad
- Additional sauna and steam rooms to build out a more comprehensive wellness zone.
- Addition of a second, larger hot pool. This would allow the two hot pools to be run at different temperatures.
- Additional deck lounging space
- Modest expansion to existing pool mechanical space for additional filters and boilers
- Potential reconfiguration and expansion of existing change rooms to accommodate the increased bather load

Depending on whether both indoor and outdoor components of the project proceed at the same time, and if not, which might proceed first, there are other options for location of the indoor and outdoor phases of the work. Another option is illustrated in Figure Thirteen.

Figure 13: Alternative Siting of Indoor and Outdoor Components of the Project

The above sketch is an alternate layout for the wellness expansion and outdoor pool on the Aquatic Center site. It has the benefit of not reducing the parking as much until the start of the wellness center construction. Although it helps with phasing, this option is slightly less efficient from a life-guarding standpoint. It also removes the possibility of having a second entrance to the outdoor pool if there is a desire to operate it separately.

Beyond the programmatic benefits and synergies, both Option 2A, 2B and 2C would significantly improve accessibility, and would also lower the overall GHG's by taking two very carbon intensive buildings out of circulation and replacing them with the shared efficiency of a centralized mechanical plant.

Option 3 – Full Build Out at New Site ($87.9 M)

Recognizing that the current building inventory is all older than 20 years, the option of consolidating all the uses at a new site in a new single facility should be considered. This could potentially address the land ownership challenges of the existing sites. It would also allow for the building to meet current codes, allow for significant reduction in GHG footprint and optimized for programming desires.

Assuming that no further capacity is required, this option could include the following:

- Main Tank (8 or 10L x 25M)
- Leisure Pool with lazy river, tot's zone, zero entry, spray features
- Waterslide
- Adult Hot pool
- Family Hot pool
- Universal change rooms
- Sauna and Steam rooms
- Pool Support Spaces
- Other potential dry floor uses (multi-purpose, fitness etc.)
- Outdoor Pool with slide and diving board

A completely new complex, optimized to emerging needs, would result in a significant increase to the quality of all existing swims and would result in an estimated 10-20 percent increase in the total number of annual swims in the short term. It would also have sufficient capacity to accommodate additional swims each year as the population grows over the next several decades.

It is important to understand the capital cost estimate for this option does not include any land costs and a site has not been identified.

Option 4A – Outdoor Pool at New Site ($16.6 M)

This option proposes a new facility built on a different site to replace the existing Outdoor Pool, which has reached the end of its service life. A new build on a new site would comply with the City's Flood Management Strategy and provide an opportunity to reallocate amenities to meet the needs of the emergent communities. Additionally, it would enable the building to comply with current regulations and standards, significantly reduce its carbon footprint, and improve the universal accessibility to the facility. Without a capacity increase, the new facility will have a pool tank and deck space size that matches the existing outdoor pool.

A new pool would result in a slight increase in the total number of outdoor swims due to an increased quality of swim experience, but because outdoor swimming represents such a small proportion of total swims, the overall total number of swims would increase a very small amount.

It is important to understand the capital cost estimate for this option does not include any land costs and a site has not been identified. However, the cost to demolish the existing facility and restore the site has been included.

Option 4B – New Outdoor Pool at Existing Site ($18.2 M)

This option proposes a new facility to replace the existing Courtenay Outdoor Pool on the same site. This option carries all of the same programming objectives as Option 4 (ie. matching the water area and amenities of the existing pool), but has some unique needs with respect to site considerations:

- Because the site is within the floodplain, current bylaws would require it to be built 1.7m higher than the existing pool. The ramps and stairs required to access this grade change would present significant disruption to the existing site connections (parking, spray pad, trails, community centre connection etc.)
- Demolition of the existing pool increases the cost of the site, and residents would lose access to the pool for at least one season unless additional site area could be made available for the new pool directly adjacent.
- As with Option 4, a new pool on this site would include all of the benefits of a modern facility built to current codes and best practices, including GHG reduction and accessibility objectives.
- The capital cost of Option 4B is higher than 4 to account for floodplain mitigation and demolition of the existing building. It has been assumed that a new parking lot is not required for Option 4B.

GHG Reduction Potential

The replacement of older buildings with newer buildings allows opportunities to substantially reduce operational GHG emissions, because newer buildings can incorporate more thermally effective envelopes, as well as less fossil fuel intensive, or fossil fuel free mechanical systems. Standalone new buildings (such as Option 4) could reduce operation GHG emissions by as much as 75-100%, driven in part by codes and policies that will make this a requirement of new construction in the very near future. For renovation or an addition to an existing building (Options 2A/B/C), the potential to reduce operation GHG's ranges closer to 25-75% and is highly dependent on the scope of mechanical equipment and envelope replacement. It is also important to note that the GHG reductions noted above are only realized at a net corporate level (across the entire building portfolio of the town or Regional District) if the existing building stock they are replacing is taken out of circulation. If not, then these options will still add to the overall corporate GHG profile, albeit with much more efficient carbon footprints.

5.2 Summary of Capital Options

Figure Fourteen provides a summary of the capital options presented above noting several key factors that will influence the analysis of options to inform decision making.

Figure 14: Summary of the Project Options

Option	Class D Capital Cost Est.	Alignment with Strategic Foundations	Increased Operating Efficiencies	Reduced Environmental Footprint	Increased Quality of Service	Enhanced Accessibility of Aquatics Service	New Site Purchase Required	Comments
Option 1: Status Quo	$16.5M	Recreation Commission Goals: • Partnerships between jurisdictions CVRD Strategic Priorities: • Community Partnerships City of Courtenay Strategies Priorities: • Invest in key relationships	None	No	None	None	No	• Perpetuates current situation for 10 years or more • Does not increase overall quality, or user. experiences. • Facilities produce significant GHG.
Option 2a: Wellness expansion at Aquatic Centre site	$25.8M	**Recreation Commission Goals:** • Asset Management • Partnerships between Jurisdictions • Connectivity **CVRD Strategic Priorities** • Fiscal Responsibility • Climate Crisis and Environmental Stewardship • Community Partnerships **City of Courtenay Strategies Priorities** • Invest in key relationships • Invest in natural and built environment • Reasoned land use planning	More	More	Some	Some	No	• Enhanced focus on fitness and wellness. • Improved quality of indoor aquatics. • Efficiencies of operation, including GHG emissions.

