Municipal Pool Feasibility Study

Municipal Pool Feasibility Study Report

Prepared for:
Town of Paradise

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Prepared by:

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Stantec Architecture Ltd.

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Table of Contents

1 Executive Summary

Stantec has been retained by the Town of Paradise to provide consulting services for the feasibility of a new aquatic facility. This potential new facility is proposed to address the growing recreational and community needs of the Town and Newfoundland and Labrador, offering a modern, multi-purpose aquatic facility designed to support various competitive and community activities.

This report represents the process and conclusions of the feasibility scope as identified in the RFP for Consulting Service: Municipal Pool Feasibility Study. The scope of work includes public engagement, development of a functional program, evaluation of two sites, conceptual test fit plans, a class D cost estimate, and operational considerations.

The facility options range from approximately 5000m^2 to 6700m^2 of gross floor area and include a lap pool, leisure pool, slide, hot tub, gender inclusive change rooms, spectator viewing, staff areas, multipurpose space, and service space. The functional program, test fit and design descriptions prioritize accessibility, multi-purpose use, and sustainability, creating an inclusive space for all levels of play and competition. The exterior and interior design intent is described at a high level to support the cost estimate; however, the scope of work does not include architectural design or engineering design; this would be developed in the next phase of the project development. It is anticipated that the next phase; full design and construction services, will be executed through a separate competitive RFP.

The information contained within this report will be utilized to support decision making on next steps for this potential project.

2 Background

The Town of Paradise is currently facing limited opportunities for residents to access swimming lessons and aquatic programming. With Paradise being one of the fastest-growing communities (see section 3.2.4 Demographics), with a large population of youth, there is a strong need for a new pool to increase access to swim lesson opportunities. Feedback gathered through community engagement highlights a strong interest in developing a new pool facility that would provide expanded amenities, diverse programming, and increased access for individuals and families.

At present, the closest pool to the town centre is the Mount Pearl Summit Centre, located an 11-minute drive away. While this facility provides some options, it does not fully meet the needs or convenience of Paradise residents, particularly given the town's population growth and the demand for accessible recreation opportunities.

To assess the potential for a new aquatic facility, a feasibility study was conducted. This study combined extensive community engagement with research into the surrounding area to evaluate current gaps in service, community preferences, and opportunities for improved recreational infrastructure. The findings suggest that an aquatic facility in Paradise could not only address the shortage of swimming lessons and aquatic programming but also enhance overall community well-being, accessibility, and quality of life.

2.1 Lifesaving Society and Drowning Prevention Research Canada-Newfoundland and Labrador

The 2024 Newfoundland and Labrador Fatal Drowning Infographic, prepared by the Lifesaving Society and the Drowning Prevention Research Centre Canada, presents data on unintentional water-related fatalities from 2017 to 2021. Key findings include that 69% of drownings occurred between May and September, with the majority happening in lakes/ponds (48%) and rivers (9%). The infographic highlights that 86% of victims were male, and common activities at the time of death included swimming (19%), snowmobiling (17%), and fishing (14%). Notably, 41% of fatalities involved boating, with powerboats and canoes being the most common vessels. Risk factors identified include lack of personal flotation devices (PFDs), alcohol consumption, being alone, and incidents occurring after dark. The report emphasizes the need for increased awareness and preventive measures to reduce water-related fatalities in the province.

2.2 Lifesaving Society and Drowning Prevention Research Canada-Maritimes

On a more regional context, the 2025 Maritimes Fatal Drowning Infographic, prepared by the Lifesaving Society and the Drowning Prevention Research Centre Canada, presents data on unintentional water-related fatalities from 2019 and 2023, drowning fatalities in the Atlantic provinces were most common during the warmer months, with 65% occurring between May and September. Most victims were male (85%), with the highest rates seen among those aged 15-19, followed by adults aged 35-49 and seniors 65 and older. Most incidents took place in unsupervised natural settings such as rivers (29%), oceans (25%), and lakes or ponds (25%), while pools accounted for less than 1%. Recreational activities most associated with fatalities included powerboating (70%), swimming (27%), and canoeing (14%). Key risk factors identified were the absence of lifejackets, alcohol use, lack of supervision, and being alone or a

weak swimmer. These findings highlight the need for targeted water safety education and prevention efforts, particularly around boating practices, natural water use, and high-risk age groups.

2.3 Income Distribution and Sources

According to Statistics Canada's Survey of Household Spending, Canadians spent an average of $5,310 on recreation in 2023, representing a 23.9% increase compared to 2021. Furthermore, research conducted by Ipsos indicates that swimming is the most affordable recreational activity for parents to enroll their children in, with an average cost of $193.20 per year.

2.4 New Brunswick Life Saving Society

In an article from CTV with the New Brunswick Lifesaving Society, children have a remarkable ability to learn quickly, making early access to swimming instruction essential. Research indicates that being able to swim 50 metres and tread water significantly reduces the risk of drowning, as most incidents occur within this distance. However, a key barrier is the lack of local 50-metre pools, which limits opportunities for effective skill development. Providing culturally appropriate spaces, such as women-only sessions, can increase participation, particularly among new Canadians and youth. Overall, access to 50-metre pools is critical for teaching essential aquatic skills, promoting water safety, and ensuring individuals can respond effectively in aquatic environments.

2.5 Eastern Canada Needs More Aquatic Centres

In the absence of provincial recommendations for Newfoundland and Labrador regarding aquatic facility needs or sizing, Ontario has been referenced as a leading example of best practices and benchmarking standards. Ontario faces a significant shortage 50-metre (50m) pools, with a current ratio of one pool per 748,629 people, the second highest in Canada. This deficit limits access to aquatic programs and competitive training, highlighting the need for strategically placed 50m facilities. Such pools offer substantial benefits, including the ability to triple programming capacity for learn-to-swim programs, fitness sessions, rehabilitation, and competitive training. They also support community development by attracting events and providing essential aquatic services, particularly in underserved areas. Ideal 50m pools should feature ten lanes, a warm-up tank, and a depth of 2.5 meters to accommodate diverse aquatic activities. Public support for expanding swim infrastructure is strong, with 56% of Ontarians advocating for new facilities and 77% supporting increased investment in aquatic amenities. The Aquatic Sport Council of Ontario recommends establishing a dedicated provincial fund to build 50m pools, develop regional recreation centres, and create best practices for design, operations, and revenue generation. Overall, investing in 50m pools is crucial for enhancing public health, promoting water safety, and fostering community development across the province.

3 Information Gathering

3.1 Existing documents

Existing documentation was provided by the Town for reference in the development of this scope of work. Past reports and documents include:

- Paradise Open Space and Recreation Master Plan, April 2019
- Your Paradise Plan 2027
- Paradise Municipal Plan 2016 – Future Land Use Map
- Paradise Municipal Plan 2016 – Land Use Zoning Map
- Town of Paradise Pre-Phase 1 Environmental Site Assessment, October 2024 – 23-7280
- Existing drawings and O&M documents of the existing Double Ice Arena
- Existing drawings of the Rotary Paradise Youth and Community Centre
- Existing drawings of the Paradise Middle School
- Existing drawings of the Dianne Whalen Master Plan
- AllRock Consulting Lt. 2023. Geotechnical Investigation – Paradise Depot. Prepared for the Town of Paradise.
- Dillon Consulting Limited. 2023. Pre-Phase I Environmental Site Assessment. Data Collection and Review, 68 McNamara Road, Paradise Park, Paradise, NL. Prepared for the Town of Paradise.
- Jacques Whitford. 2007. Additional Site Investigations, Human Health and Ecological Risk Assessment Executive Summary, Former Steel Mill Site, Paradise, NL.

3.2 Market Analysis

3.2.1 Primary Market

The primary market consists of the Town of Paradise and its immediate surroundings. With the majority of residents from Paradise utilizing the Mount Pearl Summit Centre. Included in this market are the CBS recreation complex, Mount Pearl Summit Centre, Ches Penny YMCA (St. John's), H.G.R Mews Community Centre, Paul Reynolds Community Centre, and The Works at Memorial University.

- Mount Pearl (population: 22,475, Distance: 11 min drive)
- Conception Bay South (Population: 27,168, Distance: 16min drive)
- St. John's (Population: 110, 525, Distance: 15 min drive)

3.2.2 Secondary Market

Communities included in the secondary market Logy Bay-Middle Cove-Outer Cove, Torbay, Portugal Cove-St. Philips. These people would be likely to travel for tourism and sporting opportunities, such as special events, tournaments, or weekend programming.

- Logy Bay-Middle Cove – Outer Cove (Population: 1,441, Distance: 21 min drive)
- Torbay (Population: 7, 852, Distance: 21 min drive)
- Portugal Cove-St. Philips (Population: 8,415, Distance:21 min drive)

3.3 Profile

3.3.1 Aquatic Program Zoning

Zoning of aquatic programming identifies the target user groups and associated programs of interest. Based on community profiles and markets, the following zones are proposed for the potential new facility. Each zone targets specific demographics, age groups, and programming to support operators in scheduling activities to support the community they serve.

This group comprises families seeking shared recreational opportunities that foster bonding, support child development, and provide early exposure to aquatic environments. They are primarily available in the mornings (9:00 a.m.–12:00 p.m.), offering safe and engaging spaces where parents and children can participate together. The tot's pool and leisure pool are key attractions, meeting the need for interactive, family-centred programming.

Youth participants represent a dynamic group that is highly active outside of school hours, with availability weekdays from 3:00 p.m.–9:00 p.m. and weekends from 9:00 a.m.–9:00 p.m. They are motivated by both structured activities, such as swimming lessons and school-based programs, and unstructured leisure and play. This group values social interaction, variety, and skill-building experiences that fit within their after-school and weekend routines.

Adults and health-conscious youth make up this group, seeking fitness and wellness activities that align with personal health goals and flexible schedules. They typically participate during non-prime hours (weekdays 5:00 a.m.–2:00 p.m.), valuing programs such as aquafit, water walking, kayaking, scuba, and swimming lessons. Their priorities include accessible fitness options, low-barrier activities, and opportunities to maintain or improve their health in a supportive environment.

This group consists of swimmers, artistic swimmers, triathletes, and other athletes training at a competitive level. They rely on dedicated space during weekdays from 5:00 p.m.–10:00 p.m. and weekends from 8:00 a.m.–8:00 p.m., prioritizing skill development, performance improvement, and tournament hosting. Their engagement is driven by structured training, advanced coaching, and opportunities to compete at higher levels, positioning this group as a performance-focused market segment.

3.3.2 Partnerships

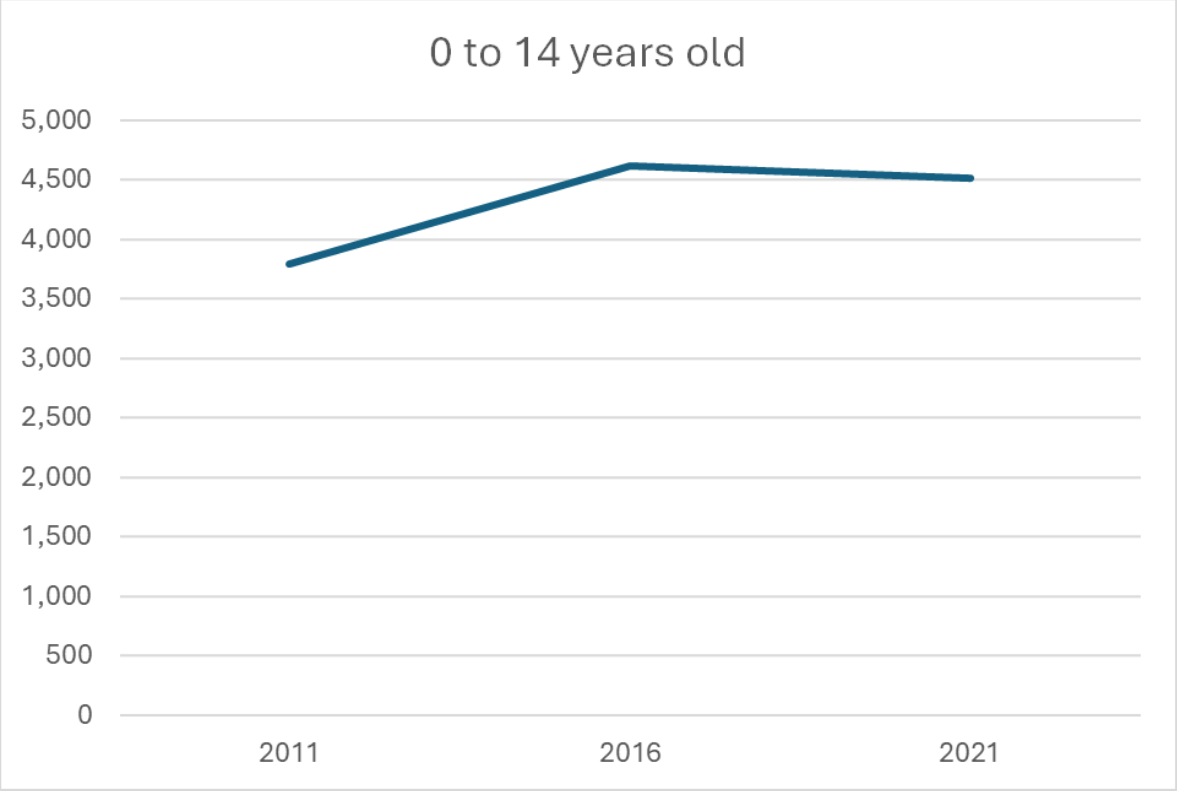
Citizens expressed concerns regarding limited access to the neighbouring facilities, and unpredictability related to being able to register for swimming lessons. One or both facilities have a priority registration process that gives “their residents” (CBS or Mount Pearl) priority. The Town officials entered into an agreements with Mount Pearl, the Works and the YMCA to enhance access opportunities for citizens of Paradise. However, the limited number of spaces has filled quickly, and citizens of Paradise are still looking to register their children for lessons.

3.4 Populations & Dwellings

3.4.1 Dwellings

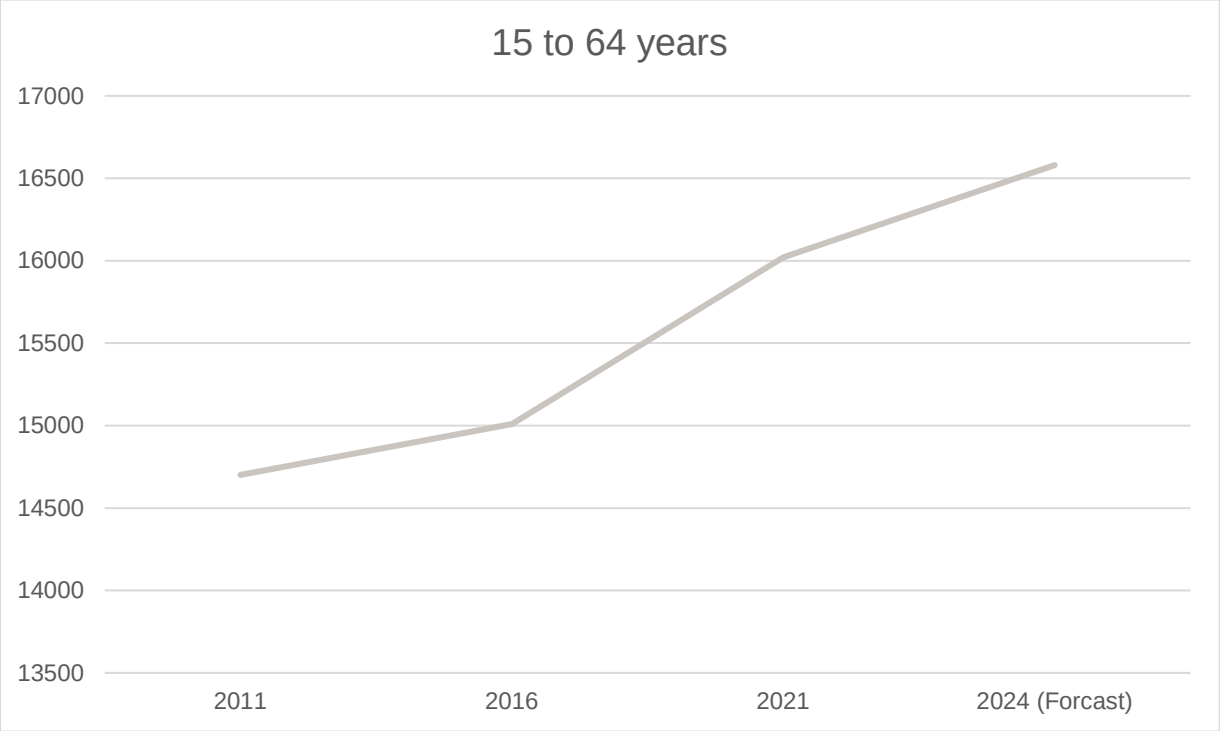
Paradise is a growing town with a population of 22,957 residents and a total of 8,810 dwellings. This reflects a strong residential base, with an average of about 2.6 people per household, indicating that the community is family-oriented while continuing to expand to meet housing needs.

3.4.2 Demographics

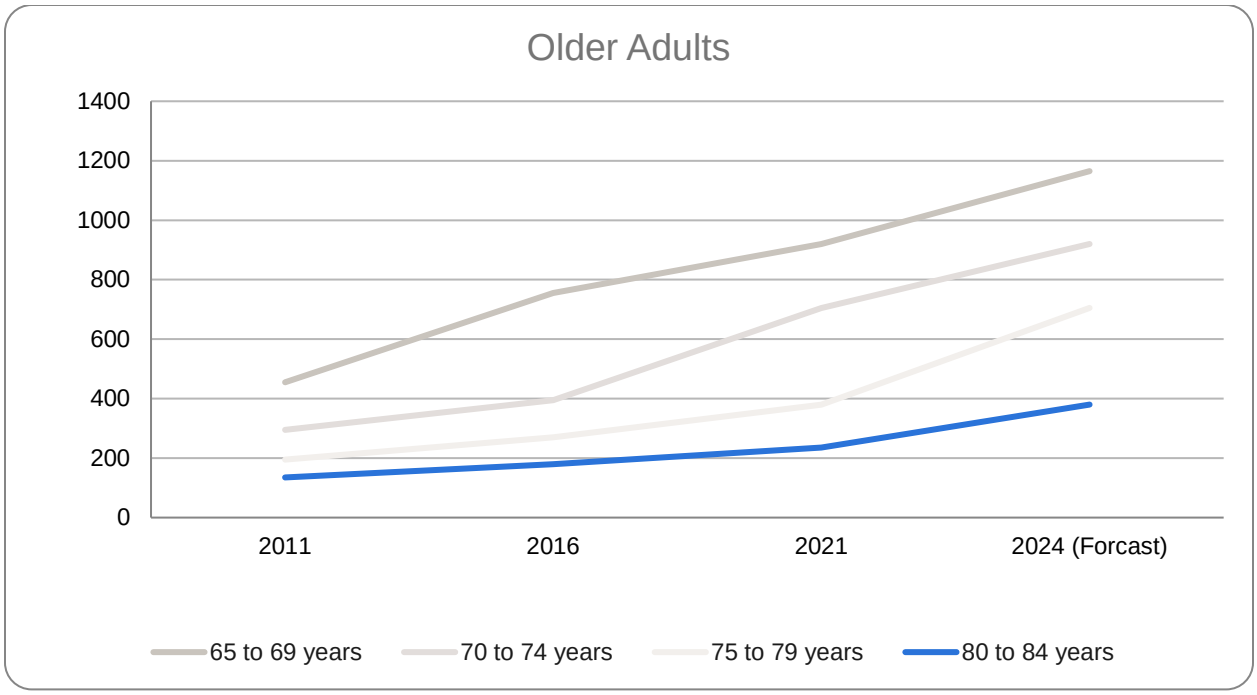


The 0 to 14 age group has experienced a general increase over the past decade, indicating a growing demand for programming targeted toward this demographic. While the population peaked at 4,620 in 2016, it saw only a slight decline to 4,510 by 2021. Overall, the age group grew from 3,790 in 2011 to 4,510 over the ten-year period.

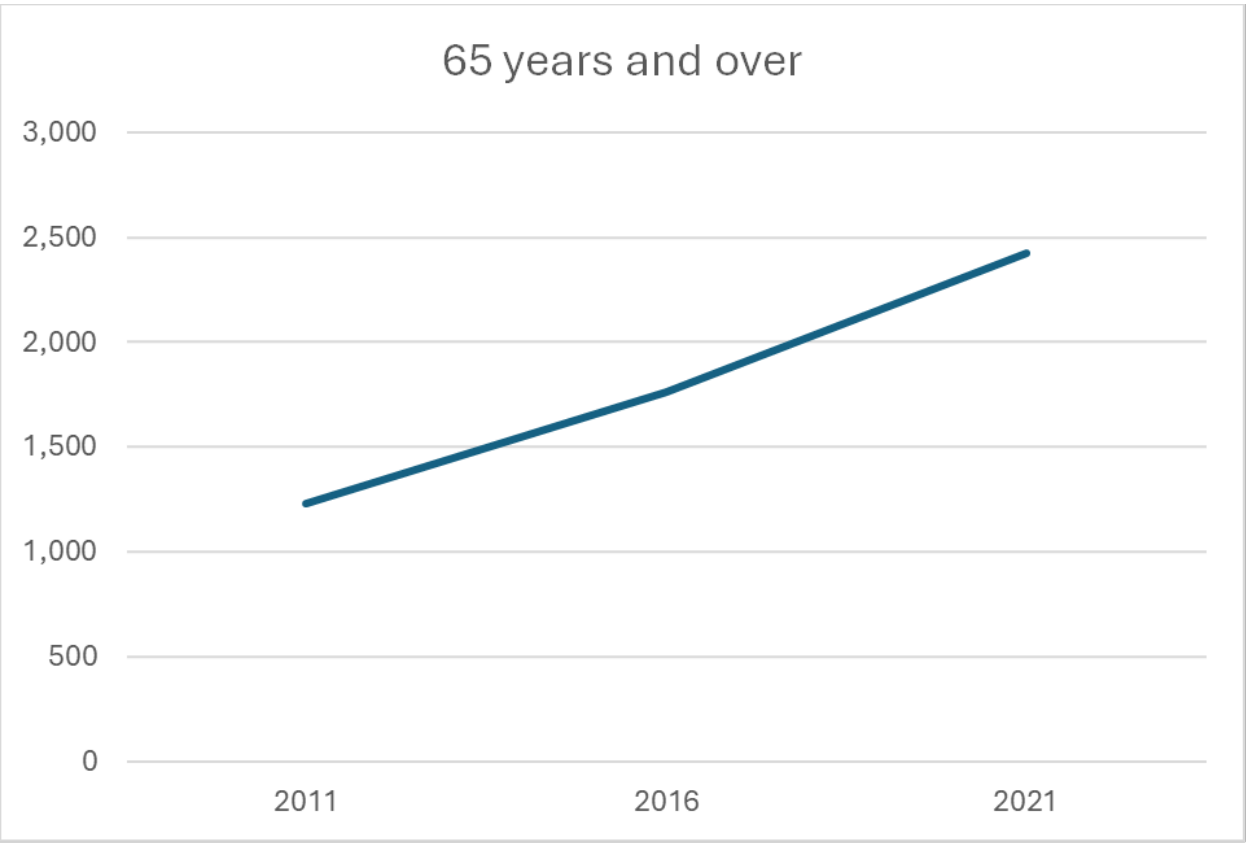
The 10 to 14 age group recorded the most significant increase between 2011 and 2021, rising from 1,020 to 1,715 individuals. The 0 to 4 age group demonstrated notable fluctuations during this period, with a peak of 1,715 in 2016, compared to 1,470 in 2011 and a decline to 1,240 in 2021. Similarly, the 5 to 9 age group increased from 1,300 in 2011 to 1,635 in 2016, followed by a slight decrease to 1,555 in 2021.



