

# CITY OF COLD LAKE **AQUATICS CENTRE**

CONCEPT DESIGN REPORT  
OCTOBER 03, 2022





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# 01

## EXECUTIVE SUMMARY



# 1.1 EXECUTIVE SUMMARY

The following report summarizes the concept design advancement of the Cold Lake Aquatics facility attached to the existing Energy Centre in Cold Lake, AB. The inclusion of an aquatics facility as part of the Energy Centre will create dedicated and consistently accessible program, rental, and drop-in opportunities for the citizens of Cold Lake and the surrounding municipal communities. It will also expand the recreational and sporting opportunities for its citizens, draw additional visitors to the facility and community, and provide a venue for teaching a particularly important life skill in swimming to a community where outdoor aquatic recreation is ample and familiarity around water is imperative.

The development of the facility program included stakeholder and public engagement as well as regional facility tours and benchmarking against comparable provincial communities of both current and future sized growth. The facility program was to include the following;

1. Natatorium
  - Lane Pool with movable floor and deep end to facilitate two 1.0m springboards
  - Leisure Pool with zero-entry zone
  - Waterslide
  - Whirlpool
  - Lazy River
2. Administrative and Aquatics Facility Support Spaces
3. Public and Staff Change Rooms
4. Connectivity to existing Energy Centre concourse
5. Improved connectivity to existing and future parking fields
6. Future second floor shell development space

The goal of the Concept Design report is to define the high-level programming requirements, review aquatics systems, identify connectivity requirements to the existing Energy Centre, and establish a realistic budget (capital and operating) for Council and Administration to make an informed decision moving forward.

The project budgets as summarized in the following report include both capital construction costs (including contingencies), as well as assumed project soft costs (fees for consulting services and owner FFE budgets). Site improvements including the realignment of Energy Centre road and parking field modifications are included, although additional proposals for the reconstruction of the entrance traffic circle are considered to be costs outside of the Aquatics scope. The capital construction cost is considered to be a Class-D cost estimate and in 2022 dollars. Additional information pertaining to project cost is summarized in Section 12.

Basis of design outlines for Aquatics, Structural, Mechanical, and Electrical systems are referenced in sections 6, 7, 8, and 9, respectively. Given the community's prioritization on providing a fully inclusive and accessible facility, Section 5 provides a cursory outline of accessibility principles and considerations that the design team will be required to investigate and further incorporate throughout design development.

The facility is anticipated to be an 18-24 month construction duration with an 8-12 month window of design advancement (although these dates are variable based on any requirements for additional public consultation). Based on a number of variable construction delivery methods, these durations can be sequential (traditional Design-Bid-Build) or can overlap (Construction Management). An evaluation of these models should be reviewed with the Steering Committee and consultant team upon project initiation based on the project schedule, risk mitigation, and priorities.

Items which are still being carried as options and/or require additional input and decisions once entering into detailed design include:

- Aquatics Basement Extents
  - Construction cost to expand the basement is broken out in Section 12. Based on the premium, the cost/benefit long term should be reviewed as well as a detailed operational and maintenance review of the additional access this perimeter basement space would provide.
- Enhanced Transportation (parking capacity) review
  - Detailed parking analysis should be completed to validate the current planning assumption that the existing and modified parking capacity will accommodate the additional patrons in daily/average and event modes.
- Incoming Services Capacity
  - The current facility is nearing it's current maximum load capacity. Cost for additional services have been accounted for in the current budget/planning, however a detailed review of final equipment loads and understanding if any future capacity should be addressed at this time will be required in the detailed design phase.
- Programming of second floor space
  - Current anticipated usage for the second floor space will be additional administrative offices. This should be reviewed to confirm space is appropriately sized for identified needs.
- Connections to development north of Energy Drive (future high school)
  - The organization and alignment of the concourse will permit a future connection to the high-school. Provisions for this connection occurring subterranean, at grade, or elevated (pedway) should be reviewed further during detailed to future-proof the facility expansion moving forward.





02

**SITE  
ANALYSIS**



# 2.1 EXISTING SITE

Masterplans for the existing Energy Centre identified a 'parcel' or 'lot' north of the Community Arena as suitable for an Aquatics Facility development.





# 2.2 PROPOSED SITE PLAN

During Concept Development, a desire was expressed to reinforce existing linkages between facilities as well as to strengthen connections to adjacent parking fields. The Aquatics Facility is situated in a location that can take advantage of the connectivity of the arena concourse and can improve connectivity to adjacent parking fields and drop-off areas.



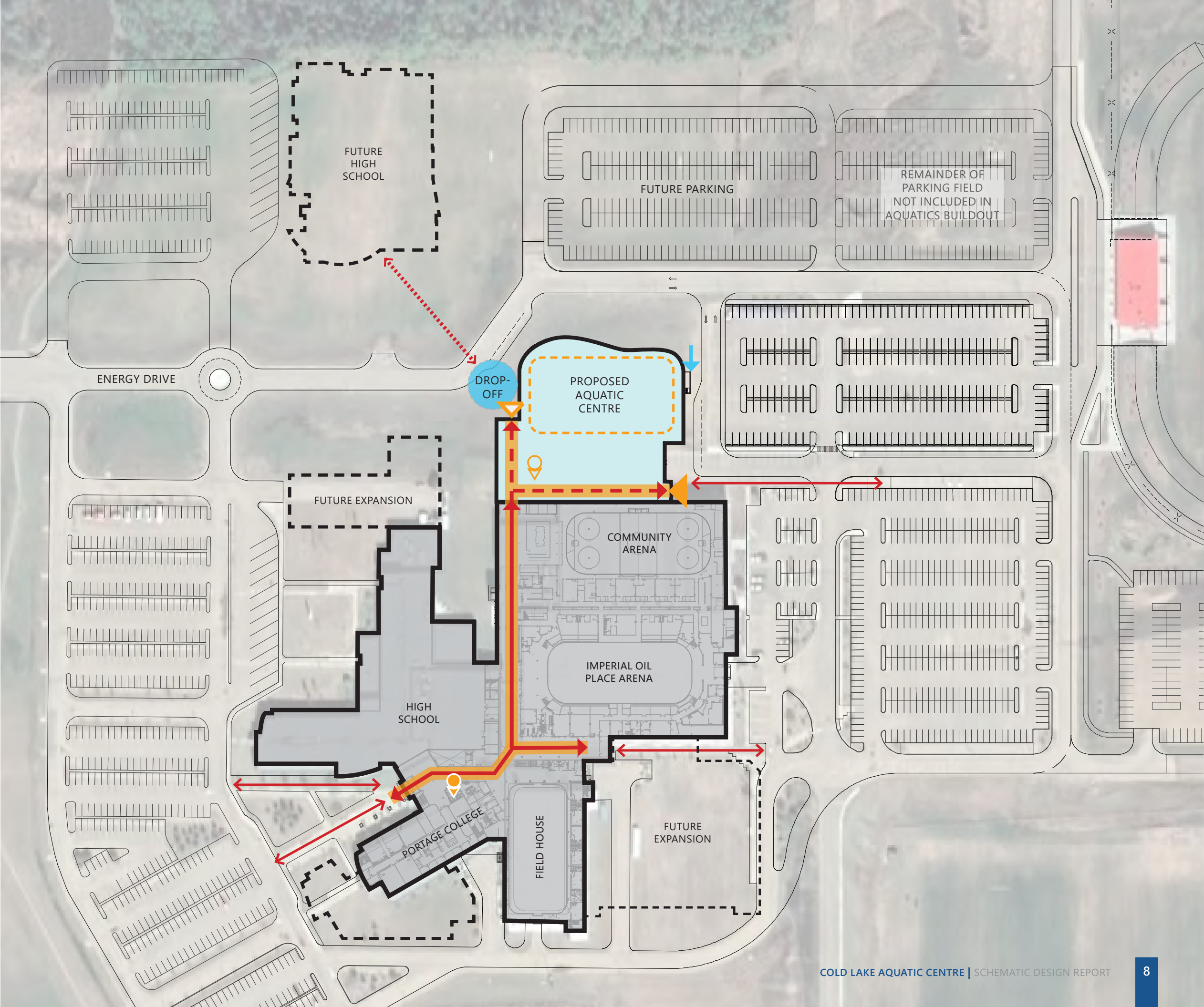


# 2.3 PROPOSED SITE CONNECTIONS

The positioning and layout of the Aquatics Facility not only strengthens interior connections but is also intended to activate the North and Northeast exterior edges of the facility complex. The North entrance will provide an opportunity for a more intentional private vehicle and public transit drop-off, while the Northeast entrance will provide a closer and more convenient connection to the large existing parking fields to the east.

The alignment of the Aquatics Facility with the existing arena concourse is deliberate, permitting an opportunity to continue the concourse across Energy Drive to the proposed Future High School. This connection could be achieved in a number of ways (subterranean, at grade or via a raised pedway) and will be studied in greater detail in future phases of detailed design.

- Proposed Main Entrance
- Proposed Secondary Entrance
- Proposed Loading Access
- Existing Concourse Circulation
- Proposed Concourse Circulation
- Existing Access Control Point
- Proposed Access Control Point
- Proposed Enclosed Space
- Exterior Circulation
- Proposed Site Connection
- Future Expansion







03

**PROGRAM  
DEVELOPMENT**



# 3.1 PROGRAM DEVELOPMENT

## PROGRAM DEVELOPMENT

Each aquatics facility is unique to the communit(ies) it serves, and must respond to unique community needs, adapt to the advancing nature of user expectations for both sport and leisure, and consider other facilities available to patrons within a catchment zone in order for facilities to complement one another. Aquatics facilities are also very expensive to operate and maintain, so a sensitivity to optimizing use, limiting staffing requirements, and specifying energy efficient and robust equipment is imperative to the long term impact of the asset on the public tax roll.

With those items in mind, the project team conducted multiple exercises and tours to determine the program which will best serve the needs of the community of Cold Lake. The following exercises were completed with partial summary content included within this section (full documentation has been included in the appendices of this report as listed);

## APPENDIX A – PROJECT PILLARS

At the project kickoff meeting, the team developed Project Pillars that would serve as guiding considerations throughout the project. These pillars were weighted according to perceived value to the project and to the community. For more information regarding the project pillars, refer to Appendix A.

## APPENDIX B – SITE TOURS

Once initial project priorities were established, site tours were arranged at the following facilities which had elements aligning with the anticipated natatorium programming for Cold Lake:

- Emerald Hills Leisure Centre, Sherwood Park
- Servus Credit Union Place, St. Albert
- The Meadows Recreation Centre, Edmonton
- Terwillegar Recreation Centre, Edmonton

Facility tours were conducted during public operating hours, which provided the project team with an opportunity to speak with facility managers as well as see how the public used the basins and facility amenities at each location. Each tour included an overview by the facility manager and/or operator with commentary on how the facility fits into their overall aquatics recreation strategy (as each facility visited was one of multiple in each community), lessons learned during the design phase of the project, and operational pros/cons observed since opening. Each tour included views of the natatorium, change rooms, and aquatics mechanical spaces.

Full facility tour packages and project team evaluations of facility feedback are included in Appendix B.

## APPENDIX C – COMMUNITY STAKEHOLDERS AND PUBLIC SURVEY FEEDBACK

Detailed community engagement was initiated in March 2022 with a public survey running concurrently. Public open houses were conducted March 14 and 15 with a booth setup in the Energy Centre for each of those days to take in public comment and feedback on potential amenities to be studied and included in the Concept Design proposal for Cold Lake Aquatics. Focus stakeholder meetings were also conducted with the following groups at that time:

- Lifesaving Society - Red Cross
- Cold Lake Seniors Society
- Age Friendly Cold Lake
- Lakeland Catholic School District
- Marlins Swim Club
- Scuba Society

A summary overview of the public feedback comments have been provided within this section (page 11), with full feedback results in Appendix C. Meeting minutes summaries with stakeholders are also included in Appendix C.

## APPENDIX D – COMPARABLE COMMUNITIES

In order to benchmark the program developed through community consultation, a survey of provincial communities was conducted to understand what other similar sized (and anticipated growth sized) communities have invested in for their communities. This comparative review is included in Appendix D.

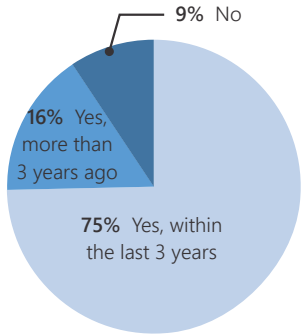
## APPENDIX E – OPERATIONAL PLANNING

The Operational Model for the proposed facility includes an overview of anticipated revenue, expenses, earnings of loss modeling, a staffing model, maintenance and investment model, utilization analysis, activation and visitation model, event hosting assessment, key performance indicators, and other data that will support operational recommendations. This information can be found in Appendix E.



# 3.2 FACILITY PLANNING STAKEHOLDER RESULTS

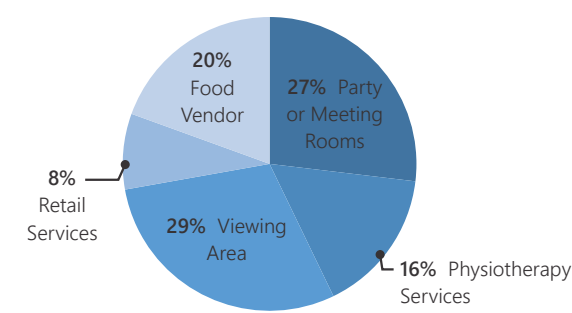
## HAVE YOU OR A HOUSEHOLD MEMBER ACTIVELY USED A POOL, WITHIN YOUR COMMUNITY OR ELSEWHERE?:



ANSWER	COUNT
Y, <3 Yrs	951
Y, >3 Yrs	204
N	119

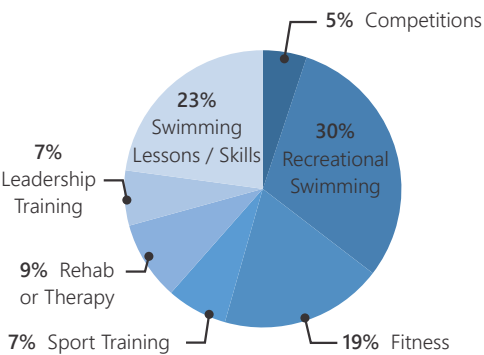
This question confirms that the majority of respondents currently are, have been, or could be active patrons in a pool. Given that approximately 75% of respondents have been recent patrons of a pool, there is a high confidence that these respondents have a vested interest in the development of a pool within the region. This will lead to more optimized answers and results throughout the remainder of the survey. If, for instance, the majority of respondents answered “No,” more study may have been required to ensure that the

## WHAT (IF ANY) NON-AQUATICS SERVICES WOULD YOU LIKE TO SEE INCLUDED AS PART OF THIS ADDITION?



The majority of the non-aquatics services ranked, overall, in the mid- to low-range in terms of importance to the public. The two major exceptions include the viewing area and the party or meeting rooms. The viewing area ranked the highest on this survey item, with 29% of respondents indicating that this component is an important feature. The viewing area ranked within the top 10 most desired activities, amenities, and spaces with a match confidence of 82%. The second most highly rated response item, the party or meeting rooms, was identified as something 27% of respondents would like to see in this facility. This amenity was ranked 11th overall.

## WHAT POOL-RELATED ACTIVITIES / FUNCTIONS ARE YOU MOST INTERESTED IN?



ANSWER	COUNT
Competition	196
Rec Swimming	1,161
Fitness	728
Sport Train	272
Rehab	353
Lead Train	246
Swim Lesson	876

For this question, respondents were asked to identify any number of 7 key activities that they would be interested in for the pool.

Respondents are interested in a wide range of activities within the new pool, with the majority interested in recreational swimming, lessons and skill development programs, and fitness activities. Nearly 30% of respondents have identified interest in competitive, training, or rehabilitation uses.

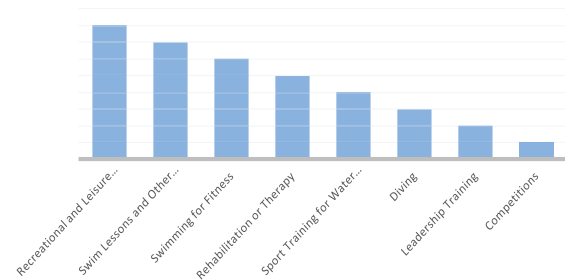
## WHAT POOL-RELATED ACTIVITIES ARE YOU MOST INTERESTED IN?

TOP 10	ANSWER	Match Score
1	Warm Water Pool	90%
2	Leisure Pool	88%
3	Water Slide(s)	86%
4	Shallow End or "Beach Entry"	86%
5	Deep End	84%
6	Hot Tub	82%
7	Viewing Area	82%
8	Toddler Pool	80%
9	Lazy River	76%
10	Wave Pool	72%

The top 10 most highly rated activities, amenities, and spaces include, primarily, spaces that support leisure uses and family-friendly participation. The incorporation of all 10 of these items will reach a wide range of participants and have an excellent chance of supporting the goal of an inclusive environment for all ages and abilities.

Where the “Top 10” lack representation is in the lane pools, with match confidence scores of approximately 60%, and ranking in or near the bottom 5 of the 23 total rated components.

## RANK THE ACTIVITIES / FUNCTIONS FOR THE NEW POOL



As a variation of the previous question, respondents were asked to rank all 7 activities from most relevant to them to least relevant. This is used to validate the overall priorities of the public as even respondents who have not identified a particular item in the question above were ranked to score all activities and functions. Of note, diving was broken out from competitions, training, and leisure for this question as it could be applied to all three.

The results are consistent with the previous question, indicating a solid consensus regarding the prioritization of key activities. That said, key users, stakeholder groups, other special users, and the City of Cold Lake/ regional goals and partnerships with less representation in this survey may still sway the overall priorities of the pool.

BOTTOM 5	ANSWER	Match Score
1	50m Lane Pool / 25m Lane Pool	60%
2	Climbing Wall	54%
3	Cold Water Pool	52%
4	Deep Tank for Competition or Sport Training	52%
5	Dryland Training Space	50%

The “Bottom 5” answers (the least highly-rated of all pool-related activities, amenities, and spaces) each scored a minimum of 50% match confidence but a maximum of 60% match confidence, indicating that while these amenities are seen as the least desirable of the list that was presented, they ranked at least neutrally or positively. None of these features could be described to have an aggregate score corresponding to “somewhat unimportant” or “very unimportant” to the public. Of note, the majority of these features would be most utilized by swim clubs and specialty training groups, which may skew their importance for this project as key stakeholder amenities.



# 3.3 FACILITY PLANNING PILLARS

## PROJECT PILLARS

When considering how the team has and will continue to make decisions in the process, the following are the primary decision making categories that will be explored. The intent of the pillars is to create absolute alignment in decision making and provide clear expectations, as well as support the rapid ability of leaders to react to opportunities and municipal risk. The four pillars have been defined, and weighting has been assigned to each of them.

These pillars were developed primarily from the identified values of the project team. These values were agreed upon early in the process and worked as the “guiding principles” for the decision making pillars. These values encompass goals of operational efficiency and product leadership, but are most focused on creating a brand based in customer intimacy. This goal focuses on providing best customer solutions and services, tailored to the unique needs and wants of the community. Innovation is focused on benefits to stakeholders, the public, and the community at large. Because of this primary goal, *Quality of Life and Experience* and *Diversity and Inclusion/Participation* were most heavily weighted as decision making criteria.





# 3.4 AQUATIC FACILITY PROGRAM

The Aquatic Facility program was developed in combination with a thorough and comprehensive study of existing facilities and stakeholder and public engagement sessions. The resulting program, summarized here, is reflective of the unique needs of the community of Cold Lake.

PROGRAM SPACE	DESCRIPTION
<b>GENERAL</b>	
• Lobby/ Concourse Connection	Public access to the aquatic centre as well as connection to the existing Energy Centre Concourse The lobby also serves as a waiting and gathering area, with seating provided; access to multi-purpose room(s) and the aquatics on-deck viewing area
• Commercial Retail Unit (CRU)	Lease space (fit-out with provisions for future Food & Beverage tenant improvement)
• Multi-purpose Room(s)	Accessible multi-functional space for large meetings, presentations, group activities and public viewing to the leisure pool
• Reception/ Control Point	Reception of visitors, place to answer inquiries and control access to natatorium and other facility spaces
• Public Washrooms	Washrooms for use by public not utilizing aquatics change rooms, ideally clearly visible from reception
<b>NATATORIUM</b>	
• Lane Pool	A pool dedicated for lane swimming, containing the deepest water to allow for diving activities
• Leisure Pool(s)	A pool dedicated for leisure activities such as a child splash zone with zero-grade entry, a lazy river, or a fitness class area
• Hot Tub/ Whirlpool	
• Waterslide	
• Viewing Area (on-deck)	Seating and viewing to natatorium for general public, separated from pool deck by guardrail barrier
• Pool Equipment Storage Room	Storage of pool equipment provided by the City. May also have dedicated storage zones for user-groups
<b>PUBLIC CHANGEROOMS</b>	
• Gendered (Mens/ Womens) Changerooms	Each changeroom includes toilet stalls, lavatories, grooming counter area, lockers, privacy change/ shower stalls, and communal showers
• Inclusive Changeroom	Each changeroom includes privacy toilet stalls, lavatories, grooming counter area, lockers, privacy change stalls, privacy shower stalls, and 'on-deck' showers
• Barrier-Free Assist Changeroom	A single room containing an adult change table along with a toilet, sink, and shower. All components are accessible along a ceiling-hung passenger lift system track, enabling a caretaker to better maneuver an individual with limited mobility. It may have direct access to the pool deck for extra convenience.
<b>ADMINISTRATION</b>	
• Lifeguard/ Staff Inclusive Changeroom	A space for staff to change and store clothing which includes dedicated staff lockers, privacy toilet stalls, lavatories, and privacy change/ shower stalls
• Lifeguard Office	An administrative and storage space for lifeguards, easily accessible from the natatorium for on-duty staff, with windows to allow for passive surveillance
• First Aid Room	Space for first-aid to be carried out along with related administration. It should be easily accessible from the natatorium and contain a wall-hung defibrillator
• Administrative Space(s)	Private office space for pool staff (supervisor and assistant supervisor office, open work spaces), staff lunch and break room, and informal meeting area
• Staff Laundry	A space for staff to wash and fold laundry
• Storage/ Safe Room	Storage of safe, office stationery supplies, files and documents, which is accessible/directly adjacent to control point
<b>SUPPORT SPACES</b>	
• Service Rooms	Overall facility mechanical and electrical equipment
• Pool Mechanical Rooms	Contains pool mechanical systems including pumps, filtration equipment, and aquatic chemicals
• I.T/ Network Room(s)	A room with servers and other computer equipment, along with demarcation for the phone and cable systems
• Custodial Rooms	Stores cleaning materials and equipment for a janitor/ maintenance employee





04

**PROPOSED  
DESIGN**



# 4.1 CONCEPT FLOOR PLANS

## LEVEL 01

A driving factor of the main floor plan organization is the desire to continue the arena concourse through the building. The circulation provides a clear sense of orientation within the facility, and connects patrons to drop-off and parking locations on the exterior.