Option	Class D Capital Cost Est.	Alignment with Strategic Foundations	Increased Operating Efficiencies	Reduced Environmental Footprint	Increased Quality of Service	Enhanced Accessibility of Aquatics Service	New Site Purchase Required	Comments
Option 2b: New Outdoor Pool at Aquatic Centre Site	$12M	**Recreation Commission Goals:** • Asset Management • Partnerships between jurisdictions • Connectivity • Accessibility **CVRD Strategic Priorities** • Fiscal Responsibility • Climate Crisis and Environmental Stewardship • Community Partnerships **City of Courtenay Strategies Priorities** • Organizational and governance excellence • Invest in key relationships • Invest in natural and built environment • Reasoned land use planning	Some	Some	More	Some	No	• CVRD would fund the relocated outdoor pool at the Aquatic Centre site.
Option 2c: Centralize All Pools at Aquatic Centre site	$35M	**Recreation Commission Goals:** • Asset Management • Partnerships between jurisdictions • Connectivity • Accessibility • Improve efficiencies • Climate Action **CVRD Strategic Priorities** • Fiscal Responsibility • Climate Crisis and Environmental Stewardship • Community Partnerships **City of Courtenay Strategies Priorities** • Organizational and governance excellence • Invest in key relationships • Invest in natural and built environment • Reasoned land use planning	Most	Most	More	More	No	• Similar benefits to Options 2a and 2b, with capital cost savings when done as one project. • Ability to capture carbon from neighbouring community facilities. • Centralized community location for ease of access.

Option	Class D Capital Cost Est.	Alignment with Strategic Foundations	Increased Operating Efficiencies	Reduced Environmental Footprint	Increased Quality of Service	Enhanced Accessibility of Aquatics Service	New Site Purchase Required	Comments
Option 3: New indoor and outdoor pool complex on a new site	$87.9M	**Recreation Commission Goals:** • Asset Management • Connectivity • Accessibility • Improve efficiencies • Climate Action **CVRD Strategic Priorities** • Fiscal Responsibility • Climate Crisis and Environmental Stewardship • Community Partnerships **City of Courtenay Strategies Priorities** • Organizational and governance excellence • Invest in key relationships • Invest in natural and built environment • Reasoned land use planning	Most	Most	Most	Most	Yes	• Doesn't take advantage of Aquatics Centre site value, including carbon capture. • Requires the complexity of securing a new site.
Option 4a: New outdoor pool on new site	$16.6M	**Recreation Commission Goals:** • Asset Management • Connectivity • Accessibility **CVRD Strategic Priorities** • Fiscal Responsibility • Climate Crisis and Environmental Stewardship • Community Partnerships **City of Courtenay Strategies Priorities** • Organizational and governance excellence • Invest in key relationships • Invest in natural and built environment • Reasoned land use planning	Some	Some	Some	Some	Yes	• Increased capital cost over option 2b, complexity of finding an appropriate new site and no operating efficiencies or economies of scale . • Would improve overall quality of outdoor aquatic experience.

Option	Class D Capital Cost Est.	Alignment with Strategic Foundations	Increased Operating Efficiencies	Reduced Environmental Footprint	Increased Quality of Service	Enhanced Accessibility of Aquatics Service	New Site Purchase Required	Comments
Option 4b: New outdoor pool at the existing site	$18.2M	**Recreation Commission Goals:** • Asset Management • Accessibility **CVRD Strategic Priorities** • Fiscal Responsibility • Community Partnerships **City of Courtenay Strategies Priorities** • Organizational and governance excellence	More	No	More	Some	No	• Increased capital cost over option 4, with complexity of complying with the floodplain bylaws, and no operating efficiencies or economies of scale. • Would improve overall quality of outdoor aquatic experience.

An objective system for evaluating the options in the previous section is required in order to make rational and defensible decisions about how to proceed.

Section 6.0

Decision making Framework to Prioritize Options

6.1 Principles and Evaluation Criteria

In order to evaluate the various options and prioritize them, five principles have been selected and within the five, a total of 12 evaluation criteria determined. Each will affect the desirability of the option to proceed relative to the other options. Because the 12 criteria don't necessarily influence priority weighting the same degree, a weight has been assigned to each between 1 and 5.

Criteria which have been assigned lower weights will have less influence over the final outcome and criteria with a higher weight will influence the prioritization process to a greater degree. The principles, criteria and weights provide a framework within which priority scoring can be accomplished. That framework is summarized in Figure Fifteen.

Figure 15: Summary of the Prioritization Framework

Criteria	Description	Scoring			Criteria Weighting (1-5)
		3 Points	2 Point	1 Point	
Principle #1: Community Health and Wellbeing					
Proximity to public facilities and spaces	The proximity of the project to public indoor facilities and outdoor spaces (e.g. schools, hospitals, parks), especially those that are complementary to the facility.	The project is within walking distance (<800m) to complementary public facilities and spaces.	The site is nearby (800m-1500m) complementary public facilities and spaces but not within walking distance.	The site is not nearby complementary public facilities and spaces (>1500m)	1
Principle #2: Environmental Sustainability and Mitigation					
Climate Impact	The degree to which the project will support reducing the environmental impact and emissions related to aquatic facilities.	The project is expected to reduce environmental impact and reduce emissions.	The project is moderately expected to reduce environmental impact and reduce emissions.	The project is not expected to reduce environmental impact and reduce emissions.	2
Flood Plain	The location of the project in relation to identified flood plain areas.	The project is not located in a flood plain area.	The project is located in proximity to a flood plain area.	The project is located in a flood plain area.	2
Principle #3: Accessible and Inclusive					
Equitable distribution and access	The degree to which the project is accessible to all regional residents and contributes to an equitable provision of services and facilities within the Region.	The project is universally accessible and contributes to the equitable provision of services in the Region.	The project is universally accessible or contributes to the equitable provision of services in the Region.	The project is not universally accessible, nor does it contribute to the equitable provision of services in the Region.	2
Proximity to public transit	The proximity of the project to public transit opportunities.	The project will be served by a public transit route.	The project is within walking distance (<800m) to a public transit route.	The project is not accessible via public transit	3

Criteria	Description	Scoring			Criteria Weighting (1-5)
		3 Points	2 Point	1 Point	
Principle #4: Service Excellence					
Service quality	The degree to which the project will enhance quality aquatic services in the Region.	The project has a high likelihood of enhancing aquatic services in the Region.	The project has a moderate likelihood of enhancing aquatic services in the Region.	The project has a limited likelihood of enhancing aquatic services in the Region.	4
Supports Regional Growth	The degree to which the project will accommodate future population growth in the region.	The project will fully accommodate future utilization demand levels.	The project has a moderate likelihood of accommodating future utilization demand levels.	The project has a limited likelihood of accommodating future utilization demand levels.	2
Principle #5: Financial Responsibility / Sustainability					
Project capital costs	The degree to which the project capital costs will impact the CVRD and City of Courtenay.	The project will have an overall low-cost impact to the CVRD and the City.	The project will have an overall moderate cost impact to the CVRD and the City.	The project will have an overall high-cost impact to the CVRD and the City.	5
Operating costs	The degree to which the project will increase the efficiency of operating investments in aquatic services	The project will appreciably increase operating efficiency in terms of net public subsidy per visit	The project will have a limited increase in operating efficiency	The project will have little or no increase in operating efficiency	3
Asset life expectancy	The anticipate life expectancy of the project.	The project will have a significant life span.	The project will have a moderate life span.	The project will have a limited life span.	3
Future expansion capability	The degree to which the project will accommodate future expansion and growth of recreation, parks, and culture facilities (as well as other public amenities).	The project will accommodate future indoor and outdoor RPC amenities as well as other public services.	The proposed site is large enough or the project design will accommodate future indoor and outdoor RPC amenities.	The project will not accommodate any future indoor and outdoor RPC amenities or other public services.	1
Land ownership	Securing a site or sites for the project could become a significant factor in making a decision about the project	The project will be on existing publicly owned land.	The project will be on land not publicly owned, but tenure is secure	The cost of securing a new site for the project will be difficult and expensive	2

6.2 Scoring the Options and Calculating Priority Scores

With the framework complete the scoring of each option against each criterion can be done. When the scores (on a three-point scale) are complete and multiplied by the weight assigned to each criterion, the options with the highest scores will be the highest priority options when all criteria are considered and combined with the proper amount of influence of each incorporated into the score. The scoring details are included in Appendix D. The final priority scores are shown in Figure Sixteen.