The chart shows the population of individuals aged 15 to 64 years old from 2011 to 2021. The population of those aged 15 to 64 grew from about 12,000 in 2011 to 16,000 in 2021, with rapid growth from 2011 to 2016, then a slower increase from 2016 to 2021.



The chart shows population changes for age groups 15–64 across 2011, 2016, and 2021. Most age groups experienced growth, with the largest increases seen in the 35–44 range by 2021. Younger groups (15–24) also showed steady growth, while some middle age groups (30–34, 45–54) fluctuated or stabilized. Older groups (55–64) consistently increased, reflecting an aging population. Overall, the data indicates a general upward trend in population across nearly all working-age groups.



The chart shows a steady rise in the 65+ population, increasing from about 1,200 in 2011 to nearly 2,500 in 2021. This growth reflects an aging demographic and confirms the doubling of the senior population over the decade.

3.4.3 2021 Age Structure

In 2021, the Town of Paradise experienced notable demographic shifts. Children aged 0–14 accounted for 19.6% of the population (approximately 4,510 individuals), while the working-age group (15–64) represented 69.5% (around 16,000 individuals). Seniors (65+) comprised 10.9% (2,500 individuals). The most significant growth occurred among the 10–14, 35–44, and 55–64 age groups, indicating both expanding family demographics and an aging workforce. The senior population nearly doubled over the decade, primarily driven by growth among those aged 65–74, while increases in the 75+ cohort were more modest and the 85+ population remained stable.

3.4.4 Population model estimates: Paradise 2035

Historic population model estimates project that Paradise will grow from 21,315 residents in 2016 to 26,553 by 2035, an increase of 24.6%. The targeted migration model suggests more modest growth to 23,130 residents, or 8.5%. With an average household size of 2.6 persons (2021 Census), this increase would require approximately 834 additional dwellings, up from 8,813 in 2021.

Demographic shifts are also expected. Between 2016 and 2035, the number of young adults aged 20 to 29 is projected to rise by 1,631, while the 30 to 44 age group is expected to decline by 1,102. The 45 to 64 age cohort is anticipated to grow by nearly 3,000, and the senior population is projected to increase from 1,740 to 4,108, more than doubling over the period. These trends indicate moderate overall growth, with the most notable change being the aging of the community.

3.5 Indoor Facilities

Within the region, five primary facilities provide access to indoor swimming. These include the CBS Recreation Centre, the Paul Reynolds Community Centre, The Works at Memorial University, the Paradise Double Ice Complex, and the Ches Penney Family YMCA. Together, these facilities represent the core indoor aquatic infrastructure available to residents.

3.5.1 Fees

The following section examines the cost of swim lesson programs, based on 30-minute session blocks. CBS, Paul Reynolds Community Centre, and the Double Ice Complex each offer programs consisting of 8 sessions, The Works offers 12-session programs, and the YMCA provides 5-session programs. The accompanying graphs illustrate the cost per session across these facilities, which ranges from approximately $2.60 to $70 per session. It should also be noted that Town of Paradise has an agreement with Mount Pearl for shared use of the Mount Pearl Summit Centre and CBS hence the Double Ice complex showing swim lessons.

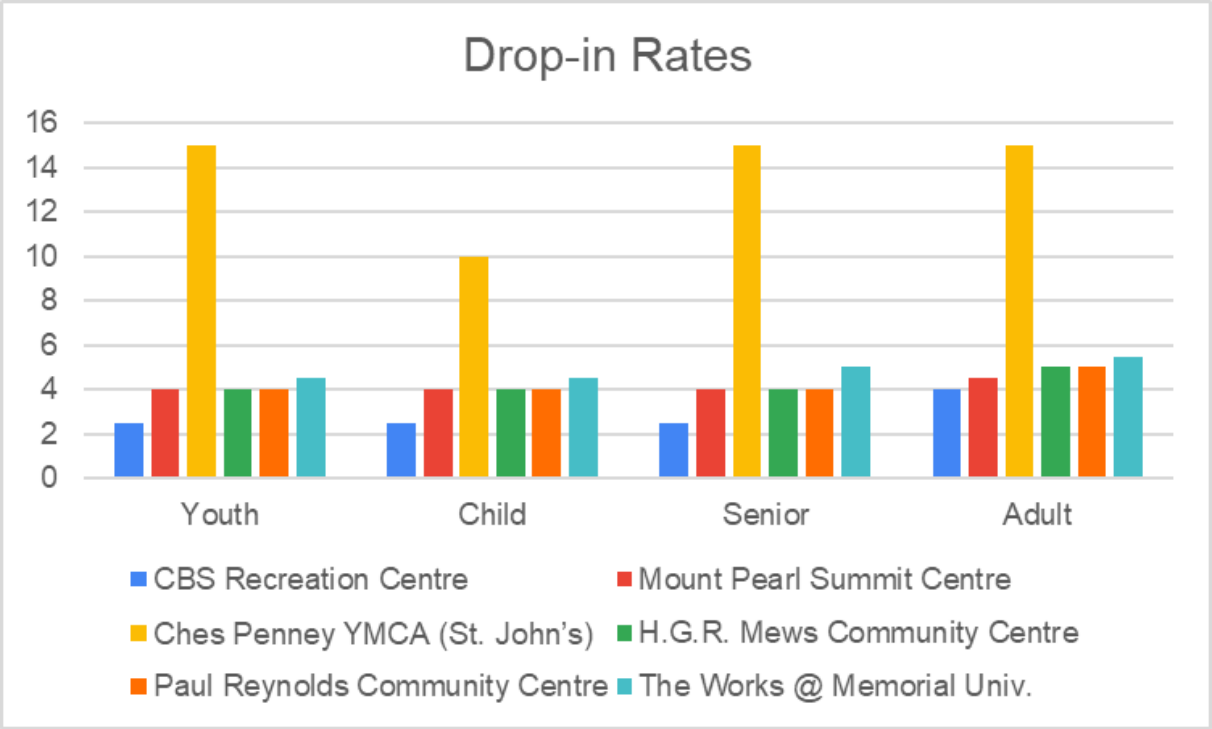
This Chart shows the age groups for swim lessons and the language used to describe these lesson groups.

Age group	Ages
Infant	0-2
Child/Youth	3-18
Adult	18+

Most facilities, including Ches Penney YMCA, H.G.R. Mews, Paul Reynolds, CBS Recreation Centre, Mount Pearl Summit Centre, and Paradise Double Ice Complex, offer 8 sessions per program, while The Works @ Memorial University provides the highest at 12 sessions.

Swimming lesson prices range widely across facilities. The lowest rates are at CBS Recreation Centre ($2.60–$3.91 per session), followed by The Works, Ches Penney YMCA, H.G.R. Mews, and Paul Reynolds centres (about $6.88–$7.25).

3.5.2 Drop in Rates



Summary and Key Takeaways

Drop-in rates across various facilities show notable differences by age group and location. The Ches Penney YMCA in St. John's consistently charges the highest rates across all groups, with children's sessions at $9.99, youth and adults at $15.21, and seniors also at $15.21 per session. The Works offers moderate rates, ranging from $4.50 for children and youth to $5.50 for adults and $4.75 for seniors. The Mount Pearl Summit Centre, H.G.R. Mews Community Centre, and Paul Reynolds Community Centre maintain relatively uniform pricing across age groups, charging between $4.00 and $5.00 per session. The CBS Recreation Centre provides the most affordable option, with rates as low as $2.60 per session for children, youth, and seniors, and $3.91 for adults. This wide pricing spectrum reflects variations in facility amenities, program demand, and target demographics.

3.5.3 Existing Amenities

Most recreation centres in the region offer a standard 25-metre pool with a shallow children's area, play features, and changing facilities, while The Works is the only facility with a 50-metre pool(but has been closed for the past two years). A few centres offer additional attractions, such as water slides, a lazy river, or beach-style entry, although these are limited to select locations. Amenities like hot tubs, saunas, and concession areas vary, with the Ches Penney YMCA and CBS Recreation Centre offering more wellness and social features. Spectator seating and multi-purpose rooms are common across most sites, but specialized offerings such as competition-standard pools, heated water, and party rental spaces are only

available in certain facilities. Overall, while all centres support basic swimming and family use, only a few provide advanced or specialty aquatic amenities.

Amenities	*Ches Penney YMCA (St. John's)*	*H.G.R. Mews Community Centre*	*Paul Reynolds Community Centre*	*The Works @ Memorial Univ.*	*CBS Recreation Centre*	*Mount Pearl Summit Centre*	*Total*
25 m Lap swimming lanes	1	1	1	1	1	1	6
Shallow children's area	1	1	1	1	1	1	6
Changing rooms/lockers	1	1	1	1	1	1	6
Deep end for diving	1	1	1	1	1		5
Play features	1	1	1	1		1	5
Multi-purpose/meeting rooms	1	1	1	1		1	5
Party/event rental space	1	1	1		1	1	5
Heated pool water	1	1	1	1			4
Spectator seating/viewing area	1	1	1			1	4
Pool deck showers		1	1		1	1	4
Sauna/steam room	1	1			1	1	4
Water slides			1	1		1	3
Beach entry/gradual depth	1	1	1				3
Competition-standard pool	1		1	1			3
Concession stand/café	1			1	1		3
Wi-Fi access	1	1				1	3
Hot tub/spa	1				1		2
50 m + Lap swimming lanes				1			1
lazy River			1				1
Water volleyball/basketball							0
Pool equipment rental							0
Wave Pool							0

3.5.4 Amenities by Zone

This table outlines the amenities associated with each zone and identifies those specific to the child-parent, youth, exercise, and competition groups. This information is valuable for determining which market segments are best served by each amenity.

			
Shallow children's area Play features Party/event rental space Spectator seating/viewing area Pool deck showers Water slides Beach entry or gradual depth Concession stand/café Wi-Fi access lazy River	Play features Party/event rental space Spectator seating/viewing area Pool deck showers Water slides Beach entry or gradual depth Concession stand/café Wi-Fi access lazy River Water volleyball/basketball Pool equipment rental Wave Pool	25 m Lap swimming lanes Multi-purpose/meeting rooms Spectator seating/viewing area Heated pool water Pool deck showers Sauna/steam room Competition-standard pool Concession stand/café Wi-Fi access Hot tub/spa Water volleyball/basketball Pool equipment rental	25 m Lap swimming lanes 50 m + Lap swimming lanes Deep end for diving Multi-purpose/meeting rooms Spectator seating/viewing area Pool deck showers Sauna/steam room Competition-standard pool Concession stand/café Wi-Fi access Pool equipment rental

3.6 Regional Capacities

Indoor pools are currently available in the H.G.R. Mews Community Centre, The Works facility at Memorial University, the Ches Penney Family YMCA in St. John's, the Mount Pearl Summit Centre, and the Conception Bay South Recreation Centre.

According to Ontario Ministry of Culture and Recreation (OMCR) standards in the Recreation Master Plan, the following facilities have been identified as having additional capacities CBS Recreation Complex Pool at 24,000 people and the Mount Pearl Summit Centre at 27,000 people.

- H.G.R Mews Community Centre (Pools: 2 Distance: 22 min drive)
- The Works at Memorial University (Pools: lane pool Distance: 16 min drive)
- Ches Penney Family YMCA (Pools: lane, play, and whirlpool Distance: 19 min drive)
- Mount Pearl Summit Centre (Pools: 2 Distance: 11 min drive)
- Conception Bay South Recreation Centre (Pools: 2 Distance: 18 min drive)

3.6.1 NRPA (National Recreation and Park Association)

The NRPA population per facility benchmark identifies the average number of residents served by specific types of recreation facilities across North America. This metric helps municipalities assess whether they have an adequate supply of facilities (such as outdoor pools, competitive pools, leisure pools, etc.) relative to their population size. By comparing local data to national averages, communities can make informed, data-driven decisions about future facility development, investment, and planning to meet current and projected needs.

Municipality	Population (2021 Census)	Outdoor Swimming Pools		Competitive pools		Leisure pools		Therapeutic		Aquatic Centres	
		NRPA	facility per pop	NRPA	facility per pop	NRPA	facility per pop	NRPA	facility per pop	NRPA	facility per pop
St. Johns	69,895	46.353	34,947	64,150	69,895	63,688	23,298	63,001	0	34,947	60,824
CBS	27,168	27,081	0	31,000	0	32,812	27,168	33,306	0	31,000	27,168
Mount Pearl	21,975	27,081	0	31,000	0	32,812	10987.5	33,306	0	31,000	21,975
Paradise	22,957	27,081	0	31,000	0	32,812	22,957	33,306	0	31,000	22,957

Based on the table above, Paradise has no competitive or leisure pools, meaning residents must travel to other municipalities for these amenities. Additionally, the existing facilities in surrounding areas, such as St. John's, already serve populations larger than recommended by NRPA guidelines, resulting in limited access for Paradise residents and demonstrating a clear need for a new aquatic facility within the community.

Leisure vs. Competitive Pools
According to NRPA standards, leisure pools are designed with a focus on recreation, accessibility, and community engagement. They typically include features such as warmer water, shallow zones, zero-depth entry, and play amenities to accommodate families, casual swimmers, and aquatic fitness activities. Competitive pools, on the other hand, are constructed to meet precise dimensional and technical requirements to support training and sanctioned events. These facilities provide standard lengths (25m or 50m), deeper water, cooler temperatures, lane markings, and spectator space to ensure compliance with sport regulations and to facilitate skill development and competition.

3.6.2 Ontario Ministry of Culture and Recreation Standards

As no specific pool size recommendations exist for the province of Newfoundland, Ontario's guidelines have been used as a comparative benchmark. The Ontario Ministry of Culture and Recreation Standards operate similarly to NRPA, measuring the number of facilities per 10,000 people and comparing it against their standards to determine the percentage of needs being met.

3.7 Recreation Master Plan

The Recreation Master Plan was finalized in April 2019. The plan assessed the community's recreation needs and laid the groundwork for a 10-year plan. Providing a blueprint for future developments for the Town's recreation and community services.
Swimming facilities in the Town of Paradise currently meet approximately 75% of the community's outdoor swimming needs. However, the community lacks an indoor pool. The Town has a policy agreement in place for the use of the indoor pool at the Mount Pearl Summit Centre, the YMCA, and the Works; however, these arrangements limit access for Paradise residents due to scheduling and availability constraints.

3.8 Public Consultation

The public consultation was conducted through an online survey and in-person engagement opportunities to better understand the community's needs. Key community stakeholders were contacted to discuss their perspectives through virtual and in-person interviews.
Public consultation, interviews with key stakeholders and Town leaders indicated that access to an indoor aquatic facility has been a topic of conversation for some time, and that although citizens travel to Mount Pearl (6km away) and Conception Bay South(13km away) regularly for swimming lessons, aquacise and leisure swimming, there is a desire, to have access to an aquatic centre in town, as there isn't access for swimming lessons or times for lane swim are full. Comments also included a note of caution about the cost of building and operating this type of facility.

Engagement Types

Public Engagement Sessions
Three public engagement sessions were held, including two pop-up events and one online session. The first in-person session had 100 participants and the second had 200. These sessions provided the opportunity for the public to share their perspectives on the need and desire for a new aquatic facility.

Online Survey
An online survey was conducted to provide qualitative evidence of interest in a new pool, it captured usage patterns, recreational needs, community preferences and programming preferences. The survey included 14 questions and received a total of 1,921 responses.

Swimmers Journey Mapping
Swimmer Journey Mapping was completed to explore how different users would experience a proposed pool. This exercise documented the full user journey, from start to finish, to identify needs, expectations, and potential barriers. This survey included 30 questions and received a total of 106 responses.

Vested Interest Holder Meetings
Vested interest holders from the community and surrounding area were contacted to assess how a new pool could support their operations and whether they would use the facility. Fourteen groups were contacted, and four interviews were completed.

Council Interviews
Phone interviews were conducted with members of the Council to understand their perspectives on the proposed pool. Of the seven members contacted, four participated in interviews.

Schools
Seven schools were contacted to explore their interest in offering programs, such as swim lessons, at a new facility. Only two schools responded (Paradise Elementary & Ecole Holy Family Elementary), and the discussions focused on current barriers to delivering aquatic programming and potential changes that could enable greater participation.

Community & Sport Organizations
Fourteen community and sport organizations were contacted, with three interviews completed. These discussions examined how a new pool could support their activities and the types of opportunities it could create for various user groups.

3.9 Community Engagement Desired Improvements

Water Activities:

One of the themes across the survey and pop-up events was the current opportunity for water activities on the ponds. However, it is worth noting that these facilities are seasonal, as they are not utilized for swimming during the winter months. The swimming/water access point at Peter Barry Duff Memorial Park has moderate use among survey respondents, and the trails surrounding the pond are moderately well-used. The Avalon Dragons are currently the most established and organized water-based group in the community, well-positioned to grow.
It is essential to acknowledge that while ponds offer a convenient and natural setting for recreation, they also pose health and safety concerns, including water quality issues, unpredictable conditions, and limited supervision, which should be carefully considered in future planning.

Indoor Pool:

The most frequent suggestion in the survey was an indoor swimming pool in Paradise. Many responses further elaborated that access to swimming lessons for children is a significant motive. Some respondents feel that a pool depends on the cost to build and maintain, as well as how that cost would be shouldered.

A few suggested that an agreement to provide more access at other pools in the region could be a reasonable solution. For context, most survey respondents visit the Mount Pearl Summit Centre at least occasionally (22% weekly, 17% monthly, 18% yearly).

4 Project Goals and Principles

Through project meetings, public engagement, and presentations to key stakeholders, the project goals and principles were developed. Key goals of the project include:

- A design that will meet the needs of the Town of Paradise and surrounding communities
- A facility that is accessible for all
- A sustainable design that minimized operational costs

Principles are developed to guide design decisions in the functional program, test fits and site evaluation. They support the project goals by outlining specific drivers. The following principles were developed for this project:

1) Provide a visible and inviting main entry and approach to the facility
2) Support efficient access control and staff surveillance
3) Offer views, transparency, and natural light from within and from outside the facility
4) Enhance programming functionality through zoning of aquatic program
5) Create (or build on an existing) “Social Heart” of the facility

These principles are evident in the program areas, test fit layouts and orientation on both sites.

5 Case Studies

During the project, existing facility case studies were presented and discussed with the project team and key project stakeholders. The intention was to learn from existing similar facilities, implement things that would work well for the Town of Paradise, and identify aspects that are not suitable for the Town.

The following facilities were selected for discussion based on local context, similar community population size, similar program elements, trends and best practices, and/or lessons learned:

- Ches Penny Family YMCA, St. John’s, NL

- Paul Reynolds Community Centre, St. John's, NL
- Mount Pearl Summit Centre, Mount Pearl, NL
- District of Summerland Aquatic Centre, District of Summerland, BC
- Ravensong Aquatic Centre, Qualicum Beach, BC
- Northside Recreation Centre, Oshawa, ON
- Iqaluit Aquatic Centre, NU
- Spray Lake Sawmills Family Sports Centre – Jayman BUILT Aquatic Centre and Curling Club Additions, Cochrane, AB
- Whitchurch-Stouffville Leisure Centre, Town of Whitchurch-Stouffville, ON

These case studies resulted in discussions on the size and programming for each water body or space, budget and funding successes and challenges, dryland spaces, spectator viewing and experiences, storage, access control, change room typology (gender specific vs gender inclusive), and leasable tenant space.

6 Facility Program & Design

6.1 Functional Space Program

The functional program was developed based on public and stakeholder engagement, reviewing existing similar facilities throughout Canada, incorporating best practices and trends, and the market and gap analysis within the region. Throughout the engagement process, the community strongly desired a 25m lap pool, with some community members expressing the desire for a 50m lap pool. Due to this, a functional program, test fits and Class D cost estimate was developed for both scenarios.

The following further describes the major program components. For the full Functional Program, see appendix A

6.1.1 Amenities

Lap Pool

25m Lap Pool

The program includes an 8 lane 25m lap pool. 8 lanes are optimal for host swimming competitions and offer flexible programming. 6 lanes could be considered, as this would still permit for most provincial competitions. The lap pool is typically maintained at a temperature of 78 – 82°F, with a starting depth of 4ft

to a maximum depth of 10 ft. Starting blocks are located at the deep end of the lap pool. The lap pool is proposed to be fully accessible with ramp access.

50 m Indoor Pool

A new aquatic facility could include a 50-meter lap pool, support more advanced swimming programs, and address current and future community needs. This would allow for more programming and rental options (for the region).

Zero Beach Entry to Leisure Tank

A Leisure pool is proposed for the new facility. The water is typically kept warmer than a lap pool (86-90°F) and the form is flexible to meet the needs of the programming. A zero beach or gradual, sloped entry system eliminates traditional pool steps, providing seamless access from deck level to swimming depth of approximately 6ft or more. This accessible design accommodates wheelchairs, mobility devices, and individuals with varying physical abilities. The gentle incline mimics a natural beach environment, making pool entry comfortable and safe for all users. Anti-slip surfaces throughout the entry zone prevent accidents, while the gradual depth change allows users to acclimate slowly. This feature significantly enhances the facility's accessibility compliance and creates an inclusive aquatic environment.

Connected to the leisure tank are additional programming components: splash area, lazy river, warm up/teaching lanes.

Splash Area

A dedicated shallow-water zone specifically designed for children ages 2-6 years, featuring interactive water play elements, fountains, and age-appropriate climbing structures. The splash area incorporates colourful, engaging equipment that promotes physical development and water confidence in young children. Safety features include slip-resistant surfaces, rounded edges, and continuous sight lines for parental supervision. Nearby seating allows parents to supervise their children during play sessions comfortably. The splash area depth is recommended from zero to 24 inches.

Warm Up/Teaching Lanes

A specialized instructional area featuring two to three clearly marked lanes optimized for swimming lessons and water safety training. Depth varies from shallow teaching areas to deeper sections for advanced instruction. The design includes built-in seating along pool edges for instructors and waiting students.

Lazy River

Typically, in the form of a figure eight, this zone has constant moving water, powered by directional jets, creating a current. Users can bob and float along with the current or swim or walk against it. Often respite seating areas are provided to break away from the current and enjoy vortex jets. Lazy river depth is recommended between 3’-4’.

Waterslide

A waterslide is an exciting recreational feature designed to enhance the aquatic experience while maintaining strict safety standards. The slide incorporates modern safety features, including proper run-out distances, appropriate splash zones, and non-slip climbing surfaces. Construction materials resist UV degradation and chemical exposure while providing years of reliable operation. The design considers user capacity, age restrictions, and supervision requirements. Integration with the leisure tank ensures adequate water depth and circulation for safe landing. Regular maintenance protocols and safety inspections provide the continued safe operation of the facility throughout its lifespan.

Swirl Pool (Hot Tub)

An aquatic feature providing relaxation and hydrotherapy benefits through heated water and strategically positioned jets. The design accommodates 8-12 users comfortably while maintaining appropriate social distancing capabilities. Advanced filtration and sanitation systems handle the increased bather load and elevated temperatures. Energy-efficient heating systems maintain optimal temperatures (100-104°F) while managing operational costs. Safety features include non-slip surfaces, clearly marked depths, and emergency shut-off controls. Regular water testing and chemical balancing protocols ensure safe, sanitary conditions. Accessibility features enable use by individuals with mobility limitations or therapeutic needs.

Seating for 200 Spectators

Competition-compliant spectator seating meeting minimum capacity requirements for sanctioned swimming events and competitions is proposed. The seating design incorporates accessibility features, including designated spaces for wheelchairs and enhanced sight lines for all attendees. Durable, moisture-resistant materials ensure longevity while providing comfortable viewing experiences. The layout maximizes visibility of pool activities while maintaining appropriate safety distances from the pool deck. This seating capacity enables the facility to host various competitive events and community gatherings.

Pool Viewing

Two areas are proposed for casual pool viewing, both an area from within the lobby and an area within the natatorium. Parent, guardians or friends can enter with outdoor attire to view or if needed, communicate with pool users.