The control point and administrative offices are located at the intersection of the north and east concourses. This central location assists with wayfinding throughout the facility as well as passive surveillance of building entrances, change rooms and the second floor access point. Refer to section 4.5 Facility Support for additional information.

Change rooms are accessed from the control point. Gendered, inclusive and barrier-free assist change rooms are provided to suit a wide range of user needs. Refer to section 4.4 Aquatic Change Rooms.

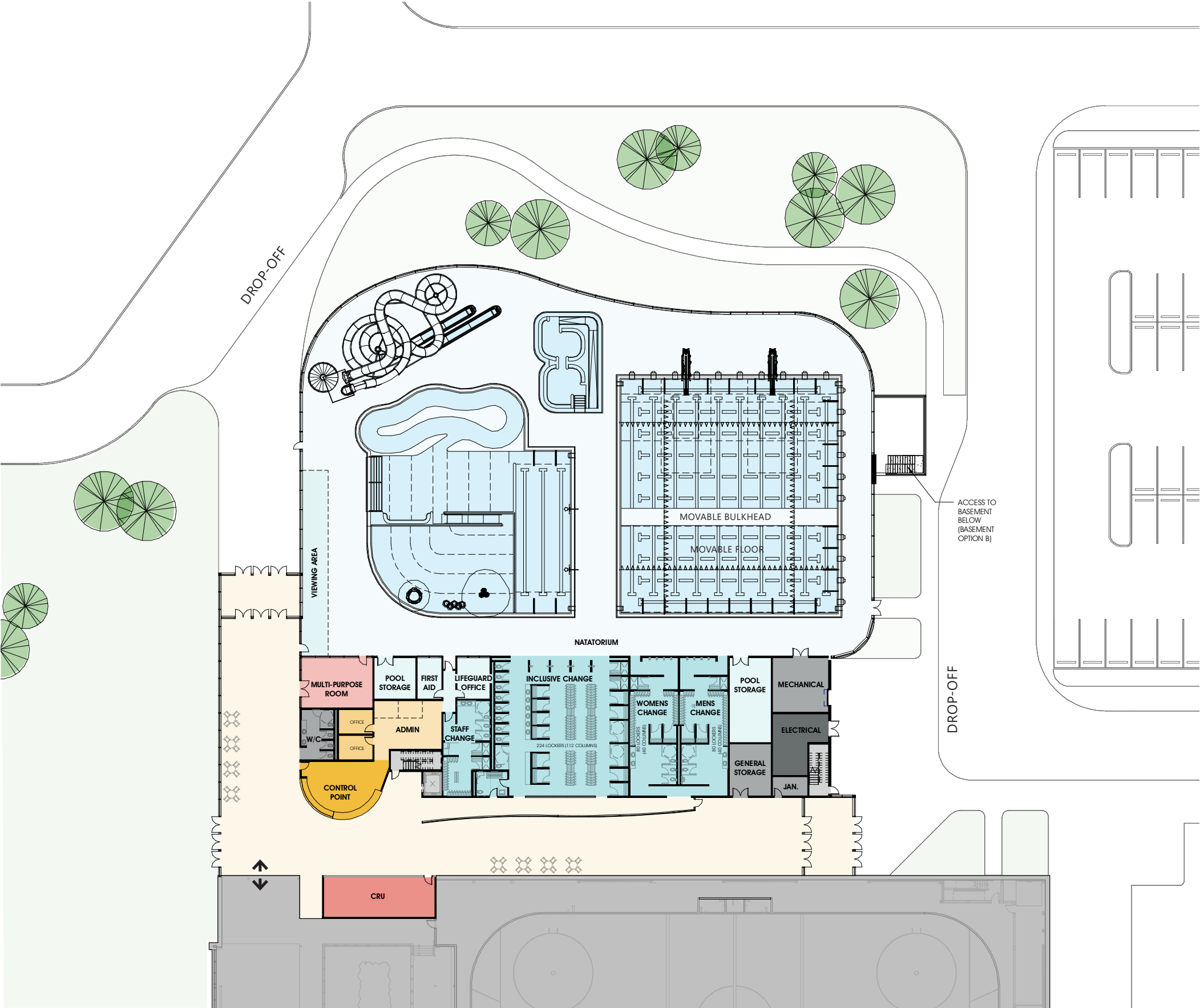
The natatorium is positioned to the north of the support spaces, with views out to the landscape. The shape of the natatorium in both plan and elevation is reminiscent of waves lapping on the shoreline. Locations of solid and glazed materials on the exterior were carefully considered to assist in controlling and limiting sunlight glare on the pool deck and basins. Refer to section 4.7 Exterior Elevations. Organization principles of the pool basins are discussed in section 4.3 Aquatic Program by Zone.

Utilities including the pool mechanical room, electrical room, and HVAC facility mechanical rooms are all stacked efficiently on the east side of the facility. Their location provides easy site entry for new utilities, as well as close connections to loading lay-bys for service calls and deliveries. Refer to section 4.6 Facility Support - Service Spaces.

AREA: 4,742 m<sup>2</sup>



SCALE 1:500



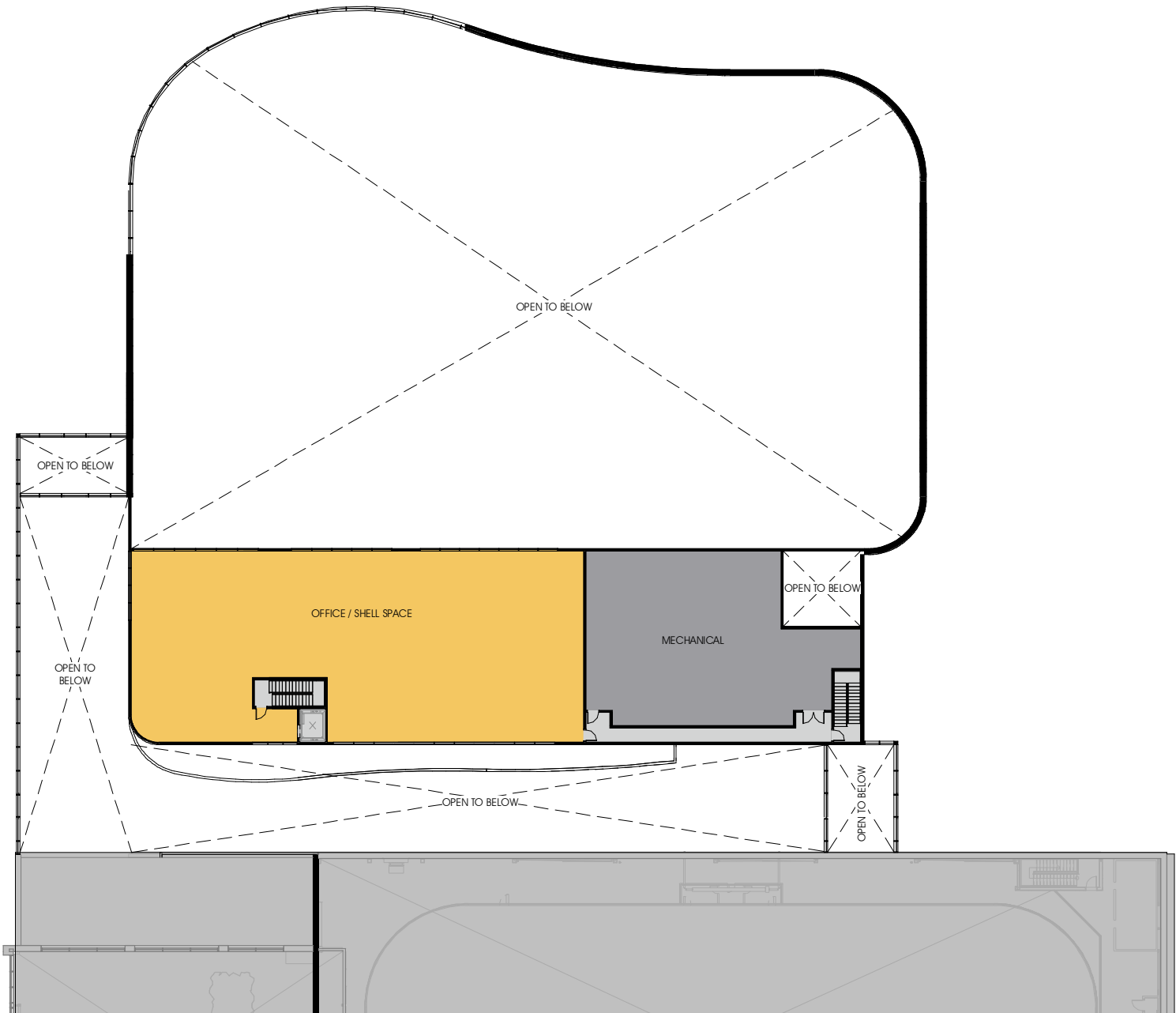


LEVEL 02

The second floor of the Aquatics facility includes provisions for office space as well as the primary mechanical HVAC room. Access to the second floor is via an elevator which is directly adjacent to the front service counter. Access into the elevator can be controlled via card-swipe access, however it's position relative to the service desk is intentional to provide an additional means of passive surveillance, and also provides the option of making the elevator public access and being in a location where it is actively monitored.

The second floor office space has opportunity for interior glazing to look into the aquatics natatorium, as well as glazing looking down into the public concourses created between the existing arena as well as the concourse extension on the west side of the facility.

AREA: 955 m<sup>2</sup>







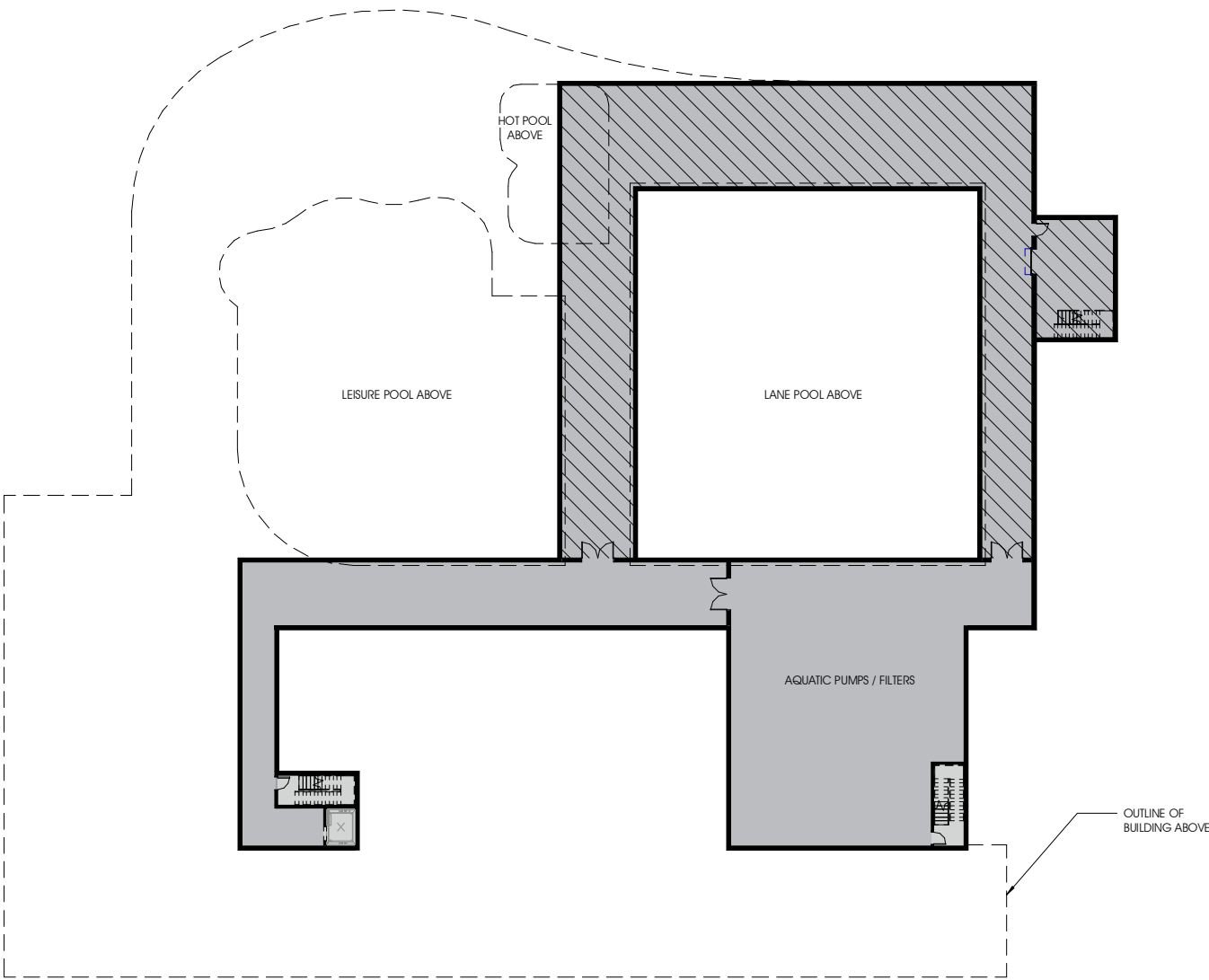
# LEVEL 00 BASEMENT

Two options are currently shown for the basement layout, where the pumps, filters and pool mechanical equipment are located. Option A shows the minimum required footprint, sized to accommodate the aquatics pool equipment and to provide a corridor along one side of each of the major basins (leisure pool and lap lane pool) for piping. The tunnel also extends and connects to the two existing egress stair locations. Option B expands tunnel access, providing a continuous connection around the lap lane pool and increasing serviceability to the leisure pool and whirlpool. Option B includes an alternate entrance with a direct connection from the exterior of the building for maintenance convenience.

A decision between Options A and B will be required early on in the future detailed design phases of the project, as it will impact the pool equipment layout as well as service and maintenance considerations and project cost.

The current cost estimate utilizes Option A as the baseline in the budget summary, with Option B represented as an additional premium.

-  BASEMENT **OPTION A** EXTENTS [681 m<sup>2</sup>]
-  BASEMENT **OPTION B** ADDITION [1,290 m<sup>2</sup>]

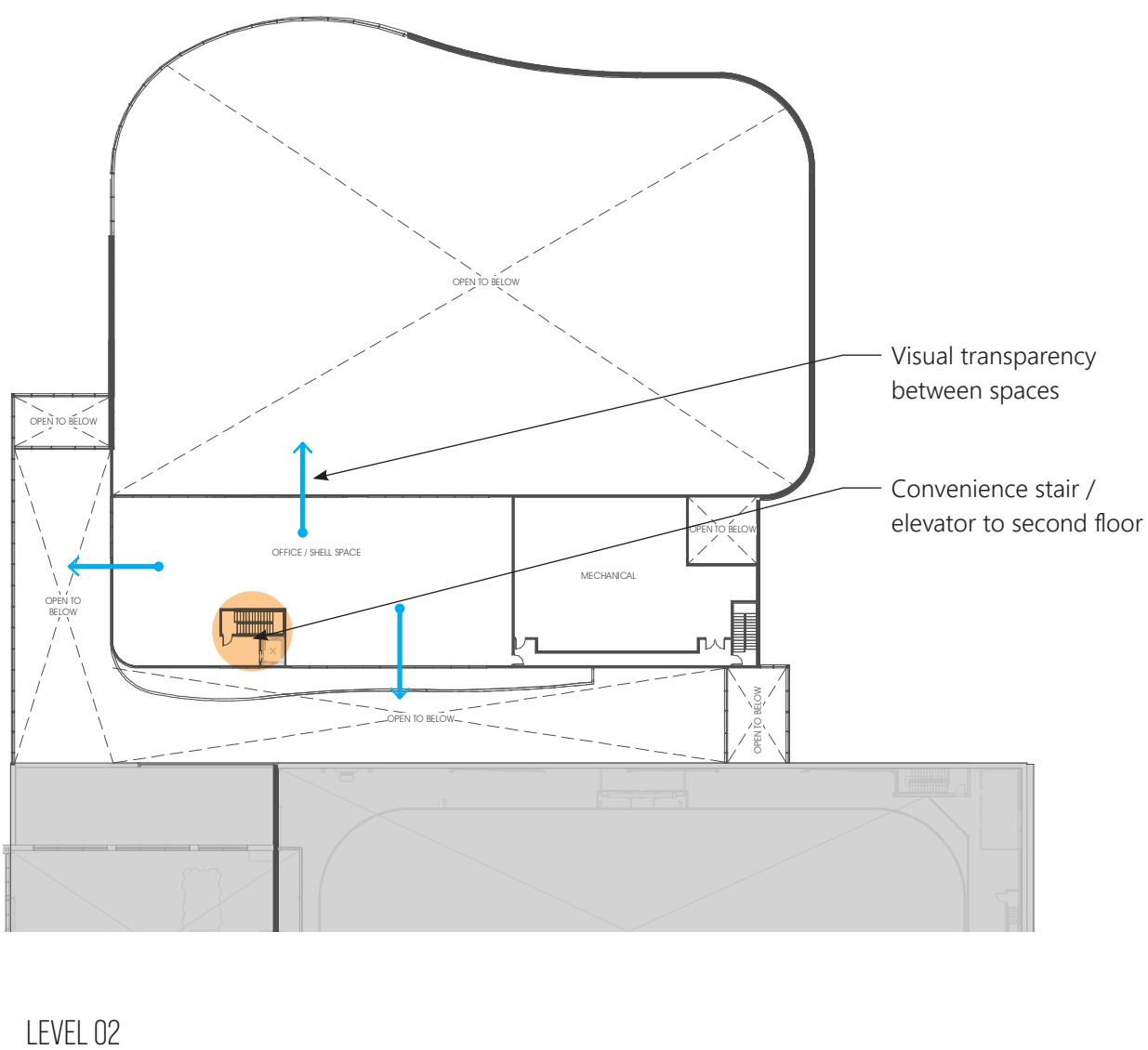
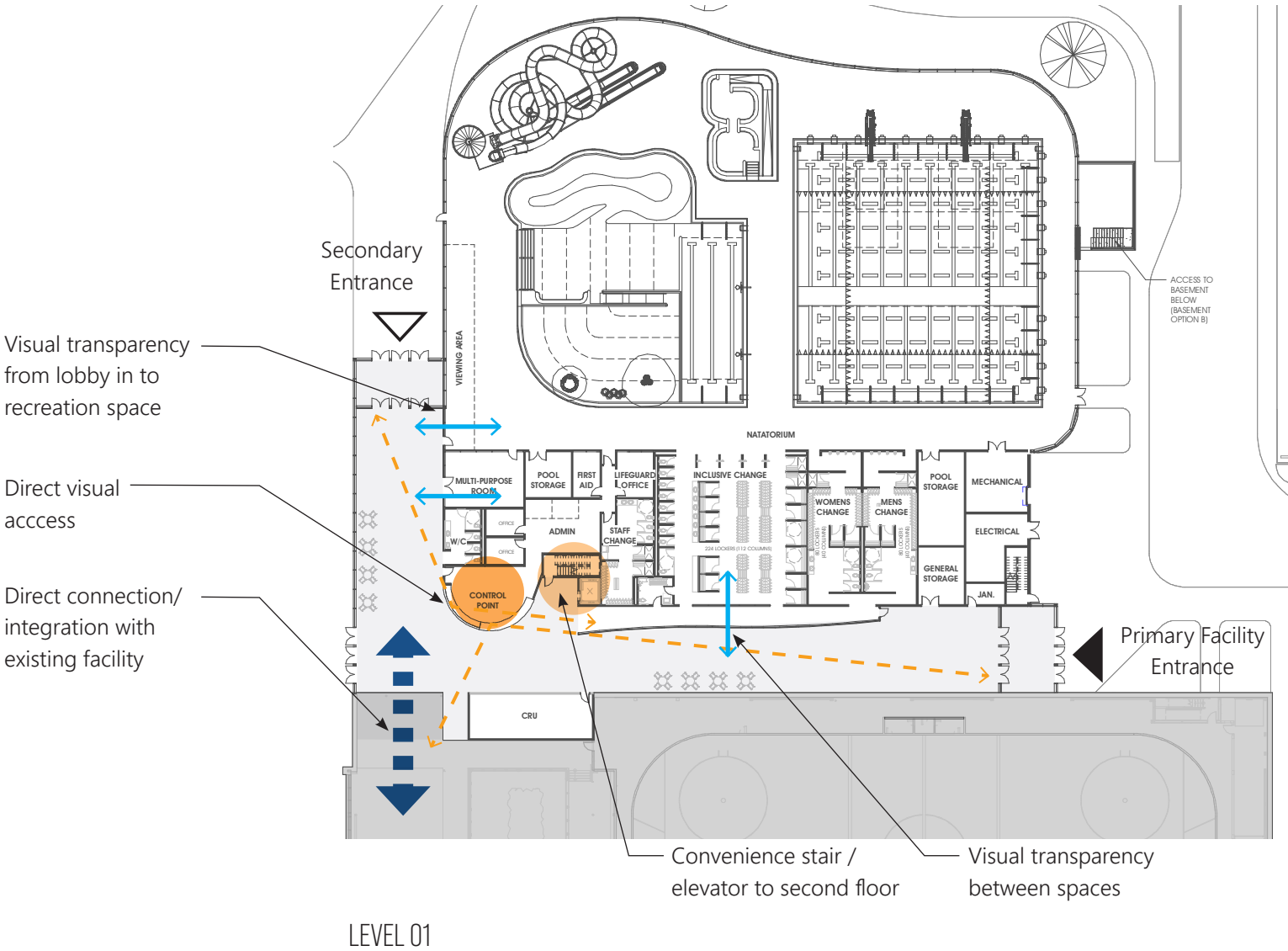




# 4.2 CIRCULATION

Components have been organized off of a lobby/circulation spine intended to supply patrons with a clear sense of orientation within the facility, and to provide operations with the ability to monitor and control access. A public lobby connects the primary Northeast entrance and the secondary North entrance. The pool circulation is organized to integrate with the existing arena concourse circulation spine. The administrative control point is centrally located at the convergence point of the circulation pathways. This central location offers direct visual access to the front doors, adjacency to the stair

and elevator access to the second floor, and passive surveillance opportunities down the 'paid use' access point/corridor of the aquatic change rooms. This reception desk is co-located with the facility's primary administrative area and aquatics offices. Visual transparency into the major program component spaces from the lobby also assists in passive wayfinding and orientation of patrons within the facility. Facility support spaces such as the multipurpose room, and commercial retail unit can be accessed off of the public lobby and facility circulation space to permit flexibility in use and programming.