Figure 16: Priority Scores Within the Prioritization Framework

Project Options	Prioritization Scores
Option 1 – Status Quo for the Outdoor Pool	56
Option 1 – Status Quo for the Indoor Pool	62
Option 2a – Central Indoor Pools on Aquatic Centre Site	76
Option 2b – Add New Outdoor Pool on Aquatic Centre Site	83
Option 2c Central Indoor and Outdoor on Aquatics Centre Site	82
Option 3 – New Indoor/Outdoor Pool Complex on a New Site	76
Option 4 – New Outdoor Pool on a New Site	70
Option 4b – New Outdoor Pool at Existing Site	56

As Figure 16 shows, when all the scoring is complete, Option 2c, the option of consolidating all indoor and outdoor aquatics on a single sight contiguous with the newest of the two indoor pools, rises to the top and becomes the highest priority option. This is because it is much less expensive than Option 3, it reduces operational green house gases considerably on an ongoing basis, and provides the current level of service at much less operating cost and subsidy per swim. Additionally the site is located adjacent to a major user market and is easily accessible by public transit. There may be further benefit from the energy transfer of heat capture from surrounding buildings. Overall, Option 2c represents the best value option in terms of environmental, social and financial criteria.

Section 7.0

Aquatic Facility Plan

7.1 Facility Planning Recommendations

Because decisions about the future of indoor aquatics options will be made by a different jurisdiction than those made about outdoor aquatic options, the recommendations for indoor and outdoor pool options have been separated initially and then combined.

Recommendation #1 – Indoor Pool Options

Indoor pool options include Options 1,2a,2c and 3. Within those options, the one with the highest priority score is Option 2A. Therefore, it is recommended that the CVRD phase out the operation of the indoor pool at the Comox Valley Sports Centre once it has been replaced with a new indoor pool with comparable but refined capacity added to the Comox Valley Aquatic Centre. This option, referred to as Option 2A in the previous section, represents the most cost-effective option for delivering all indoor aquatic services in the long-term future and has the added benefit of being the most accessible option and the most environmentally sustainable option for indoor pools in the region. It also increases the quality of indoor swimming on average and will increase the total number of swims in the region.

Recommendation #2 – Outdoor Pool Options

Outdoor pool options include Options 1, 2b and 4. Among these options, the one with the highest priority score is Option 2B. Therefore, it is recommended that the City of Courtenay phase out the existing Courtenay Memorial Outdoor Pool once a replacement outdoor pool has been completed at the site of and added to the Comox Valley Aquatic Centre and work with the CVRD on a management model which will integrate the operation of the new outdoor pool with the indoor aquatic infrastructure on that site. While there are options for where a replacement outdoor pool might be located, none are more central to the regional user population or as cost effective as this option. It is the most cost-effective option for delivering outdoor aquatic services to the growing regional market and has the added benefit of being the most accessible and environmentally sustainable option for outdoor pools in the region. It will also increase both the quality and quantity of outdoor swimming in the region.

Recommendation #3 – Indoor and Outdoor Pool Options

When recommendations 1 and 2 are combined, the highest priority score is Option 2C, which accounts for the synergistic benefits of combining indoor and outdoor pool services with an even higher score than options 2A or 2B. Therefore, it is recommended that Option 2C be confirmed by both the City of Courtenay and the Comox Valley Regional District and that they work cooperatively on the timing and implementation of this long-term strategy. This option confers the most benefits both parties, to all residents of the region and to the environment.

7.2 Facility Plan Implementation

If the CVRD and the City adopt this strategy and agree on Option 2C, the following should be considered as a means of implementing the project.

1. The CVRD would initially secure exclusive access to the site on which the Comox Valley Aquatics Centre now occupies for a long term sufficient to justify significant investment of public funds.
2. The two parties would then collaborate on the timing of elements of the site development. If both the indoor replacement pool and the outdoor replacement pool are not to be developed at the same time, agreement is needed on which is to proceed first and when. It is assumed that since the replacement of the outdoor pool is more urgent, it will proceed either by itself or in conjunction with the indoor pool portion of the project.
3. The two parties then need to come to agreement on which jurisdiction will "own" and take a leadership position on the outdoor pool portion of the project. While it is possible that the City may wish to continue to "own" and operate the facility, many of the benefits of integration of indoor and outdoor aquatic infrastructure assume a single owner/operator; that being the CVRD.
4. The next step would be to agree on the capital financing of the project. The two options would be for the City to provide the capital or the CVRD to provide the capital. Even if the CVRD would lead the project and operate the outdoor pool as regional service, the fact that it is replacing a City asset may suggest that the City would assume all or most of the financing of the capital. The other alternative would be for the CVRD to assume the responsibility for the capital financing.
5. Before committing to proceeding with the project, it will also be important to develop a complete operating financing scenario which translates to any changes in the tax levies required to operate the project.
6. Once the above steps have been completed, the next step would be to commission a detailed design for the site and a more current and definitive capital cost estimate.
7. The next step would be to agree on when the project should proceed, and how the construction would be managed.

If, in the above scenario, one or two referenda are required to support the capital financing of elements of the project, the most likely timing of said referenda would be immediately after step 5 is complete, as the information in the first five steps is required for voters to make an informed decision on any referendum put before them.

If, for any reason, the City wishes to proceed separately with its outdoor pool replacement (i.e., Option 4, the project might proceed along different lines.

1. The City would identify and secure a site for the outdoor pool replacement which is separate from the Comox Valley Aquatic Centre site.
2. It would then commission a design and more definitive capital cost estimate.
3. After that, it would determine when and how it wishes to proceed with the project on its own or negotiate with the CVRD to make the replacement facility a regional service.
4. Meanwhile, the CVRD, if it agrees to replace the aging Sports Centre pool in conjunction with the Aquatic Centre site (i.e., Option 2A), it will proceed independent of the City with steps 1, 5, 6 and 7 above and the timing of the indoor pool project might not be as urgent as in the first scenario above.

Section 8.0

Glossary

Demand for Aquatics Services – All demand for all seven categories of indoor aquatics services and all nine categories of outdoor aquatic services includes current swims (by definition, all existing swims in public indoor and outdoor pools are a partial demonstration of demand) plus frustrated demand (where demand has been registered but not fulfilled due to a capacity constraint, as evidenced by swim lesson registration waitlists and requests for swim lane rental that cannot be fulfilled) and latent demand (where, if you build a new facility, some might be motivated to try it out even if they haven't registered their demand beforehand).