Staff and Tenant Offices

Professional workspace areas designed to support facility staff and user groups (Triathlon, Masters, Artistic Swimming, Youth Swim Club) or potential tenants like physiotherapy. Each office is equipped with suitable electrical outlets, network connectivity, and climate control systems to ensure year-round comfort. Secure storage for important documents, keys, and administrative materials is incorporated into the design. The offices are strategically located for easy access to pool areas and could provide access to public spaces.

Lobby Area

The main reception and gathering space creates a welcoming first impression for facility users. This area includes a reception desk, seating areas, and information displays about programs and services. A climate-controlled environment provides comfort during check-in processes and waiting periods. The design incorporates durable, easy-to-maintain materials suitable for high-traffic areas. Natural lighting and attractive design elements create an inviting atmosphere. Strategic placement allows staff to monitor facility access while providing clear sight lines to various pool areas for enhanced security and customer service.

Staff Area for Lifeguarding

A dedicated space providing lifeguard personnel with necessary amenities, including changing facilities, equipment storage, and break areas. The design ensures quick access to pool areas during emergencies while providing a private space for staff preparation and rest periods. Climate control maintains comfort during off-duty periods, while secure storage protects personal belongings and professional equipment. The area includes first aid supplies, communication equipment, and emergency response tools. Proper ventilation and lighting create a professional environment that supports staff well-being and operational efficiency throughout long shifts. This area is purposely placed central to the natatorium with clear sightlines of the pool tanks and deck area for safety and surveillance.

Two Multipurpose Rooms for Birthday Events and Training

Flexible spaces designed to accommodate private parties, training sessions, and community programming. Each room features adjustable lighting and climate control systems for various event types. Durable flooring and wall surfaces withstand high activity levels while maintaining easy cleaning protocols. Built-in storage houses tables, chairs, and activity supplies. Kitchen access or catering facilities could be added to support food service requirements. Sound systems and audio-visual capabilities enhance training sessions and presentations. Strategic location provides easy access to pool areas while maintaining privacy for special events and professional development activities.

Gender Inclusive Change Rooms

Modern changing facilities are designed to accommodate all users, regardless of gender identity, family structure, or personal preferences. Private changing stalls with locking doors ensure individual privacy while communal areas provide space for preparation. Family-friendly features accommodate parents with children of different genders. Accessible stalls meet accessibility requirements with appropriate grab bars, benches, change tables and maneuvering space. Durable, moisture-resistant materials withstand constant humidity and frequent cleaning. Adequate ventilation systems prevent mold growth while maintaining air quality. Security features and proper lighting create a safe and comfortable environment for all facility users.

Sufficient Storage Space to Support Operational Requirements

Comprehensive storage solutions are distributed throughout the facility to support daily operations, equipment maintenance, and program delivery. Climate-controlled areas protect sensitive equipment and supplies from moisture damage. Chemical storage rooms meet safety codes with proper ventilation,

containment systems, and security features. Pool maintenance equipment storage includes space for cleaning tools, testing equipment, and spare parts. The program supplies storage that accommodates seasonal equipment, teaching aids, and recreational materials. Janitorial storage houses cleaning supplies and equipment separate from other materials. Strategic placement ensures easy access while maintaining security and organizational efficiency.

			
Splash Zone Zero Beach Entry Waterslide Swirl Pool Multipurpose rooms Gender Inclusive change rooms	Slash Zone Zero Beach Entry Warm up/Teaching Lanes Waterslide Swirl Pool Multipurpose rooms Gender Inclusive change rooms	Warm up/Teaching Lanes Swirl Pool Multipurpose rooms Gender Inclusive change rooms Sufficient Storage	Seating for 200 Spectators Swirl Pool Multipurpose rooms Gender Inclusive change rooms Sufficient Storage

6.2 Program Development Strategy

The programs that will be required would be a mix of swimming lessons (youth, adaptive and adult), fitness programs (Aquafit), rentals for swim clubs (Triathlon, Masters, Artistic Swimming, Youth Swim Club) and open swim/free swim and lane swimming. For the Town of Paradise to excel in meeting the needs of the broad spectrum of residents, annual targets should be set in several categories, and systems established to reduce barriers for specific groups.

			
Swim Lessons Family swims Family Theme Night Scavenger Hunts Seasonal Swim Events Parent & Tot Float and Talk Parent & Tot Water Safety Basics	Swim Lessons Kayak Lessons Movie Nights Family Swim Family Theme Night Scavenger Hunts Seasonal Swim Events Scuba Lessons Dive Lessons	Swim Lessons Aquafit Water Walking Open/ Free Swim Lane swimming Kayak Lessons Drop in Swim Scuba Lessons Dive Lessons	Triathlon Masters Artistic Swimming Youth Swim Club Scuba Club Dive Club

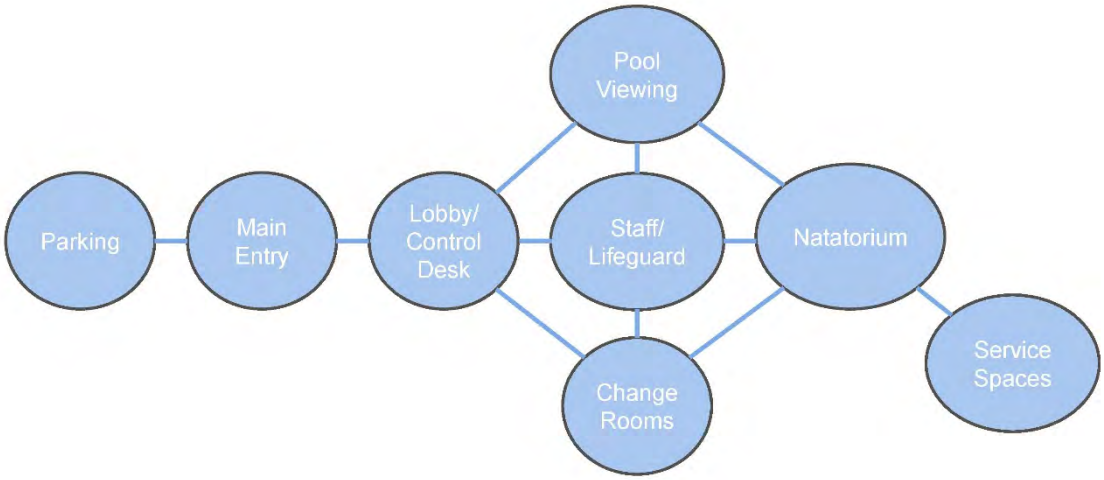
As the 65+ age group continues to grow at the fastest rate in the Town, developing strategies to engage this population will become increasingly important. Programming at the new facility should cater to a wide range of interests and skill levels, including offerings specifically designed for seniors.

6.3 Adjacencies

The proposed adjacencies are driven by efficient flow, access control, safety and clear wayfinding. From the facility main entry, a direct line of site to the aquatic control desk should be provided. This immediate visual connection provides staff surveillance and directs visitors where to go upon entry.

From the control desk, users are able to access the change rooms or pool viewing areas. Point of sale and controlled access into the change rooms are typical to track revenue, bather load counts, and usage data. Adjacent to the control desk, staff and lifeguard areas should be connected to take advantage of synergies and resource sharing.

Pool viewing, staff/lifeguard areas and changerooms require direct access and/or clear lines of sight into the natatorium and pool areas. Service spaces should be located nearby to reduce runs for HVAC and pool piping.



6.4 Conceptual Layout Options

6.4.1 Preferred Layout

Two preferred layouts have been developed, responding to the two distinct sites. The layouts are similar with some modifications to suit site specific characteristics.

Site 1 – Double Ice Complex

Site 1 is the Double Ice Complex located at 68 McNamara Dr. The existing multi-use recreation facility includes two NHL ice sheets, a fitness centre, full-service canteen, a multi-purpose room, office space and meeting areas, and acts as the main entrance to the Rotary Paradise Youth Centre. The potential new aquatic centre is proposed as an addition to this existing recreation complex.

The existing facility main entry is visible and identifiable from McNamara Dr with approximately 430 existing parking spaces. A new expansion could impact this visible existing main entrance, reducing clear wayfinding for visitors as they approach the facility. This should be considered in the next phase of design. An expansion or alteration to the existing main entrance has not been included in this scope of work.

The below diagrams illustrate three potential locations for the aquatic centre expansion to the existing Double Ice Complex.

Location 1

Location 2a

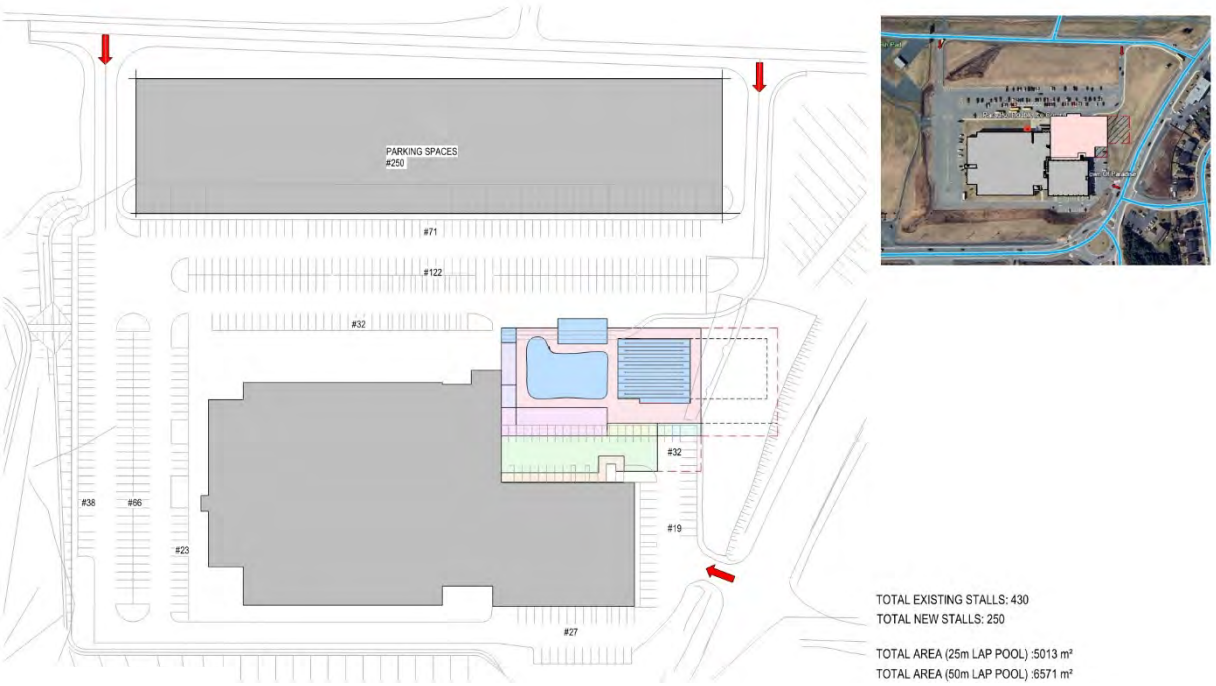
Location 2b

Location 1 maintains good visibility of the facility main entrance from McNamara Dr, however is it adjacent to the double storey space of the ice arena. Access to the existing second floor and elevator would be complex and costly. This location also disrupts the existing parking circulation.

Location 2a and 2b appropriately take advantage of the existing facility lobby and connect to the existing second floor, however they conceal the existing main entry from McNamara Dr. Location 2a is least disruptive to the existing parking.

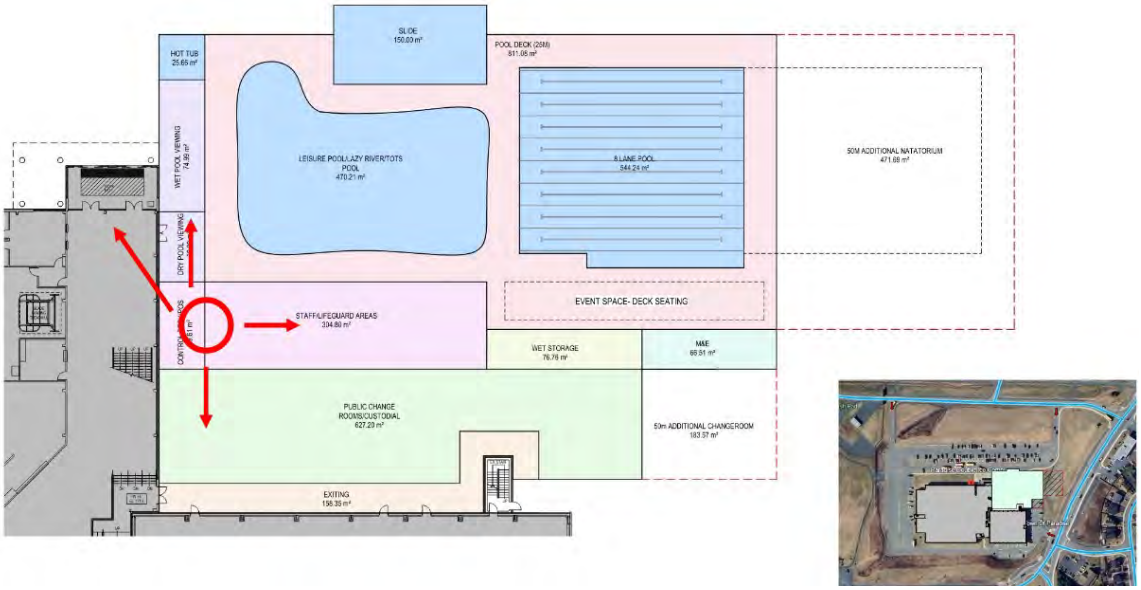
Location 2a was selected to further explore the expansion of a new aquatic centre.

The potential new expansion will impact the existing vehicular drop off area and the Rotary Youth surface parking area. Some existing exterior mechanical units will need to be relocated and exiting from the existing exit stair will need to be maintained. The below test fit plans illustrate the proposed expansion footprint for a 25m 8 lane lap pool and all other proposed program components. Dashed lines, in the below graphics, indicate the expansion footprint, should a 50m lap pool be considered.



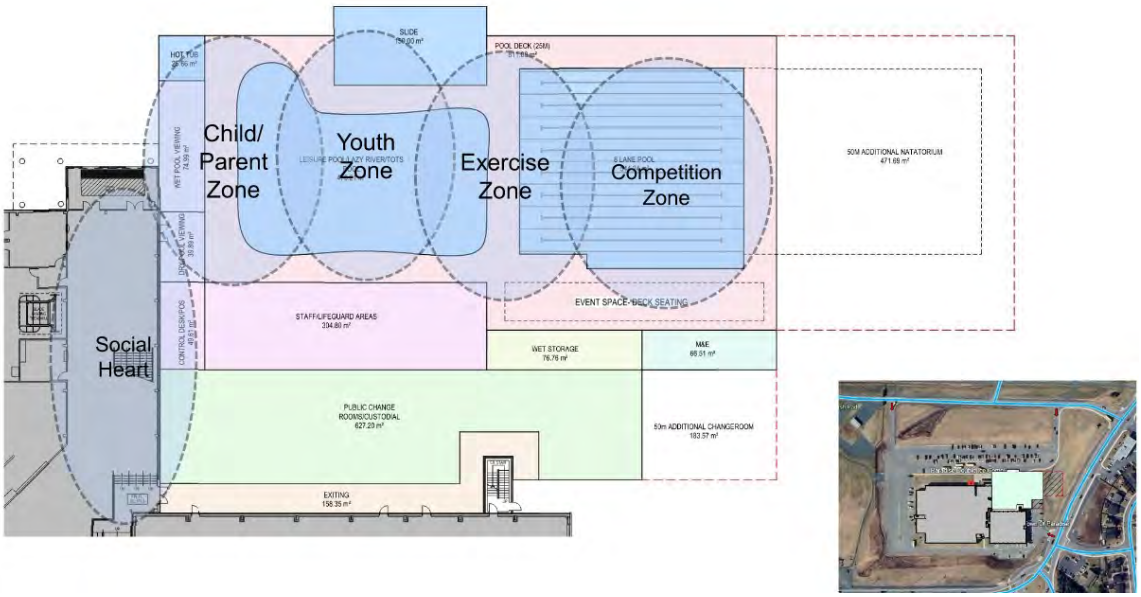
Double Ice Complex Site - Site test fit layout (For full size test fit plans, see appendix B)

The proposed facility has a main floor, second floor and basement area. The main natatorium is positioned on the main floor and offers views in and out of the facility towards Mcnamara Rd and Octagon Pond. The control desk is centrally located and connected to the existing facility lobby, offering clear wayfinding for visitors and passive surveillance for staff, as well as control of access into the change rooms.

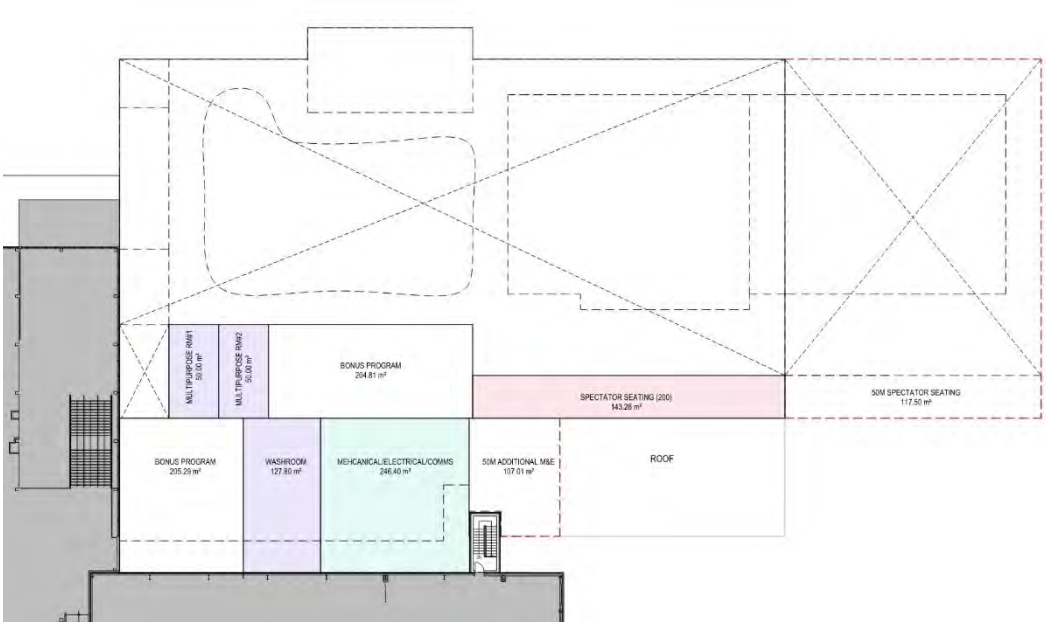


Double Ice Complex Site – Main floor test fit layout – Control desk

The natatorium pools are configured to align with program zoning – Child/Parent Zone, Youth Zone, Exercise Zone, and the Competition Zone. The reception and casual viewing into the natatorium is connected to the existing facility social heart and lobby area.

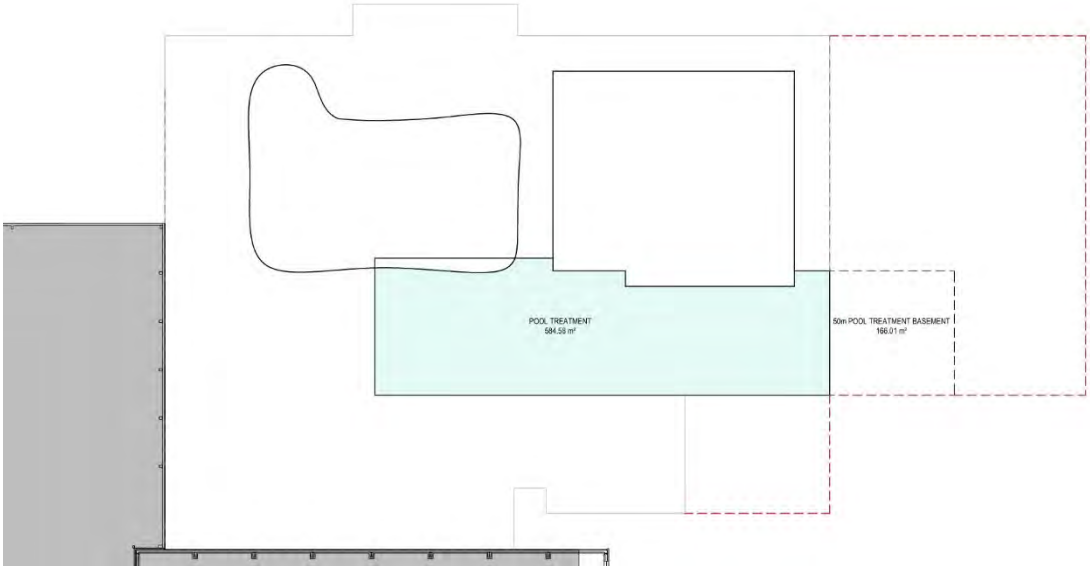


Double Ice Complex Site – Main floor test fit layout – Program zones



Double Ice Complex Site – Second floor test fit layout

The second floor test fit proposes spectator seating overlooking the lap pool for competitions. Multipurpose rooms, washrooms and service space make up the remainder of the second floor required program. Bonus Program area is proposed adjacent to the existing facility structure. This is due to structural and maintenance efficienies realized by building the expansion to match the existing adjacent roof structure. Althougth these program areas are not required at this stage of the design process, trends for mixed use sports and recreation facilities include leasable tenant space or additional multi use spaces. Infilling the expansion to match the existing facility roof height is realtively low cost and will mitigate snow loading that would occure on a lower roofs in these locations.



Double Ice Complex Site – Basement floor test fit layout

The basement level will be used for pool mechanical systems and some electrical equipment. An elevator and stair is proposed for full access to all equipment and surge tanks.

Site 2 – Dianne Whalen Soccer Complex and Master Plan

The second site selected for evaluation is the Dianne Whalen Soccer Complex. This outdoor sport venue is located off Dianne Whalen Dr. and adjacent to the existing and future schools in Paradise. The site is also surrounded by industrial and business uses and is hidden from view and main thoroughfares within the town.

The overall master plan for the Dianne Whalen site and the current state is shown below.

Dianne Whalen Site – Current

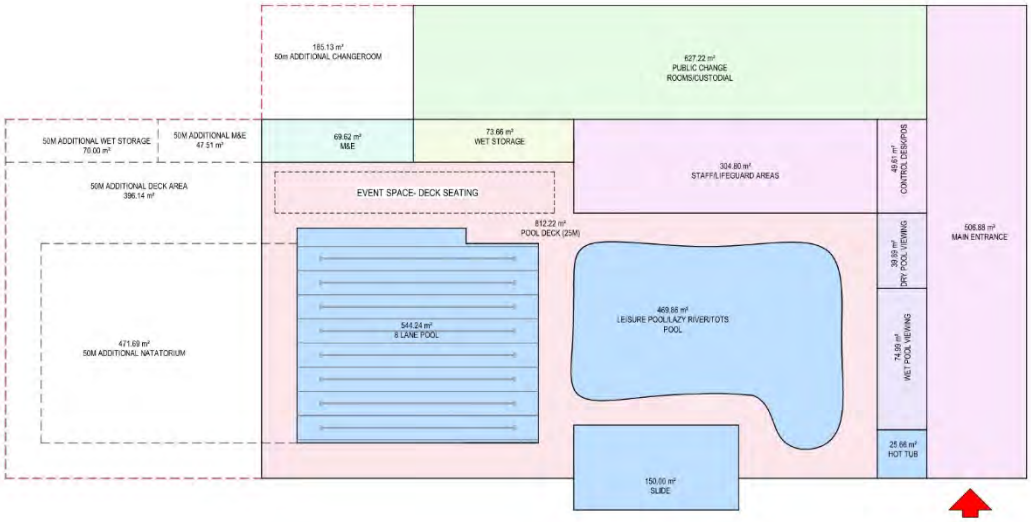
Dianne Whalen Site – Master Plan

The functional program of the potential new aquatic facility for Site 2 is altered to provide amenities required for a stand-alone new aquatic centre. A main lobby and social heart are proposed, however there is less leasable tenant area located on the second floor, as there are no adjacent structures to abut and create snow loading. A full breakdown of the functional program is located in appendix A.