# 4.3 AQUATIC PROGRAM BY ZONE

- 1

LEISURE POOL: ZERO DEPTH ENTRY AREA

+/- 333

- Beach-style wading
  - Interactive sprays / play
  - Toddler play
  - Gentle first introduction to the water for all
  - Family play zone
- 2

LEISURE POOL: ACTIVITY ZONE

- Open play / free play
  - Program classes such as water aerobics
  - Learn to swim classes
- 3

LEISURE POOL: PROGRAM ZONE

- Open play / free play
  - Program classes such as water aerobics
  - Relaxation and socialization
- 4

LAZY RIVER

- Floating and drifting in current / entertainment, relaxation, socialization
  - Fitness use for water walking
- 5

LAP LANE AREA

+/- 416

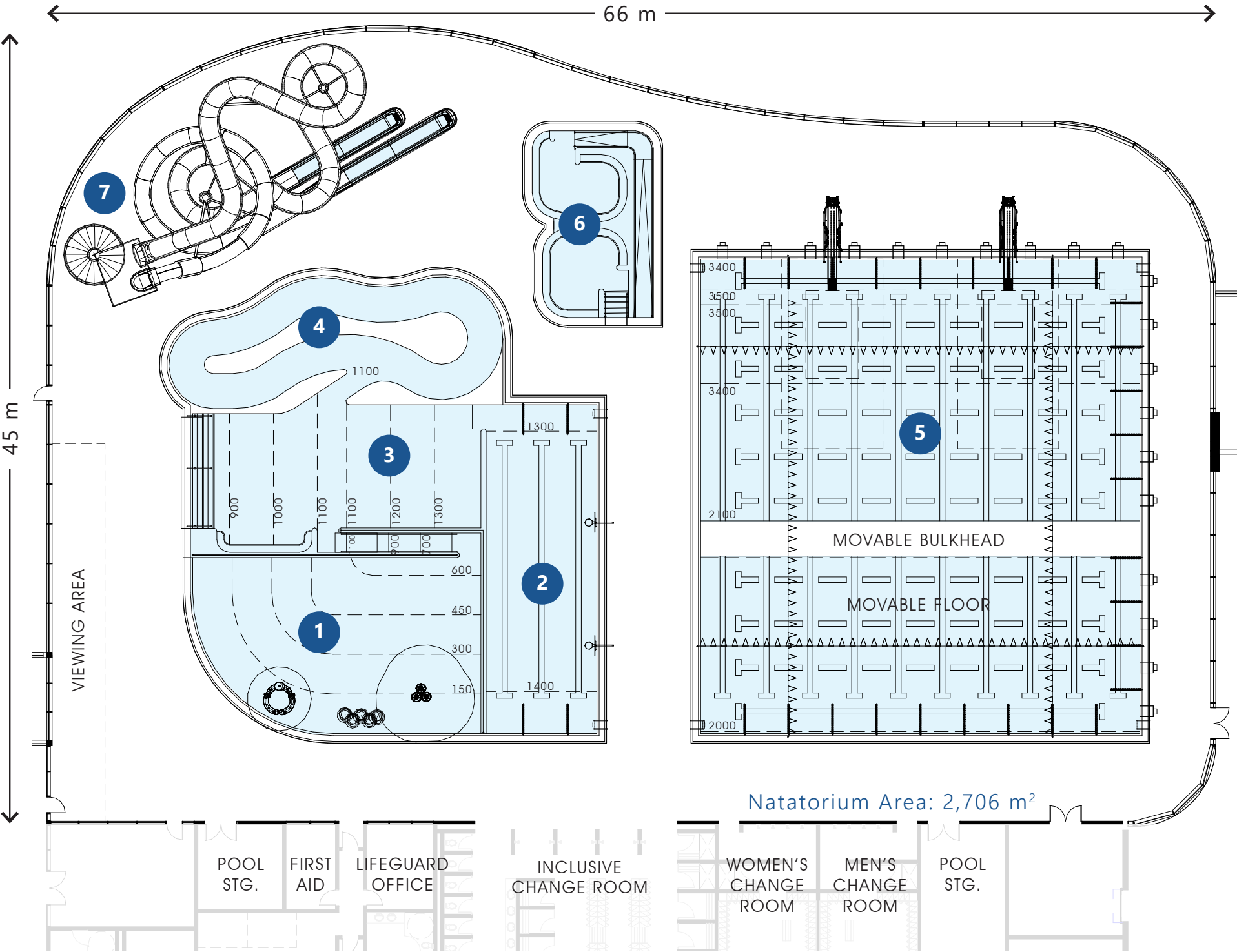
- Lane swimming for fitness / exercise
  - Lane swimming for competitions / training
  - Competition swim starts (deep end)
  - Springboard diving for competition or recreation (deep end)
  - Program classes (shallow end)
  - Water basketball (shallow end)
  - Open swim / play
- 6

WHIRLPOOL

+/- 59
- 7

WATERSLIDE

Total Bather Load:  
+/- 808



The natatorium is organized by program zones, with the shallower basins starting in the SW corner of the natatorium and the deeper water located in the NE corner. The leisure pool, and specifically the zero-depth entry area, is located closest to the inclusive change rooms as well as to the on-deck viewing area. From here, bathers can access the more active water zones including the activity zone, program zone, and lazy river. The waterslide also resides in the active water zone. The 10 lane lap pool includes a movable

floor closest to the change rooms, increasing its flexibility for programming such as for swimming lessons. Diving boards are located on the far side of the natatorium, at the deepest end of the lane pool where there would be the least amount of on-deck traffic. The whirlpool is positioned in between the leisure pool and the lap lane pool, providing passive views into all other program zones. Dedicated storage rooms are conveniently located within close proximity to both the leisure pool and lap lane pool.



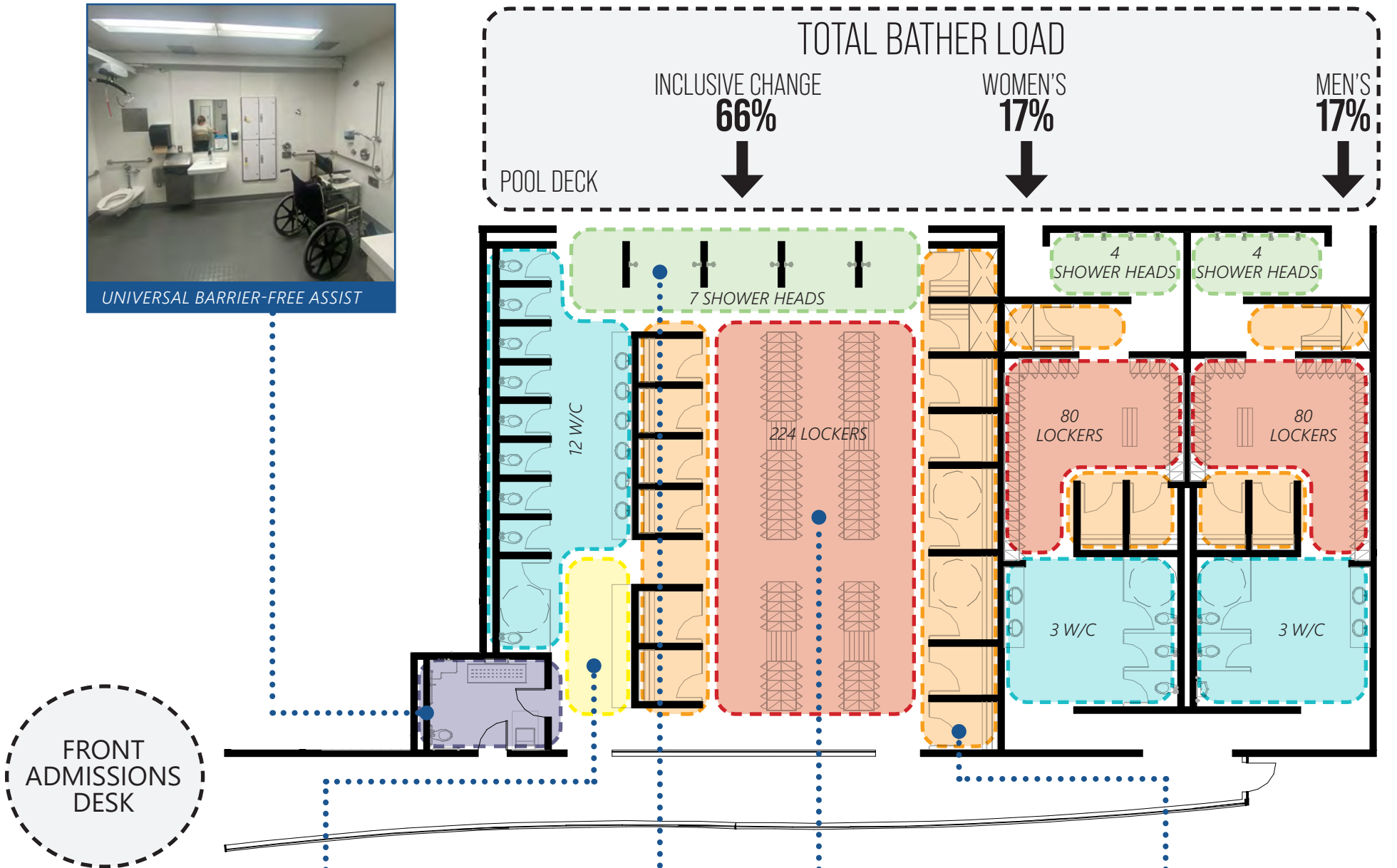
# 4.4 AQUATIC CHANGE ROOMS

The Aquatics facility and change rooms are designed for a total bather load of 450 people. The ratio of the Inclusive change room, Female change room and Male change room is 66% (300 people), 17% (75 people) and 17% (75 people) respectively.

The Inclusive change room displays a high degree of visibility, following principles of CPTED (Crime Prevention Through Environmental Design). The inclusive change room is designed to maximize clear sight lines into and through the spaces to permit natural surveillance. Banks of lockers are located with direct visibility from both the pool deck and arrival corridor. The openness of the Inclusive change room is intended to provide a sense of safety among patrons while in use, but has an added benefit of reducing thefts and break-ins.

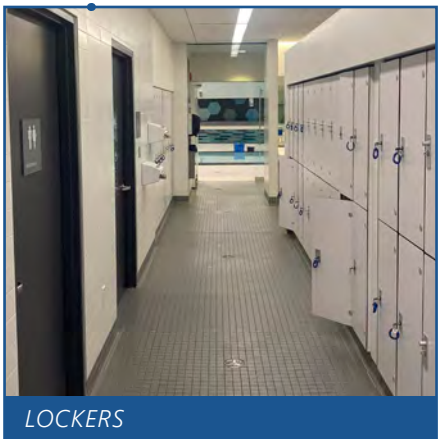
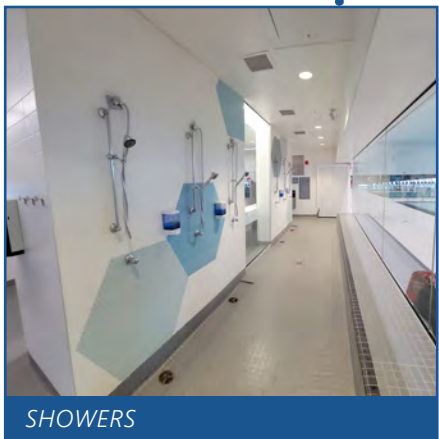
All bathers must remain clothed in the locker area as it is considered common space. Locker areas are accompanied by change stalls that vary in size and use. A complement of 'dry' (change only) and 'wet' (showers and change) stalls are provided. Smaller stalls are intended for individual use while larger stalls are intended to accommodate families. Sizing and number of stalls will be further advanced in detailed design. The Universal Barrier-Free Assist shower and change room is also located within the Inclusive change room, benefitting from direct access off of the main corridor.

Gendered change rooms are provided with full vision locks that restrict sightlines into these spaces. Dry and wet change stalls are provided in the gendered change rooms as well, to suit all bathers' comfort levels.



## LEGEND

- GROOMING COUNTER
- SHOWERS
- LOCKERS
- CHANGE STALLS
- WASHROOMS
- UNIVERSAL WASHROOM





# 4.5 FACILITY SUPPORT

- 1

LOBBY

- Direct Connection to existing facility
- 2

CONTROL POINT

- Facility Bookings
  - Passes
  - Information
  - Security
- 3

ADMINISTRATION

- Staff
  - Offices
- 4

STAFF CHANGE ROOM
- 5

FIRST AID
- 6

LIFEGUARD OFFICE
- 7

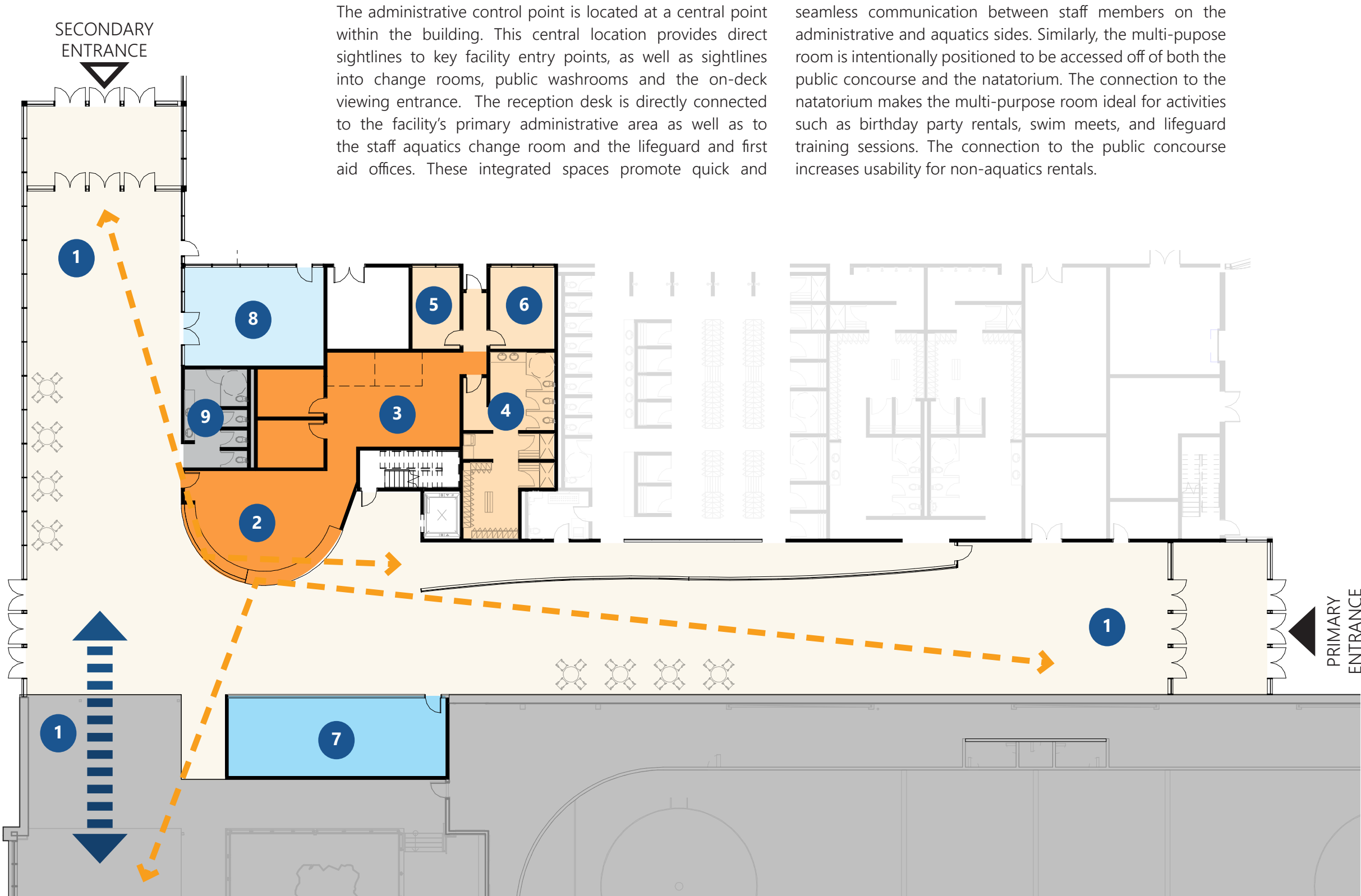
COMMERCIAL RETAIL UNIT

- Small Scale Retail
- 8

MULTIPURPOSE ROOM

- Rental / booking space for programming, community events and birthday parties
- 9

INCLUSIVE WASHROOMS

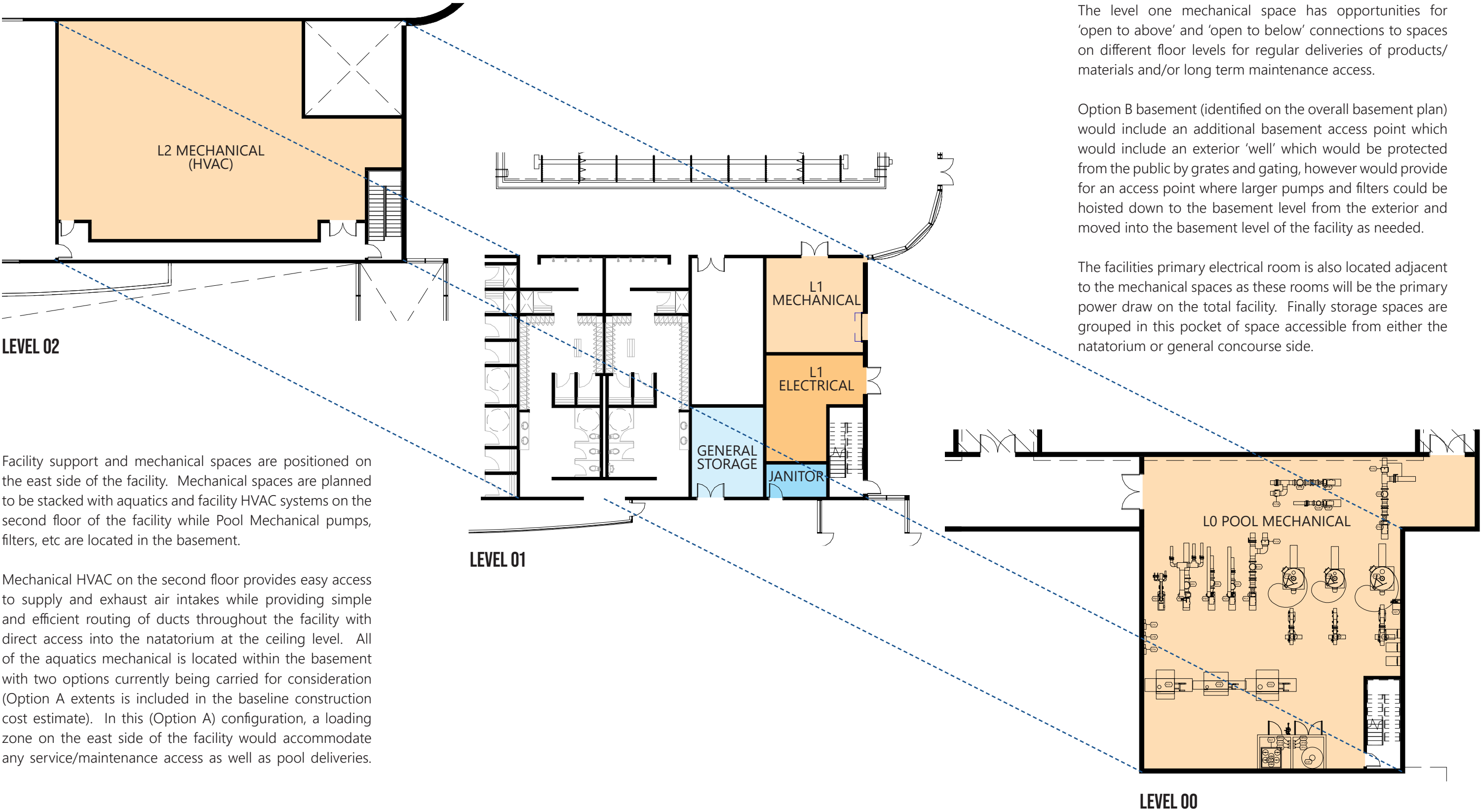


The administrative control point is located at a central point within the building. This central location provides direct sightlines to key facility entry points, as well as sightlines into change rooms, public washrooms and the on-deck viewing entrance. The reception desk is directly connected to the facility's primary administrative area as well as to the staff aquatics change room and the lifeguard and first aid offices. These integrated spaces promote quick and

seamless communication between staff members on the administrative and aquatics sides. Similarly, the multi-purpose room is intentionally positioned to be accessed off of both the public concourse and the natatorium. The connection to the natatorium makes the multi-purpose room ideal for activities such as birthday party rentals, swim meets, and lifeguard training sessions. The connection to the public concourse increases usability for non-aquatics rentals.



# 4.6 FACILITY SUPPORT - SERVICE SPACES



The level one mechanical space has opportunities for 'open to above' and 'open to below' connections to spaces on different floor levels for regular deliveries of products/materials and/or long term maintenance access.

Option B basement (identified on the overall basement plan) would include an additional basement access point which would include an exterior 'well' which would be protected from the public by grates and gating, however would provide for an access point where larger pumps and filters could be hoisted down to the basement level from the exterior and moved into the basement level of the facility as needed.