Capacity for Delivering Aquatics Services – Calculated using proprietary formulae, this is the physical capacity of an indoor pool or outdoor pools to accommodate demand. Assumptions about how the capacity is operated are usually used to qualify an estimate of what the capacity is. For example, if a pool is primarily used as a recreational facility, the capacity may increase. If it is primarily used as fitness facility or sport training facility, the capacity may be reduced. The capacity calculations used in this report assume a typical mix of uses in all categories of aquatic service.

Collaborator – internal actors / partners (municipal government administration and Council) who support the delivery of aquatic services. This is an alternative term for stakeholder to be respectful to Indigenous peoples.

Contributor – external community groups / actors / partners who support the delivery of aquatic services. This is an alternative term for stakeholder to be respectful to Indigenous peoples.

Swim Rates – This is a measure of the total swims in a given population expressed as a number of swims per capita. If, for example, the swim rate remains constant, and the population grows, the total number of swims will increase. If the swim rate increases over time, the total number of swims would increase faster than the rate of population growth.

Utilization Rates – Total use of indoor and outdoor pools in swims can be expressed as a percentage of available capacity. If demand exceeds capacity for indoor swimming in some or all of the aquatic service categories, it can be a justification for adding more capacity.

Section 9.0

Appendix A – Current State of Community Pools

The following is a current state analysis of Comox Valley Community Pools as compiled by hmca.

Courtenay Outdoor Pool

- *Courtenay Outdoor Pool* - this facility was built in 1949 and is the oldest of the three buildings. The most recent facility condition assessment (completed by Carscadden et. al in 2015) indicated no remaining life or value. It identified deficiencies that would need to be addressed over a 10-year horizon to maintain current operations. Deficiencies addressed include boiler upgrade and repair work change rooms. Investments needed to keep the facility running for the next year could approach $1.0M (note that this doesn't speak to the main drain deterioration or envelope issues identified after this report).
- In 2017 a building enclosure review was commissioned that recommended the replacement of all interior walls (significantly deteriorated) and replacement of the external cladding and sheathing.
- During our walk through, it was noted that significant water loss was likely occurring from a suspected leak in the main drain. More details will follow pending further remediation works.
- A Rick Hansen Assessment completed in 2018 applied a score of 47%, which indicates that the facility does not qualify for certification and needs improvement.
- At face value, these assessments indicate that there is little remaining life or capital value in these assets. It should be noted however, that the facility is fully operational and continues to provide outdoor swim experiences for users. Outdoor pools are often well-loved by their communities, and this pool appears to be no exception.

Photo from: **www.facebook.com/people/Courtenay-District-Memorial-Outdoor-Pool**

Comox Valley Sports Centre

This facility was constructed in 1973. It contains a 25m tank and a large, more recently added hot pool. It appears that the primary programming use here focuses on swimming for fitness, aquasize and competitive training.

A FCA report by AECOM commissioned in 2017 provided a score of 7%, indicating that the building was in fair shape. The primary area of concern identified by the FCA was the roofing and air handling equipment, both of which are end of life. Total value of estimated required investment over a 20-year horizon is approximately $7.5M.

Recent upgrades have enhanced the accessibility, including lifts into each pool tank. An energy recovery project was completed in 2016/2017. General observation during our site visit supported this assessment, and the facility has been very well maintained for its age.

Comox Valley Aquatic Centre

This building was completed in 1998. It contains a 25m pool, leisure/wave pool, waterslides, hot pool and sauna and steam room. It is the newest facility in the inventory, with a strong focus on leisure related amenities.

The 2017 FCA by AECOM provided a score of 4%, indicating that the facility is in good condition. At that time the report identified a required investment over 20 years of $2.25M. A subsequent report by Faulkner Browns Architect in 2021 indicated that a total investment of $8.0M would be required over the next 10 years to deal with items reaching end of life. Most of these costs were attributed to upgrading the filter plant and replacing the roof. For purposes of this study, the higher value of $8.0M has been assumed.

Photos from: **www.comoxvalleyrd.ca**

Section 10.0

Appendix B – Community Demographics

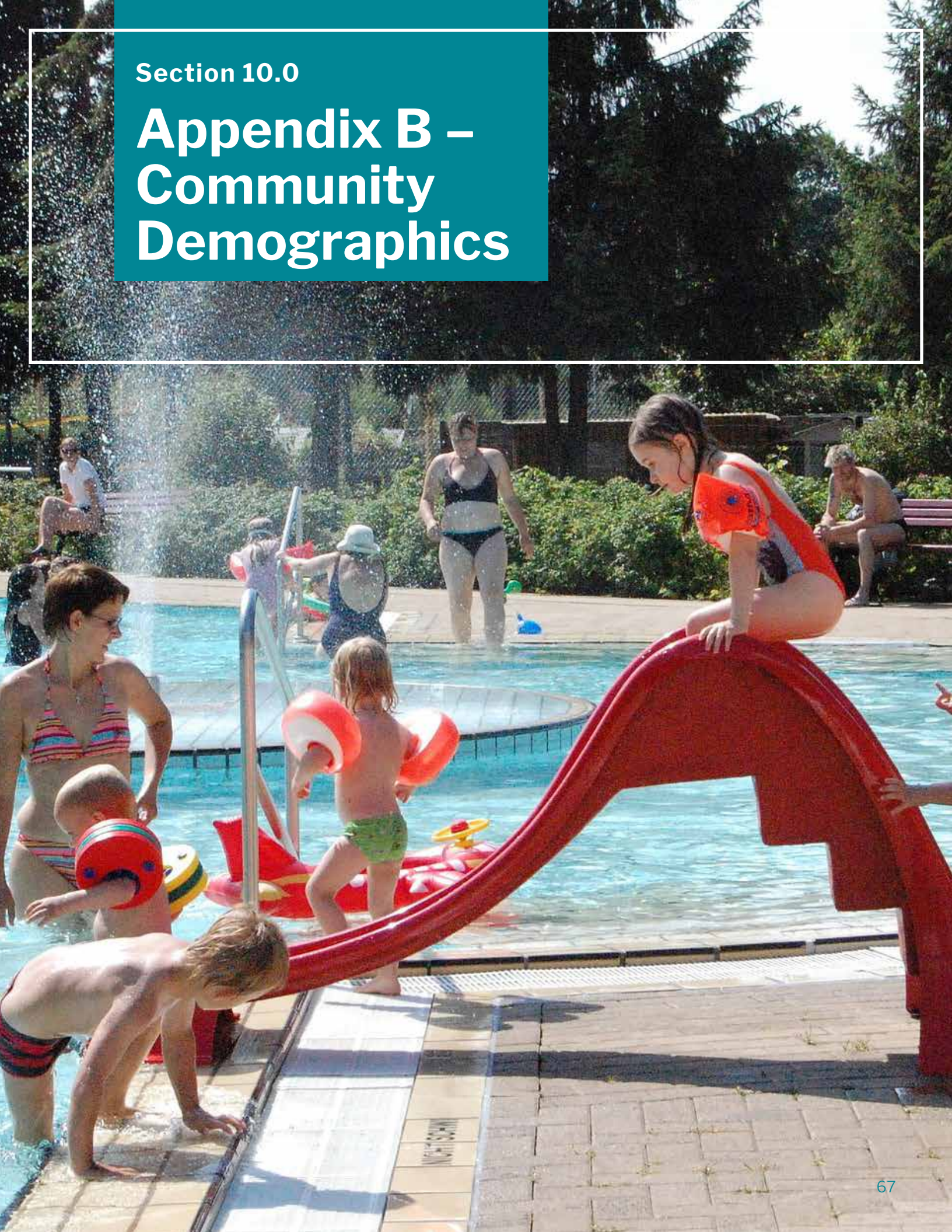
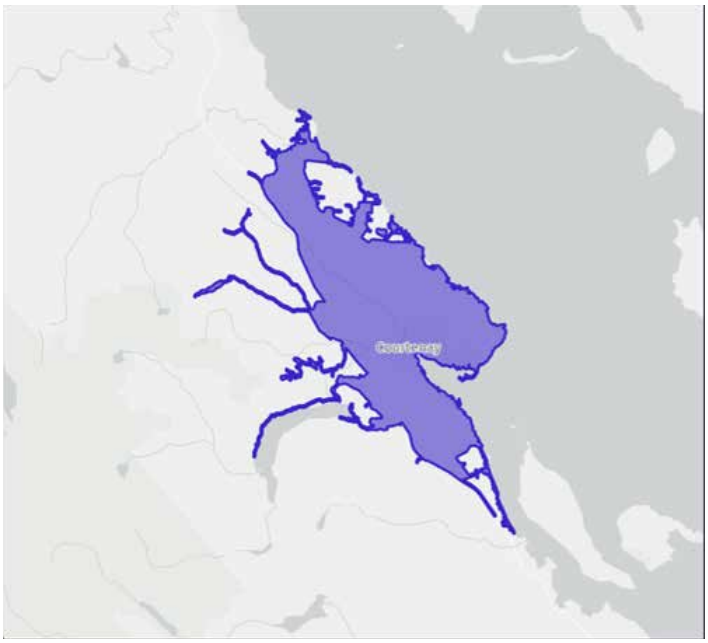