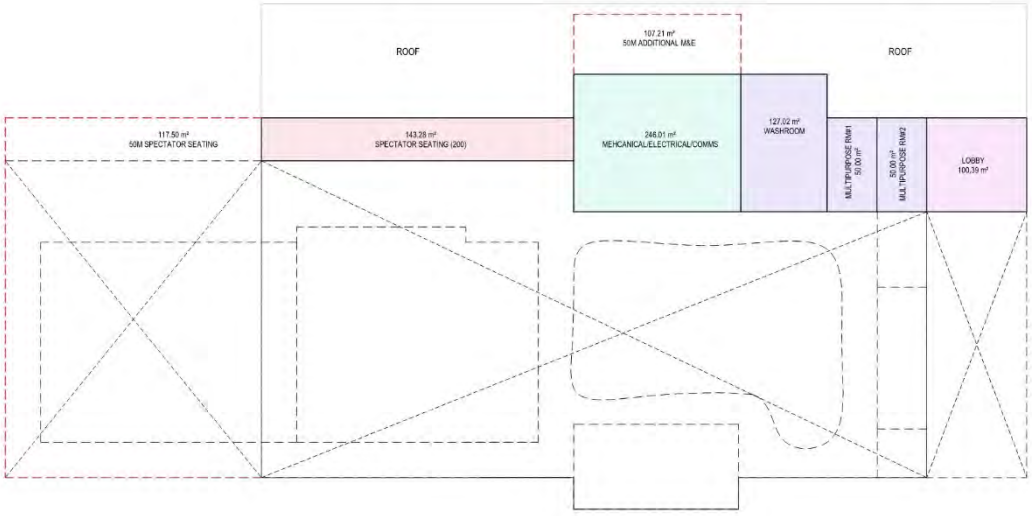
Two locations were tested; one aligning with the new road looping the fields, and one aligning with the central greenway spine on the site. Both locations offer a prominent view of the new facility as visitors approach.

Dianne Whalen Site – Aquatic facility location 1

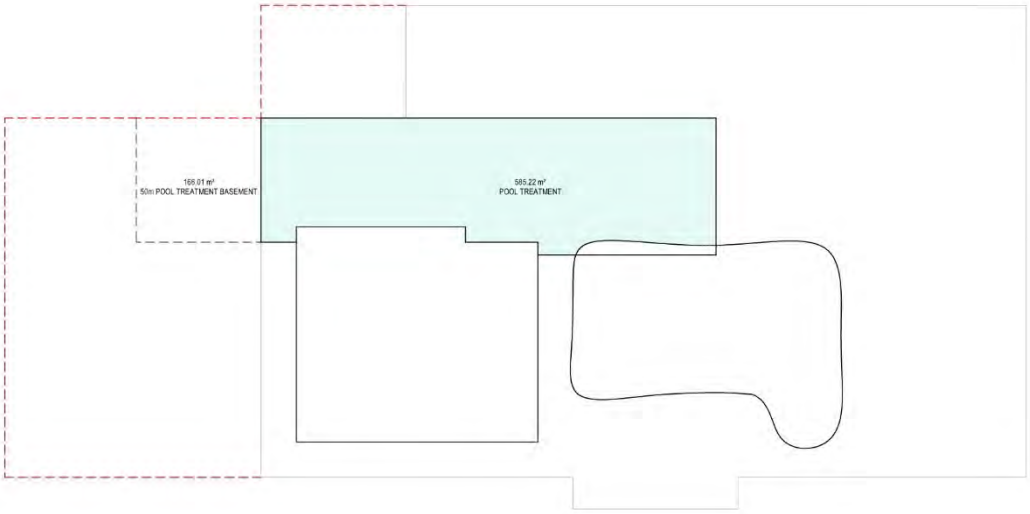
Dianne Whalen Site - Aquatic facility location 2



Dianne Whalen Site - Main Floor Test Fit Layout



Dianne Whalen Site - Second Floor Test Fit Layout



Dianne Whalen Site - Basement Test Fit Layout

6.4.2 Architectural

Exterior design

The exterior design will be durable and provide an insulated envelope to support the sustainability targets for the project, and at a minimum comply with the National Building Code of Canada (NBCC) 2020 and National Energy Code of Canada for Buildings (NECB) 2020. A rain screen assembly is envisioned with a combination of block or brick cladding from grade to 8'-10' for durability and metal cladding above. Glazing will be used in strategic areas to provide natural light and views, both into and out of the new facility. Double glazed curtain wall is proposed at a minimum, and based on future detailed design, triple glazing may be required. A flat roof can be assumed at this time; once detailed design begins a sloped roof could be assessed. Snow loading and rainwater drainage will be factors in the roof type and design.

Additional parking is required for both sites as noted in the test fit plans. Based on the Town of Paradise Bylaw, 1 stall per 20sm of floor area is required for this new facility. This equates to approximately 250 new stalls. Since both sites offer existing parking (for the Double Ice Complex and the Dianne Whalen sports fields) there could be a reduction in the required 250 parking stalls with some stall sharing of these mixed-use sites.

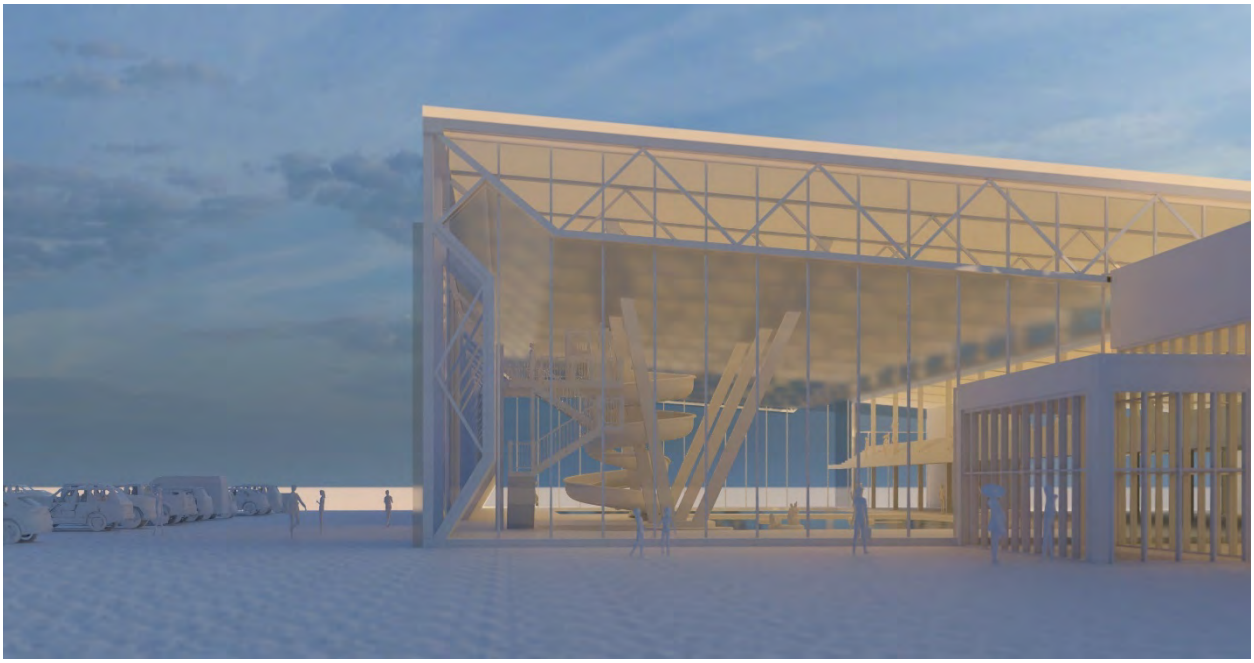
Site 1

For site 1, the existing facility main entry will be used to access the new aquatic expansion within the existing lobby. Removal or maintaining the existing curtain wall glazing and metal cladding will be evaluated in the next phase of design. Some existing exterior HVAC equipment should be relocated to the roof of the new expansion.

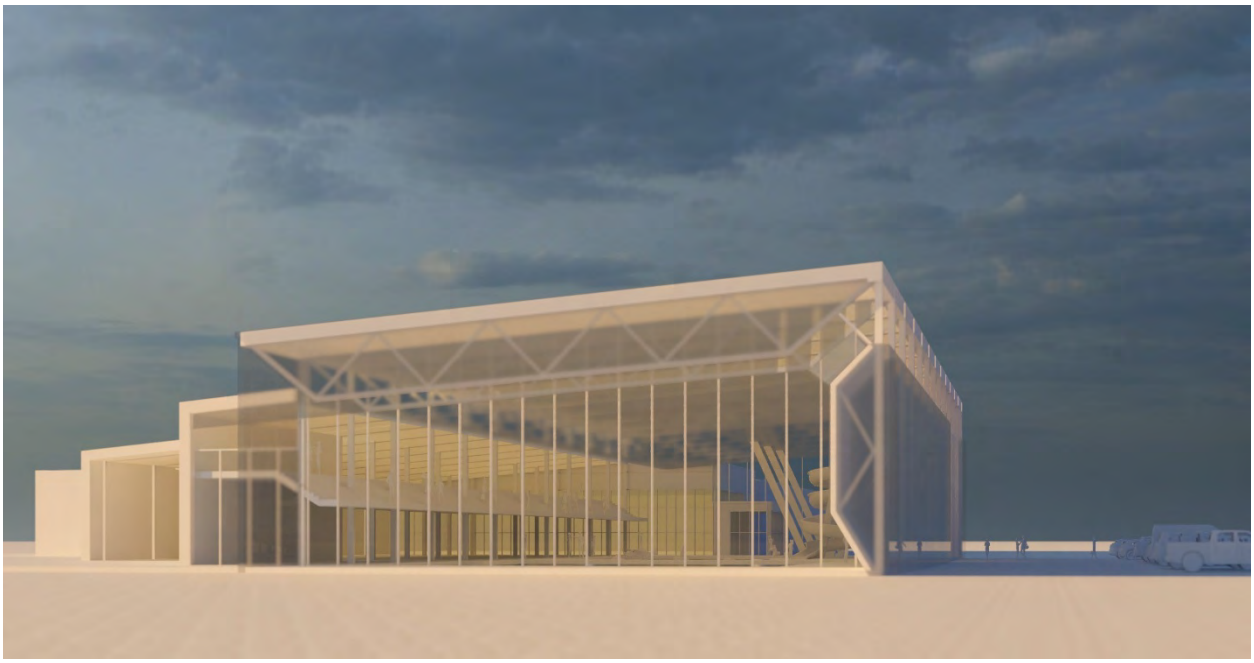
The expansion is located on existing green space, parking spaces and the facility drop off zone. A redeveloped drop off zone and overall parking will be developed in the next phase of design. As identified in the Site 1 Analysis, the facility main entry should be reviewed in future phases of design and potentially expanded to maintain a visible and identifiable main entrance from McNamara Dr.

Prominent features are expressed on the expansion facades facing the visitor parking and McNamara Dr.

Site 1 – Concept view from visitor parking



Site 1 – Concept view from visitor parking and existing main entry



Site 1 – Concept view from McNamara Dr.

Site 2 – Dianne Whalen Soccer Fields

For site 2, the new aquatic centre will be a stand alone building. A new main entry and lobby atrium will be built. 50% exterior glazing should be assumed for this new atrium with a flat roof. An elevator and feature stair are required in the new lobby area. The layout, adjacencies and flow remain the same as the Site 1 test fit layout.

Interior design

The interior design of the aquatic centre will be durable and cost-effective. A full environmental separation is required between the natatorium and the adjacent spaces. The moist environment will be contained within the wet spaces with a vapour barrier. Materials within the natatorium will be selected or treated to resist moisture and deterioration. Based on the sustainability goals, a mass timber structure could be implemented versus steel structure that is treated for the moist environment. Any steel connections or secondary structure in steel will be either galvanized or treated with epoxy paint. All fixtures and accessories will also be of stainless steel, aluminum or be treated to resist deterioration.

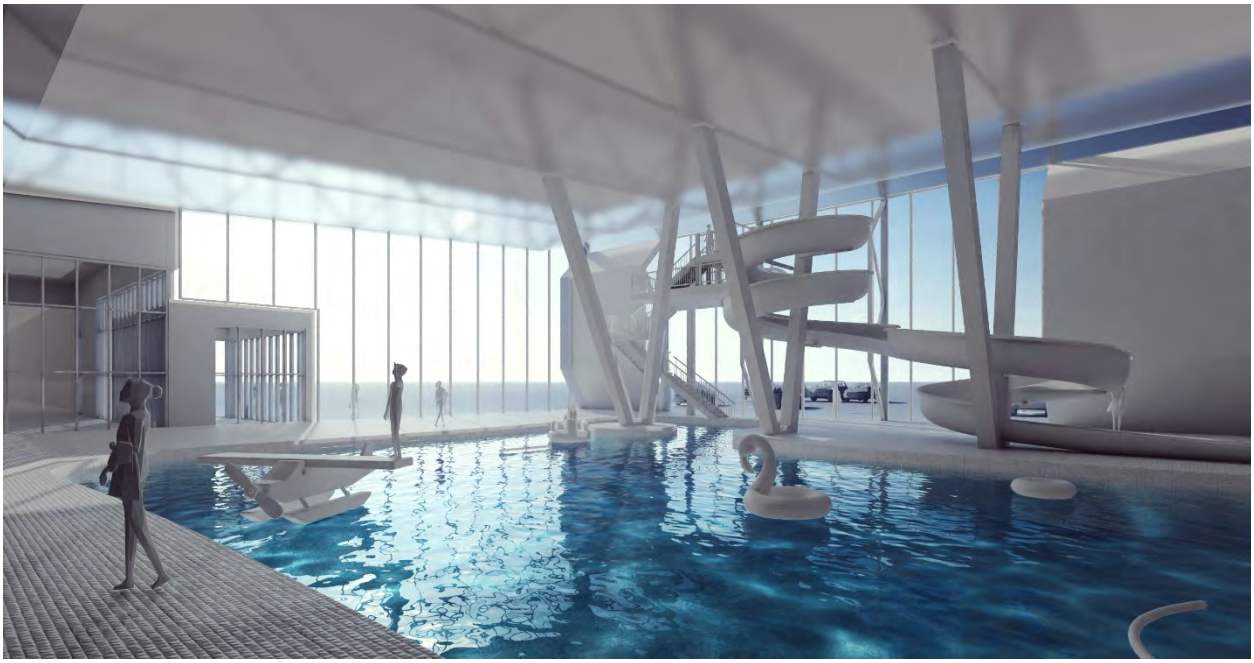
The pool tanks, pool deck and change room floors are anticipated to be traditional cast in place concrete with a 2”x2” tile finish, sloping to trench drains. Sealed concrete floors will be proposed in service and storage rooms. A polished concrete or vinyl plank is proposed in admin and office spaces.

Interior partitions will be both concrete block and drywall on steel stud. Concrete block in wet areas will be primed and painted with epoxy paint. Some tile finish will be applied in select wet areas. Drywall will be used in administrative areas.

Ceilings will be acoustic ceiling tiles in administration areas, moisture resistant drywall in some change areas, and exposed structure (treated in wet areas) in the natatorium, service/storage rooms, and atrium or lobby areas.

Some other interior assumptions include:

- Phenolic lockers, partitions and benches
- Wood doors, storefront/glazed aluminum doors, metal doors
- Solid surface counters, tile floor and backslpash finishes in change rooms and washrooms
- Feature ceiling treatment in the control desk area, acoustic baffles in the natatorium (ceiling hung or wall mounted)
- Spray/splash features in the leisure tank, underwater lighting in all pool tanks.
- Starting blocks and touchpads for the 8 lane lap pool. Lane ropes, flags, depth markers, etc.
- Facility signage
- FFE allowance



Conceptual interior view of the Natatorium

6.5 Structural

This feasibility study outlines the proposed structural design concepts for a future municipal pool facility in the Town of Paradise, located near St. John's, Newfoundland and Labrador. The envisioned facility will serve as a vital recreational and wellness hub for the community, with a primary focus on an indoor pool natatorium and potential auxiliary spaces such as fitness areas, multi-purpose rooms, and administrative offices.

The structural design prioritizes three key objectives:

- Architectural Integration: Supporting the spatial and aesthetic goals of the facility, including wide-open pool areas and exposed mass timber elements.
- Structural Efficiency: Employing optimized systems that meet performance standards while minimizing material use and construction waste.
- Sustainability: Reducing embodied carbon through low-carbon concrete mixes, recycled steel, and mass timber construction where feasible.

The substructure is anticipated to consist of shallow foundations with cast-in-place concrete elements, including watertight pool shells designed to ACI 350 standards. One option for the superstructure is feature a hybrid of mass timber and structural steel systems, with exposed mass timber used to enhance environmental and architectural value. A full structural steel option has also been included in the Class D cost estimate for comparison.

Design loads, including dead, live, snow, wind, and seismic, will conform to the prevailing version of the National Building Code of Canada (NBCC 2020) and local climate data. Site 1 for the proposed municipal pool facility will be an extension to the existing community centre and will be classified as a "High Importance" building as per the NBCC which provides a greater degree of safety to human life than a

Normal Importance category building due to its critical role in providing essential services and support to the community. This should be reviewed in the next phase of design.

This feasibility study provides a foundation for future design development, capital cost estimation, and community engagement, ensuring that the Town of Paradise can move forward with a resilient, sustainable, and community-centered aquatic facility.

6.6 Sustainability and Embodied Carbon Reduction

Globally, building materials and construction contribute approximately 34% of CO_2 emissions, with structural components responsible for over half of a building's total embodied carbon. Concrete and steel, especially cement and rebar, are the primary contributors. To mitigate this impact, the structural design will incorporate the following low-carbon strategies:

- Optimize structural systems to meet performance standards while minimizing material use.
- Specify low-carbon concrete mixes using performance-based criteria aligned with CSA A23.1.
- Set Global Warming Potential (GWP) reduction targets for concrete design mixes based on Canadian industry benchmarks.
- Use recycled steel and energy-efficient manufacturing processes for structural steel and rebar.
- Utilize mass timber in areas where structural feasibility permits, aiming to lower carbon emissions and enrich the architectural character with natural warmth.

6.7 Substructure

6.7.1 Foundation System

Geotechnical investigation will be required to confirm soil conditions. For feasibility purposes, a shallow foundation system is assumed based on the existing adjacent structure (Paradise Double Ice Complex) foundation system. This includes:

- Strip and spread footings founded on undisturbed native soil or engineered fill.
- Slab-on-grade concrete floor with control joints to manage shrinkage and cracking. Polypropylene fiber reinforcement may be used for added durability.
- Perimeter concrete foundation walls on strip footings to support exterior cladding, designed to be founded below 1200 mm frost depth per the existing adjacent structure's geotechnical recommendations.

6.7.2 Basement and Pool Structure

The natatorium will incorporate cast-in-place concrete for the basement walls, pool walls, suspended slab above the basement and the slab on grade. Pool shells will be designed as watertight structure in accordance with ACI 350 standards. The basement walls will be engineered to withstand both earth pressure and hydrostatic pressure if the groundwater level rises above the basement slab.

Concrete specifications will outline low-carbon concrete properties, including the following:

- Exposure Class F1 with 30 MPa compressive strength.
- Use of GUL (Portland-Limestone) cement to reduce CO_2 emissions by ~10%.
- Inclusion of supplementary cementitious materials (SCMs) such as slag or fly ash.
- Performance-based mix design to meet CSA A23.1 standards.

To further reduce the embodied carbon impact, the following will be included in the specifications:

- Type III Environmental Product Declarations (EPDs) will be required.
- A GWP reduction target of between 20 to 25% below industry average will be specified.

6.8 Superstructure

The building's layout will be tailored to Paradise's community needs, but for feasibility, a conceptual plan includes:

- A single-storey natatorium featuring a double-height space, constructed with mass timber (CLT and glulam) to promote sustainability and enhance architectural warmth. (Full steel structure is also included in the cost estimate as an option and for cost comparison).
- A two-storey section (if included) for multipurpose rooms, M+E rooms, fitness and administration, using a hybrid structural system. This approach strategically combines structural steel, used for non-public-facing rooms requiring mass timber encapsulation per code, for cost efficiency, with mass timber elements to enhance sustainability and reduce the overall carbon footprint.
- Roof systems may incorporate cross laminated (CLT) panels over the natatorium or steel decking above the fitness and administration areas, selected based on span and load requirements.

Mass timber elements will be exposed where possible to reduce finishing materials and enhance the natural character of the space. Structural grids will be spaced to maximize open areas, especially in the natatorium zone.

Where timber and steel systems intersect, paired columns will be used to maintain architectural continuity and structural integrity.

Lateral stability will be provided by steel cross-bracing and/or concrete shear walls, designed to resist wind and seismic forces per NBCC.

6.9 Design Loads

Design loads will be based on the NBCC and localized climate data specific to Paradise, Newfoundland, and Labrador. These loads will ensure the structural integrity and long-term performance of the proposed municipal pool facility.

6.9.1 Gravity Loads

- **Dead Loads**: Include the self-weight of structural components, architectural finishes, interior partitions, and allowances for mechanical and electrical services.
- **Live Loads**: Account for occupancy-related loads, as well as environmental factors such as snow accumulation, rainfall, and stormwater retention.
- **Roof Loads**: Roof structures will be designed to support live loads, mechanical rooftop equipment as well as any additional loads, including the weight of photovoltaic thermal (PVT) solar panels, if installed.

6.9.2 Lateral Loads

- **Wind and Seismic Loads**: Lateral forces will be evaluated based on regional hazard data. Wind pressure (q) and seismic ground motion parameters will be determined using NBCC provisions, supplemented by soil properties identified in the site-specific geotechnical investigation.

6.10 Mechanical

6.10.1 HVAC

6.10.1.1 Ventilation & Air Conditioning Requirements

HVAC systems serving the Natatorium are to be designed to maintain the following space conditions:

Summer	
Dry-Bulb	**Relative Humidity**
30°C	60%
Winter	
Dry-Bulb	**Relative Humidity**
30°C	50%

In accordance with ASHRAE guidance, the HVAC system shall be sized to provide a minimum of six (6) air changes per hour within the pool space. The outside air flow rate shall be a minimum of 2.4 L/s/m^2 including the pool surfaces and surrounding wet-deck areas. Based on the preliminary building layouts the estimated airflow rate required by the pool HVAC system is approximately 27,000L/s, with a dehumidification load of approximately 100kg/hr.

Dehumidification loads shall be determined with consideration given to evaporation rates from pool surfaces, as well as latent heat from bathers and spectators. Evaporation rates shall be adjusted using industry standard ‘Activity’ factors to compensate for the use of water features and bather activity.

Typical Activity Factors for Various Pool Feature Types	
Pool Type	**Typical Activity Factor**
Baseline (unoccupied)	0.5
Residential Pool	0.5
Condominium	0.65
Therapy Pool	0.65
Hotel	0.8
Public, schools	1
Whirlpools, spas	1
Wavepools, water slides	1.5 (minimum)

(source: ASHRAE Applications 2019)

The pool HVAC system shall incorporate energy recovery systems, including but not limited to, hot-gas reheat on the dehumidification system, and a water cooled condenser coil to reject heat from the air stream back into the pool. A secondary air-cooled condenser shall be provided for heat rejection when water heating is not required.

The remainder of the building should be served by a variable volume air handling unit or series of units, which shall provide ventilation and air conditioning for all spaces outside of the natatorium. The estimated cooling demand for the building, excluding the natatorium is approximately 30 tons.