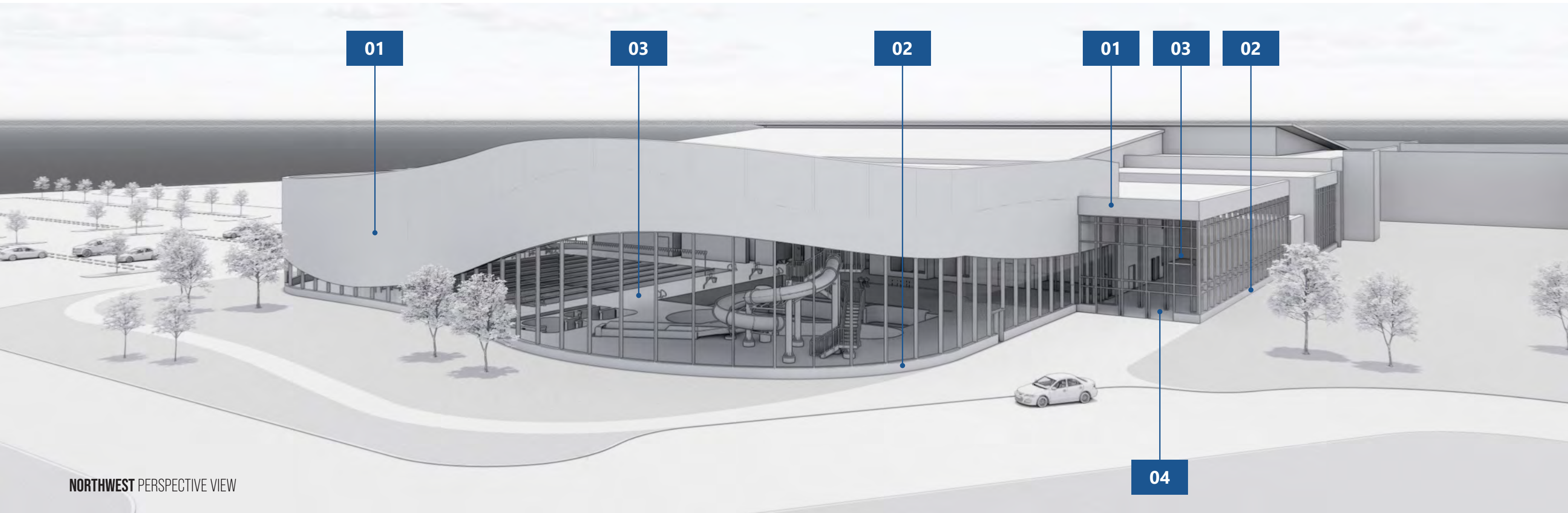
The facilities primary electrical room is also located adjacent to the mechanical spaces as these rooms will be the primary power draw on the total facility. Finally storage spaces are grouped in this pocket of space accessible from either the natatorium or general concourse side.

Facility support and mechanical spaces are positioned on the east side of the facility. Mechanical spaces are planned to be stacked with aquatics and facility HVAC systems on the second floor of the facility while Pool Mechanical pumps, filters, etc are located in the basement.

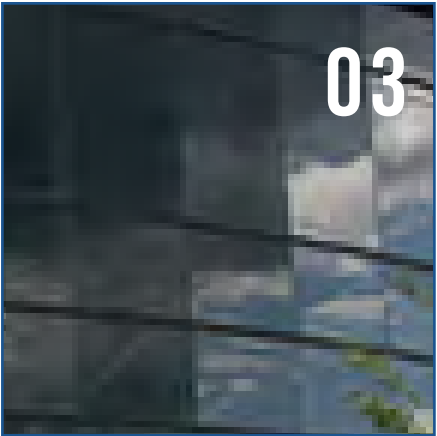
Mechanical HVAC on the second floor provides easy access to supply and exhaust air intakes while providing simple and efficient routing of ducts throughout the facility with direct access into the natatorium at the ceiling level. All of the aquatics mechanical is located within the basement with two options currently being carried for consideration (Option A extents is included in the baseline construction cost estimate). In this (Option A) configuration, a loading zone on the east side of the facility would accommodate any service/maintenance access as well as pool deliveries.



# 4.7 BUILDING ELEVATIONS

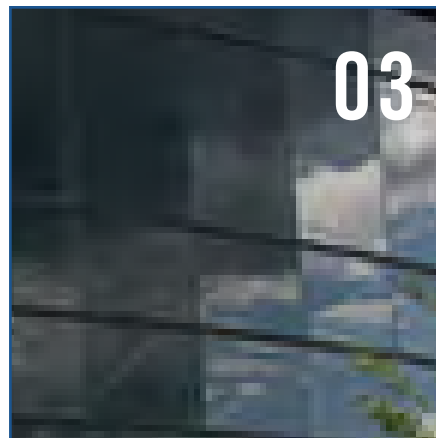
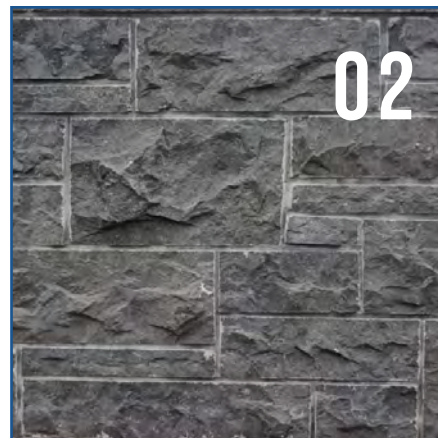
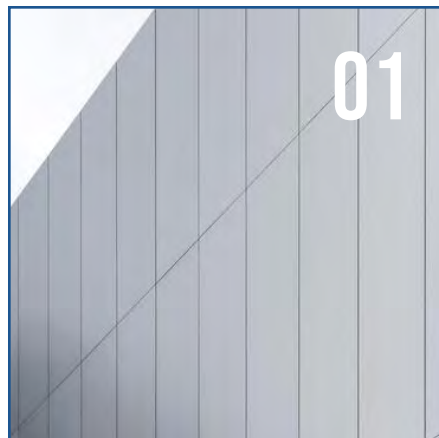
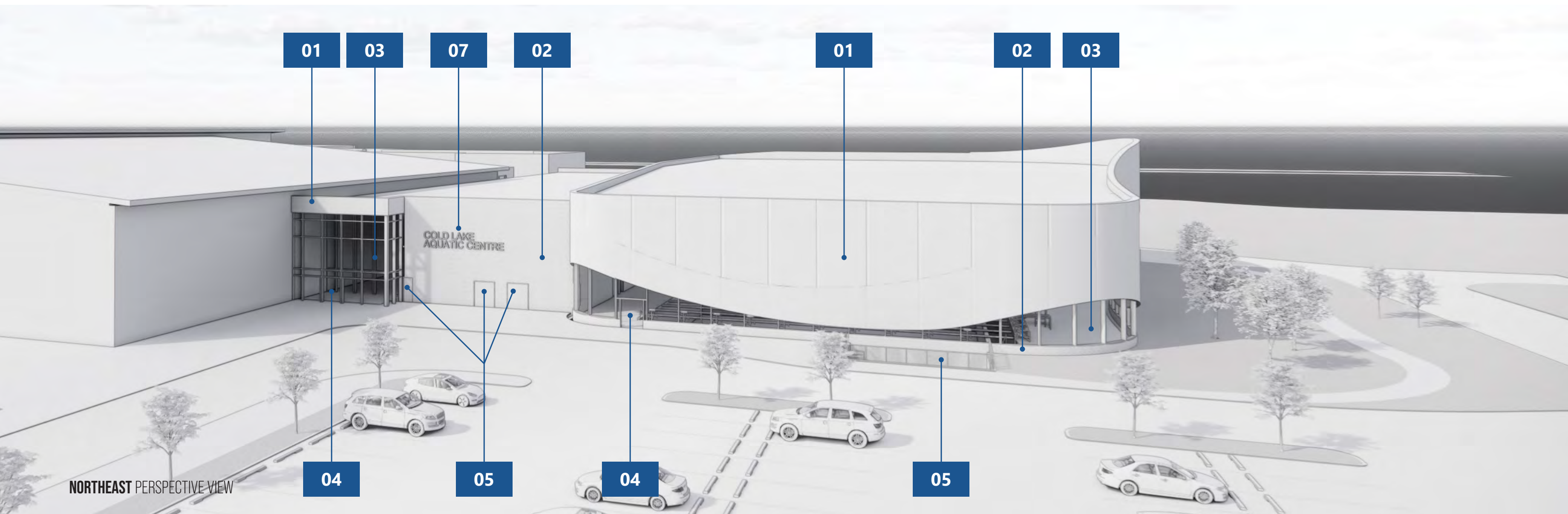


NORTHWEST PERSPECTIVE VIEW



LEGEND			
01-	METAL CLADDING	05-	INSULATED METAL DOOR
02-	MASONRY	06-	GUARDRAIL
03-	CURTAIN WALL	07-	SIGNAGE
04-	ALUMINUM DOOR W/ GLAZING		





### LEGEND

01-	METAL CLADDING	05-	INSULATED METAL DOOR
02-	MASONRY	06-	GUARDRAIL
03-	CURTAIN WALL	07-	SIGNAGE
04-	ALUMINUM DOOR W/ GLAZING		



## 4.8 INTERIOR RENDERS



INTERIOR | CONTROL POINT





INTERIOR | CIRCULATION CORRIDOR





INTERIOR | LEISURE POOL - ZERO DEPTH ENTRY





INTERIOR | LEISURE POOL - ACTIVITY ZONE





INTERIOR | LANE POOL (showing variable depth floor and movable bulkhead)





# 05

## ACCESSIBILITY REVIEW



# ACCESSIBILITY AND UNIVERSAL DESIGN REVIEW

Prepared By: Level Playing Field (LPF)  
Author: Darby Lee Young, Principal

Date: September 2022

## 5.0 OVERVIEW

Level Playing Field (LPF) feels privileged to have the opportunity to work with TBD Architecture + Urban Planning to provide our expertise in accessible design for the Cold Lake Aquatic Centre. This building will serve an important community need and we want to help ensure its design provides an inclusive, safe, and enjoyable experience for all visitors, and staff.

In this report we have completed a review of the schematic design drawings and provided comments and recommendations that will contribute to the projects overall success. Our goal is to work closely with the TBD Architecture + Urban Planning to ensure that the building is meaningfully accessible and user-centric. Buildings such as this provide an excellent opportunity to set an example for accessibility and inclusion given its intended use, purpose, and clientele.

We welcome the opportunity to discuss this report and any further questions you may have. Thank you for your commitment to assist with making your project meaningfully accessible to everyone regardless of age, ability or circumstance.

*Supplementary images within this report have been adapted from CSA B651HB-18. All recommendations have been adapted from the CSA B651HB-18, CNIB Foundation's Clearing Our Path, and the 2010 ADA Standard for Accessible Design.*

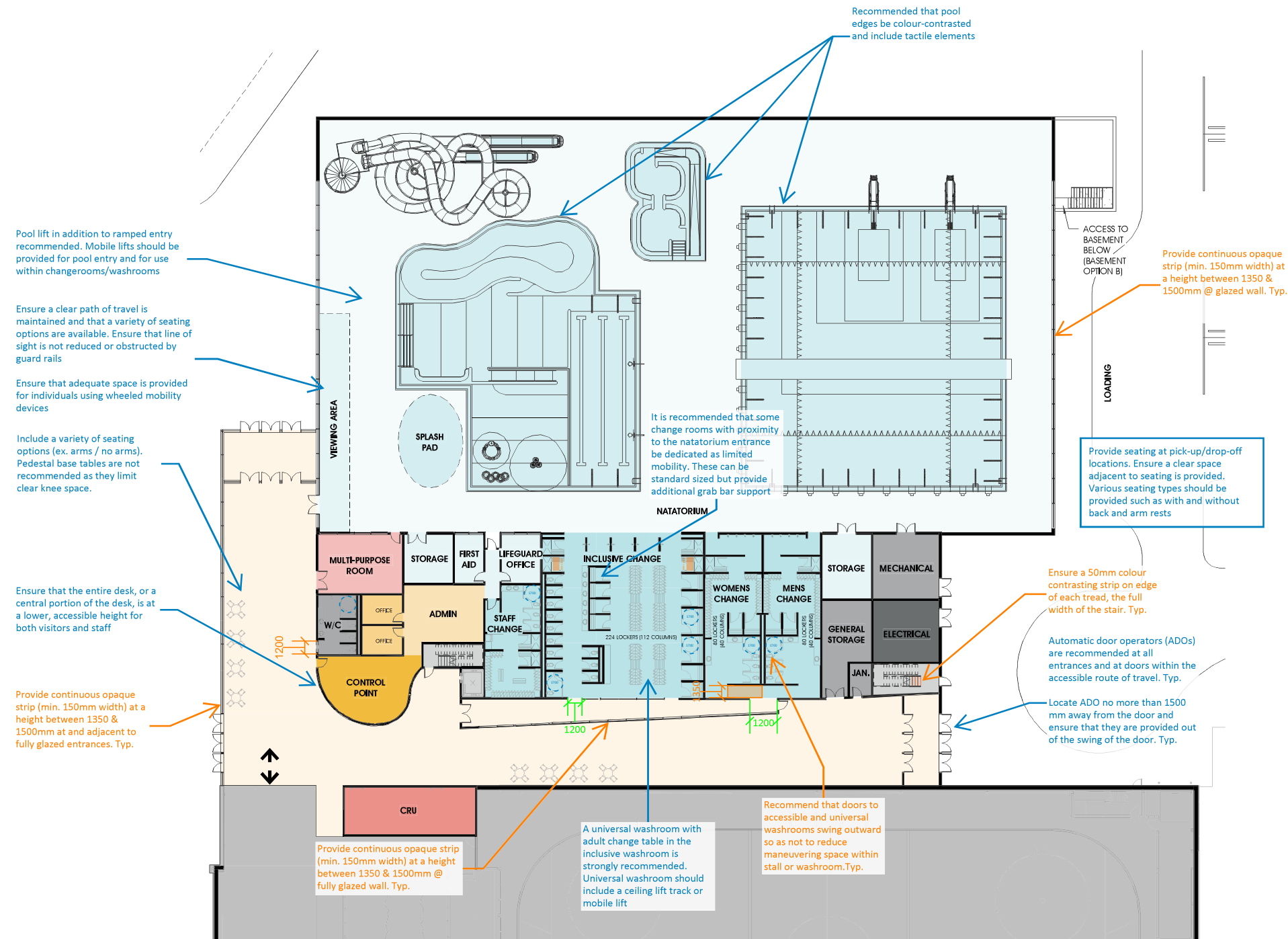
### DISCLAIMER

This report has been prepared for the exclusive use by TBD Architecture + Urban Planning and solely for the purpose of developing an accessibility plan for the Cold Lake Aquatic Centre. Unless express prior consent is provided from the author, this report may not be relied upon for any other purpose and no part of this report may be reproduced, distributed or communicated to any third party. The author does not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report. Any opinions, findings, conclusions, or recommendations are those of the author.



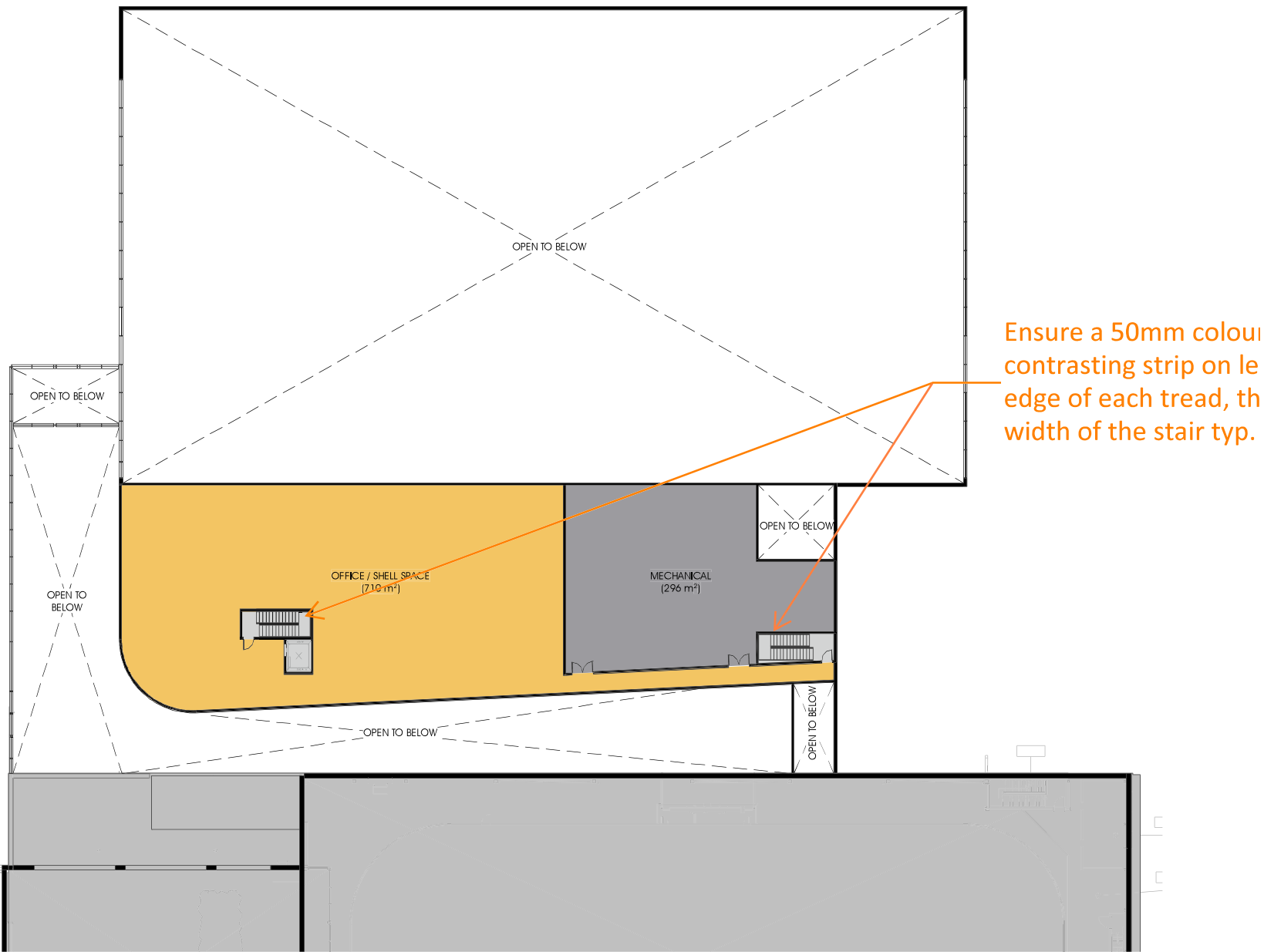
# 5.1 ARCHITECTURAL

## 5.1.1 PLAN LEVEL 01

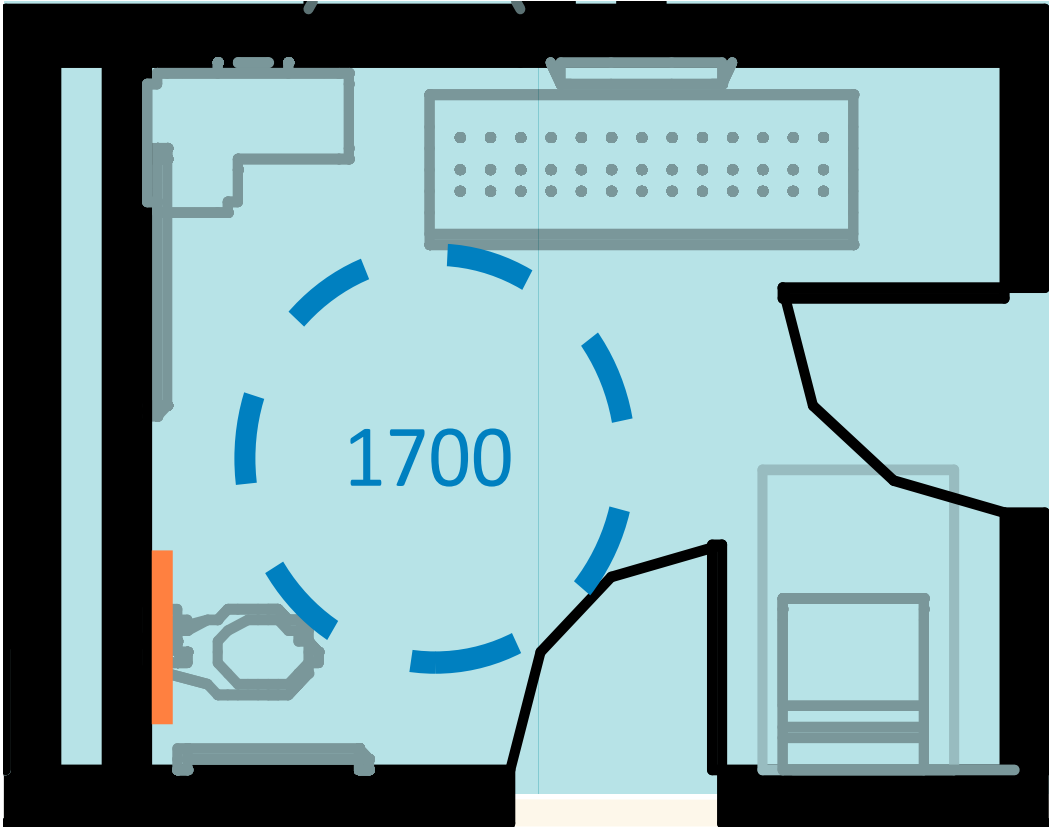




5.1.2 PLAN LEVEL 02



5.1.3 UNIVERSAL WASHROOM PLAN



- With the inclusion of two doors, ensure that an automatic lock is equipped to lock both doors at once
- Ensure that both doors are equipped with an automatic door opener



## 5.2 INTERIOR FACILITIES

### 5.2.1 UNIVERSAL WASHROOMS

#### ACCESSORIES

##### MIRROR

- Shall be mounted with its bottom edge not more than **1000mm** from the floor
- Shall be flush mounted to the wall and not tilted

##### SOAP DISPENSER/ HAND DRYER

- Should be located within **500mm** of a person seated at the lavatory
- Shall have its dispensing point no higher than **1100mm** from the finished floor
- Be operable with one hand

##### GRAB BARS

- Grab bars are to be slip-resistant with a diameter between **30mm & 40mm** and have a space **35mm & 45mm** between wall and grab bar
- Provide a **90° grab bar** on the side wall closest to the toilet
- Provide one additional grab bar that is horizontal and mounted centered over the toilet on rear wall; not
- less than **600mm** long and mounted at the same height as the grab bar on the side wall (if toilet has tank it shall be mounted **100mm** above tank)
- Ensure all grab bars are **structurally supported**

##### TOILET PAPER DISPENSER

- Shall be located such that the closest edge of the dispenser is 300mm from the front of the toilet and at a height between **600mm & 800mm** from the floor
- **LPF best practice recommends an open roll dispenser to reduce dexterity required to access tissue**

##### TURNING RADIUS

- LPF recommends providing a **1700mm** turning radius in all accessible washrooms to adhere to the new
- National Building Code that is anticipated to be released early next year

##### STALL DOORS

- Ensure accessible stall doors **swing out**

##### BABY CHANGE STATION

- There are no requirements for baby change stations. However, it is recommended that the height of the table is between **730 and 860mm** from the floor. Knee space of **800mm wide x 685mm high by 480mm deep** should also be provided.