Figure 17: Demographics Surrounding Comox Valley Sports Centre Pool

25km from Comox Valley Sports Centre Pool



Educational Attainment Over 15 Years of Age

8,004	17,819	20,212	12,208
No High School	High School Diploma	College and Trades	University Degree

Employment Type Over 15 Years of Age

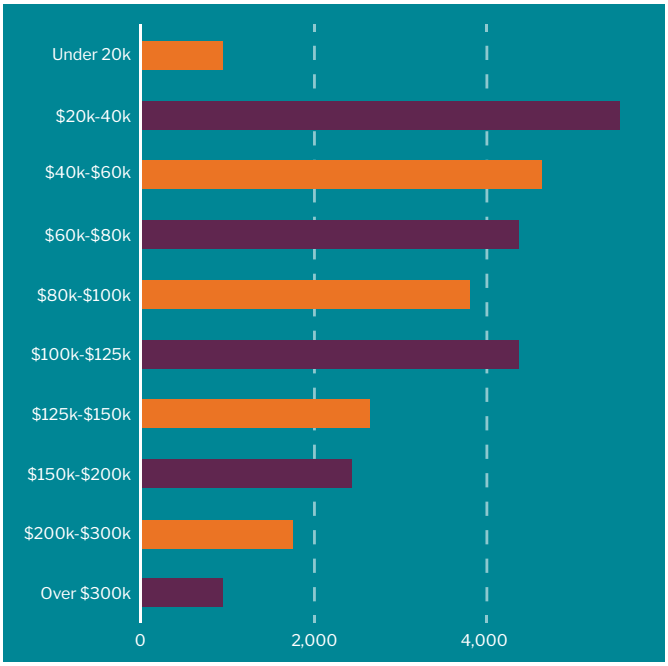
White Collar	15,891
Blue Collar	7,425
Services	10,337

11.1 Unemployment Rate

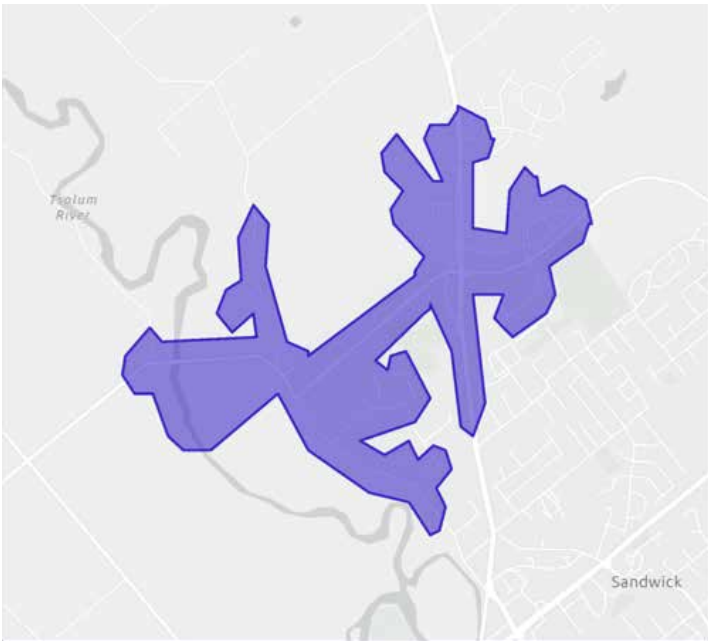
Key Demographic Facts

70,158	49.5
Population	Median Age
30,465	**CA$79,169**
Households	Median HH Income

Household Income by Range



1,500 m from Comox Valley Sports Centre Pool



Educational Attainment Over 15 Years of Age

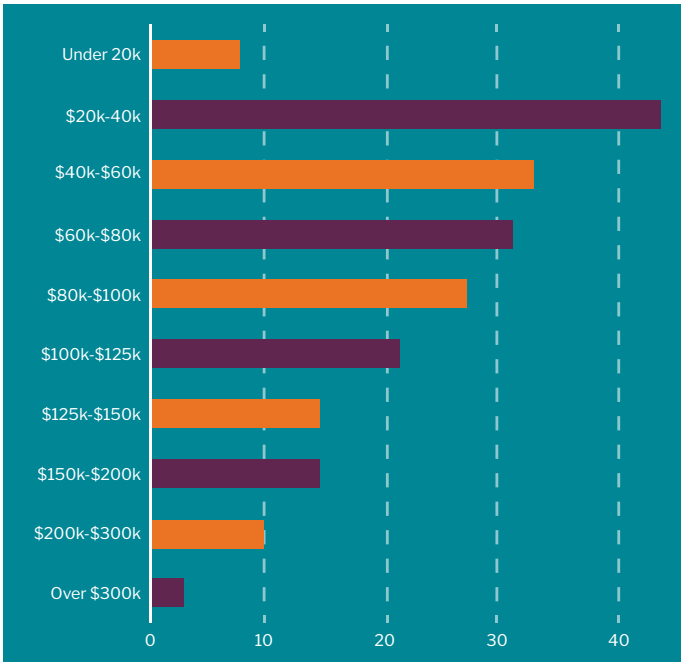
59	148	145	86
No High School	High School Diploma	College and Trades	University Degree