6.10.1.2 Energy Conservation & Sustainability

Pool facilities tend to be energy intensive buildings, requiring year-round dehumidification, and heating. As such, any and all opportunities to reduce energy demands should be explored. Site #1, at the existing double ice complex presents a potential advantage over Site #2 in this regard. There is a synergy between the Ice Plant which requires year-round cooling, while the natatorium which has a year-round heating demand. The Ice Complex is a LEED Silver certified building, which already utilizes heat recovery strategies to reject heat from the ice plant into domestic water and hot water used for heating the building; however, there are still times when loads are satisfied, and the remaining waste heat has to be dumped to the outside via a cooling tower. The addition of a public pool facility attached to the ice complex would provide an additional consumer for the waste heat generated by the ice plant. Taking advantage of this 'free' heat could potentially lower the energy demand for both facilities. Additional study will be required at the time of design to explore the amount of heat which could be made available to the pool from the existing ice complex as well as the method and routing to interconnect the pool piping to the existing ice plant. Regardless of which site is selected, the mechanical design must focus on energy efficiency, including, but not limited to features such as enthalpy recovery wheels, drain waste heat recovery, and air or water source heat pump systems for heating and cooling.

Operationally, the building automation system should include energy-saving measures such as night-time temperature setbacks, demand controlled ventilation, as well as air and water side economizers to reduce the reliance on mechanical heating and cooling.

6.10.2 Plumbing

6.10.2.1 Pool Systems

Each pool system shall incorporate its own dedicated circulation and filtration systems to allow for individual features and pools to be shut down for maintenance without impacting the rest of the facility. Pool systems shall be designed to provide a minimum turn-over rate in each pool / water feature of four (4) changes per day in accordance with the Newfoundland Public Pool Regulations and Public Health Act.

Each system shall consist of a dedicated balance tank, water makeup assembly, pump package, strainers, filter assembly, water heater, and water chemistry control system. Pumps, and water heaters are to be provided with N+1 redundancy. The hot tub must include a leakage current collector and grounding system in accordance with the Canadian Electrical Code.

Approximate turn-over rates required based on the proposed options are as follows:

Pool	Approx. Vol. m^3	Flow Rate L/s
25m Lap Pool	915	42.3
50m Lap Pool	1830	84.7
Leisure/Tots Pool	604	28.0
Lazy River	55	2.5
Hot Tub	28	1.4

Recommended pool water temperatures vary depending on the primary activities they are intended to accommodate. Typical pool design conditions for a variety of activities is provided below:

Typical Natatorium Design Conditions			
Type of Pool	**Air Temperature °C**	**Water Temperature °C**	**Relative Humidity %**
Recreational	24 - 29	24 - 29	50 - 60
Therapeutic	27 - 29	29 - 35	50 - 60
Competition	26 - 29	24 -28	50 - 60
Diving	27 - 29	27 - 32	50 - 60
Elderly Swimmers	29 - 32	29 - 32	50 - 60
Hotel	28 - 39	28 - 30	50 - 60
Whirlpool/Spa	27 - 29	36 - 40	50 - 60

(source ASHRAE Applications 2019)

Operating temperatures should be selected to be as low as practically possible to minimize energy demands. Given this is intended to be a community facility, the ‘Recreational’ design conditions are likely most applicable.

6.10.2.2 Domestic Hot Water

Domestic hot water loads for public pool facilities tend to be quite high due to the nature of the building and the frequency and volume of water used by the public showers. Heat pump based water heaters and drain-waste heat recovery systems should be considered in order to lower the overall energy demand. Estimated storage requirements to serve the public showers is 1000 L, with heating capacity of 60kW.

6.10.3 Fire Protection

The facility will require an automatic sprinkler system designed and installed in accordance with NFPA standard 13. Based upon the proposed size and occupancy of the building, the anticipated fire flow demand is estimated to be 44 L/s (~700 gpm). Based on other recent builds in the area around Site #2 near the Dianne Whalen Soccer Complex, it is likely that a fire pump will be required to satisfy the fire protection requirements. By comparison, the existing double ice complex, which also has an automatic fire protection system did not require a fire pump or any on-site storage.

Fire flow testing at the selected site will need to be conducted at the time of design to determine if adequate flow and pressure is available to feed the sprinkler system without the assistance of a fire pump. For the purpose of this feasibility assessment, costs for a fire pump and on site storage were included for Site #2.Control & Automation.

The facility will be served by a building automation system (BAS), complete with a front end graphical interface. The BAS will provide full control over all HVAC and Pool treatment systems. The front end will provide Town staff with the ability to adjust setpoints, see trouble / alarm conditions, and monitor water and air temperatures from any workstation, or internet connected device with sufficient permissions.

6.11 Electrical

6.11.1 Power Distribution System
(Option 1 - Existing Building Expansion)

The electrical service will be installed in the new electrical room of the building and will have sufficient capacity to support both the existing ice rink complex and the new pool addition. The service will be fed underground from a new utility pad-mounted transformer located at the entrance of the building, featuring a 2500A main breaker. The primary distribution of the transformer will operate at utility medium voltage, with the secondary distribution at 600V, three-phase. All mechanical equipment and heating systems will be supplied at 347/600V, while receptacles, lighting, emergency/exit lighting, and general power will be

supplied at 120/208V. The new service will back-feed the existing ice rink service, and the existing transformer will be removed.

The Main Distribution Panel (MDP) will be centrally located and sized to accommodate the total load of the building. Subpanels will also be distributed strategically within the building to serve specific zones, including the natatorium and auxiliary areas, such as change rooms and offices.

Emergency Power System:

A new emergency power and life safety system will be provided to ensure uninterrupted operation and occupant safety during power outages or emergencies. Key components include:

Emergency Generator: A new, larger-capacity generator will be installed on the exterior of the building to provide backup power for both the existing Ice Complex and the new pool facility. The generator will support critical systems such as refrigeration, emergency lighting, fire alarms, communication systems, security systems, Building Management Systems (BMS), central data servers, and fire pumps. It will be housed in a sound-attenuated, weatherproof enclosure and equipped with a base fuel storage tank sized to provide a minimum of 24 hours of operation during utility power outages.

Back-Feed to Existing Complex: The new generator will have sufficient capacity to back-feed the existing emergency distribution, ensuring integration of the current ice complex systems with the new pool facility.

Power Distribution: Emergency power will be routed through a new underground duct bank to the electrical room. Power will be delivered to the essential distribution system via automatic transfer switches (ATS). Separate ATS units will be provided for life-safety and non-life-safety loads, utilizing a four-pole design or overlapping neutral to ensure proper ground sensing at the main breaker. Each ATS will include a full maintenance bypass feature to allow servicing while operating on either utility or generator power.

(Option 2 - New Building)

The electrical service will be installed in the main electrical room of the building, featuring a 1600A main breaker. The service will be fed underground from a new utility pad-mounted transformer. Key components of the power distribution system include:

A pad-mounted transformer will be located at the entrance of the building. The primary distribution of the transformer will operate at utility medium voltage, and the secondary distribution will operate at 600V, three-phase. All mechanical equipment and heating systems will be supplied at 347/600V, while receptacles, lighting, emergency/exit lighting, and general power will be supplied at 120/208V.

The Main Distribution Panel (MDP) will be centrally located and sized to accommodate the total load of the building. Subpanels will be distributed strategically within the building to serve specific zones, including the natatorium and auxiliary areas, such as change rooms and offices.

Emergency Power System:

The pool will be equipped with an emergency power and life safety system to ensure uninterrupted operation and occupant safety during power outages or emergencies. Key components include:

Emergency Generator: Emergency power will be supplied from a new emergency generator located on the exterior of the building. The generator will support critical systems, emergency lighting, fire alarms, communication systems, security systems, Building Management Systems (BMS), central data servers, and fire pumps.

The generator will be housed in a sound-attenuated, weatherproof enclosure. A base fuel storage tank will provide the required fuel for a minimum of 24 hours of operation during utility power outages. Actual systems requiring emergency backup and generator/fuel capacities will be reviewed with the client during detailed design. Emergency power routing will use a new underground duct bank connecting the generator to the electrical room.

Power Distribution: Emergency power will be routed through a new underground duct bank to the electrical room. Power will be delivered to the essential distribution system via automatic transfer switches (ATS). Separate ATS units will be provided for life-safety and non-life-safety loads, utilizing a four-pole design or overlapping neutral to ensure proper ground sensing at the main breaker. Automatic Transfer Switches will include a full maintenance bypass feature for servicing while operating on either utility or generator power.

Building Wiring

The building wiring will be designed to ensure operational efficiency, safety, and compliance with applicable electrical codes. The wiring system will include all conductors, conduits, connectors, and devices necessary for the complete electrical installation.

- All wiring will comply with the Canadian Electrical Code (CEC) and local authority regulations.
- Conductors will be copper with insulation types as required for specific applications. The minimum wire size will be #12 AWG unless otherwise noted.
- All wiring for lighting, receptacles, and power distribution will follow appropriate voltage and ampacity ratings to prevent overheating and ensure energy efficiency.
- Power cables will be installed in conduit systems for mechanical protection and ease of maintenance.
- Feeder cables will be routed to subpanels in each building zone, ensuring balanced loads across all phases.
- Conduit sizes will be selected to accommodate the number and size of conductors, minimizing voltage drops.
- Lighting circuits will operate on 120/208V or 347/600V systems, depending on application requirements.

- Dedicated circuits will be provided for emergency and exit lighting, connected to the emergency power system, ensuring compliance with applicable safety codes.
- Duplex receptacles will be installed in all necessary locations.
- Ground fault circuit interrupters (GFCIs) will be installed in wet or damp areas as required by the CEC.
- Low-voltage cabling for building management systems (BMS), fire alarms, and communication networks will be routed separately to prevent interference.
- Fire alarm cables will be FAS-grade and comply with all safety requirements.

Service Entrance and Metering System

The service entrance to the building will consist of a two-section service entrance switchboard incorporating a main breaker, a utility metering compartment, owner's metering capability, and circuit breaker-style distribution sections.

- An allowance will be made for power monitoring through an electronic owner's service board meter with local digital display and BACnet output to the Building Control Management System (BCMS) to enable the facility to achieve LEED v5 certification.
- Short circuit current will be calculated based on utility-supplied available fault levels, and entrance equipment will be rated to suit.
- The main service entrance will be fed by two underground NF Power feeders routed through a concrete-encased duct bank.
- The service equipment will include a main breaker, overcurrent protection devices, and surge protection.
- The metering system will include a utility-supplied revenue meter to monitor the total energy consumption of the complex.
- Sub-meters will be installed for HVAC systems, the hot water plant, interior lighting, exterior lighting, and receptacle circuits to track individual energy usage in accordance with LEED v5 requirements.
- To track energy consumption effectively, the electrical design minimizes the number of meters and ties them into the BCMS (Building Control Management System).
- Service conductors will be sized to accommodate the maximum demand of the complex with provisions for future expansion.

Grounding

Copper ground conductors will be used throughout the building. All ground conductors will be stranded copper with green TWH insulation and will run in conduit for mechanical protection. Copper ground bars will be installed in all electrical rooms, complete with lugs for terminating ground cables. A communications ground bus will be installed at the incoming communication service and in each distribution location.

- A #12 AWG green insulated ground conductor will be installed in all conduits.
- Transformers, switchgear, motor control centers, panelboards, and other equipment will have dedicated grounding conductors, sized in accordance with the CEC.
- Flexible conduits will include bonding wires to ensure electrical continuity.
- Metallic raceways, expansion joints, and telescoping sections will be bonded using jumper cables.
- The electrical service will be grounded to the building's structural steel and water main, creating a comprehensive grounding system. Building structural steel and metal siding will also be bonded to the grounding system.
- The metal parts of the pool and of other non-electrical equipment associated with the pool, such as piping, pool reinforcing steel, ladders, diving board supports, and conductive infrastructure within 1.5 m of the pool, will be grounded with a copper conductor not smaller than #6 AWG.
- Grounding connections will follow a radial configuration to avoid loop connections.

Dry-Type Transformers

High-efficiency step-down transformers (120/208V) will be used to provide power for general usage, including lighting and receptacles. These transformers are designed to handle non-linear loads and will meet the requirements of CAN/CSA-C802.2, ensuring reliability and efficient energy use across the facility.

- Windings will consist of copper with Class H insulation rated for 220°C, ensuring durability and performance.
- Enclosures will be ventilated and drip-proof, designed for the specific environmental conditions within the pool.

Pad mount Distribution Transformers:

A high-voltage Pad-mounted transformer will be installed to provide a reliable connection between the primary utility feed and the building's secondary distribution system. This transformer will be supplied and installed by Newfoundland Power. and connected by a high-voltage underground duct bank to a new utility terminal pole. A concrete pad will support the transformer while the installation follows the utility

provider's requirements. The transformer will be located close to the building to minimize electrical losses and conductor length, with proper drainage to prevent water from entering through the service conduits.

Disconnect/Safety Switches

Safety Disconnect switches will be provided for safe isolation of electrical circuits, supporting both fused and non-fused applications up to 600V primary to manage power for mechanical loads.

- Switches will have Quick-make, quick-break action mechanisms.
- Enclosures will be CSA code-gauge galvanized steel, with NEMA-1 for dry locations and NEMA-3R or 4X for outdoor/weather-exposed locations.
- Will include external operating handles, visible blade indicators, and padlocking provisions for safety.
- All poles of a switch will operate simultaneously using a common bar.
- Switches will feature door interlocks to prevent opening while in the ON position, with override mechanisms for maintenance.

Motor Starters and Motor Control Centers (MCC)

All starters will include "Hand-Off-Auto" selector switches to allow flexible control between manual and automatic operation, ensuring efficient mechanical system management. All motor starters will meet NEMA standards and be drip-proof to safeguard against sprinkler systems. Where appropriate, motor starters for the building’s mechanical equipment will be grouped into centralized Motor Control Centers (MCCs) for ease of control and monitoring. Variable frequency drives will be provided for mechanical equipment where speed control is required.

Conduits

Minimum conduit size will be 21mm with an allowance made for the use of 16mm conduit in cases where one 3-wire, 15A branch circuit is wired for switch legs. Above-ground conduit will generally be thin-wall EMT. Underground and in-slab conduit will be rigid PVC. Where subject to damage, rigid epoxy-coated galvanized conduits will be used on the exterior and rigid steel conduits will be used on the interior. All conduits will contain separate ground wires. Rack supports will be provided where feeder conduits are grouped.

6.11.2 Fire Alarm System

(Option 1 - Existing Building Expansion)

The fire alarm system will be connected to the existing system, offering full building coverage. Horns and strobe lights will be installed throughout in accordance with NBCC requirements. Pull stations will be strategically placed at exterior doors, ensuring easy accessibility for emergency activation.

(Option 2 - New Building)

The building will feature an addressable, single-stage, Class A detection, Class B annunciation fire alarm system, providing full building coverage. The system will include smoke detectors, heat detectors, and manual pull stations strategically placed throughout the facility. Speakers and strobe lights will be installed throughout in accordance with NBCC requirements. Additional signal devices will be provided where necessary, and strobes will be placed in critical areas to ensure visibility. Pull stations will be located at exterior doors to ensure easy accessibility for emergency activation.

The system will activate in response to any alarm-initiating device, ensuring signals are sounded throughout the building and triggering automatic safety mechanisms such as fan shutdowns and door closures. Voice evacuation capabilities will be integrated into the system, ensuring clear instructions during emergencies. Fire alarm control panels will be connected to the emergency power supply to guarantee uninterrupted functionality. The system will be designed to meet all applicable fire safety codes and standards, ensuring a high level of safety for occupants.

6.11.3 Lighting

Interior Lighting

Recessed or surface-mounted LED fixtures will be used throughout the building, providing high-efficiency lighting. Generally, LED lights will be recessed in T-bar or drywall ceilings throughout, except in high/open-ceiling spaces such as the natatorium. The pool area will use high-bay style suspended LED fixtures. Occupancy or vacancy sensors will be provided throughout for automatic lighting control to achieve National Energy Code controllability requirements. Lighting will also be integrated with energy management systems. Where appropriate, photo sensors will be provided in areas with access to daylight. The lighting system will be designed to minimize glare, using indirect sources on ceiling fixtures. LED fixtures will have a minimum CRI of 90 to meet LEED requirements.

Exterior Lighting

Exterior security lighting will be provided for drives, walks and parking areas. Cast aluminum exterior building-mounted lighting will be provided on all sides of the building and at all exits. Fixtures will be rugged, vandal-resistant type. Exterior lighting will be controlled by a contactor and a time clock in

conjunction with the building energy control system provided by the mechanical division. Exterior lighting will be installed to provide a safe and secure environment around the building and parking areas. Where opportunities exist, these spaces will be lit with LED fixtures mounted directly on the building. Parking areas will use pole-mounted LED fixtures designed to sustain wind loads outlined under CSA S6. Decorative architectural style fixtures will be used where appropriate.

Exit and Emergency Lighting

Emergency lighting will be generally provided by select interior lighting fixtures that are connected to the building generator and life-safety automatic transfer switch distribution. Lighting will be provided in all exits, routes to exit and high-occupancy load spaces in accordance with NBCC requirements. Supplemental battery unit equipment will be provided in the electrical room per CSA C282 requirements. The unit equipment will be powered by battery packs with a capacity for 90 minutes of operation, in line with the National Building Code of Canada (NBCC) and NFPA 101 requirements.

Clock System

The facility will be provided with a central clock system. The type and style of system will be further reviewed during detailed design.

Clocks will be located in the natatorium, corridors, staff areas, as well as any other required areas.

6.11.4 Communication System

(Option 1 - Existing Building Expansion)

A floor-mounted data rack and patch panels will be located in the data room and connected to the data rack in the Double Ice Arena. Each communication outlet will be connected using Category 6A cabling run in an EMT conduit. All communications outlets will be RF-45 style on modular faceplates and placed within 400mm of a power outlet for computer or equipment use.

All patch panels and patch cords required for a complete data wiring system will be provided. Active equipment (switches, routers, etc.) will be the responsibility of the client. The communications system will be completely certified from entry to outlet and patch cable as a Category 6A system.

Suitable raceways and ducts will be provided so that the relevant communication system providers can bring their media into the data room. All distribution cabling within the building will be provided under this contract.

(Option 2 - New Building)

A floor-mounted data rack and patch panels will be located in the data room. Each communication outlet will be connected using Category 6A cabling run in an EMT conduit. All communications outlets will be

RF-45 style on modular faceplates and placed within 400mm of a power outlet for computer or equipment use.

All patch panels and patch cords required for a complete data wiring system will be provided. Active equipment (switches, routers, etc.) will be the responsibility of the client. The communications system will be completely certified from entry to outlet and patch cable as a Category 6A system.

Suitable raceways and ducts will be provided so that the relevant communication system providers can bring their media into the data room. All distribution cabling within the building will be provided under this contract.

6.11.5 Security Systems

Card Access

A conduit system, pull boxes, and emergency power sources will be provided to accommodate central proximity card access at each exterior door and various interior control doors and entries. All pathways will have 100% spare capacity. The door access control system will have the capacity for remote building lockdown controls. Each card reader door will be roughed in for card reader, magnetic lock/electric strike and request for exit.

This should be reviewed at the next phase of design. Within the context of Site 1 – Double Ice Complex expansion, card access may be incongruent with the existing facility. Some card access or automated access control is recommended for aquatic change areas based on point-of-sale completion.

CCTV

Conduit system, pull boxes, emergency power sources, cabinets and wiring will be provided to accommodate security CCTV cameras at each exterior door, assembly areas as well as any other required areas. All pathways will have 100% spare capacity. The entire building perimeter will be viewed on the system. Two dedicated enhanced CAT 6A will be provided in conduit to each camera. All security CCTV cameras will be conduit and pull string to the security desk location where CCTV monitors will be provided. All power outlets will be provided on UPS power required for monitors at this location.

Intrusion Detection System (Option 1 - Existing Building Expansion)

The intrusion detection system will be connected to the existing building's Intrusion Detection System and will include a ULC-approved expandable control panel with tamper detection. The system will be designed as a modular access control and alarm monitoring system, expandable and easily modified for inputs, outputs, and remote-control stations. It will be capable of annunciating undesirable, abnormal, or dangerous conditions and prioritizing alarms by type, including panic/duress, intrusion, and tamper.

Detection accessories, including PIRs, glass break detectors, and magnetic contacts, will provide comprehensive coverage. The system will feature environmental monitoring for smoke, heat, and humidity, along with notification devices such as sirens and voice annunciators. Power supplies will support all components with a 50% safety margin for 4 hours of backup. Redundant communication channels will ensure no single point of failure.

(Option 2 - New Building)

The intrusion detection system will include a ULC-approved expandable control panel with tamper detection. The system will be designed as a modular access control and alarm monitoring system, expandable and easily modified for inputs, outputs, and remote-control stations. It will be capable of annunciating undesirable, abnormal, or dangerous conditions and prioritizing alarms by type, including panic/duress, intrusion, and tamper. Detection accessories, including PIRs, glass break detectors, and magnetic contacts, will provide comprehensive coverage. The system will feature environmental monitoring for smoke, heat, and humidity, along with notification devices such as sirens and voice annunciators. Power supplies will support all components with a 50% safety margin for 4 hours of backup. Redundant communication channels will ensure no single point of failure.

6.11.6 Public Address System

(Option 1 - Existing Building Expansion)

The public address system will be connected to the existing building. And will consist of speakers, volume control stations, acknowledgment pushbuttons and strobe lights in accordance with client requirements.

(Option 2 - New Building)

The facility will be provided with a complete public address system consisting of speakers, volume control stations, acknowledgment pushbuttons and strobe lights in accordance with client requirements. The exact equipment and system details will be coordinated with the client during detailed design.

6.11.7 Electric Vehicle (EV) Charging Stations

Level 2 EV charging stations will be installed to encourage the use of electric vehicles. These stations will feature chargers equipped with GFI auto-reset protection and indicator LEDs. Each station will include a 5.5-meter cord, complying with all applicable UL standards. Stations will be NEMA 3R rated for outdoor use, and RFID authentication will be provided for user access. The location and quantity of charging stations will be confirmed during the detailed design to ensure compliance with LEED v5 requirements.

Mounting Heights

- Local switches: 1050 mm.
- Wall receptacles:
- General: 400 mm.
- In mechanical rooms: 1400 mm.
- Fire alarm stations: 1050 mm.
- Fire alarm bells: 2400 mm.
- Television outlets: behind TV.
- Doorbell pushbuttons: 1050 mm.
- Exit lights: 2400 mm.
- Emergency lighting heads: 2400 mm.
- Wall-mounted lighting fixtures in high-ceiling areas: Between 2500mm – 3000mm
- Any wireless access point: Below 10 feet
- Clocks: 2100 mm (300 mm below finished ceiling)
- Thermostats: 1050mm

7 Sustainable Design Options

The facility shall be energy efficient in compliance with NECB 2020 as a base requirement, as per the requirements of the new Towns and Local Services District Act (TLSDA), which came into effect in Newfoundland on January 1, 2025.

NECB 2020 (baseline design) envelope performance Compliance with NECB 2020 will most likely be demonstrated following the Building Energy Performance Compliance Path, which permits design trade-offs provided that the overall building design is as energy efficient or more energy efficient than a reference building designed to NECB 2020. The site would be located in climate zone 6, with 4800 heating degree days per year (HDD). For purposes of costing, in the absence of a detailed building design or a precise strategy for the energy trade-offs, the following NECB 2020 requirements for the building are presented, to be assumed as the characteristics for the baseline design. Per NECB 2020, the maximum allowable fenestration and door area is 34.6% of the gross wall area (above-ground wall assemblies only). Walls are R-24 $ft^2 \cdot °F \cdot h/Btu$ effective, roof R-41 $ft^2 \cdot °F \cdot h/Btu$ effective. Vertical fenestration performance would be overall (glazing + frame) U-0.3 $Btu/ft^2 \cdot h \cdot °F$, representing a high-performance double pane system with non-metallic IGU spacer. For assemblies in contact with the ground, floors would be insulated to R-7.5 $Btu/ft^2 \cdot h \cdot °F$ for 1.2m, and walls insulated to R-20 $Btu/ft^2 \cdot h \cdot °F$

In addition to the baseline requirement, the following sustainable design options are being considered by the Town.