##### WASTE BINS

- Ensure the opening is located to a maximum of **1100mm** above the floor and has clear manoeuvring area.

##### LAVATORY

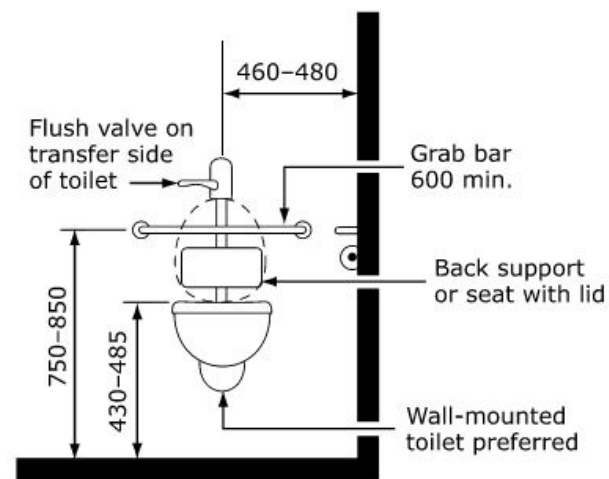
- Shall be mounted with the centerline at least 460mm from a side wall with the top located between 810mm and 860mm from floor
- Knee clearance shall be centred on the lavatory at least 800 w x 200 d x 685mm h with an additional toe clearance of 800mm w x 230mm d x 230mm h
- Clear floor area should be centred on the lavatory at least 800mm x 1350mm, of which not more than 480mm may be under lavatory
- Insulate or shroud hot water and drain pipes or offset to the rear
- Faucet should be automatic or levered with off position angled to the front and not requiring continuous force to maintain water flow. A single lever faucet is preferred for ease of control, especially for individuals with limited use of both limbs, or those with limb
- **LPF best practice recommends that faucets have colour (red and blue) as well as hot & cold indicators**

##### TOILET

- Should have a seat height between 430mm and 485mm from the floor
- The toilet should have a clear transfer space at least 900mm wide x 1500mm long (measured from the edge of the toilet bowl)
- A back support is recommended for the toilet to reduce the chance of imbalance or injury due to leaning against exposed valves or pipes
- If toilet is not automatically activated, the controls should be located on the transfer side of the toilet, or within easy reach for a person who has transferred back onto their wheeled-mobility device, eliminating the need to reach over the toilet to flush
- The centreline of the toilet should be located between 460mm and 480mm from the side wall
- LPF Best practice suggests alternating the side of the toilet where the transfer space is located as requirements vary depending on the user; ensure signage indicates which side the transfer space is on.

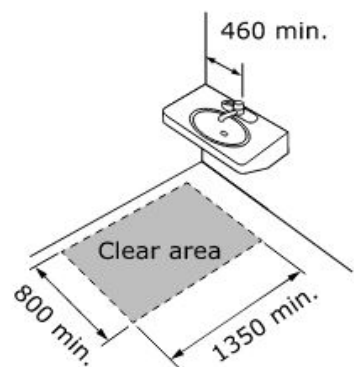


ACCESSIBLE WASHROOM SUPPLEMENTARY IMAGES

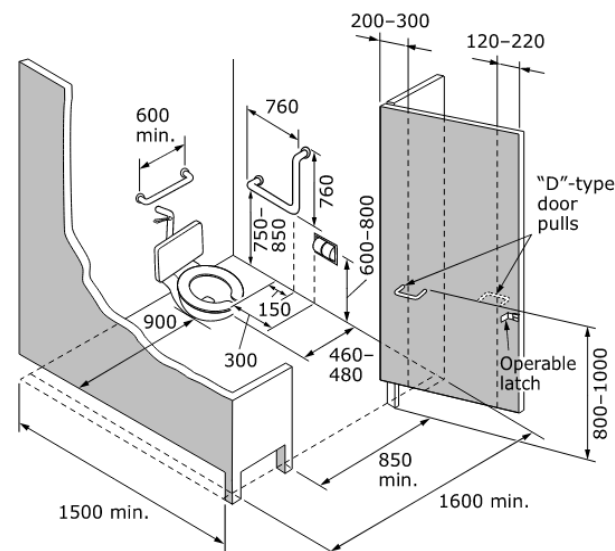


**Note:** All dimensions are in mm.

Toilet with Grab Bars

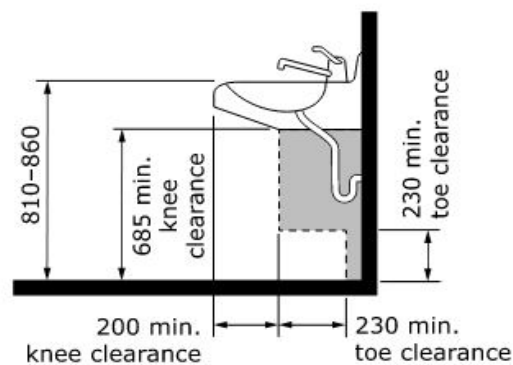


Sink Area

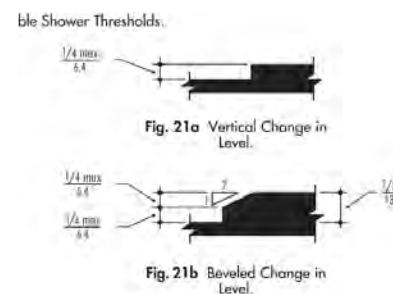


\*LPF BEST PRACTICE WHEELCHAIR TURNING SPACE IS 1700mm

Washroom



Sink Elevation



\*LPF BEST PRACTICE IS A LEVEL THRESHOLD

Threshold (maximum)

5.2.2 UNIVERSAL WASHROOMS

ACCESSORIES

MIRROR

- Shall be mounted with its bottom edge not more than 1000mm from the floor
- Shall be flush mounted to the wall and not tilted

SOAP DISPENSER/ HAND DRYER

- Should be located within 500mm of a person seated at the lavatory
- Shall have its dispensing point no higher than 1100mm
- Be operable with one hand

GRAB BARS

- Grab bars are to be slip-resistant with a diameter between 30mm & 40mm and have a space 35mm & 45mm between wall and grab bar
- Provide a 90° grab bar
- Provide one additional grab bar that is horizontal and mounted centered on rear wall; not less than 600mm long and mounted at the same height as the grab bar on the side wall (if toilet has tank it shall be mounted 100mm above tank)
- Ensure all grab bars are structurally supported

TOILET PAPER DISPENSER

- Shall be located such that the closest edge of the dispenser is 300mm from the front of the toilet and at a height between 600mm & 800mm from the floor
- LPF best practice recommends an open roll dispenser to reduce dexterity required to access tissue

TURNING RADIUS

- LPF recommends providing a 1700mm turning radius in all accessible washrooms to adhere to the new National Building Code that is anticipated to be released early next year

EMERGENCY CALL SYSTEM

- Activated by a control on the wall beside the toilet; this should be mounted so that it can be activated from a supine (fallen, lying on back) position
- Activates audible and visual signals within and outside of the washroom
- Tactile signage should be posted outside of the washroom with instructions for what to do in the event of an emergency

LAVATORY

- Shall be mounted with the centerline at least 460mm from a side wall with the top located between 810mm and 860mm from floor
- Knee clearance shall be centred on the lavatory at least 800 w x 200 d x 685mm h with an additional toe clearance of 800mm w x 230mm d x 230mm h
- Clear floor area should be centred on the lavatory at least 800mm x 1350mm, of which not more than 480mm may be under lavatory
- Insulate hot water and drain pipes or offset to the rear
- Faucet should be automatic or levered with off position angled to the front and not requiring continuous force to maintain water flow

TOILET

- Should have a seat height between 430mm and 485mm from the floor



- The toilet should have a clear transfer space at least 900mm wide x 1500mm long (measured from the edge of the toilet bowl)
- A back support is recommended for the toilet to reduce the chance of imbalance or injury due to leaning against exposed valves or pipes
- It is recommended that the toilet be automatically activated

#### DOOR

- Should have a power-assisted door opener that is capable of being unlocked from the outside

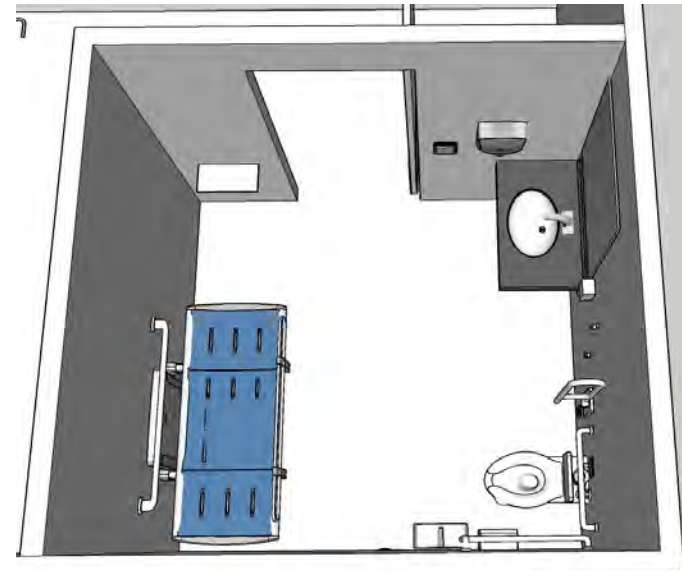
#### ACCESSORIES

- Provide a shelf or counter that is 200 x 400mm
- Include a coat hook mounted not more than 1200mm from the floor that does not protrude more than 40 mm from the wall

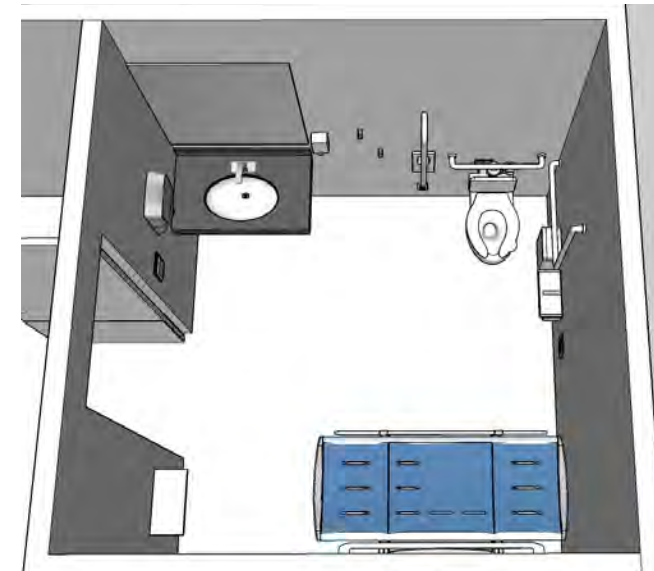
#### ADULT CHANGE TABLE

- Provide an adult change table that is at least 760 mm wide x 1830 mm long
- It should be height adjustable between 450 and 500 mm at the low range and between 850 and 900mm at the high range
- Provide a horizontal grab bar that is centered at the long dimension of the table and is at least 1200 mm long
- Provide a transfer space of 900 x 1500 mm adjacent to the bench
- Adult change tables are specifically for caregiver use. A ceiling track or mobile lift is necessary where adult change tables are provided to allow for individuals who require use of the change table to be safely transferred and lifted onto the table by a caregiver

### UNIVERSAL WASHROOM SUPPLEMENTARY IMAGES



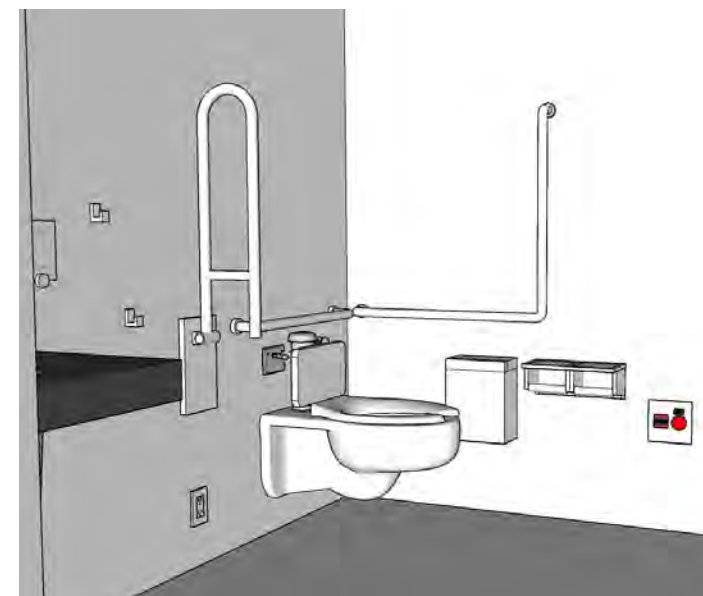
Universal Washroom Birdseye



Universal Washroom Birdseye



Universal Washroom Entry



Universal Washroom Toilet

### 5.2.3 ACCESSIBLE CHANGEROOMS

#### CHANGE BENCHES

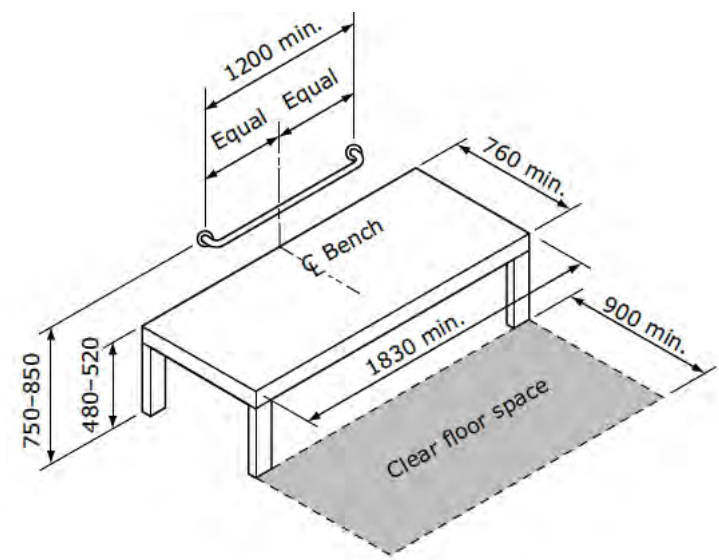
- Change benches shall be located on an accessible route and have an adjacent clear floor area of at least 900mm x length of the bench
- Change benches shall be at least 760mm wide x 1830mm long
- The top surface of a change bench shall be between 480 and 520mm from the floor
- Change benches shall have a horizontal grab bar that is centred on the long dimension of the bench, be at least 1200mm long, and be mounted at a height between 750 to 850mm from the floor
- Where possible, include a 920 x 1200mm clear space at the end of benches to allow for guide dogs and additional transfer space

#### INDIVIDUAL CHANGEROOMS

- Doors to an individual changeroom shall either swing out, or if it swings in, there shall be a clear floor space of at least 800 x 1350mm beyond the door swing within the room
- Clear floor space within an individual changeroom should be positioned for a parallel approach to the long side of the bench and have room for a 1700mm diameter turning circle
- If the change bench is not affixed to a wall, then back support shall be provided
- Back support shall be at least 1100mm in length, and extend from a point 50mm above the seat to a point 450mm above the seat



ACCESSIBLE CHANGEROOMS SUPPLEMENTARY IMAGES



Change Bench

5.2.4 ACCESSIBLE SHOWERS

ENCLOSURES

- Where enclosed shower rooms are provided, at least one shall be accessible
- Doors or curtains for shower stalls shall not obstruct the controls or the transfer space

SHOWERHEADS

- Accessible showers should include a hand-held type showerhead with hose at least 1800mm long
- Showerheads should allow for use in both a fixed and mounted position. Mounted position shall be vertically adjustable between 1200 and 2030 mm from the floor

ROLL-IN SHOWER STALLS

- Accessible showers should have a level or flush threshold
- Roll-in shower stalls shall have an interior clear area of at least 900 x 1500mm
- A clear transfer space of 900 x 1500mm is required in front of the roll-in shower stall, with the long dimension parallel to the shower stall

CONTROLS

- Faucets and controls for roll-in shower stalls shall be levered
- Faucets and controls shall be mounted on the centre of the back wall above the grab bar
- Faucets and controls shall be not more than 1200mm from the floor

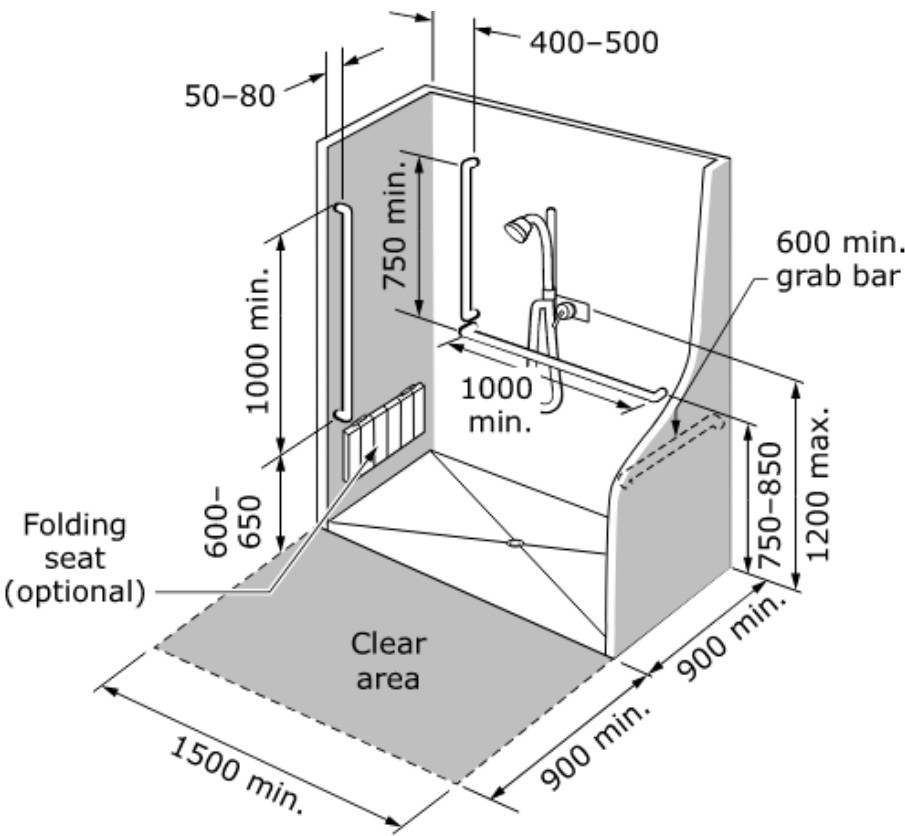
GRAB BARS

- A roll-in shower shall have four grab bars mounted as follows:
  1. One horizontally on a side wall at least 600mm long and between 750 and 850mm from the floor
  2. One vertically on the opposite side wall at least 1000mm long with the lower end between 600 and 650mm from the floor, and between 50 and 80mm from the adjacent clear floor area
  3. One horizontally on the back wall at least 1000mm long and between 750 and 850mm from the floor
  4. One vertically on the back wall with the lower edge between 50 and 60mm above the horizontal grab bar on the back wall, located between 400 and 500mm from the side wall on which the other vertical grab bar is mounted

SEAT

- In a roll-in shower stall, if a seat is provided it shall be on the side wall with the vertical grab bar
- If a seat is provided, it shall be at least 400mm wide extending the full depth of the stall, less a space for the shower curtain
- A seat shall have a height between 430mm and 485mm from the floor

ACCESSIBLE SHOWERS SUPPLEMENTARY IMAGES



Roll-in Shower Stall

5.2.5 NATATORIUM

SWIMMING POOLS

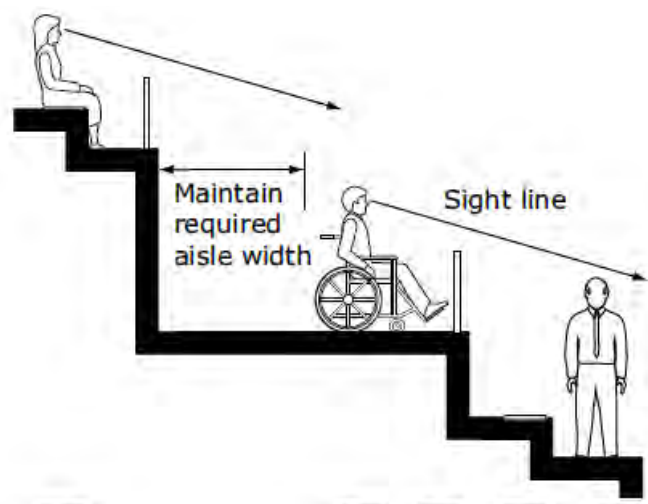
- At least two accessible entrances shall be provided for swimming pools, such as pool lifts or sloped entries
- A pool lift in addition to a ramped entry is recommended, but these means of access should not be provided in the same location of the pool
- Pool edges should be colour-contrasted and include tactile elements

VIEWING AREAS

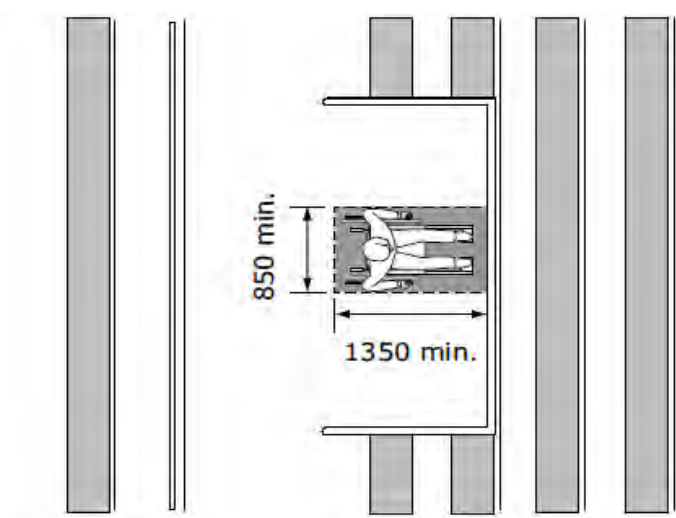
- Ensure a clear path of travel is maintained in the pool viewing area
- Ensure that the line of sight is not reduced or obstructed by guard rails, and is comparable to those for all viewing positions
- A viewing space for a person using a wheeled mobility device shall have a clear floor area of at least 850 x 1350mm and on a clear and level surface
- LPF best practice recommends that some change rooms with proximity to the natatorium entrance be dedicated as limited mobility. These can be standard sized, but provide additional grab bar support and backframing for said grab bars