Employment Type Over 15 Years of Age

White Collar	124
Blue Collar	61
Services	72

15.2
Unemployment Rate

Household Income by Range

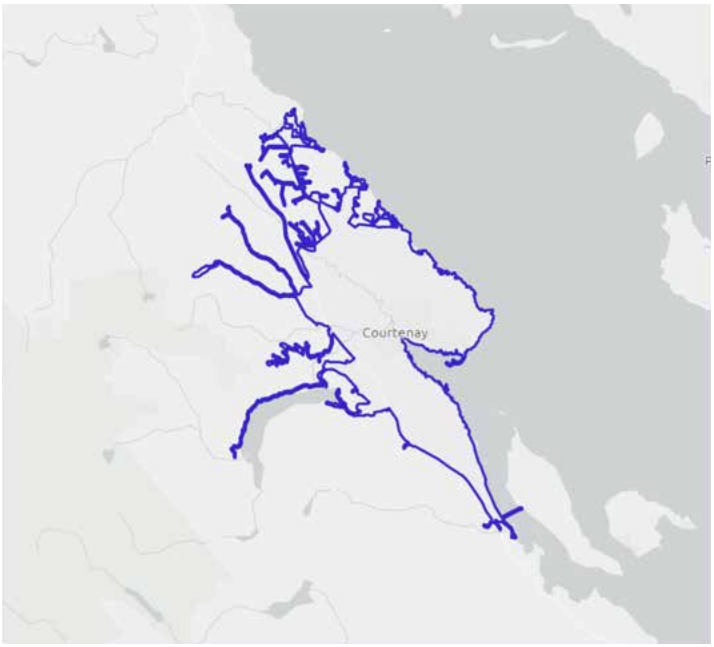


Key Demographic Facts

655	55.5
Population	Median Age
212	CA$71,875
Households	Median HH Income

Figure 18: Demographics Surrounding Courtenay and District Memorial Poo

25 km from Courtenay and District Memorial Pool



Educational Attainment Over 15 Years of Age

7,894	17,628	19,974	12,065
No High School	High School Diploma	College and Trades	University Degree

Employment Type Over 15 Years of Age

White Collar	15,710
Blue Collar	7,309
Services	10,223

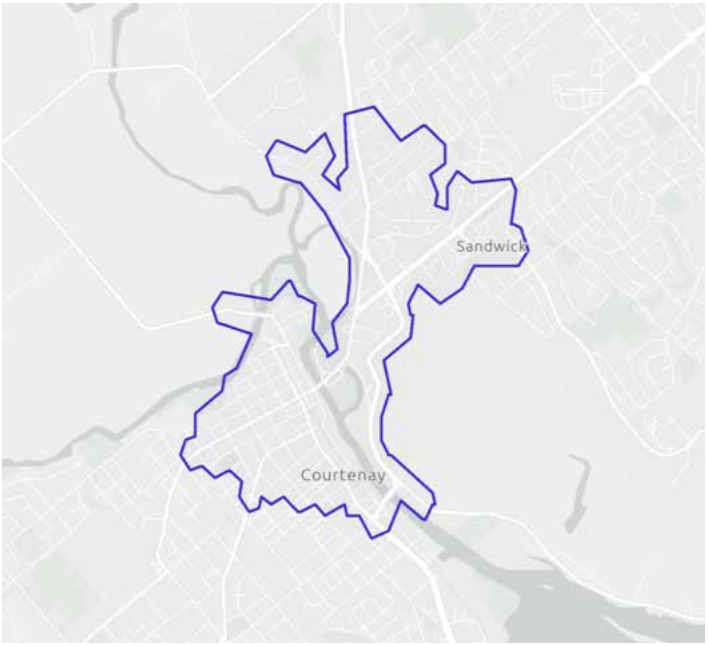
11.1
Unemployment Rate

Key Demographic Facts

69,344	49.5
Population	Median Age
30,112	CA$79,083
Households	Median HH Income

Household Income by Range

1,500m from Courtenay and District Memorial Pool



Educational Attainment Over 15 Years of Age

7,894	17,628	19,974	12,065
No High School	High School Diploma	College and Trades	University Degree

Employment Type Over 15 Years of Age

White Collar	15,710
Blue Collar	7,309
Services	10,223

11.1
Unemployment Rate

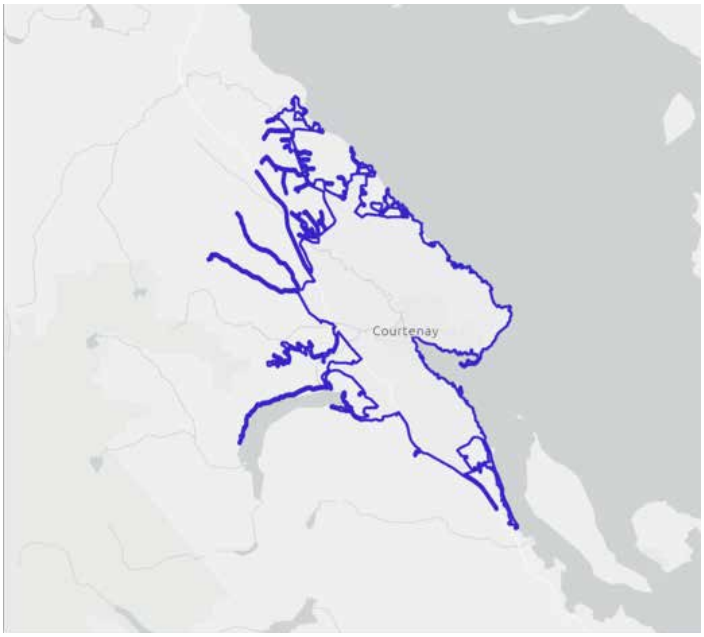
Key Demographic Facts

69,344	49.5
Population	Median Age
30,112	CA$79,083
Households	Median HH Income

Household Income by Range

Figure 19: Demographics Surrounding Comox Aquatic Centre Pool

25km from Comox Aquatic Centre



Educational Attainment Over 15 Years of Age

7,767	17,415	19,731	11,951
No High School	High School Diploma	College and Trades	University Degree