7.1 Zero Carbon Building - Design Certification

Canada Green Building Council's Zero Carbon Building (ZCB)– Design Certification requires that the design of the building be 25% better than NECB 2025, that the embodied carbon of the structure and enclosure be no higher than 425 kg CO_2e / m^2. An all-electric design (as is expected) would not be subject to limitations on thermal energy demand intensity (TEDI). The two required innovation measures would be zero use of fossil fuel combustion for space heating and pool water heating.

A ZCB-Design version of the facility would have the following characteristics:

Upgraded building envelope Under the ZCB-Design version of the design, there would be no change to the maximum fenestration and door area, however the thermal performance of the envelope would be improved (in support of the overall target to improve energy performance by 25% over NECB), as follows: walls R-24 $ft^2 \cdot °F \cdot h/Btu$ effective, roof R-60 $ft^2 \cdot °F \cdot h/Btu$ effective. Vertical fenestration performance would be overall (glazing + frame) U-0.27 $Btu/ft^2 \cdot h \cdot °F$, representing a high-performance triple pane system with non-metallic IGU spacer. For assemblies in contact with the ground, floors would be insulated to R-10 $Btu/ft^2 \cdot h \cdot °F$ for the first 1.2m of the perimeter, and walls insulated to R-25 $Btu/ft^2 \cdot h \cdot °F$

Upgraded heat recovery Drain water waste heat recovery systems would be included for domestic hot water as well as pool water discharge. Ventilation air energy recovery systems at an overall effectiveness of at least 80% sensible and 70% latent. Should Site #1 be the preferred option, there is also the potential to interconnect the pool water heating system with the existing ice plant to recover waste heat during ice building and resurfacing operations at the double ice complex.

Reduced embodied carbon In order to meet the embodied carbon target, the design measures described in the structural section (6.6) of this report would have to be implemented.

7.2 LEED version 5 Silver Certification

LEED version 4 (v4) will be closing to new registrations at the end of Q1 2026 (March 31, 2026). It is highly likely that, by the time this facility has approvals to move forward, LEED version 5 (v5) will be in effect. LEED v5 is an upgrade relative to LEED v4. There is much more significant focus on emissions reduction and resilience. Many credits have been "upgraded", meaning that they are more challenging to achieve then in v4.

In order to achieve LEED v5 Silver certification, the measures described in the previous section would be required, in addition to the following:

Electric vehicle chargers At least 5 percent of parking spaces would be equipped with electric vehicle chargers (Level 2), with another 5 percent of parking spaces made electric-vehicle charger ready (equipped with conduit and wire).

High albedo roof and pavement In order to mitigate the heat island effect in summer months, the building would have a white roof, and at least 20% of the parking lot would be covered with a high albedo pavement coating to increase solar reflectance.

Light pollution reduction All exterior fixtures would be Dark Sky rated.

Water sub-metering Pool make-up water and hot water for indoor plumbing fixtures to be submetered, with sub-meters recording water consumption such that data can be accessible online of via a local area network (LAN).

Upgraded, environmentally preferrable interior finishes All interior finishes to be selected to be compliant with CDPH Standard Method VOC-emissions testing (most commonly characterized as Greenguard Gold certified, Floorscore certified, Intertek Clean Air Gold certified or SCS Indoor Advantage Gold certified)). At least 5 major finishes (for example, flooring, paint, ceiling systems, tiling, gypsum board) to be selected to have preferred environmental sustainability attributes such as Cradle-to-Cradle certification, and/or a Cradle-to-Cradle Material Health Certificate, and/or optimized Environmental Product Declarations (EPDs), and/or third-party verified Health Product Declarations (HPDs) or Declare labels, and/or containing a high amount of recycled content.

Upgraded interior lighting All interior lighting shall be low glare, with high color rendering index (CRI) of minimum 90.

Design for climate resilience In anticipation of extreme heat events in the future, the cooling system capacity shall be increased by 25%. To mitigate indoor air quality impacts from wildfires, ventilation systems shall be sized to accommodate MERV 16 filters to reduce PM2.5 in incoming outdoor air.

Enhanced landscape design Exterior site landscaping shall include addition of deciduous trees within parking lot islands and along street frontages.

8 Site Evaluation

8.1 Site 1 – Double Ice Complex

8.1.1 Civil

This option consists of adding either a 25 m or 50 m lap pool and 250 additional parking spaces to the existing Double Ice Complex site as shown in appendix B. From a site layout perspective, there is sufficient space on the site to accommodate the 25 m lap pool building footprint. If the Town proceeds with the 50 m lap pool building footprint, the edge of the building is approaching the edge of McNamara

Drive. The Town should confirm the existing right of way for McNamara Drive in this area as well as confirming any landscaping and buffer requirements in the Town's Development Regulations prior to proceeding with the 50 m lap pool option. Further development of the layout and configuration may be required.

The land gently slopes from the existing Double Ice Complex, down through the existing parking lot to the access road at the north of the site. There are an additional 250 parking spaces required as part of this project and they are proposed to be located in the current landscaped area between the existing parking lot and the north site access road. Based on a preliminary site review of the area, the slope of the landscaped area appears to be fairly consistent with the slope of the existing parking lot, and a large retaining wall on the site is not anticipated. However, this should be confirmed with topographic survey data at a future project stage. There is an existing stormwater ditch located on the western side of the proposed additional 250 parking spaces. A storm sewer system will be required to convey the stormwater under the proposed parking lot. Based on a preliminary site visit and the size of existing infrastructure, it is likely that approximately 100 m of 750 mm storm sewer and two 1500 mm storm manholes will be required. The storm sewer design and pipe sizing should be confimred in the next project phase.

There is no geotechnical information available for this site. It is recommended that a geotechnical investigation is completed in the next project phase.

From a site servicing perspective, it is anticipated that the following connections will be required at the building:

- 150 mm sanitary sewer
- 250 mm storm sewer
- 75 mm domestic water and 150 mm fire protection water.

Existing drawings for the services in McNamara Drive were not made available to Stantec during this scope of work, but based on other surrounding land uses and servicing requirements, it is expected that these services are available within McNamara Drive. The sanitary sewer connection point in McNamara Drive may need to extend further north to provide sufficient slope to accommodate the basement that is proposed for the pool building. It should also be confirmed that the downstream sanitary and storm sewer networks have sufficient capacity to service the pool and the available water flow and pressure should also be confirmed. The presence and location of any existing underground services within the proposed building footprint is also not known and should be confirmed so that they can be relocated as required.

Stormwater storage will be required to meet the Town's zero net runoff requirements. The Town has advised that the post-development flow rates from the development area shall not exceed the pre-development flow rates for the 10, 25, 50 and 100 year Annual Exceedence Probability (AEP) design storms that include climate change. It is expected the underground stormwate storage in the parking lot will be required.

8.1.2 Environmental

Site 1 is located immediately adjacent to the Paradise Double Ice Complex and has been previously cleared and a history of industrial use. Currently, the site consists of a flat, grassy area that is maintained by regular mowing, bordered by the Paradise Double Ice Complex on the east and south, McNamara Road to the north, and a parking area on the west followed by the former CN railbed (currently used a recreational walking trail). This history of site disturbance indicates that much of the original natural landscape has been altered or removed, which reduces the likelihood of encountering species at risk, areas of sensitive habitat, or ecological communities of special concern. The lack of mature trees, shrubs, or undisturbed ground cover further supports the assessment that the area is primarily composed of managed grassland, with limited ecological value for wildlife. Given the absence of waterbodies or wetlands in the immediate vicinity, there are no anticipated concerns related to aquatic ecosystems or wetland conservation at Site 1. As a result, regulatory requirements under the Newfoundland and Labrador *Environmental Protection Act* and the *Water Resources Act* are not expected to apply to this site, and no environmental permits or approvals are anticipated to be necessary for the proposed development, provided that future investigations do not reveal unexpected environmental features. If site clearing will be completed between mid-April and late-August, nest sweeps should be conducted.
The site is located in the area of the former steel mill property which was constructed in 1965 and operated until the early 1970s (Jacques Whitford 2007 in Dillon 2023). Following the closure of the mill, the area has a complex industrial legacy, having been used for steel production, scrap metal recycling, and fibreglass boat construction by various operators from the 1980s through the early 2000s (Jacques Whitford 2007 in Dillon 2023). This history raises potential concerns about site contamination. A Human Health and Ecological Risk Assessment completed in 2007 for the former steel mill site. The site was found to have several environmental concerns, such as asbestos, hazardous chemical drums, and contaminated soil from petroleum hydrocarbons (PHCs), polychlorinated biphenyls (PCBs), and metals (Jacques Whitford 2007 in Dillon 2023). Recommended actions included removing hazardous materials and drums, capping contaminated areas with clean fill, consolidating non-hazardous waste in landfills, and demolishing aboveground structures to reduce safety risks. The plan also called for topographic surveys to confirm capping thickness and ongoing safety precautions for workers, including personal protective equipment and strict hygiene measures during excavation. Although many remediation steps, like soil capping, were reportedly completed, there was no documentation available to verify cap specifications or continued monitoring of its condition (Jacques Whitford 2007 in Dillon 2023). While development has occurred in this area since remedial actions were carried out, including the development of roadways, parking, playground, the Paradise Double Ice Complex, and community centre, site contamination remains a potential risk to groundwater quality or future site users if disturbed during excavation or construction.
To address these concerns, it is recommended that a Phase I Environmental Site Assessment (ESA) be conducted at the site prior to ground-disturbing activities. This assessment should involve a review of historical records, including land use and fill documentation, as well as site inspections to look for visible signs of contamination, such as staining, debris. The Phase I ESA will help identify potential sources of contamination or environmental liability. If the Phase I ESA flags areas of concern, a more detailed Phase II ESA may be warranted. The Phase II ESA would involve the collection and laboratory analysis of soil and groundwater samples from targeted locations to determine the presence, type, and extent of contaminants. The results of these investigations will inform risk management strategies and help confirm that the site is safe for its intended future use.

8.2 Site 2 – Dianne Whalen Soccer Complex

8.2.1 Civil

This option consists of adding either a 25 m or 50 m lap pool and 250 additional parking spaces adjacent to the Dianne Whalen Soccer Complex site as shown in appendix B. From a site layout perspective, there apperas to be sufficient space on the site to accommodate the 25 m or 50 m lap pool building footprint. The Town should confirm the property boundaries of the planned development area.

Access to the site would be obtained through the existing Dianne Whalen Soccer Complex gravel access roads. It is recommended that the existing access is upgraded to accommodate an asphalt surface and storm sewer system if the pool is constructed at this site.

There is no topographic information available for this proposed site, but it is anticipated that the land is near the high point of the surrounding area and slopes away to the north and south. Further detailed site grading analysis is recommended for this option and retaining walls or extensive sloping/earthworks may be needed. There will be some clearing and grubbing required for a portion of the site.

There was a geotechnical investigation completed in December 2023 for the proposed Paradise Depot which is directly adjacent to the proposed pool. The geotechnical investigation encountered between 0.2 and 1.5 m of fill in the pool development site. This fill will likely need to be removed and replaced with structural fill for all developed areas. The geotechnical investigation also included a topographis survey for the Depot and it appears that there is at least a 15 m elevation change across the site.

From a site servicing perspective, it is anticipated that the following connections will be required at the building:

- 150 mm sanitary sewer
- 250 mm storm sewer
- 75 mm domestic water and 150 mm fire protection water.

Stantec is aware that there is limited water pressure available at this location due to the existing elevation of the site. The Town may provide another water storage tank in the area in the future to service adjacent development, but as the timing of this work is unknown, Stantec recommends that a cistern and fire pump are included as part of the design for the pool at this site location. Further analysis is recommended if this site is chosen.

Servicing the site with sanitary and storm sewer is also challenging. It is assumed that a sanitary sewer pump station is included as part of the design for this site and a forcemain discharges to the sanitary sewer in Dianne Whalen Drive. One other option worth considering is whether an easement can be obtained through one of the existing properties and a gravity connection provided to North-West to McNamara Drive.

It is also not clear how the site will be serviced from a stormwater perspective. Depending on the future site design, stormwater outlets may be required north to McNamara Drive and/or south to Kenmount Road. Easements may be required to accommodate these servicing connections. There appears to be an existing ditch adjacent to PridePak Newfoundland that may be able to accommodate a stormwater discharge from our proposed site. Stormwater storage will be required to meet the Town's zero net runoff requirements. The Town has advised that the post-development flow rates from the development area shall not exceed the pre-development flow rates for the 10, 25, 50 and 100 year Annual Exceedence Probability (AEP) design storms that include climate change. Depending on the site layout and elevation, a stormwater pond may be able to be pursued for this site if the land is available. If this is not a feasible option, underground stormwater storage will be required.

8.2.2 Environmental

Site 2 is situated directly adjacent to the Dianne Whalen Soccer Complex and is surrounded by existing development, indicating that it is within a predominantly urbanized area. The site appears to retain some natural features, as it is partially forested, which suggests the presence of mature trees and understorey vegetation. However, the extent and quality of this woodland cover are not fully documented at this stage. The presence of waterbodies and wetlands on Site 2 has not yet been confirmed. While it is anticipated that such features are likely to be limited due to the degree of surrounding development, a formal assessment has not been completed. To address this, a site walkover conducted by a qualified biologist is recommended. This walkover would serve to verify the existence or absence of waterbodies and wetlands, as well as to identify areas of sensitive habitat, such as nesting sites or rare plant communities. This will be important as the proposed Project will require clearing activities, which could affect local flora and fauna. If site clearing will be completed between mid-April and late-August, nest sweeps should be conducted. This process helps avoid disturbing active bird nests, in compliance with the *Migratory Birds Convention Act* and other relevant wildlife protection legislation.

A geotechnical investigation was carried out in 2023 by AllRock Consulting Ltd. in the area adjacent to Site 2 (AllRock 2023). Surficial geology mapping indicates that the site is primarily composed of glacial till overlying bedrock, with some areas of exposed bedrock present. The underlying bedrock consists of red and green siltstones and sandstones, which are part of the Mistaken Point or Drook Formations (AllRock 2023). During the geotechnical work, groundwater was encountered at shallow depths, ranging from 1 to 2.4 metres below the current grade. This information is important for planning excavation or construction activities, as groundwater management may be necessary to prevent issues such as flooding or soil instability.

Prior to site disturbance, it is strongly recommended to conduct a Phase I Environmental Site Assessment (ESA). This assessment involves a comprehensive review of historical records, previous site uses, and current conditions to identify potential sources of contamination. Should the Phase I ESA identify areas of concern, a more detailed Phase II ESA may be warranted. This would involve the collection and laboratory analysis of soil and groundwater samples to determine the presence and extent of contamination that could pose risks to human health or the environment.

Based on current information, it is not anticipated that approvals or permits under the Newfoundland and Labrador *Environmental Protection Act* will be required for this site. However, this conclusion may be revisited if the biologist's survey or subsequent investigations reveal the presence of regulated waterbodies, wetlands, or sensitive habitats that fall under provincial or federal environmental legislation.

8.3 Site Evaluation Recommendations/Results

Stantec recommends that prior to proceeding with the next phase of this project, a transportation engineering assessment is completed to confirm the existing road infrastructure is sufficient to accommodate the additional transportation demand generated by the addition of the pool, and if not, recommend any required off-site improvements.

The below table outlines the perceived Pro's and Con's for both sites. Site 1 is deemed to offer the most pro's for the town.

Site 1 – Double Ice Complex		Site 2 – Dianne Whalen Soccer Complex	
Pro's	Con's	Pro's	Con's
Synergies with existing recreation facility	Disruption during construction	Complements the Dianne Whalen outdoor sports fields	No visibility of the new facility from the street
Recreation hub for the community	Relocation of existing site elements or exterior equipment	Walking distance from the school	Concerns on water pressure and long runs to connect with infrastructure
Staffing efficiencies	Existing main entry visibility could be reduced	No disruption to existing programming	May require servicing easements and pumping station
Potential for reduced/shared parking		Future expansion opportunity	Require road upgrading to access site
Heat recovery from ice plant to pre-heat domestic water			Additional staff needed (reception)
Excellent visibility from the street			Remote location adds more logistics

Shared use and exposure to other sports program users			

9 Town Goals Alignment

The “Your Paradise Plan 2027” document outlines Pillars and Goals for the town. The vision for Paradise is “Creating a thriving, well-balanced community together”. The following five pillars support the vision:

Your Paradise Strategic Plan

The potential new aquatic facility and the process taken to develop this report aligns with the above pillars to Support, Prosper, Thrive, Green and Engage. Financial feasibility should continue to be reviewed and verified, should the project proceed into the next phases of design and construction.

10 Costing

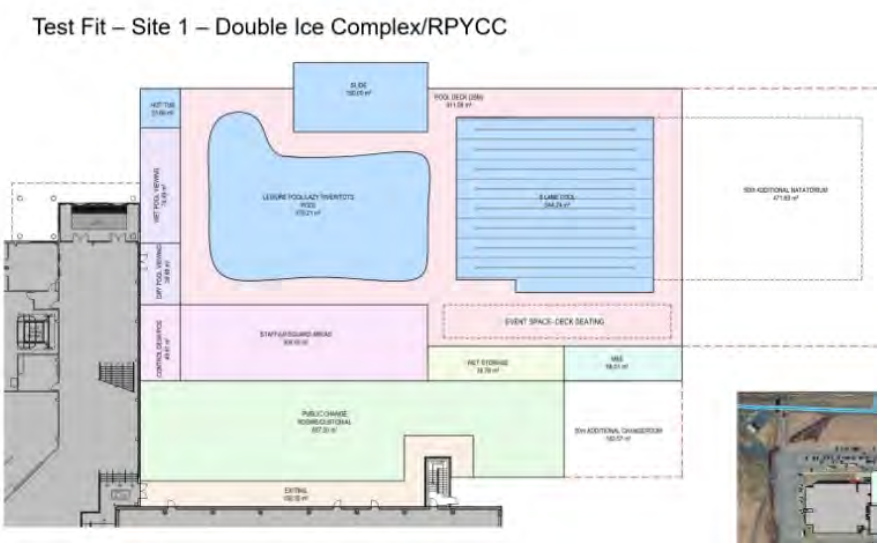
10.1 Construction Cost Estimate

See appendix C for the Class D cost estimate.

10.2 Annual Operational & Maintenance Costs and Revenue Projections

The facility is recommended to be divided into two key components: operations and the delivery of recreation opportunities. The main pool has eight lanes, and the leisure pool has two lanes. This allows a mixed delivery of programs and swimmers, as well as a vast opportunity for teaching lessons. The 10 lanes can be booked individually or as a whole pool. Having the lanes be booked or programmed individually changes the use of the pool from spontaneous users to timeblocks for easier tracking and budget forecasting. Also, booking out lanes and specific spaces allows the pool to be programmed to accommodate multiple user groups and age groups, creating a multigenerational space. Furthermore, utilizing the lanes in the leisure pool will support inclusive swimming as those lanes will be shallower than the main pool, and the temperature will be higher than the main pool.

The proposed operational structure is an even-mixed model that reflects program space predominantly used by spontaneous users, with concurrent use by private organizations/user groups during prime time hours.



Operations Overview

Based on best practices and community comparisons, the pool is projected to operate 104 hours per week, serving more than 4,500 patrons. On average, the pool is open for 15 hours a day, with more operating hours throughout the week than on the weekend. The number of Lifeguards is based on a 1:30 lifeguard-to-patron ratio. The ratio is lower than that of other rectangular pools, as there is more pool area to cover. The Swim Instructors are assigned at a 1:6 ratio. The contractors are for aquacise classes, and there is one contractor per class. Total operations will be 49 weeks, including a two-week shutdown and one week for holidays and other closures.

Day	Opening Time	Closing Time	Total Hours	Drop-in	Lifeguard Hours	Swim Instructor Hours	Contractors Hours
TOTALS			104 hours	4628	344	112	20

Forecasting Swimmers

The pool spaces can be evaluated for the number of swims based on water turnover, average activity rate, water depth and length, and forecasted lane capacity. Using these numbers can help plan and understand the maximum number of swimmers the pool should accommodate for operations.

Type	Swims
Legal Capacity (Yearly)	2.3 million
Practical Capacity (Yearly)	851,000
Expected Swimmers per Year	226,000
Expected Swimmers per Month	18,000
Expected Swimmers per Week	4,700
Expected Swimmers per Day	675

Programs

Swimming programs form the operational backbone of a successful aquatic facility, serving diverse community needs while generating essential revenue streams. The table below illustrates the potential program offerings, including Adult Swim, Aquacise, Family Swim, Lane Swim, Leisure Swim, Lessons, Public Swim/Rentals, and Swim Club. Effective program development requires careful assessment of community demographics, market demand, facility capabilities, and competitive positioning. A well-designed program mix maximizes pool utilization, ensures accessibility across age groups and skill levels, and establishes the facility as a vital community resource.

Program	Description
Adult Swim	A dedicated swim time for adults to enjoy lane swimming, relaxation, or personal fitness in a calm, adult-only environment.
Aquacise	A low-impact, high-energy water fitness class that combines aerobic and strength exercises suitable for all fitness levels.
Family Swim	An open swim session for families to enjoy the pool together

Lane Swim	Ideal for fitness swimmers, this program offers designated lanes for continuous lap swimming and water running at various speeds.
Leisure Swim	An unstructured swim time where all ages can enjoy open pool space, water features, and recreation in a casual setting.
Lessons	Progressive swimming instruction led by certified instructors, focusing on skill development, confidence, and water safety.
Public Swim/Rentals	An open swim opportunity for the community to enjoy the pool, or to book private rentals for events, parties, or team use.
Swim Club	A local swimming sports organization that is affiliated with the province
Youth Recreation	Active, social, and water-based programs designed for youth

Expected Swimmer

Each day and each activity was forecast to estimate the total number of participants from the programmed lanes. Some users will come to the pool to use additional amenities, such as the hot tub, which are not included in the expected total. This is based on average class size, aquacise space per person and standard practices. The lanes using these expected totals reflect 60% capacity.

Estimated Drop-in and Passes

In the programs, swimmers can access the facility through drop-in or passes. Drop-in is a spontaneous and one-time use to access the facility. It is a single rate based on the swimmer's age. Children are not allowed to access the facility without a parent or guardian. The passes have options between a monthly pass and a 10-punch pass. Both pass options will need to be evaluated with the public to understand the suitability and need. At some of their pools in St John's, they do not offer the monthly pass but only the 10-punch pass.

Toddler (0-2)	Preschool (3-5)	Child (6-12)	Youth (13-17) and Senior (65+)	Adult (18-64)
Free	$2.50	$3	$3.75	$5

Swim Lessons

This model presents a comprehensive breakdown of swim lesson capacity planning and scheduling structure for an aquatic facility. The model was designed to accommodate only 2500 total swim lesson spaces across its programming calendar, using a 10-lane pool configuration that enables simultaneous instruction across multiple groups. The 2500 total swim lesson spaces were based on 55% of the number of people under 14.

The scheduling framework operates on a two-night lesson set, with classes meeting on alternating days, such as Monday/Wednesday or Tuesday/Thursday. Each lesson session runs for 5 weeks, providing consistent, progressive instruction that allows participants to develop skills systematically. The facility allocates only 3 hours of programming each evening for swim lessons, maximizing prime-time usage when families are most available.

The operational model achieves significant efficiency through its lane utilization strategy. With 12 classes per hour and roughly 1 class per lane, the 10-lane pool operates near capacity during lesson times. There will be an overlap in some lanes that have preschool lessons, which will have two classes per lane to enable the 12 classes per hour. Over the course of a single evening session, the facility delivers 35 classes across the Monday/Wednesday or Tuesday/Thursday schedule. Each complete 5-week session produces 70 classes, and the facility runs 420 total classes annually to reach the 2,500-space target.