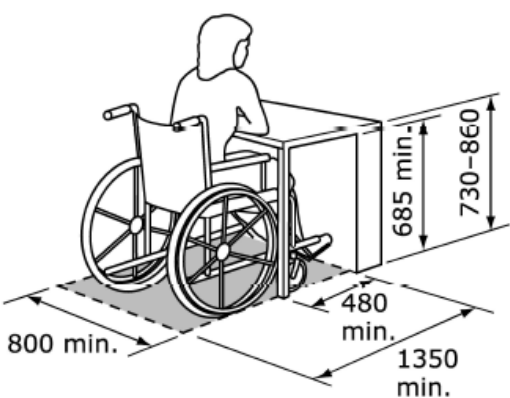
VIEWING AREAS SUPPLEMENTARY IMAGES



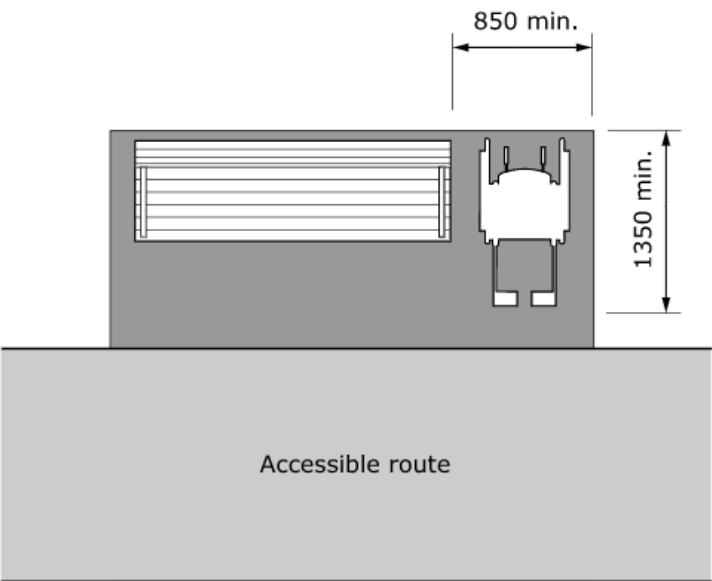
Viewing Spaces



COMMON SHARED SPACE SUPPLEMENTARY IMAGES



Dimensions



Rest Area

5.2.6 COMMON SHARED SPACE

- Seating space for persons using a wheeled mobility device, such as that provided at counters, tables or work surfaces, shall have a clear floor area not less than 800mm x 1350mm and adequate manoeuvring space to approach it
- Forward approach for seating at tables and work surfaces is preferred
- Table or counter surface shall be at a height between 730mm and 860mm from the floor
- Knee clearance for a forward approach shall be at least 800mm wide x 480mm deep x 685mm high (this may overlap the clear floor area by not more than 480mm)
- A bench or seat in a rest area shall be located adjacent to an accessible route

- Rest area ground or floor surface shall be level and contrast in colour and texture with the surrounding surface
- Benches or seats shall be stable, with a seat height between 430mm and 485mm from the floor
- A variety of seating options should be offered to suit different people, such as seats with and without armrests, and fixed and movable seats
- LPF best practice recommends providing a variety of seating options to suit different people, such as some with back rests, some with arm rests and some with both, and fixed and movable seats

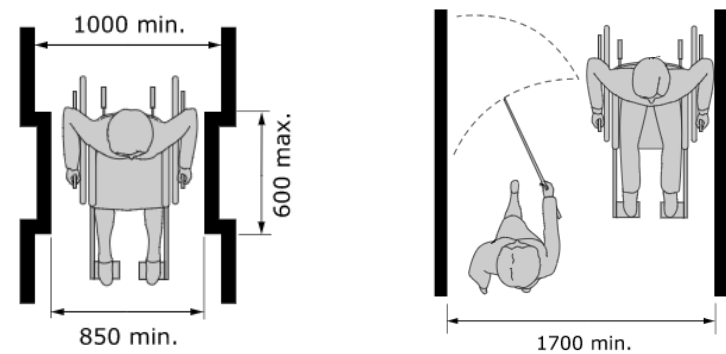
5.2.7 ACCESSIBLE ROUTES

- Clear width of accessible routes shall be at least 1000mm
- Were there are short indentations up to 600mm in length, it shall be at least 850mm
- For U-turns around an obstacle less than 1200mm wide, it shall be at least 1200mm
- For U-turns around an obstacle greater than 1200mm wide, it shall be at least 1000mm

- An accessible path of travel that is more than 30m long shall have a manoeuvring zone at least 1700mm wide for a length of 1700mm at intervals not exceeding 30m
- For long routes of travel, resting areas should be provided at frequent intervals
- LPF best practice suggests routes be at least 1700mm wide to allow persons using mobility aids to pass

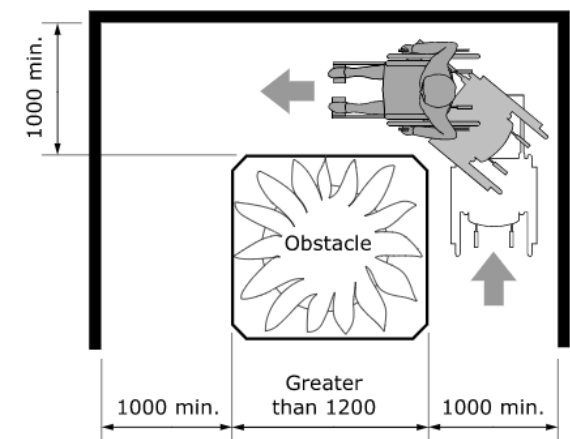


ACCESSIBLE ROUTE SUPPLEMENTARY IMAGES

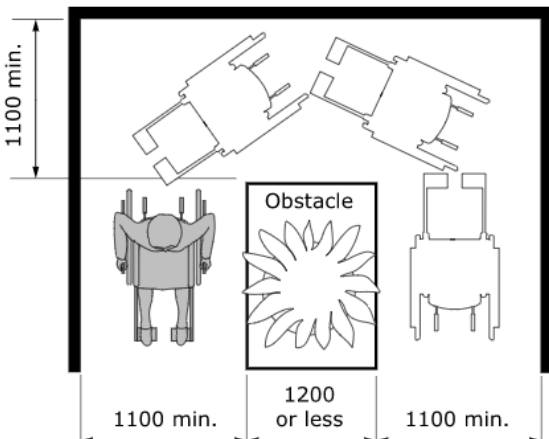


Obstacle Width

Clear Width (mobility aids)



U-Turn width with Large Obstacle



U-Turn width with Small Obstacle

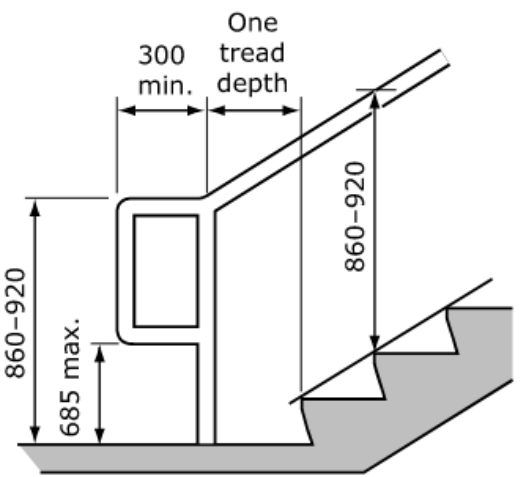
5.2.8 HANDRAILS ON STAIRS

- Continuous handrails are required for all stairs
- Ensure handrails have a graspable cross-section that is either:
  - Circular with an outside diameter of 30mm to 40mm; or
  - Elliptical with an outside perimeter between 100mm and 125mm with the largest cross-sectional dimension not more than 45mm
- Ensure handrails are at an accessible height of between 860mm to 920mm above the finished floor.
- Ensure handrails are colour-contrasted from the finished wall surface

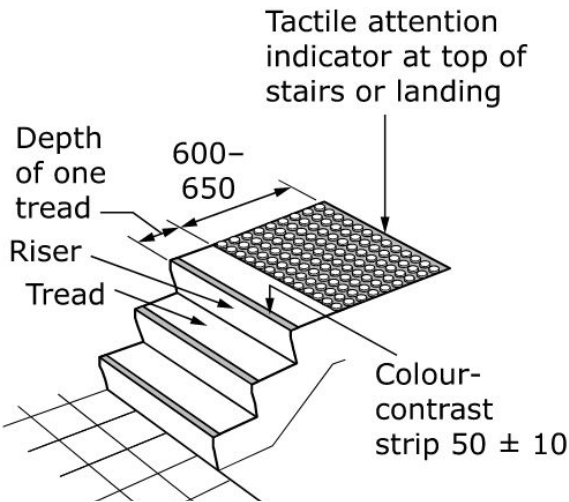
5.2.9 COLOUR CONTRASTED STRIP ON STAIRS

- Provide a horizontal strip 50 +/- 10 mm deep on each tread that is colour-contrasted with the tread; and riser and extends the full width of the tread

2.8 AND 2.9 SUPPLEMENTARY IMAGES



Handrail Dimensions



Nosing Strip



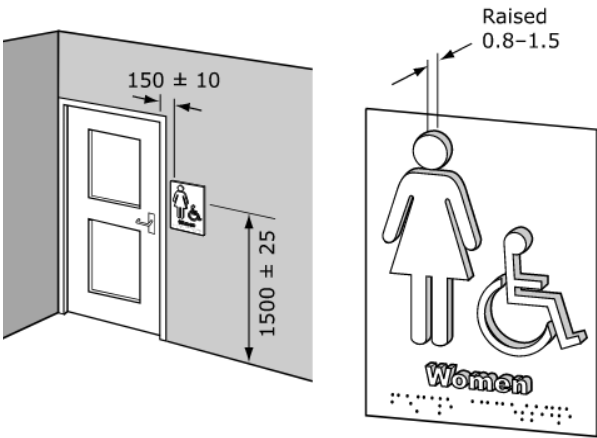
5.2.10 SIGNAGE AND WAYFINDING

- Signage shall be placed at decision-making points along routes of travel, including entrances and exits
- Signage should be positioned to avoid shadow areas and glare
- Signage should face direction of travel and avoid vertical wording
- Signage should be uniform; consistently shaped, coloured, and positioned; colour-contrasted with its background
- Characters should be sans serif and use arabic numbers
- Colour-contrast characters 70% with their background
- Tactile markings shall supplement the text of regulatory signs, warning signs and identification signs
- Tactile signage and signage with braille shall not be placed on doors, where possible
- Tactile signage should be mounted at a height with its horizontal centreline 1500 +/- 25mm a.f.f.
- Provide visible alarms so that at least one alarm is visible throughout any enclosed space; if more than one, ensure they are synchronized to flash in unison
- Audible alarms should be used in conjunction with visible alarms to warn people of emergencies
- Illumination on signs shall be at least 200 lx
- Denote accessible spaces with the international symbol of access or the forward movement symbol of accessibility
- Include blade style signage to assist with locating critical destinations such as washrooms/changerooms, accessible facilities, and elevators

SIGNAGE AND WAYFINDING SUPPLEMENTARY IMAGES



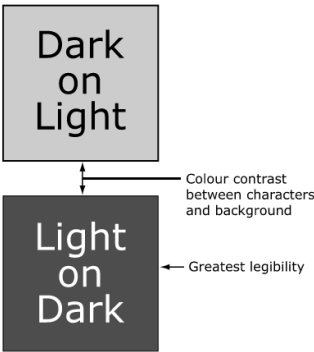
Forward Movement  
Symbol of Access



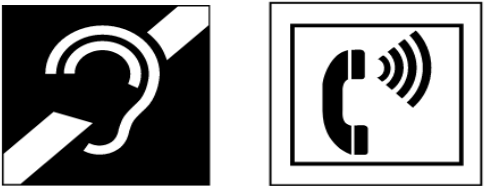
Washroom Signage

Minimum character height, mm	Maximum viewing distance, mm
25	750
50	1500
75	2250
100	3000
150	4500
200	6000
250	7500
300	9000

Character Height Relative to  
Viewing Distance



Legibility of Characters



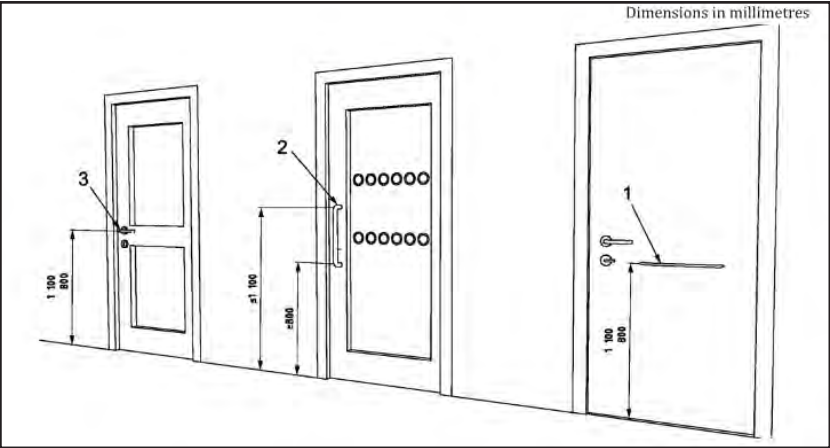
Symbols of Accessibiity for those  
Hard of Hearing



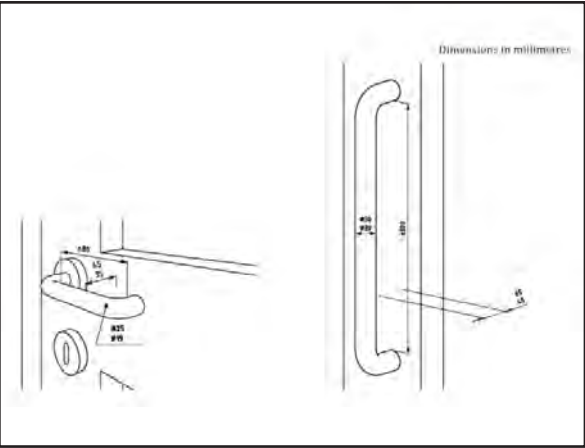
### 5.2.11 INTERIOR DOORS

- Doorways should be at least 850mm (915 clear frame opening) clear from face of door in open position
- Doors and frames should visually contrast with their background and surrounding walls
- Handles, pulls, latches & locks shall be mounted between 900mm and 1100mm
- Doors along the interior path of travel should not require more than 22N of force to push or pull open
- U-shaped levers/ push-pull are preferred over knob and thumb latch handles (not appropriate)
- Ensure 600mm on pull (hinge) side and 300mm on push side of door; measured at latch edge from door opening
- Lever handles should be between 19mm and 25mm in diameter; “D” handles are preferred and located at a height between 800mm and 1100mm
- LPF best practice recommends providing kick plates on all accessible doors to prevent damage from wheelchairs, etc.

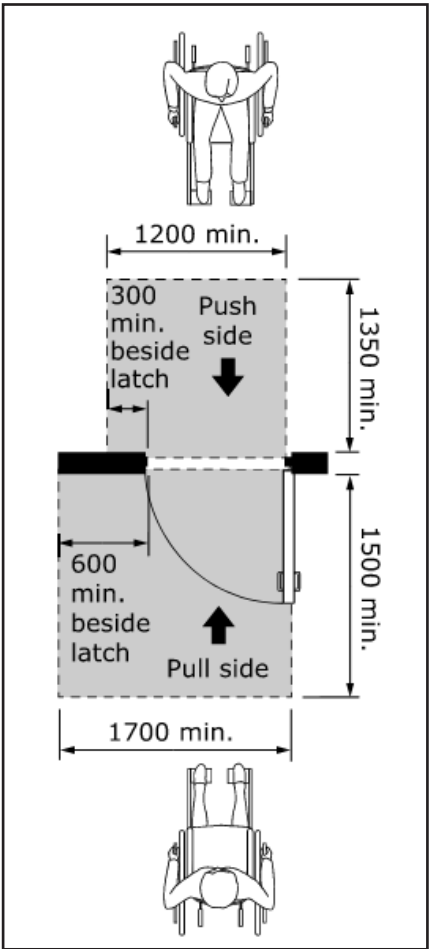
### INTERIOR DOOR SUPPLEMENTARY IMAGES



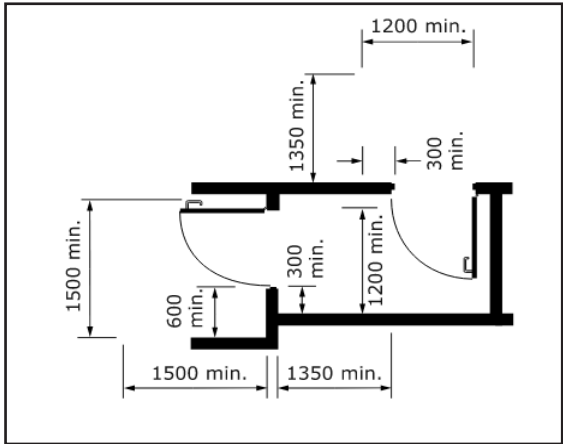
Handle Dimensions



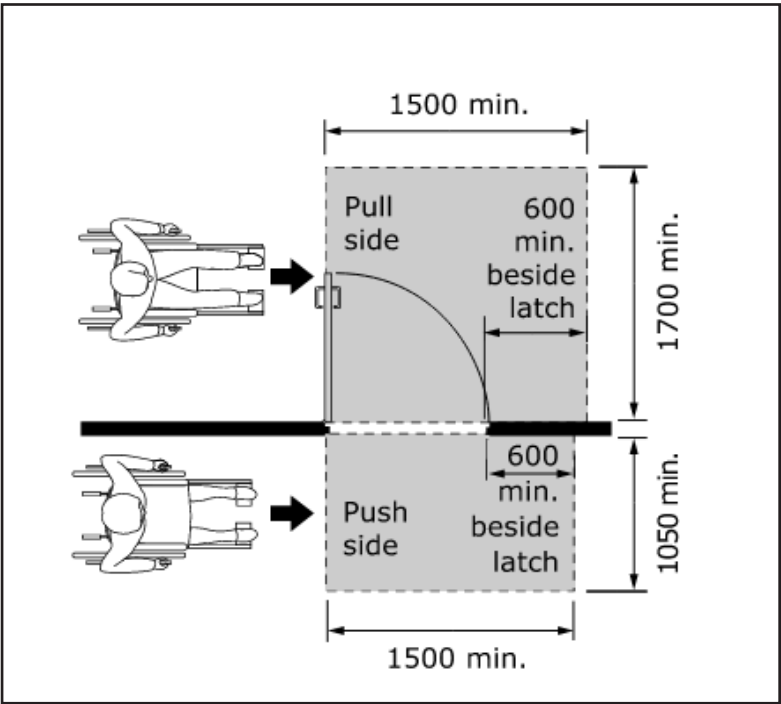
Handle Depth



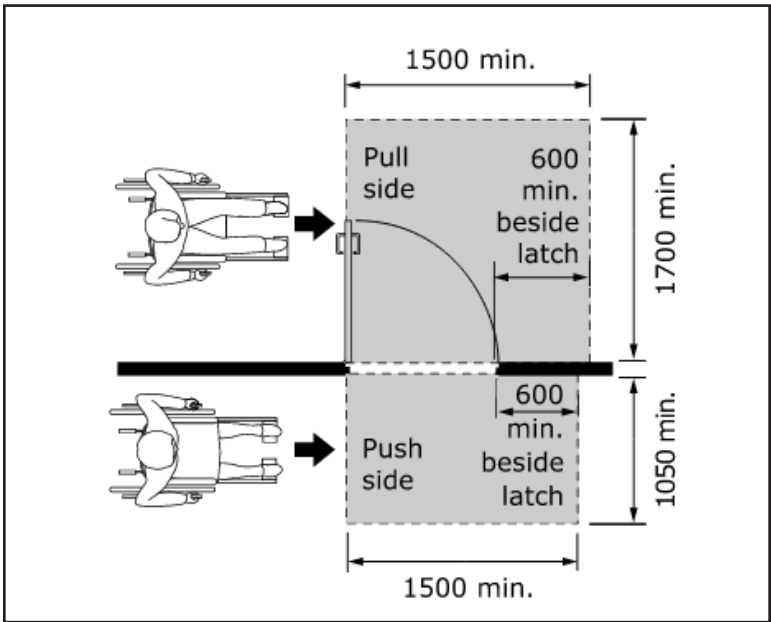
Push/ Pull



Clearances



Hinge Side Approach



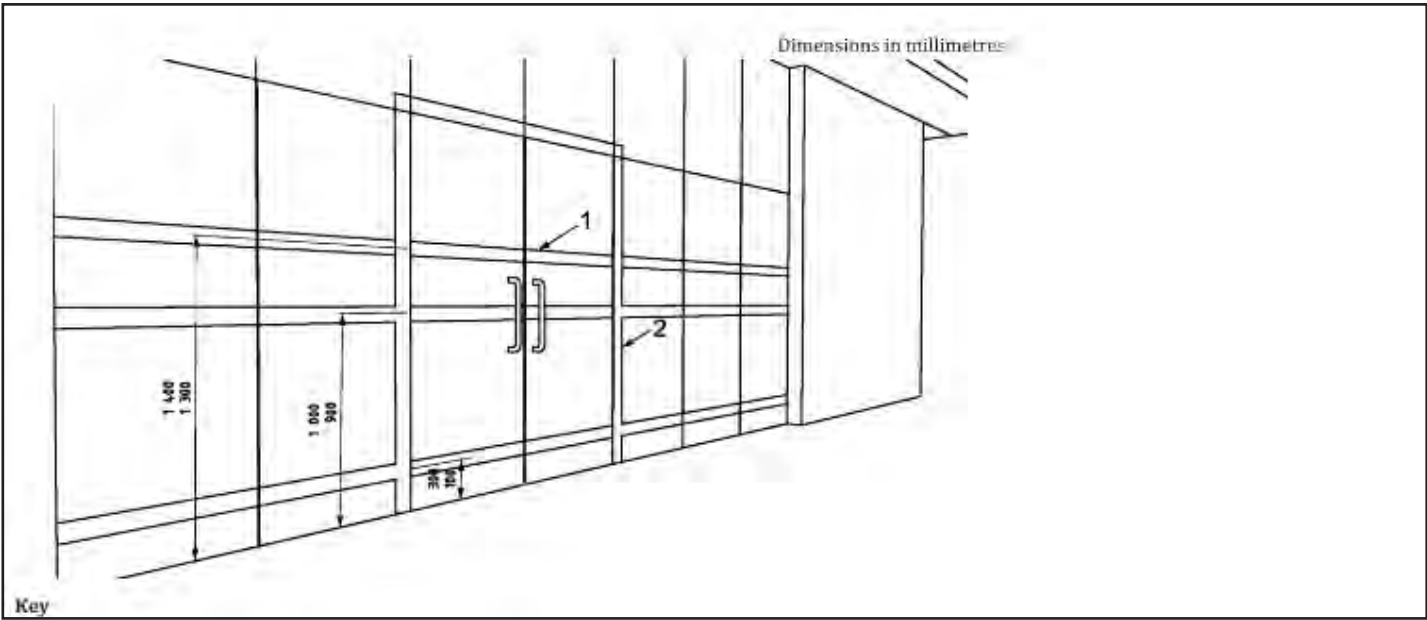
Hinge Edge Approach



5.2.12 GLAZING FILM

- Glazed walls (or fully glazed doors) shall be clearly marked with visual indicators of at least 50mm (100mm preferable) in height with a luminance contrast of 30-45% to the background and be placed just below eye level at a height of 1350mm to 1500mm above floor level
- The glazing strip should run the entire width of the glass
- An additional visual indicator placed at a height of 100mm to 300mm is recommended