Employment Type Over 15 Years of Age

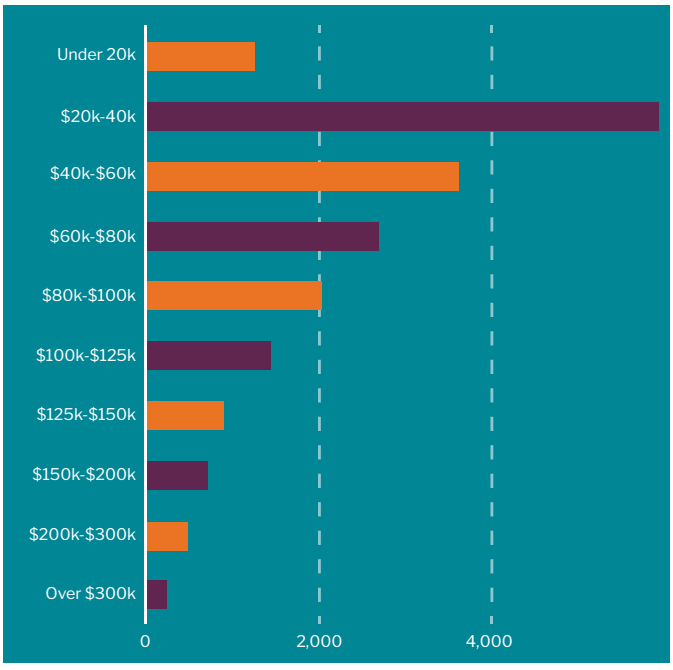
White Collar	15,544
Blue Collar	7,176
Services	10,123

11.1 Unemployment Rate

Key Demographic Facts

4,128 Population	49.4 Median Age
29,789 Households	CA$79,033 Median HH Income

Household Income by Range



1,500 m from Comox Aquatic Centre

Educational Attainment Over 15 Years of Age

337	736	739	447
No High School	High School Diploma	College and Trades	University Degree

Employment Type Over 15 Years of Age

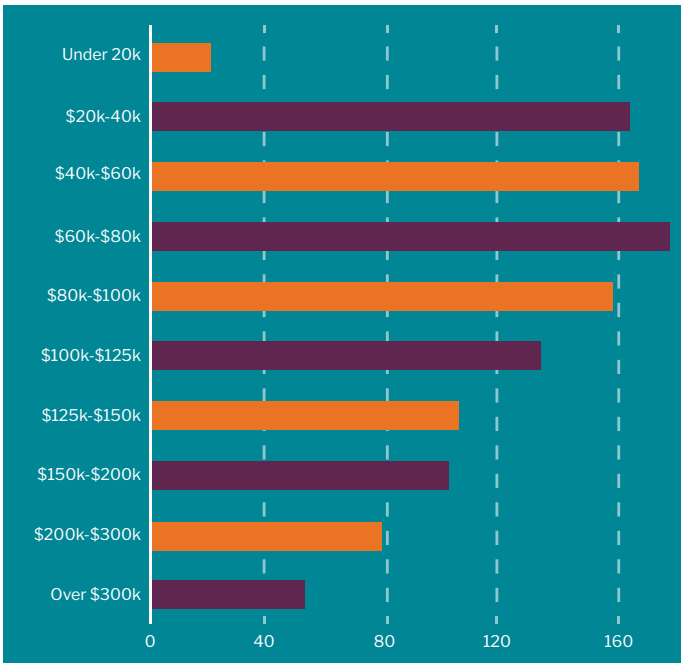
White Collar	598
Blue Collar	189
Services	293

13.9
Unemployment Rate

Key Demographic Facts

2,574	58.2
Population	Median Age
1,180	CA$86,358
Households	Median HH Income

Household Income by Range



Section 11.0

Appendix C – Calculating Annual Capacity of Pools in the Comox Valley

Figure 19: Demographics Surrounding Comox Aquatic Centre Pool

There are three types of Definitions of Annual Capacity for Swimming.

- The first is legal capacity and that is calculated by a provincially mandated formula. No pool has ever been able to achieve this instantaneous capacity on a year-round basis.
- There is theoretical physical capacity, which assumes infinite demand, and a lineup of users waiting at the door whenever the pool is open, ready to enter as soon as someone leaves the facility. No pool has ever been able to reach this threshold either. It would be similar to the legal capacity above.
- There is practical capacity which is achievable in isolated cases where a community resist building additional capacity as it grows, and demand exceeds available capacity. This results in a lower estimate of capacity than the previous two. Very few pools achieve this threshold, but because some have, it allows for calculations to be made about what is possible and practical. Even with this definition, there will be off peak periods where additional use could theoretically be accommodated, but never is because demand is not constant during all opening hours.

This appendix provides details of the third type of capacity above and is based on experience working in hundreds of pools over the past forty years in Canada. It is a proprietary calculation and assumes the following:

- Applies only to indoor aquatic facilities (outdoor pools serve a slightly different market and has different characteristics and assumptions).
- An operating format of approximately 5000 hours per year, which is the average that existing pools are available for use.
- Only using the main tanks in a pool enclosure, not whirlpools or hot tubs.
- Charging fees which don't create a significant barrier to use.
- And best attempts are made to meet all of the categories of aquatic service.

The formula is quite simple and is listed below:

- For water surface area which has water less than 5 feet deep, a total of 60 swims per year per sq. ft. can be realized.
- For water surface which has water 5 ft. or more of depth, a total of 25 swims per year per sq. ft. can be realized.
- So, we add the two above.

According to the above formula, the current capacity for annual indoor swims in the Comox Valley is about 760,000 swims as noted in the calculations below.

Comox Valley Sports Centre (pool)

Six (6) lane 25 m lap pool (4 ft – 12 ft) with a total of 595 sq. m. or 6404.5 sq. ft. of which 50% of 3202.2 sq. ft. is deep water and the remaining 3202.3 sq. ft. is shallow.

The separate hot tub is not included in the calculations for capacity as users of this space are not additive to the users of the main tank.

So, the shallow water has annual capacity of (3202.3 sq. ft. x 60) 192,138 swims per year and the deep water has (3202.2 sq. ft. x 25) 80,055 swims for a total of 272,193. Therefore, the total capacity is about 272,193 swims; which can be rounded to 272,000 swims per year.

Comox Valley Aquatics Centre

8 lane 25 m lap pool (3 ft – 12 ft) totals about 413 sq. m. or about 4445.5 sq. ft. of water surface area, of which 50% is shallow (i.e., 2222.8 sq. ft.) and 50% is deep water (i.e., 2222.7 sq. ft)

The leisure pool totals about 263 sq. m. or about 2830.9 sq. ft. of water surface area of which 10% is deep water (.1 x 2830.9 = 283.1 sq. ft.) and 90% is shallow water (i.e., .9 x 2830.9 = 2547.8 sq. ft.).

There is also a hot tub which doesn't get included in the capacity calculation.

So, the deep water in the main tank and the leisure tank has annual capacity for (2222.8 + 283.1 = 2505.9 sq. ft. x 25 swims per sq. ft. =) 62,648 annual swims and the shallow water has (2222.7 + 2547.8 sq. ft. x 60 swims per sq. ft. =) 286,230 swims per year. Therefore, the total capacity for both shallow and deep water is about 348,878 swims per year; say 350,000 swims per year.

Courtenay Memorial Outdoor Pool

6 lane 30.5m lap pool (3.5 ft – 12 ft) with stairway entrance and wheelchair accessible lift which totals 4015.7 sq. ft. of which 1284.6 sq. ft. is deep and 2731.1 sq. ft. is shallow

There is also a 1200 sq. ft. shallow water wading pool which will not be included in the capacity calculations.