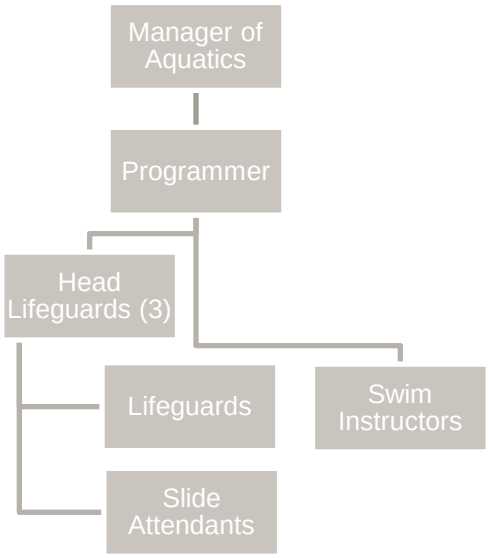
2500	Swim Lesson Spaces (Average 6 per class)

This capacity model is not fully utilized and was based on current revenue expectations for the Town of Paradise Arena's cost recovery. Additionally, due to current staffing concerns for lifeguards and swim instructors nationwide, the capacity was set very conservatively.

The price per lesson is based on the current lesson prices in the region; on average, it is $7 per class.

Staffing

Adequate staffing is fundamental to the successful operation and sustainability of any aquatic facility. The personnel requirements are necessary to ensure safe, efficient, and high-quality pool operations that meet both regulatory standards and community expectations. A comprehensive staffing model must address multiple operational areas, including lifeguarding, facility management, and programming. The analysis considers industry benchmarks, local labour market conditions, and certification requirements. Proper staffing levels directly impact patron safety, program delivery, facility cleanliness, and overall user experience.



There are six staffing divisions where the pool will be managed and operated by the manager of aquatics. The programmer's responsibilities will include: lessons, lesson desk hand and programming events, birthday parties and working with external stakeholders like the swim club. Three FTE head lifeguards lead the pool, the desk and its operations, like cleaning and maintenance. There will be part-time and casual employees, such as lifeguards, slide attendants, and swim instructors. Swim Instructors are separate from lifeguards and slide attendants, as they do not need a National Lifeguard Pool certification to teach swimming lessons.

Position	Certification
Manager of Aquatics	Pool Operators 2, Held (National Lifeguard Trainer, First Aid Instructor, Lifesaving Society Instructor Trainer, O2 Administration Trainer)
Programmer	Pool Operators 1, National Lifeguard Trainer, First Aid Instructor, Lifesaving Society Instructor Trainer, Aqua Fitness Certification, O2 Administration Trainer
Head Lifeguard	Pool Operators 1, National Lifeguard, Lifesaving Society Swim Instructor, Aqua Fitness Certification, O2 Administration
Lifeguard	National Lifeguard, Lifesaving Society Swim Instructor
Slide Attendant	Bronze Cross, Lifesaving Society Swim Instructor
Swim Instructor	Bronze Cross, Lifesaving Society Swim Instructor

The Head Lifeguards have three shifts: one each morning, Monday through Friday, and the other two are on weekends and part of the weekdays. There is also a minimum of 5 full-time lifeguard shifts throughout the week. The most staff needed will be on Monday and Wednesday. There are two shifts of swim instructors during the week, needing a minimum of 10 instructors.

Staff Training

In-house training is a cost-effective solution for gaining and retaining skills, and for providing a clear pathway from swimming lessons to becoming a lifeguard at the local pool. Below are the costs to run the course and the fees associated with each participant. The Town will take the initial cost for this course if they pass, and in their agreement, would outline that the staff would have to work 120 hours and should they quit before the number of hours, then they would have to pay the course fees.

Budget

In the projected budget, sales will exceed 850,000, with the majority coming from drop-ins and passes. Aquacise would be included in the drop-in revenue. Registered programs are swimming lessons and instructor courses. Rentals currently comprise only the swim club. Expenses contain over 850 thousand in wages for management and designated staff. Other expenses include utilities, chemicals, and program supplies for swimming lessons. These are all variable costs that depend on pool usage.

Budget	
Revenue	
Registered Programs	$175,000
Drop-in and Passes	$674,000
Sales of Equipment	$5,000
Rental ($15/l/h)	$18,500
Total Revenue	**$872,500**

Expenses	
Salary & Wages Lifeguards	$948,000
Supplies	$156,000
Utilities	$451,500
Insurance	$20,000
Maintenance	$100,000
Advertising and Promotion	$30,000
Total Expenses	**$1,705,500**

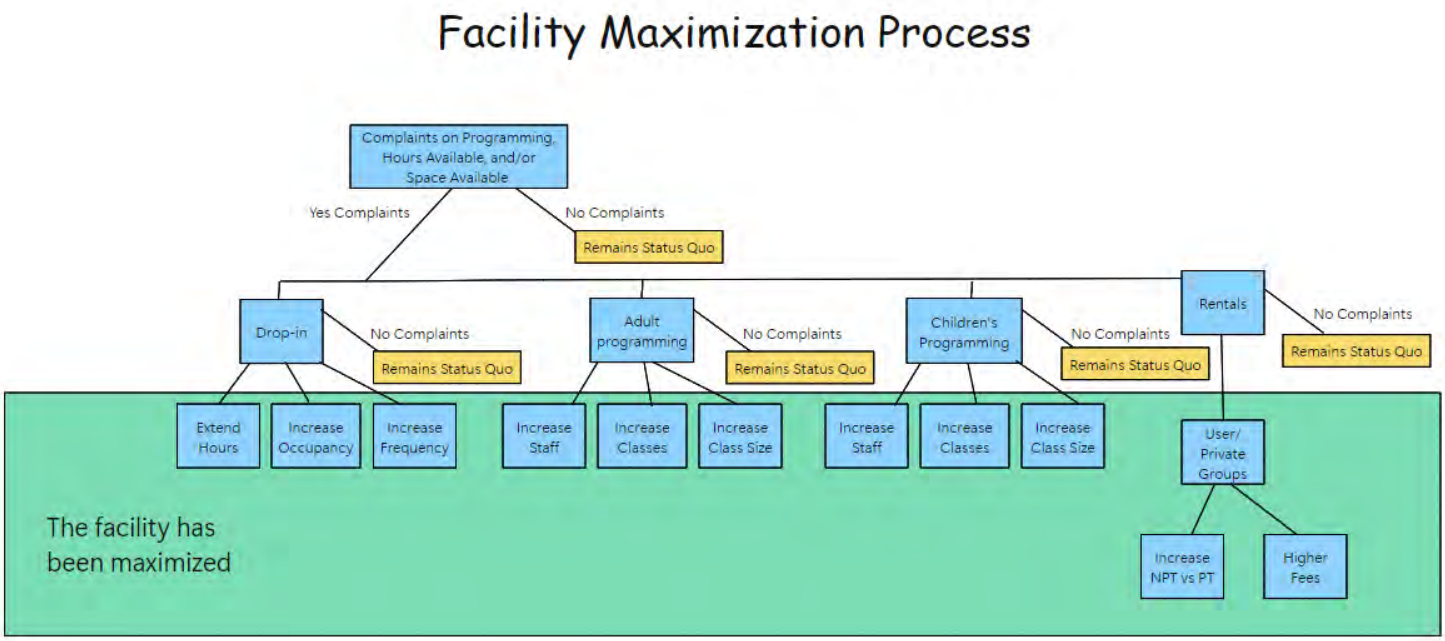
This would equate to a 51% cost recovery or a net loss of $833,000.00. This is similar to the current cost recovery from the arena. (Recreation Master Plan).

Options
As this is a new pool, the proposed model is the even mixed model, which has a tax impact and a conservative number of lessons. This allows for an even distribution among spontaneous users, programs, and rentals, enabling understanding of market dynamics and uptake. After the first year of operations, the pool can decide, based on class waitlists, user complaints, and user group allocation needs, to shift its cost recovery mix.

	Descriptions
Even Mixed Programming Model	Facility compensated through tax increase and revenue from fees and charges • Estimated Tax Increase ~$95-$190 per 8,810 residential dwellings • Drop-in programming, aquacise and registered programs would be a fee for entry and class • Similar cost-recovery to arena (51%)

Optimization

To achieve the desired cost recovery, the facility can follow the process below to ensure it is maximizing its spaces, programs, and partnerships. It is divided into spontaneous use (drop-in), programming, and rentals. Each area would directly affect the others and should be considered alongside community engagement, best practices, and alignment.



11 Findings

The findings from this scope of work include:

- Public engagement participation was high and there is strong support for aquatic amenities within the Town of Paradise
- The Market Analysis and Demographics data indicates a need for additional aquatic services within the region.
- The potential Functional Program for a new indoor aquatic facility is in the range of 5000m^2 – 6600m^2 with the difference being a 25m lap pool versus a 50m lap pool.
- The Test fits and Site Evaluations indicate a preference for the Double Ice Complex Site location, however the test fit can be accommodated at either location.
- A base capital cost estimate of approximately $46,860,900 (see appendix C for full details).
- The operational cost analysis indicated operating at 51% cost recovery with a potential tax impact of ~$95-$190 per 8,810 residential dwellings.

Appendix A Functional Program

	Paradise Pool - Functional Program					
			Site 1 (25m lap pool)	Site 1 (50m lap pool)	Site 2 (25m lap pool)	Site 2 (50m lap pool)
1.00	Natatorium	Description	m^2	m^2	m^2	m^2
	25m lap pool	8 lanes, 2.5m width per lane	545		545	
	50m lap pool	8 lanes, 2.5m width per lane		1017		1017
	Leisure pool, Lazy river, Splash area	Zero beach entry, short lap lanes	470	470	470	470
	Swirl pool/hot tub		25	25	25	25
	Slide		150	150	150	150
	Pool deck (25m)		800		800	
	Pool deck (50m)			1200		1200
	Spectator seating (200)		140	260	140	260
2.00	Change rooms					
		Male, Female, Inclusive	600	800	600	800
		Lifeguard/Staff	50	50	50	50
		Custodial	12	12	12	12
		Boot/Cloak area	30	30	30	30
3.00	Lifeguard/Staff areas					
	First Aid		15	15	15	15
	Viewing bull pen		40	40	40	40
	Lifeguard office#1		12	12	12	12
	Lifeguard office#2		12	12	12	12
	Office supplies		15	15	15	15
	Control desk/POS		30	30	30	30
	Meeting rooms		20	20	20	20
	Staff office #1		12	12	12	12
	Staff office #2		12	12	12	12
	Tenant office #1		12	12	12	12
	Tenant office #2		12	12	12	12
4.00	Storage					
	Wet Storage		70		70	
	Wet Storage	With 50m lap pool		150		150
	Admin Storage (See office supplies)					
5.00	Service spaces					
	Pool Treatment	Pool mechanical room, surge tanks, chemical storage. Includes partial basement.	550	750	550	750

	Mechanical/electrical/comms/water meter	Some roof top equipment assumed	220	320	220	320
6.00	Renovations					
			160	160		
7.00	Amenity					
	Dry pool viewing		40	40	40	40
	Wet pool viewing		75	75	75	75
	Multipurpose Room#1	Pool parties, events, meetings.	50	50	50	50
	Multipurpose Room#2	Pool parties, events, meetings.	50	50	50	50
	Washrooms		100	175	100	175
	Tenant leasable space/Program		533	450		
	Lobby				615	615
8.00	Totals					
	Net Usable Space (25m lap pool)		4862		4784	
	Net Usable Space (50m lap pool)			6426		6431
			151	145	266	179
	Gross up (circulation, structure, walls, shafts, etc)		5013	6571	5050	6610

Appendix B Test Fit Drawings

The drawings presented in this package are for conceptual intent and pricing purposes. More detailed discipline coordination is still required as the project progresses into the next design phase

PROPOSED SECOND SITE PLAN

1 : 2500

SECOND SITE- OPTION 1

PARADISE POOL
29/09/25

Stantec

140132866

PROPOSED SECOND SITE PLAN

1 : 1000

TOTAL AREA (25m LAP POOL) :5050 m²
TOTAL AREA (50m LAP POOL) :6610 m²

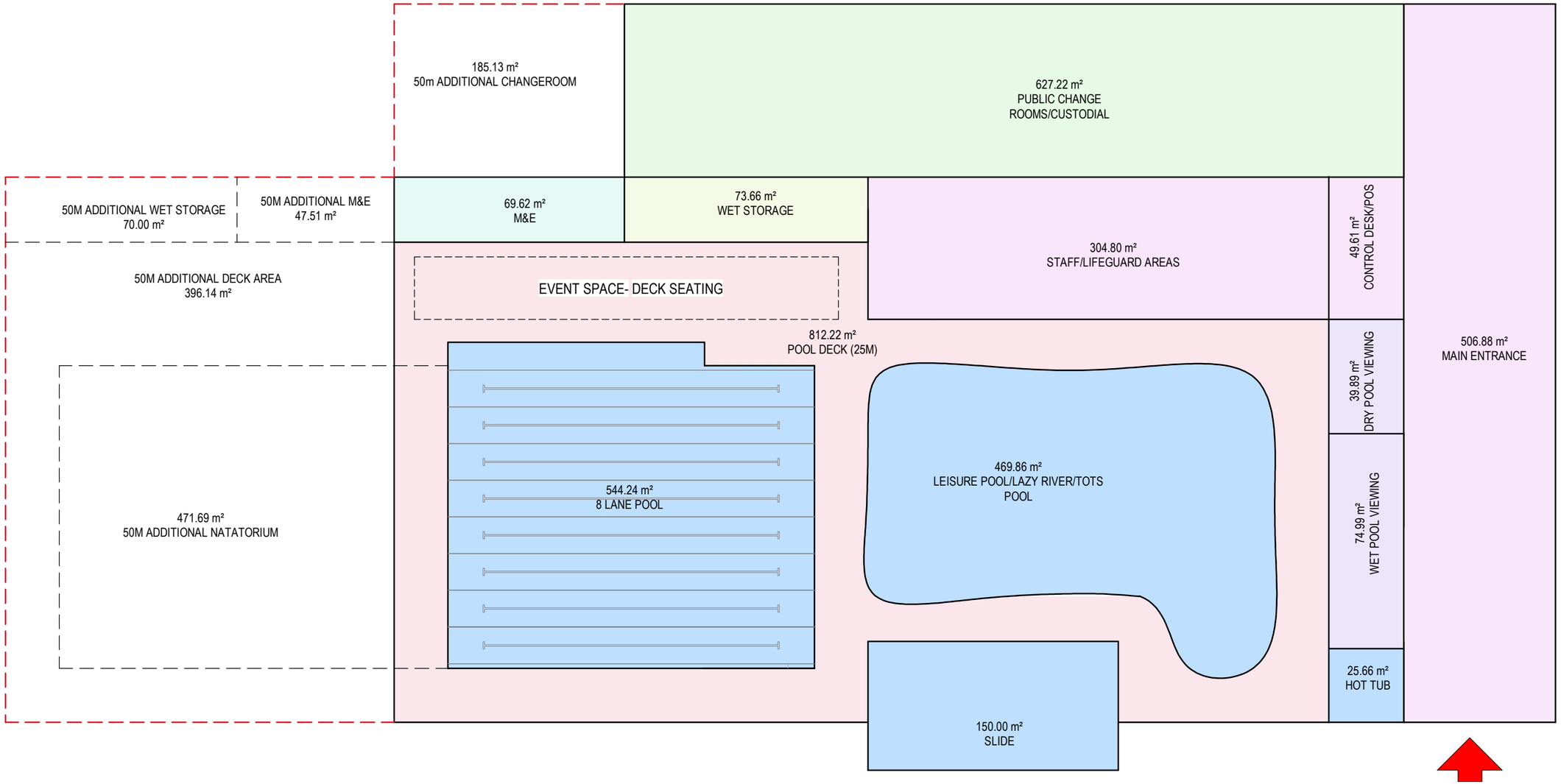
TOTAL EXISTING STALLS: 234
TOTAL NEW STALLS: 252

SECOND SITE- OPTION 1

PARADISE POOL
29/09/25

Stantec

140132866



PROPOSED FLOOR PLAN - LEVEL 1

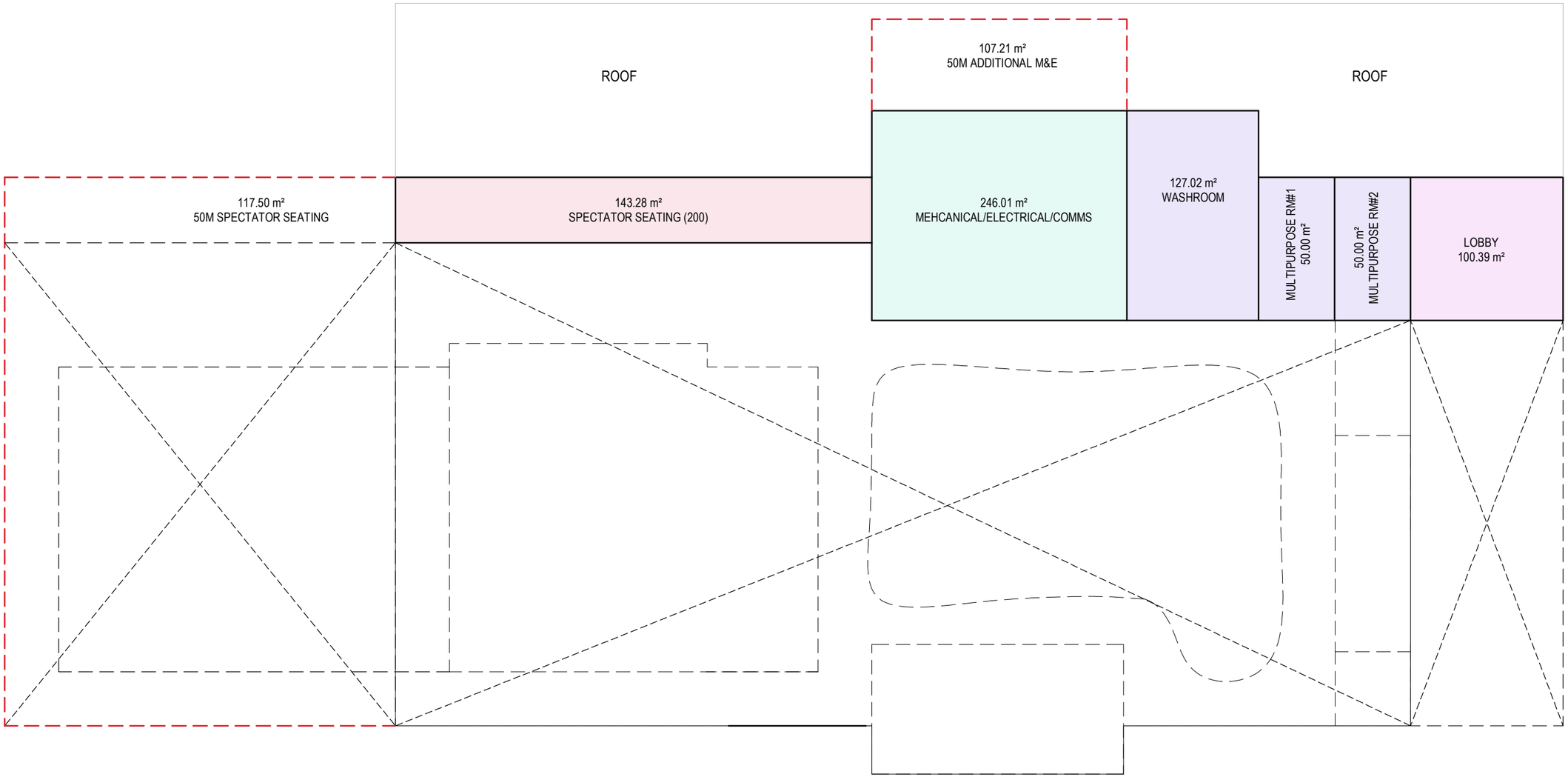
1 : 300

SECOND SITE- OPTION 1

PARADISE POOL
09/09/25

Stantec

140132866



PROPOSED FLOOR PLAN- LEVEL 2

1 : 300

SECOND SITE- OPTION 1

PARADISE POOL
09/09/25

Stantec

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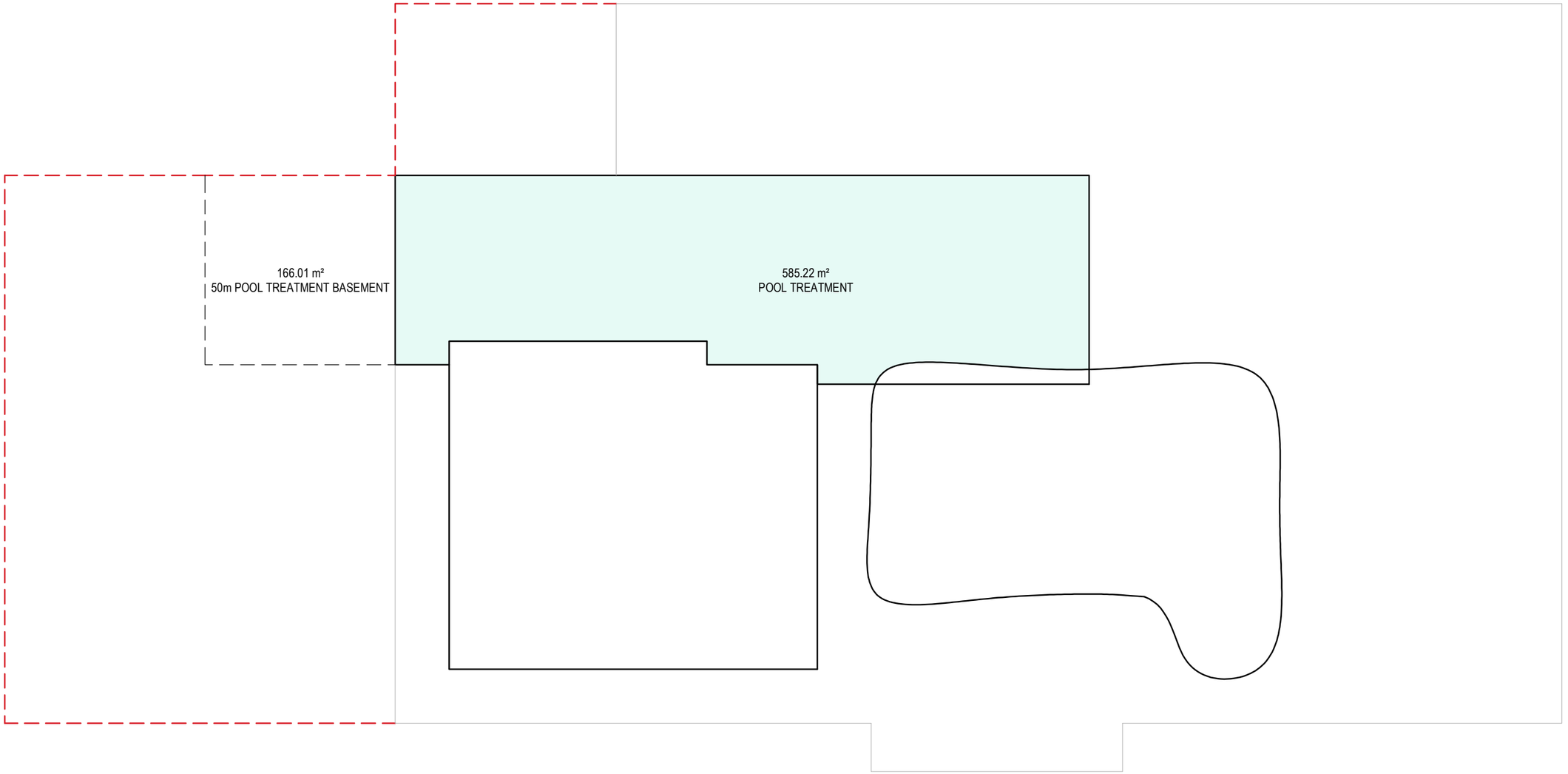