GLAZING FILM SUPPLEMENTARY IMAGES



5.2.13 ADDITIONAL RECOMMENDATIONS

CONTRAST

- Ensure floor, floor base, walls and ceiling have colour contrast between materials
- Door and frame shall be contrasted with adjacent wall

ILLUMINATION

- Provide adequate lighting throughout exterior of facility on passenger paths for safety
- Provide proper lighting levels throughout facility to safely perform tasks and move throughout space



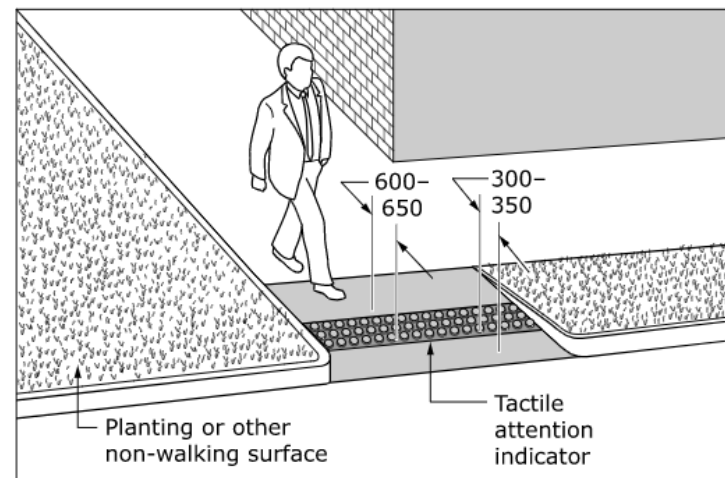
## 5.3 EXTERIOR FACILITIES

### 5.3.1 ACCESSIBLE ROUTE

- Clear width of an accessible pedestrian route shall be at least 1600mm; or where adjacent to a curb ramp, at least 1350mm
- Shall have a firm surface such as asphalt or concrete
- Provide contrasting surface directly adjacent to accessible route (this can be accomplished by landscaping features such as grass or an alternative textured material)
- Protrusions from buildings, such as gas meters, stand pipes etc. should be cane detectable and colourcontrasted from surroundings
- Route shall be well drained to prevent accumulation of ice and water
- When path is immediately adjacent to a vertical drop, edge protection or handrails shall be provided
- Bollards are recommended in areas where it is possible for vehicles to enter pedestrian routes
- Persons with a vision impairment rely on straight paths for their way-finding needs, accessible paths should be designed to be as straight as possible
- An accessible route that is shared with other users shall be delineated or separated by separations, curbs, bollards, or other physical means
- Designate the separate routes by signage
- Illumination along a pedestrian route shall be continuous and not create any dark or shadow

areas; have light standards located off the pedestrian route or space, but adjacent to it and illuminate components along the route such as ramps, rest areas, stairs, to at least 50 lx at ground level

### ACCESSIBLE ROUTE SUPPLEMENTARY IMAGES



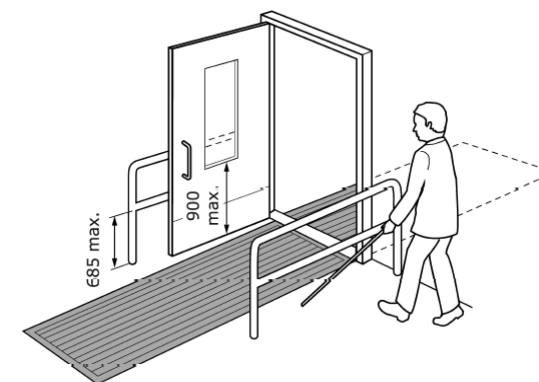
### Curb Ramp

### 5.3.2 ENTRY/EXIT DOORS

- Door closers shall be adjusted so that the door will take 3s or more to move from an open position of 90 degrees to a semi-closed position of approx. 12 degrees
- If door requires over 38N of force to open, a power-assisted opener should be considered
- Controls should be located on a route of travel and adjacent to a clear floor area, 800mm x 1350mm clear of door swing but no more than 1500mm from it

- Pads should be operated by touching or approaching in close proximity any part of the surface with a fist, arm or foot; operable from height between 150mm and 300mm as well as 900mm and 100mm above floor and be identified with international symbol of access
- Distance between 2 swinging doors in a series shall be 1350mm plus width of any door swinging into the space
- Thresholds should not be more than 13mm high; where over 6mm high, be bevelled at a slope not steeper than a ratio of 1:2 (50%)

### EXTERIOR/ENTRY DOOR SUPPLEMENTARY IMAGES



Note: All dimensions are in mm.

### Automatic Opener Identification

### 5.3.5 PEDESTRIAN PICK-UP/ DROP-OFF ZONE

- Ensure passenger pick-up/drop off zones are located on a firm, level and slip-resistant ground surface that is paved
- Ensure these areas are separated from the pedestrian walkways with either a curb and curb ramp, or a colour-contrasted ground surface with tactile attention surface indicators
- Ensure these zones are at least 1500mm wide and 7000mm long
- Ensure these zones can accommodate side-access vans and contain a height clearance from the ground surface to the underside of any ceiling structure or hanging object of at least 3000mm

### 5.3.6 WASTE RECEPTACLES, RECYCLING BINS

- Where provided, locate adjacent to an accessible route
- Securely fasten to the ground, post or wall
- Ensure opening or lid is not higher than 1060mm from the ground
- Provide a clear ground area of at least 800mm x 1350mm at the opening/ lid
- Ensure it is cane detectable to the ground and colour-contrasted with its surroundings



A swimmer in a pool, seen from behind, wearing a swim cap and goggles, with water droplets on their back. The swimmer is in a pool with lane lines, and the background is a blurred view of the pool's interior with bright lights.

**06**

**AQUATICS  
REPORT**



# AQUATICS PROGRAM NARRATIVE

Prepared By: Water Technology Inc  
Author: Ryan Nachreiner

Date: September 9, 2022

## DESIGN CONFIRMATION

The purpose of this document is to confirm the current design decisions and detail the established design characteristics of the project aquatic amenities. Decisions have been established through communication with the project owners and input gathering from stakeholders.

## 6.0 OVERVIEW

The aquatic facility will contain three indoor pools and an indoor waterslide tower with two slide flumes. The indoor pools will be a competition pool, adult whirlpool, and a leisure pool located within a shared natatorium. The competition pool will have ten lap lanes with a 25-metre course length. The competition pool will focus primarily on swim training and competition. The leisure pool will accommodate activities and events focused on leisure, entertainment, fitness, and general recreation. The leisure pool will contain a zero-depth entry area, a lazy river, a fitness/wellness area, lap lanes, and underwater social benches. The fitness/wellness area of the leisure pool is intended primarily for aquatic therapy and fitness/

exercise courses but will also be utilized for multi-purpose recreational programs. The lap lane area will contain three short lap lanes, approximately 18.7 meters in length. Adjacent to the lazy river in the leisure pool will be a waterslide tower with two body flume waterslides.

Both waterslides will end in a runout termination on the pool deck. The whirlpool will allow relaxation in hot water with underwater benches, turbulence jets, and be accessed with a ramp entry and stair entry.

### COMPETITION POOL

Water Surface Area:	625m2
Dimensions:	25m x 25m
Minimum Depth:	Varies: 0.0m to 2.0m
Maximum Depth:	3.5m
Water Temperature:	80°F / 26.6°C
Turnover Time:	240 minutes
Surface Water Removal:	Grated Deck Level Gutter
Filtration Method:	Perlite Regenerative Media
Primary Disinfection:	Sodium Hypochlorite
Secondary Disinfection:	Medium Pressure Ultraviolet

### COMPETITION POOL

Chemical Balance:	Carbon Dioxide
Features:	10m x 25m Movable Floor (2) 1-meter Springboards (10) Competition Starting Platforms

### LEISURE POOL

Water Surface Area:	483.5m2
Dimensions:	Freeform
Minimum Depth:	0.0m
Maximum Depth:	1.4m
Water Temperature:	86°F / 30°C
Turnover Time:	120 minutes
Surface Water Removal:	Grated Deck Level Gutter
Filtration Method:	Perlite Regenerative Media
Primary Disinfection:	Sodium Hypochlorite
Secondary Disinfection:	Medium Pressure Ultraviolet
Chemical Balance:	Carbon Dioxide

### LEISURE POOL

Features:	Interactive Spray - Vortex Cascade Loop Interactive Spray – Vortex Bobble No2 Interactive Spray – Ground Spray Geysers (2) Basketball Hoops River Propulsion Waterslides – 2 Flumes with Runout Terminations
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### WHIRLPOOL

Water Surface Area:	56.8m2
Dimensions:	Freeform
Minimum Depth:	1.1m
Maximum Depth:	1.1m
Water Temperature:	104°F / 40°C
Turnover Time:	15 minutes
Surface Water Removal:	Grated Deck Level Gutter
Filtration Method:	Perlite Regenerative Media
Primary Disinfection:	Sodium Hypochlorite
Secondary Disinfection:	Medium Pressure Ultraviolet
Chemical Balance:	Carbon Dioxide
Features:	Hydrotherapy Jet Bench Seating



# 6.1 POOL VESSELS

The Competition Pool will have interior dimensions of 25 meters length and 25 meters width, for a water surface area of 625m2. These dimensions will allow for ten short course lap lanes as well as ten cross course lap lanes. The maximum depth of the Competition Pool will be 3.5m and accommodate two 1-meter springboard diving stands. The shallow side of the pool will have a movable floor with a 25-meter by 10-meter dimension. The movable floor will have a minimum depth of zero meters and a maximum of 2.0 meters. The floor will operate with hydraulic pistons and a recess will be build in the pool vessel beneath the movable floor to allow the structure to sit flush with the stationary bottom of the pool when in the lowest position. The movable floor will have a trailing ramp connecting the moving section of floor with the stationary section of the pool. The slope of this ramp will adjust as the movable floor raises and lowers and will be designed to have a maximum slope of 1:3 when the floor is completely raised.

**Alternative:** Instead of a trailing ramp providing a transition from the movable floor to the remainder of the pool vessel, a bulkhead may also be used as a wall to prevent access beneath the movable floor when raised. A floating bulkhead would rest adjacent to the movable floor anytime the floor was raised above it’s deepest position and would provide a physical separation between the shallow side and deep side of the pool. When the movable floor is fully lowered, the bulkhead could be repositioned on the end of the pool to enable the full 25-meter lap lane course.

The Leisure Pool will have a water surface area of 483.5m2 with four primary pool zones: 1) zero depth entry area, 2) program/activity area, 3) lap lane/wellness area, and 4) lazy river. Starting at the zero-depth entry area, the pool floor slopes down at 1:15 to a depth of 0.6m, covering an area of approximately 150m2. Ramping down from the zero depth entry area, the program/activity area starts at a depth of 1.1m; sloping shallower to 0.9m and a wide stair entry on one side and sloping deeper to 1.3m on the other. An underwater bench provides a spot to rest and relax in the program/activity area. With an approximate water surface area of 117m2, the program/activity area can accommodate typical program classes of about 45 users. The program/activity area transitions to the lap lane/wellness area at a depth of 1.3m. The three lap lanes are 18.7m long with a maximum depth of 1.4m. With an area of approximately 118m2, the lap lane/wellness area can accommodate typical program classes of up to about 70 users. The lap lane/wellness area also includes two deck mounted basketball hoops. The lazy river has an approximate width of 2.0m with a constant depth of 1.1m. The river has a length of about 40m, and in addition to a fun and relaxing place to floating the moving current, may also be utilized for water walking and exercise.

The Whirlpool will have a water surface area of approximately 57m2 and consist of two main social areas with underwater bench seating. The benches will contain hydrotherapy jet returns with injected air for soothing, turbulent water. The Whirlpool seating will be capable of accommodating approximately 33 users. Access will be via a ramp entry and a stair entry.

The pools will be constructed with steel reinforced concrete. The design of the pools will be based on an assumed soil bearing capacity of 2,500 pounds per square foot.

# 6.2 POOL PERIMETER

The perimeter of the pools will be constructed as a deck-level gutter to collect surface water for removal from the pools and processing in the filtration and water treatment systems. Most of the contamination in a swimming pool resides on the surface of the water, and the surface water removal provided by the gutter system is essential to maintaining a high level of water quality. The gutters for both pools will be constructed with steel reinforced concrete and will be covered with PVC grating. The gutters will be bordered with ceramic tile on both sides of the grating, and a waterproofing compound will be applied to the interior of the gutters. The tile on the edge of the pool walls will be a C701 finger-grip nosing to provide an easy and convenient handhold. The back, or non-pool side, of the gutters will be flush with the pool deck and separated by a construction joint. The deck level gutters will provide an uninterrupted transition into and out of the pools from any location on the pool deck.

# 6.3 POOL FINISH

The interior finish of the pools will be fully ceramic tile. The tile color will be white, with markings, such as lane lines, a contrasting black or dark blue as selected by the owner. A contrasting 30mm tile band will mark all nosings of benches and stair treads.

In the Competition Pool, the pool floor lane markers will run uninterrupted for the primary 25-meter length and be constructed with black ceramic tile. Pool floor lane markers will be interrupted for the cross course 25-meter length and be constructed with dark blue ceramic tile.

Pool wall end targets, on all pool walls and for each lap lane, will be constructed with ceramic tile matching the floor lane maker tiles.

In the Leisure Pool, the interior walls (or common walls) and the “island” of the lazy river will rise approximately 25mm above the water surface and be surfaced with ceramic tile with color and pattern as selected by owner. The edges of the interior walls will be angled or beveled to discourage climbing on or over these surfaces.

Underwater edges and transitions will be indicated with black/dark contrasting lines of border tile. These areas involve the edges of stair treads and the pool floor slope transitions.

# 6.4 POOL DRAINS

Water will be partially removed from the pools through dual main drains located at the deepest locations of each pool vessel. Piping from the main drains will be connected to facilitate suction forces transferring from one drain to the other in the event of a blockage. All main drains will be VGBA approved prefabricated fiberglass sumps with PVC grate assemblies to minimize regular maintenance. All main drain sumps will contain hydrostatic relief valves as a precaution against the potential damages from high ground water levels. All main drain and pump suction assemblies will meet the requirements of the Virginia Graeme Baker Pool and Spa Safety Act. Main drains will be piped with an electronic control valve to allow for direct suction through the circulation pump to facilitate draining the pools and enhanced gutter performance.



## 6.5 POOL WATER RETURN

After passing through filtration, water treatment, and heating systems, pool water will be returned to the pools via evenly spaced return floor inlets to provide even distribution without creating turbulence on the water surface.

## 6.6 WATERSLIDES

The leisure pool system will incorporate the waterslides. From a single tower, two waterslide flumes will provide differential slide path experiences for riders. One flume will be enclosed and the other an open flume. The slide tower will be constructed with concrete in a spiral staircase design and the flumes will be manufactured with fiberglass. The water supplied to the waterslide will be from and integrated with the leisure pool.

## 6.7 SPRAYS AND FEATURES

In the zero-depth entry area of the Leisure Pool has a cluster of five field fabricated geysers and two interactive water sprays:

- Vortex Intl. – Cascade Loop
- Vortex Intl. – Bobble No2

## 6.8 POOL CIRCULATION AND PIPING

Water from the pool gutters will flow by gravity to surge tanks located in the pool mechanical room. The surge tanks will be designed as part of the structural foundation of the building. Within the pool mechanical room and in a pump pit below the static water level of the pools, flooded-suction three-phase centrifugal circulation pumps will draw a mixture of water from the surge tanks and the main drain sumps. The centrifugal circulation pumps will force water into the filtration system. Variable frequency drives will be installed on the circulation pumps to minimize energy consumption and optimize operation. The circulation systems will be designed to handle 100% of the required flow through either the gutters or the main drains. The pool piping for all pressure and gravity piping will be Schedule 80 PVC.

## 6.9 POOL FILTRATION

Pool water for the three pools will pass through pressure regenerative media filters to remove particles and contaminants. The regenerative media filters will filter pool water using perlite media and a regenerative “bump” cycle. This cycle mechanically separates media that successfully trapped dirt or debris from cleaner media with remaining filtration capacity. This process prolongs the life and filtration ability of the media cycle and greatly reduces the waste of water. The regenerative cycle will be fully automated to optimize the filtration performance and will be initiated by the operator’s command.

## 6.10 PRIMARY DISINFECTION

Chemical water treatment is necessary to disinfect and oxidize pollutants and contaminants in both indoor pools and the outdoor splash pad. A residual of free chlorine will be maintained with the automated injection of sodium hypochlorite, or liquid chlorine. Liquid chlorine will be stored in a dedicated chlorine chemical room and injected into the circulation systems with peristaltic pumps at the direction of the chemical controller.

## 6.11 SUPPLEMENTARY SANITATION

The primary disinfection chemical is necessary to disinfect and oxidize contaminants and maintain a residual throughout all areas of the pool water. However, it is almost impossible for even strong oxidizers to completely remove all bacteria and pathogens from a busy, crowded pool. Further, chloramines and disinfection byproducts, a result of the oxidation process, are also present in pool water and increase as bather load increases. Exposure to ultraviolet light inactivates biological contaminants and reduces noxious chloramines. As a secondary means of water treatment, the pool and splash pad water will pass through medium pressure ultraviolet light chambers. In these chambers, ultraviolet bulbs will flood the passing water with ultraviolet radiation to kill bacteria and breakdown contaminants.

## 6.12 CHEMICAL BALANCE

With the addition of disinfection chemicals and the impact of dirt and contaminants from the environment and users’ bodies the pH level of the pool water is anticipated to rise. Carbon dioxide will be injected into the circulation system through solenoid valves and a venturi controlled by the automated chemical controller.

Periodically, muriatic acid, or hydrochloric acid, may need to be added to the pool water to decrease alkalinity, and/or decrease the pH level. Other pool chemicals will, at times, also likely be added to the pool water. These chemicals are commonly sodium bicarbonate (to increase alkalinity, also known as Baking Soda), sodium carbonate (to increase pH, also known as Soda Ash), calcium chloride (to increase calcium hardness), sodium thiosulfate (to rapidly decrease chlorine levels), clarifiers, sequestering agents, algaecides, and enzymes. These chemicals will be added manually on an as-needed basis.

## 6.13 CHEMICAL CONTROL

Automated chemical controllers will monitor the pool water chemistry for each body of water. The controllers will measure Oxidation Reduction Potential (ORP), Parts Per Million of Free Chlorine (PPM), and pH of the pool water. The automated controllers will direct the addition and feed rate of disinfection and balancing chemicals through the control of the power to the peristaltic pumps for the sodium hypochlorite and solenoid valves for carbon dioxide.



## 6.14 POOL HEATING

The pools will be heated using high efficiency, non-condensing, gas-fired pool water heaters with cupro-nickel tube heat exchangers. Water temperatures for each body of water is anticipated to be maintained at the following:

- Competition Pool: 80°F / 26.6°C
- Leisure Pool: 86°F / 30°C
- Whirlpool: 104°F / 40°C

## 6.15 POOL ENTRY/EXIT

In the Competition Pool, four pool ladders provide a means of entry and exit from the pool. Each ladder will be located near a corner of the pool on the side of the primary lap lanes. All pool ladders have steps recessed into the pool wall to prevent interference with lap swimming or other pool activities. The grabrails on each ladder will be anchored into the pool deck, be built with 316L stainless steel or greater, and will have an outside diameter of 1.5 inches.

In the Leisure Pool, a stair entry will provide convenience access into the program/activity area. The stair handrails will be anchored into the pool deck, be built with 316L stainless steel or greater, and will have an outside diameter of 1.5 inches.

Pool ladders will also be in the lap lane/wellness area and have steps recessed into the pool wall. The grabrails on each ladder will be anchor into the pool deck, be built with 316L stainless steel or greater, and will have an outside diameter of 1.5 inches.

Both the Competition Pool and Leisure Pool will comply with ADA regulations for accessible means of entry and exit. The pools will utilize chairlifts capable of lifting users into and out of the pools and will be operable without assistance.

The Whirlpool will have a barrier free ramp entry for an accessible means of entry and exit. The ramp will have 316L stainless steel handrails on both sides. The whirlpool will also have a stair entry with 316L stainless steel handrails.

## 6.17 STARTING PLATFORMS

The deep end of the Competition Pool will have starting platforms for swim starts. The platforms, or blocks, will be 24 inches by 32 inches with a 10-degree slope. Starting platforms will lock into anchors imbedded into the pool deck and be removable for storage. Each stating platform will have horizontal backstroke bars.

## 6.18 BACKSTROKE FLAGS AND STANCHIONS

The lap pool will have two backstroke flag lines overhead on each end of the lap lanes. The backstroke flag stanchions will be 316L stainless steel and 1.9 inch outside diameter.

## 6.19 LAP LANE DIVIDERS

The lap pool will have 6-inch diameter wave-quelling lap lane dividers separating each lap lane at the water surface. Lap lane dividers will anchor using “flip-up” anchors integrated into the gutter grating.

## 6.20 SCOREBOARD AND TIMING SYSTEM

The natatorium will hold an 10-lane numeric scoreboard for electronic timing of practice pacing, instruction, and competitive swimming events. The scoreboard will integrate with an in-deck timing system with conduit and cables installed in the pool deck. The timing system will involve a starting system, touchpads, relay judging platforms, control console, cabling and connections, and associated software.



architecture + urban planning





The background of the entire slide is a light blue textured surface with a pattern resembling water ripples or a fine mesh. On the left side, there are three interlocking gears. The top gear is a light, almost white color. The bottom-left gear is a medium blue color. The bottom-right gear is a darker blue color. They are arranged in a triangular pattern, with the top gear meshing with the other two.