If the pool were indoors, operating 100 hours per week, the capacity would be calculated at 60 swims per square foot of shallow water (i.e., 60 x 2731.1= 163,866 swims per year) and 25 swims per square foot of deep water (i.e., 25 x 1284.6= 32,115 swims per year) and the total capacity would be 195,988 swims per year. However, the pool is only open an average of 103 days per year so that initial calculation is discounted by 72% (.28 x 195,988 = 55,504) and further discounted because the pool is only open for an average of 76 hours per week (i.e., .76 x 55,304=42,031 swims per year) and further discounted by 10% for weather related non-use (i.e., .9 x 42,031) for a net annual capacity of about 37,828 swims in an average year.

19 Wing Base Pool

A pool like the 19 Wing Base pool has approximately 250,000 swims of capacity per year. No calculations are available as much of the capacity is reserved for military designated uses. However, adding up all the hours during which the public is welcome, it appears that there are about 100,000 swims of capacity available for public use.

Section 12.0

Appendix D – Scoring of Project Options

The black scores (S) on a scale of 1 to 3 (see Figure Fifteen for how scores are calculated) and multiplied by the weighting on a scale of 1 to 5 to render a weighted score (WS) which is in red in the table below. All the weighted scores are added to get a composite weighted priority score at the bottom on the table.

Figure 20: Facility Option Scoring

Criteria	Criteria Weighting	1 Outdoor Pool Status Quo		1 Indoor Pool Status Quo		2a Centralize indoor pools		2b Add Outdoor Pool		2c Complete Centralization		3 New Complex		4 New Outdoor Pool		4b New Outdoor Pool, Existing Site	
		S	WS	S	WS	S	WC	S	WC	S	WS	S	WS	S	WS	S	WS
Proximity to public facilities and spaces	1	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2
Climate Impact	2	1	2	1	2	3	6	3	6	3	6	3	6	2	4	2	4
Flood Plain	2	1	2	3	6	1	2	3	6	3	6	3	6	3	6	1	2
Equitable distribution and access	2	2	4	2	4	3	6	2	4	3	6	3	6	2	4	2	4
Proximity to public transit	3	2	6	1	3	3	9	3	9	3	9	3	9	3	9	2	6
Service quality	4	1	4	2	8	3	12	3	12	3	12	3	12	3	12	3	12
Supports regional growth	2	1	2	1	2	2	4	2	4	3	6	3	6	3	6	1	2
Project capital costs	5	3	15	3	15	2	10	2	10	2	10	1	5	1	5	1	5
Operating costs	3	1	3	2	6	3	9	3	9	3	9	3	9	1	3	1	3
Asset life expectancy	3	1	3	2	6	3	9	3	9	3	9	3	9	3	9	3	9
Future expansion capability	1	2	2	2	2	1	1	1	1	1	1	3	3	3	3	1	1
Land ownership	2	3	6	3	6	3	6	3	6	3	6	1	2	1	2	3	6
Total Weighted Score		51		62		76		78		82		76		65		56	

It is important to understand that scoring is relative rather than absolute and that the outdoor pool options were scored against other outdoor pool options separately and all indoor options were scored relative to other indoor pool options only.

The scores where then combined with options that have both indoor and outdoor pool elements. So, a few examples are required to illustrate how the scoring was done.

When scoring outdoor pools against the "Capital Cost" criterion, Option 1 (ie. status quo) is the lowest capital cost and is therefore given a 4. Option 2b is the second lowest capital cost and is given a 3, Option 4a is the next highest capital cost and is given a 4. Option 4b is the highest of all capital costs for outdoor options so it is given the lowest score; a 1.

Similarly, with indoor pool options, Option 1, the status quo is the lowest capital cost, so it is given a high 3. Option 2a is the next highest capital cost so it is given a 2, and Option 3 is the highest capital cost, so it is given a 1.

When scoring options against the Climate Impact criterion, it is worth noting that, unlike other classes of buildings, pool operations have such high energy consumption that embedded carbon is much less important than ongoing operating climate impacts, so only greenhouse gas emissions were considered. In that light, the options which reduce energy consumption the most, or have the least amount of ongoing greenhouse gas emissions get the highest scores and those that have the most ongoing impact on the environment over the next fifty years get the lowest scores.

Section 13.0

Appendix E: Engagement Findings

Feedback was gathered from February 6, 2023 through to March 6, 2023. In total 73 submissions were received. This is comprised of 70 responses to the online survey and an additional three comments submitted via Facebook and email. The points from the feedback collected **related to an outdoor pool** are presented below. Those points with * are specific the current outdoor pool and / or its location.

No Need For Outdoor Pool

- *Outdoor pool should be shut down.
- *Outdoor pool should be removed and another recreation facility installed.
- I do not feel there is a need for an outdoor pool that could not be used year round with there already being splash parks, beaches, etc.
- Do not support a new outdoor pool, would prefer a fenced splash park / wading pool or better rive access.
- I don't feel like an outdoor pool is a high priority as we have a short and often unpredictable summer. We also have so much water surrounding us.

Support For An Outdoor Pool

- *I am saddened at the prospect of losing the outdoor pool. It is a gem and a good central location – walkable and bikeable from many areas of Courtneay. I have always believed that it was underused due to the poor change room facilities.
- *The loss of the outdoor pool (cooling facility) in the city centre is a loss of access for persons who are less able to access facilities that have less or zero cost.
- *The current location of the outdoor is good with easy access from west Courtenay.
- *Keep the outdoor pool at Lewis Park or find a new location on the west side of Courtenay.
- *Replace the outdoor pool in its current location.
- *The outdoor pool in its current location provides the best alternative for lower income families.
- The outdoor pool experience is unique and the CVRD should not consider closure unless absolutely necessary. Timetable of lessons at the outdoor pool offers availability unlike the offerings at the indoor pools.
- <with consolidation at one site> it appears that the proposed new outdoor pool will be primarily for recreation and some swim lessons with no ability for lane swimming outdoors. I would like some option for lane swimming outdoors.
- Relocate the outdoor pool, it should become a regional facility.

Other Comments

- *There are issues with the outdoor pool that prevent people from using it fully:
  - » Parking lot is ridiculously small
  - » Getting out of parking lot is a nightmare due to constant traffic coming both ways
  - » Having to pay cash is inconvenient
  - » The change rooms are way too small and uninviting
  - » The pool itself is also small
  - » Appreciate free access to life jackets but rest of equipment (incl. pool noodles) have seen better days.
- *The location of the outdoor pool needs to be in a co-location that is part of another or near other CVRD public sport infrastructure.
- I would like the outdoor pool to be shaped so swimmers can swim lengths and have sun shared over the area.
- Proposed location for the replacement outdoor pool is horrible – the noise of one of the business intersections in town will transmit to the pool. I'd rather have no outdoor pool than the central location.
- Any consideration of incorporating the natural river area around the current outdoor pool to create a natural beach or pool built into the river.

Source: comoxvalleyrd.ca