PROPOSED BASEMENT FLOOR PLAN

1 : 300

SECOND SITE- OPTION 1

PARADISE POOL
09/09/25

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PROPOSED SECOND SITE PLAN

1 : 2500

SECOND SITE- OPTION 2

PARADISE POOL
29/09/25

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PROPOSED SECOND SITE PLAN

1 : 1000

TOTAL AREA (25m LAP POOL) :5050 m²

TOTAL AREA (50m LAP POOL) :6610 m²

TOTAL EXISTING STALLS: 234

TOTAL NEW STALLS: 250

SECOND SITE- OPTION 2

PARADISE POOL
29/09/25

Stantec

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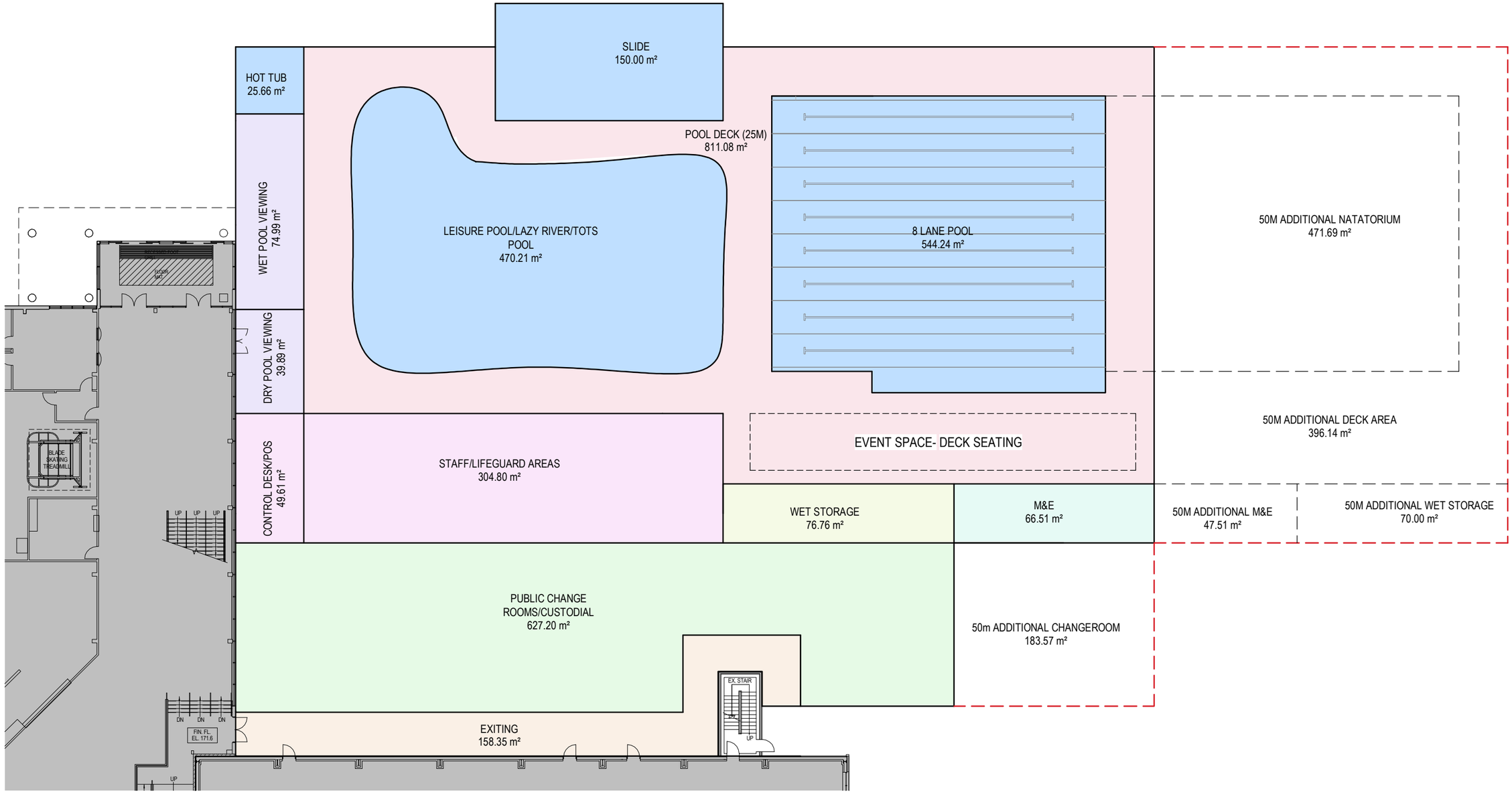

PROPOSED FLOOR PLAN- LEVEL 1

1 : 300

FIRST SITE

PARADISE POOL
09/09/25

Stantec

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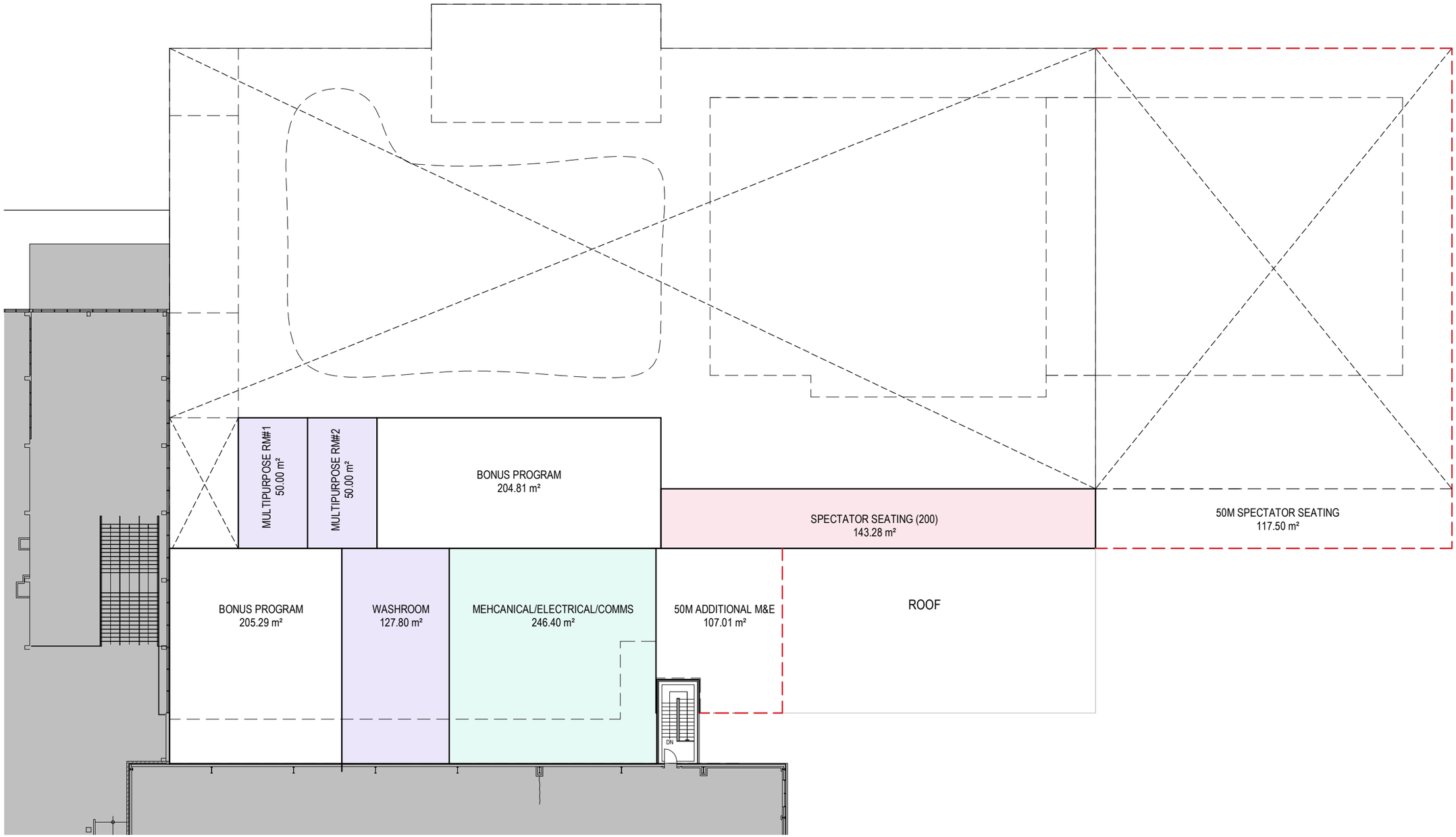


PROPOSED FLOOR PLAN-LEVEL 2

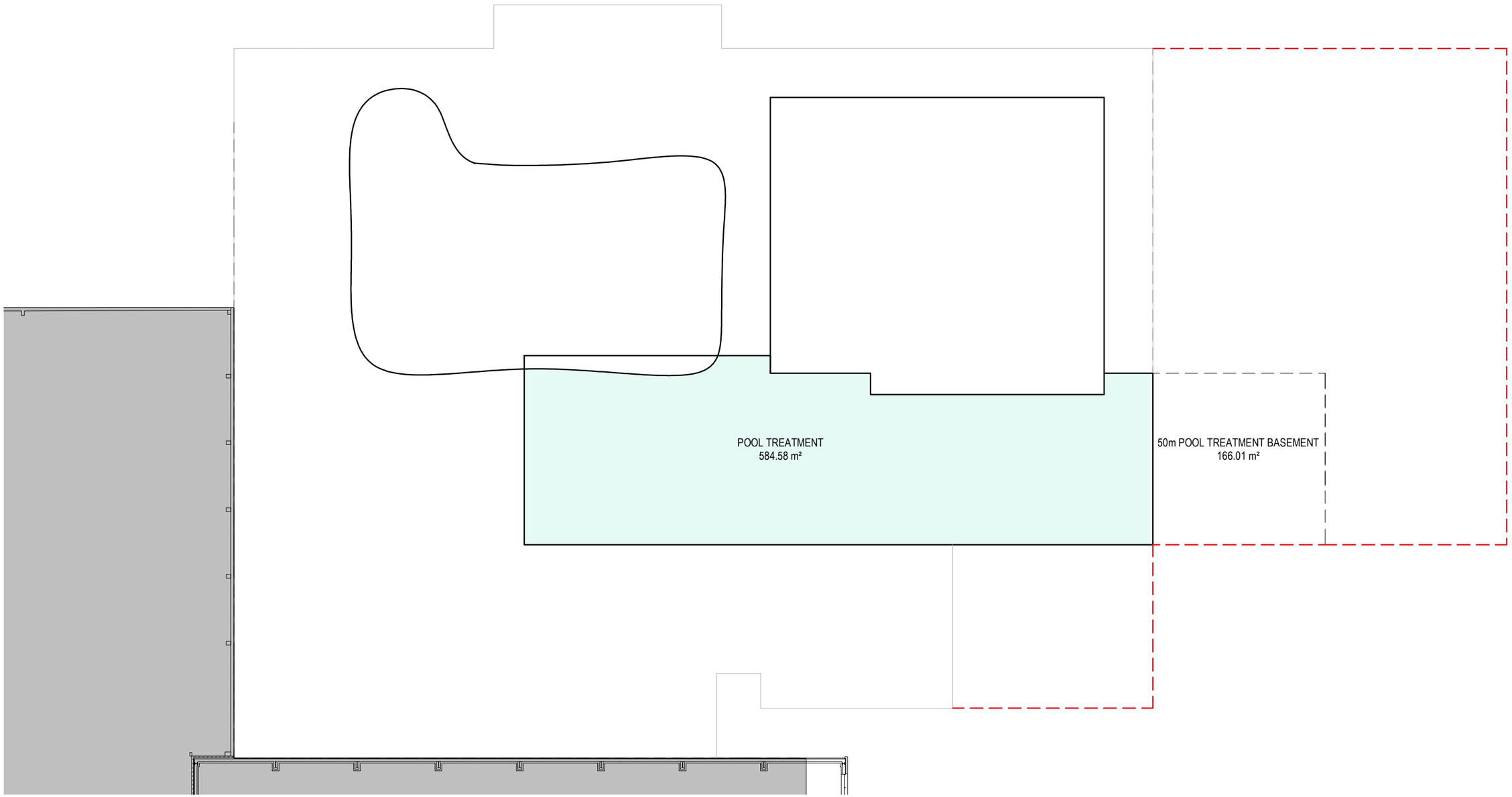
1 : 300

FIRST SITE

PARADISE POOL
09/09/25

Stantec

140132866



PROPOSED BASEMENT FLOOR PLAN

1 : 300

FIRST SITE

PARADISE POOL
09/09/25

Stantec

140132866

Appendix C Class D Cost Estimate

CLASS D ESTIMATE

MUNICIPAL POOL (SITE1/2 - 25/50M LAP)
FEASIBILITY STUDY
PARADISE, NL

Prepared for:
Stantec Architecture

November 25, 2025

Hanscomb
QUANTITY SURVEYORS

November 25, 2025 Ref # HAL3688

Hanscomb
QUANTITY SURVEYORS

Stantec Architecture
141 Kelsey Drive
St. John's , NL A1B 0L2
T: (709) 746-4012
E: amelia.hollingshurst@stantec.com

Attn: Amelia Hollingshurst

Re: Municipal Pool (Site1/2 - 25/50m lap), Feasibility Study, Paradise, NL

Dear Amelia:

Please find attached our Class D Estimate for the Municipal Pool (Site1/2 - 25/50m lap), Feasibility Study in Paradise, NL.

This Class D Estimate is intended to provide a realistic allocation of direct construction costs and is a determination of fair market value. Pricing shown reflects probable construction costs obtainable in the Paradise, NL area on the effective date of this report and is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the work.

Hanscomb has prepared this estimate(s) in accordance with generally accepted principles and practices. Our general assumptions are included in Section 3 of this report and any exclusions are identified in Section 1.6. For quality assurance, this estimate has been reviewed by the designated Team Lead, as signed below. Hanscomb staff are available and pleased to discuss the contents of this report with any interested party.

Requests for modifications of any apparent errors or omissions to this document must be made to Hanscomb within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

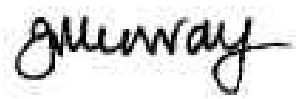
We trust our estimate is complete and comprehensive and provides the necessary information to allow for informed capital decisions for moving this project forward. Please do not hesitate to contact us if you have any questions or require additional information.

Yours truly,

Hanscomb Limited
Team Lead

Ankur Mahendru
CEC
Cost Consultant

Hanscomb Limited
Principal / Estimate Reviewer



JoAnne Murray
BSc. QS [Hons], PQS, MRICS
Technical Manager

Hanscomb Limited
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Halifax, Nova Scotia B3L 2C2
T: (902) 422-3620
halifax@hanscomb.com
www.hanscomb.com

EXECUTIVE SUMMARY

This Class D Estimate is intended to provide a realistic allocation of direct construction costs for the Municipal Pool (Site1/2 - 25/50m lap), Feasibility Study, located in Paradise, NL. Hanscomb recommends that the Owner and design team carefully review this document, including line-item descriptions, unit prices, exclusions, inclusions, assumptions, contingencies, escalation, and mark-ups. If the project is over budget or has unresolved budgeting issues, alternatives should be evaluated before proceeding to the next design phase.

The following are the highlights of this Class D Estimate:

Project Cost Highlights:

Steel Structure

Description	Site-1 - 25m lap	Site-1 - 50m lap	Site-2 - 25m lap	Site-2 - 50m lap
Gross Floor Area (GFA)	5,090 m2	6,548 m2	5,103 m2	6,763 m2
Total Construction Cost	$46,860,900	$61,663,800	$49,880,600	$64,778,200
Cost per GFA	$9,206.46 /m2	$9,417.20 /m2	$9,774.76 /m2	$9,578.32 /m2

Mass Timber Structure

Description	Site-1 - 25m lap	Site-1 - 50m lap	Site-2 - 25m lap	Site-2 - 50m lap
Gross Floor Area (GFA)	5,090 m2	6,548 m2	5,103 m2	6,763 m2
Total Construction Cost	$47,157,200	$61,974,100	$52,389,600	$67,561,600
Cost per GFA	$9,264.68 /m2	$9,464.58 /m2	$10,266.43 /m2	$9,989.89 /m2

Allowances included in the estimate:

- **20.0%** design & pricing contingency
- **No** escalation from November 2025 to the approaching construction start

  (Escalation table provided in item#5.2)
- **10.0%** construction contingency

The Degree of Accuracy expected for this Class D Estimate is **+/- 30%**. In other words, bid results might vary by this amount if the construction budget were set at this milestone estimate. In today's market, projects are trending to the higher end of the plus range.

Base Assumptions:

All costs are estimated on the basis of **competitive bids** (a minimum of at least 3 general contractor bids and at least 3 subcontractor bids for each trade) being received in Paradise, NL in **November 2025** based on a **stipulated sum** form of contract. If these conditions are not met, bids received could be expected to exceed this estimate.

Exclusions

- Cost of contaminated soil removal
- Cost of hazardous material (e.g. asbestos, lead, PCB, etc.) removal
- Soft Costs (e.g. professional fees, building permit, development charges, owner's staff and management, relocation costs, etc.)
- Financing costs
- Special audio, visual, security equipment or installation other than the provision of empty conduit systems carried in the electrical division
- Window treatments
- In-contract equipment and ICAT beyond that identified in this estimate
- Loose furniture, furnishings, equipment and ICAT
- Escalation contingency beyond that identified in this estimate
- Value-added tax (e.g. Harmonized Sales Tax, Goods and Services Tax, or other)
- Unexpected labour unavailability and productivity disruptions leading to delays and added costs
- Supply chain disruptions leading to delays and added costs
- Any premiums resulting from Canadian Foreign government-imposed tariffs

The details of this estimate are provided in the subsequent pages of this report for your review, comment and acceptance.

Appendix D Engagement Survey

Appendix A – Online Survey

PURPOSE:

The survey serves as a critical data collection tool within the feasibility study, gathering comprehensive community input that directly informs decision-making. By systematically collecting resident responses, it captures current usage patterns, unmet recreational needs, and community preferences. Survey results provide quantitative evidence of interest while revealing programming preferences and facility expectations that guide design and operational planning, ensuring recommendations align with actual community needs.

DATE: July 15-30,2025

1. How often does your household currently access swimming facilities?

Private home pool	Annually / Monthly / Weekly / Daily
CBS Recreation Centre	Annually / Monthly / Weekly / Daily
Mount Pearl Summit Centre	Annually / Monthly / Weekly / Daily
Ches Penney Family YMCA (St. John's)	Annually / Monthly / Weekly / Daily
Paul Reynolds Community Centre	Annually / Monthly / Weekly / Daily
The Works @ Memorial University	Annually / Monthly / Weekly / Daily
H.G.R. Mews Community Centre	Annually / Monthly / Weekly / Daily

Activity & Time	**Current Usage**	**Expected Usage with New Community Pool**
Recreational swimming		
- Early morning (6-9 AM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily
- Daytime (9 AM-4 PM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily
- Evening (4-8 PM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily

Public recreation center	Annually / Monthly / Weekly / Daily
Private gym/club	Annually / Monthly / Weekly / Daily
Hotel pools when travelling	Annually / Monthly / Weekly / Daily
Friends' or family's pools	Annually / Monthly / Weekly / Daily
Beach/lake/natural swimming areas	Annually / Monthly / Weekly / Daily
We don't currently swim regularly	
Other explain where and usage:	

2. Current and Future Pool Usage by Time of Day. *Please rate your household's current usage and expected future usage:*

Lap swimming/exercise

- Early morning (6-9 AM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily
- Daytime (9 AM-4 PM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily
- Evening (4-8 PM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily

Children's activities

- After school (3-6 PM)	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily
- Weekends	Never / Annually / Monthly / Weekly / Daily	Never / Annually / Monthly / Weekly / Daily

3. Pool Features Importance *Rate how important each feature is to your household:*

Feature	Essential	Important	Nice to Have	Not Important
25 m Lap swimming lanes	☐	☐	☐	☐
50 m + Lap swimming lanes	☐	☐	☐	☐
Shallow children's area	☐	☐	☐	☐
Deep end for diving	☐	☐	☐	☐
Water slides/play features	☐	☐	☐	☐
Hot tub/spa	☐	☐	☐	☐
Heated pool water	☐	☐	☐	☐
Beach entry/gradual depth	☐	☐	☐	☐
Competition-standard pool	☐	☐	☐	☐
Water volleyball/basketball	☐	☐	☐	☐

4. Facility Amenities Importance *Rate how important each amenity is to your household:*

Amenity	Essential	Important	Nice to Have	Not Important
Changing rooms/lockers	☐	☐	☐	☐
Concession stand/café	☐	☐	☐	☐
Spectator seating/viewing area	☐	☐	☐	☐
Pool equipment rental	☐	☐	☐	☐
Pool deck showers	☐	☐	☐	☐
Multi-purpose/meeting rooms	☐	☐	☐	☐
Wi-Fi access	☐	☐	☐	☐

Sauna/steam room	☐	☐	☐	☐
Party/event rental space	☐	☐	☐	☐

5. Willingness to Pay for Pool Access *Please indicate the maximum your household would pay for each option:*

Access Type	$2.5	$2.5-4	$4-5.5	$5.50-7	$16-20	$21+
Daily pass	☐	☐	☐	☐	☐	☐
Monthly pass (individual)	☐	☐	☐	☐	☐	☐
Monthly pass (family)	☐	☐	☐	☐	☐	☐
Annual pass (individual)	$0	$50-100	$101-150	$151-200	$201-250	$251+
Annual pass (family)	$0	$100-200	$201-300	$301-400	$401-500	$501+

6. Tax Impact Acceptance *How much additional annual property tax would your household be willing to pay to support a community pool?*

Tax Increase	Strongly Support	Support	Neutral	Oppose	Strongly Oppose
$0-50 per year	☐	☐	☐	☐	☐
$51-100 per year	☐	☐	☐	☐	☐
$101-200 per year	☐	☐	☐	☐	☐
$201-300 per year	☐	☐	☐	☐	☐
$301+ per year	☐	☐	☐	☐	☐

7. Travel Distance: *What is the maximum distance your household would travel to use this community pool?*

- Less than 1 km
- 1-2 km
- 2-4 km
- 4-6 km
- More than 6 km

8. Programs and Services Interest: *How interested would you be in the following programs and services?*

Program/Service	**Very Interested**	**Somewhat Interested**	**Not Interested**
Swimming lessons (children)	☐	☐	☐
Swimming lessons (adults)	☐	☐	☐
Water aerobics/fitness classes	☐	☐	☐
Competitive swimming teams	☐	☐	☐
Senior swimming programs	☐	☐	☐
Therapeutic/rehabilitation	☐	☐	☐
Swimming Birthday party packages	☐	☐	☐
Corporate/group events	☐	☐	☐
Swimming camps (holidays/summer)	☐	☐	☐

9. Community Pool Need Assessment *Rate how much you agree with each statement:*

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Our community lacks adequate swimming facilities	☐	☐	☐	☐	☐
A community pool would improve our quality of life	☐	☐	☐	☐	☐
I would use a community pool for health/fitness	☐	☐	☐	☐	☐
My family needs a safe place for children to swim	☐	☐	☐	☐	☐
A pool would increase our property values	☐	☐	☐	☐	☐
Our community would benefit from more recreation options	☐	☐	☐	☐	☐

10. Demographic information

11. Please describe your household by recording the number of members in the following age groups. (Please do not forget yourself!)

0-4 years
5-9 years
10-14 years
15-19 years
20-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75+ years

12. Please choose where you live:

a. Town of Paradise
b. Conception Bay South
c. Bay Roberts
d. St. John's
e. Mount Pearl
f. Portugal Cove-St. Philip's
g. Torbay
h. Other:
please specify_____

13. Additional comments about community pool needs or comments for the Town of Paradise: [Open-ended response field]

Stantec

Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.