07

# **STRUCTURAL REPORT**



# STRUCTURAL SCOPE REPORT

Prepared By: RJC Engineers  
Author: Frank Cavaliere

Date: September, 2022

## 7.1 GENERAL

The Cold Lake Energy & Aquatic Centre is an expansion to the existing multi-use recreation centre. Throughout the design process, the goal will be to develop economical structural solutions, fully integrated with other building design disciplines. To help contribute to the proposed sustainable design goals of the project, structural building systems will incorporate sustainable design features where cost effective.

## 7.2 DESIGN ASSUMPTIONS

The structural components of the Cold Lake Energy & Aquatic Centre project will be designed in accordance with the requirements of the National Building Code – 2019 Alberta Edition and all referenced documents. The structural systems will be capable of sustaining the minimum loading requirements of the Building Code.

The proposed design floor superimposed live loadings for the new building are as follows:

### LIVE LOADS - MAIN FLOOR

Main Floor	4.8 kPa
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### LIVE LOADS - SECOND FLOOR

Office / Shell Space	2.4 kPa
Stairs & Corridor	4.8 kPa
Mechanical Room	3.6 kPa Minimum

Mechanical equipment is proposed to be situated primarily within the basement and in the second floor mechanical room. Mechanical rooms will be designed for the minimum Building Code prescribed live loads noted above or the weight of individual mechanical equipment, whichever governs.

Roof loads will consider the dead load of the selected roofing system and superimposed live loads due to snow and rain as prescribed by the National Building Code - 2019 Alberta Edition. Where changes in roof elevation occur, snow drifting will be considered in the structural design. Roof structures will be designed for the prescribed one-day rain accumulation of water over the entire roof surface, including the effects of ponding at roof drain locations.

As required by the Building Code, lateral support for wind loads shall be incorporated into the structural design of the Cold Lake Energy & Aquatic Centre. Lateral support for seismic loads will be provided based on the results of the site-specific geotechnical investigation, in particular the soils classification for site.

Climatic design parameters for the Cold Lake Energy & Aquatic Centre, as prescribed by the National Building Code - 2019 Alberta Edition are as follows:

### SNOW LOADS

SS	1.7 kPa
SR	0.1 kPa
+ Snow Accumulation	

### ONE DAY RAIN

1/50	81 mm
------	-------

### SEISMIC

Sa (0.2)	0.055
Sa (0.5)	0.034
Sa (1.0)	0.019
Sa (2.0)	0.078

### WIND

q 1/10	0.29 kPa
q 1/50	0.38 kPa

## 7.3 IMPORTANCE CATEGORY

As required by the National Building Code - 2019 Alberta Edition, all buildings shall be assigned an Importance Category. Based on the anticipated use and function of the Cold Lake Energy & Aquatic Centre, the building will be assigned a Normal Importance category for the purpose of structural design of the building elements. Where appropriate, Building Code prescribed force modification factors will be applied to the structural design loads.

## 7.4 FOUNDATIONS

A site-specific geotechnical investigation report is required for the Cold Lake Energy & Aquatic Centre. The foundations design will be based upon the recommendations of the site-specific geotechnical investigation. At this time, it is expected that piles will be used to support a perimeter grade beam and all main building columns. Pool basins may be supported on either structural slabs on a grid of piles or directly on subgrade soils as a slab-on-grade depending upon the outcome of the geotechnical investigation. Where the new structure abuts the existing recreation centre, a cantilever foundation system will be utilized in order to achieve structural support immediately adjacent to the existing structure while not compromising its current foundations.

The suspended main floor slab over the basement is proposed to be constructed with a cast-in-place concrete structural slab. The pool basins will be backfilled with a large amount of granular fill and so in order to mitigate against excessive floor deflections a structural concrete slab-on-grade will be considered in those areas. Where the main floor is near native soils a typical grade-supported slab can be used.



## 7.5 SUPERSTRUCTURE

Due to Building Code requirements, the primary structural framing of the building will consist of non-combustible construction. Structural steel will be used for the building superstructure of the Cold Lake Energy & Aquatic Centre. To accommodate the functional desire to provide a column free structure over the pool basins, long span steel trusses are proposed, consisting of either open web steel joists or fabricated trusses spanning to columns at the perimeter of the natatorium.

The second storey office / shell space and mechanical room will be framed with structural steel beams and columns. Market conditions will determine whether the primary structural floor and roof members will be open web steel joists or rolled wide flange beams, with consideration for both price and availability.

To resist lateral forces due to wind and earthquake, steel braces will be located with the superstructure to suit the building architecture. Additionally, structural steel girts will be located as necessary to laterally support walls against secondary wind loads applied to exterior walls.

## 7.6 SUSTAINABLE DESIGN

In order to contribute to the proposed sustainable design goals of the project, structural building systems will incorporate the following sustainable design features.

High volume fly ash will be utilized for all cast-in-place concrete elements, including foundations of all new building additions. High volume fly ash replaces a portion of the Portland cement in concrete with fly ash, a waste product of coal fired power generation. Replacing a portion of cement with fly ash reduces the embodied energy of the concrete, diverts the fly ash from landfills, and decreases the greenhouse gas emissions generated by cement production.

At present, a minimum of 40% flyash replacement is proposed for all concrete foundation elements, including piles, foundation walls, and grade supported slabs. A flyash replacement level of 30% is proposed for all suspended concrete slabs, including concrete columns. From recent construction experience, the flyash replacement rates proposed can be achieved with minimal impact on construction schedule and project cost.

In addition, all steel utilized in the construction of the building will be specified with a high recycled content. Both reinforcing steel used in concrete construction, and structural steel framing members contain high recycled content and will contribute to the sustainable goals of the project.





08

**MECHANICAL  
REPORT**



# MECHANICAL CONCEPT DESIGN REPORT

Prepared By: Arrow Engineering  
Author: Bill Bartelds

Date: September, 2022

## 8.1 GENERAL

This report describes the mechanical systems to be installed for the new Cold Lake Aquatics Facility for The City of Cold Lake, Alberta.

The mechanical systems described within this report, have been selected to provide a high level of occupant comfort and convenience, with consideration being given to initial capital costs, operating costs, reliability, maintenance, and good engineering practice.

The mechanical systems being considered at this time are based on the latest information on the building design that has been received to date. Should deviations be required as necessitated by more up-to-date information and/or by design calculations or other factors, such changes will be incorporated into the final contract documents.

The mechanical systems will comply with the Alberta Building Code and all applicable Municipal Codes where practical. It is anticipated that the mechanical systems for the project will be of a commercial quality throughout.

## 8.2 DESIGN CRITERIA

The Cold Lake Aquatics will be provided with tempered and dehumidified air to maintain the space temperatures outlined below.

The outside design conditions are:

Winter	-35°C Dry Bulb (2½% variance)
Summer	+28°C Dry Bulb, +19°C Wet Bulb (2½% variance)

The inside design conditions for all air conditioned areas are:

Winter	21°C minimum
Summer	23°C maximum

The inside design conditions for all non-conditioned areas are:

Winter	20°C minimum
Summer	Summer indoor temperatures will fluctuate with outdoor air temperatures

All mechanical systems will be designed and installed in accordance with the requirements of the latest adopted editions and revisions of the applicable codes and standards in effect for building construction in Alberta, and with specific owner requirements. Such standards include those published by the following organizations.

AABC	American Air Balance Council
AMCA	Air Moving and Conditioning Association
ANSI	American National Standard Institute
ARI	Air conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASTM	American Society for Testing and Materials
CSA	Canadian Standards Association
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NBC	National Building Code – Alberta Edition
NFC	National Fire Code
APC	Alberta Plumbing Code
NEC	National Research Council of Canada
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association Inc.
ULC	Underwriter’s Laboratories of Canada

## 8.3 SUSTAINABLE DESIGN

The energy usage of this building will be the result of many various factors of the building design and operation. The main components that affect energy usage are the building envelope design, lighting design, efficiency of the mechanical and electrical systems installed, hours of operation for the complex and finally how the building operators actually control the building energy usage.

Energy efficiency will be considered in the selection of all new mechanical and equipment systems. The mechanical standards of the ASHRAE Standard 90.1 Energy Efficient Design of New Buildings and the Model National Energy Code of Canada will be reviewed in relation to the proposed mechanical systems for the building.

The design team will closely work with the Owner during the design development stage of the project to establish the extent of the energy savings equipment and systems controls that can be effectively and justifiably implemented. It is currently anticipated that energy efficient systems that can demonstrate a reasonable payback would be implemented in this project.

Carbon dioxide (CO2) sensors will be located at the occupant level and will modulate the outdoor air dampers on the air systems, providing sufficient outdoor air ventilation as required when CO2 levels increase beyond a predetermined set point.



### 8.3.1 ENERGY MODEL

Energy Modeling analysis will be performed based on the schematic design documents made available at the time of performing the energy analysis. Any updates or changes to the design documents could impact the energy performance of the building

The energy simulations and projections of energy should not be used as a forecast of anticipated actual energy usage. This is due to the deviations in actual weather data versus the computer program simulated weather data, occupancy loads for the various parts of the building, and actual building mechanical and electrical systems operation by maintenance staff.

### 8.3.2 WATER EFFICIENCY

Consideration has been given to reducing the consumption of domestic water for the building with the use of low to ultra-low flow water closets, urinals, lavatories, sinks and showers

95% efficient, condensing type gas fired domestic water heaters will be utilized to minimize the gas usage for producing domestic hot water.

### 8.3.3 ENERGY EFFICIENCY

The design and selection of the air systems for this building was based on assumptions for hours of occupancy in the various parts of the building. Whenever possible, air systems will be de-energized during the unoccupied mode.

All of the new air systems will also be designed to be complete with “free cooling” economizer control. The outdoor damper section will be utilized on the air systems to ensure the ASHRAE Standard 62 ventilation requirements are always maintained and to vary the amount of additional outdoor air that will be required for free cooling mode.

Variable speed drives will be installed on the heating system pumps to allow the system to modulate with the building heating and cooling loads. All electric motors used for the pumps and fans utilized on this project, will be off the high efficiency type.

Outdoor temperature reset schedules will also be utilized for the heating system, which will allow for the heating water supply temperature to vary as required for the building loads.

The new building automation system controls, as a minimum, will be complete with the following energy savings features:

- Optimum start/stop (heat/cool), Optimum outside air
- Night setback control, Heating/Cooling plant optimization
- Time of day & holiday scheduling
- Outdoor air reset, Trend logging

## 8.4 LIFECYCLE ANALYSIS, OPERATIONS AND MAINTENANCE CONSIDERATIONS

The systems have been selected to provide a high level of occupant comfort and convenience, with consideration being given to initial capital costs, operating costs, reliability, maintenance, and good engineering practice.

To assist in prolonging the life expectancy of mechanical systems, only high quality materials and equipment will be used. It is expected that the life span of the proposed mechanical systems to be installed in the building will range from 25 – 40 years.

## 8.5 QUALITY ASSURANCE

All products provided to be CSA Approved, Canadian Underwriters’ Laboratory approved where applicable, and new, unless otherwise specified. If products specified are not CSA approved, obtain special approval from local regulatory authority.

Materials and equipment installed shall be new, full weight and of quality specified. Use same brand or manufacturer and model for each specific application.

Replace materials or workmanship below specified quality and relocate work wrongly placed. Install materials and equipment in a quality manner providing good workmanship by competent tradesmen

Provide the owner with a complete set of as built drawings that include all circuit numbers and tags, branch circuit conduits, major junction box locations, panel feeder runs and location of all electrical equipment.

Provide the owner with manuals that contain a complete copy of all manuals for systems equipment and hardware. Shop drawing data shall not be considered sufficient for future equipment operation.

Furnish a written guarantee stating that all work executed in this contract will be free from defective workmanship and materials for a period of one year from the date of substantial performance of work. The Contractor shall repair and replace any work which fails or becomes defective during the term of the guarantee/warranty, providing the operating and maintenance instructions have been complied with.

## 8.6 COORDINATION WITH DIVISION 26 WORK

Provide motors or mechanical equipment with voltage and phase characteristics as defined in Division 26. Prior to ordering any motor driven mechanical equipment, meet with the electrical trade and he shall confirm all electrical interface requirements with mechanical components.



# 8.7 HEATING, VENTILATION AND COOLING SYSTEM

## 8.7.1 HEATING SYSTEM

The heating system shall be sized to achieve, on a year round basis, the design criteria stated previously in this document.

The source of heat for the Natatorium, Administration Office, Shelf space, Lobby & CRU areas of the building will be by natural gas fired condensing boilers. The hot water heating boilers shall have fully modulating burners and shall be condensing type boilers and have a minimum of 94% thermal efficiency at all firing rates. The boilers will generate heating water at approximately 71 C, which will be circulated throughout the building to the various terminal heating units and air system coils. Each boiler will be complete with a circulating pump to maintain constant flow through the boiler when in operation and will serve as the primary heating water circuit.

There will be minimum of two secondary heating pumps, each sized to provide 100% back-up in the event of a failure of one of the pumps. The pumps shall have high efficiency motors controlled by variable frequency drives (VFDs) that will track the heating demand of the building to minimize power consumption. The pumps will circulate heating water to the various building terminal heating units and air system coils. The heating piping networks shall be designed as a two pipe reverse return system.

A glycol heating system will be installed to produce a 50/50 glycol heating water mixture for the various air system heating coils. Two (2) heating pumps will be provided for the glycol heating system, with each pump

having a variable speed drive. Each pump will each be sized for 100% of the flow requirements for the glycol system.

All exterior rooms shall be provided with hot water terminal units along the perimeter in the form of radiant ceiling panels or wall finned tube radiation and controlled by space temperature sensors

Balance and flow measuring devices shall be provided at locations where required to ensure design flow rates are achieved in all section of the piping system.

## 8.7.2 COOLING SYSTEM

The cooling system shall be sized to achieve on a year round basis the design criteria stated previously in this document. The Natatorium and Change Rooms portion of the facility will not be air conditioned.

Administration Office, Shelf space, Lobby & CRU areas will be cooled by using conditioned supply air from the air handling unit. The units shall be complete with direct expansion (DX) cooling coils with roof mounted air cooled refrigerant condensers. Refer to the Ventilation Systems portion of this report.

The air systems will also be designed so that when outdoor air temperatures are low enough the air systems will be capable of providing 100% free cooling.

IT Equipment Room and Communication room temperatures shall be maintained utilizing packaged style split system refrigerant cooling units with air cooled condensers on the roof.

## 8.7.3 VENTILATION SYSTEM

**Natatorium - air system AS-1 (25,060 l/s)**

The major concern for controlling the pool space humidity

levels is the evaporation from the pool surface. Pool ventilation criteria will be based on the latest ASHRAE Guidelines for Natatoriums and the ASHRAE Standard 62.1 Guidelines for the air change rate in pools. The air system has been designed to provide six air changes per hour for the pool.

A custom-built heat recovery air-handling unit will be installed for the pool. The units will be located in the mechanical room shall be complete with filters, glycol heating coil section, approx. 72% efficient heat wheel section for heat recovery, filter section, fans section, 100% outdoor air section, heating coil section and 100% fan exhaust air section. The air system will be designed for a minimum of 4 air changes of hour will be provided for the volume of the pool.

Supply air ductwork will be designed to provide even air distribution to the pool. Consideration will be given to the proper air movement so as not to create excessive air motion or drafts that would be uncomfortable for patrons (the air velocity at the pool surface should not exceed 30 fpm).

Air movement will also be directed onto the exterior glazing of the poll to prevent condensation from forming on the glazing and mullions.

The pool space pressurization will be designed to maintain a negative pressure relative to the outdoors. This will prevent moisture forming in the building envelope. A negative pressure gradient relative to the other building spaces will also be maintained in order to mitigate odors and humidity from entering these spaces from the pool.

**Change Locker Room - air system AS-2 (2990 l/s)**

No air conditioning will be provided for this space. The air handling unit will be a 100% outdoor air intake, constant volume, low pressure packaged system,

designed to heat, and filter all ventilation air supplied to the change rooms, washrooms, and tertiary areas.

The unit will be designed with an exhaust fan for exhausting for the locker room/washroom and a heat recovery system to recover the heat from the exhaust air stream and transfer back to the outdoor air intake air section of the unit. The unit will be designed to allow for free cooling economizer control so as to utilize the cooler outdoor air as free cooling.

Low pressure duct distribution will be utilized from the air system to duct mounted supply air grilles within each locker room. Air distribution patterns and velocities will be carefully reviewed to ensure an even distribution of air within the space.

The washrooms exhaust ventilation will meet the latest ASHRAE 62 standards and as a minimum will be exhausted at the rate of 12 air changes per hour.

Careful consideration will be given to the isolation of rotating equipment. Duct air velocities will be selected to meet acceptable sound levels as established by ASHRAE for this type of occupancy. Acoustic insulation will be utilized where required to prevent duct borne noise from traveling between rooms and reduce radiated sound levels.

**Lobby & Circulation & Adm. & CRUs AS-3 (10,700 l/s)**

The air handler will be designed as a variable volume supply air system with thermostatically controlled VAV boxes allowing for independent zone control of the various spaces. The air system will be pre-manufactured unit complete with a supply air fan, filters, glycol coil heat section, DX cooling coil and controls

Air conditioning in these air systems will comply with the latest energy efficiency standards as outlined by the 2017 National Energy Code and shall comply with



ASHRAE 90.1 energy standards. The air system will be pre-manufactured unit complete with a variable volume supply air and variable volume return air fans, filters, heating section, DX cooling coil and controls. The unit will be located in a mechanical room.

The air handling unit shall be designed and constructed to provide a free cooling mode by utilizing outdoor air to offset the building's cooling load when the ambient conditions are suitable.

Terminal heat transfer units in the form of radiant heating panel and cabinet unit heaters will be utilized as dictated by the various requirements of each area. All rooms containing an outside exposure will be provided with ceiling mounted radiant heating panels. All entrances will be heated with cabinet unit heaters

Medium pressure duct distribution will be utilized from the air system to variable volume boxes and then low velocity ductwork to the various supply air grilles. Air distribution patterns and velocities will be carefully reviewed to ensure an even distribution of air within the space

A room space sensor will modulate the air flow and heat to the room as required to maintain the room setpoint temperature.

CO2 sensors will be located at the occupant level and will modulate the outdoor air damper providing sufficient outdoor air ventilation as required when CO2 levels increase beyond a predetermined setpoint.

Careful consideration will be given to the isolation of rotating equipment. Duct velocities will be selected to meet acceptable sound levels as established by ASHRAE for this type of occupancy. Acoustic insulation will be utilized where required to prevent duct borne noise from traveling between rooms and reduce radiated sound levels.

#### **Pool Mechanical Room Air system AS-4 (1930 l/s)**

No air conditioning will be provided for this space. The air handling unit will be a 100% outdoor air intake, constant volume, low pressure packaged system, designed to heat, and filter all ventilation air supplied to the pool service rooms.

The unit will be designed with an exhaust fan for exhausting for the pool service room and a heat recovery system to recover the heat from the exhaust air stream and transfer back to the outdoor air intake air section of the unit.

Careful consideration will be given to the isolation of rotating equipment. Duct velocities will be selected to meet acceptable sound levels as established by ASHRAE for this type of occupancy. Acoustic insulation will be utilized where required to prevent duct borne noise from traveling between rooms and reduce radiated sound levels.

#### **General exhaust/transfer air fans**

Transfer air fans will be used to ventilate the various small storage rooms located in the Facility. Air will be transferred from the adjacent space through the room and back out again with ductwork and wall/ceiling grilles.

#### **Sanitary exhaust systems**

All washrooms and janitor rooms will be exhausted at minimum ventilation rate of 12 air changes per hour and will be ducted to back to the change/locker room air systems or to either roof, wall, or duct mounted exhaust fans.

## 8.8 PLUMBING SYSTEMS

### 8.8.1 NATURAL GAS

The new addition will be serviced with new meter will be sized to handle the natural gas load for the Facility with a gas service distribution pressure of 2 psig to all the gas fired equipment. Coordination with local gas utility company will be required for the gas service location to the gas meter location.

### 8.8.2 DOMESTIC HOT AND COLD WATER

The new addition will be serviced with a new water main which will provide domestic cold water as well as fire protection water for the new building.

All domestic water piping shall be installed to meet the Plumbing Codes. Cross contamination protection will be provided where necessary to meet the current requirements of the authority having jurisdiction, as well as the Alberta Plumbing Code. A hot and cold water piping system will be utilized for the distribution to all plumbing fixtures in the building.

All domestic water piping will be provided with isolation valves for groups of fixtures. These valves will be strategically located for maintenance and operating purposes. All individual fixtures will be complete with individual isolation valves.

Domestic hot water will be generated in the new Mechanical Room utilizing 95% efficient condensing gas fired domestic water heaters with storage tanks. A domestic hot water re-circulating pump and piping system will be used to ensure that there will be readily available hot water at all plumbing fixtures.

Cross contamination protection will be provided where

necessary to meet the current requirements of the authority having jurisdiction, as well as the National Plumbing Code.

### 8.8.3 SANITARY AND VENTING SYSTEM

The sanitary drainage and venting system will be installed to collect waste from washrooms and other plumbing fixtures throughout the facility. The collection of waste will be gravity drained to a new sanitary sewer line to the exterior of the building. Drainage lines will be sloped at a minimum of 1 percent.

The pool filtration tank backwash system may not be able to gravity drain to the sanitary system and will consist of a large underground lift station assembly, complete with sump tank, sump pumps c/w 100% backup capability, level controls and alarms.

### 8.8.4 STORM DRAINAGE

On all flat roof areas, roof drains and sloped roof gutter drains will collect the roof drainage with the interior rainwater leaders and splashed to grade.

### 8.8.5 PLUMBING FIXTURES

Plumbing fixtures will be selected from the products of manufacturers offering good quality commercial product. Low flow basins, low flow showers, single low flush water closets for Men's and Women's washrooms, ultra-low flush urinals, and low flow sinks shall be installed in the locations shown on the drawings. Other fixtures supplied shall include sinks, drinking fountains, floor drains and hose bibs.



The following outlines the plumbing fixture minimum flows that will be utilized.

Water Closets	6 litres per flush
Urinals	3.8 litres per flush
Lavatories	1.9 litres per minute
Showers	9.5 litres per minute
Sinks	8.3 litres per minte

The Battery operated, electronic flush valves and faucets will be utilized for the water closets, lavs and urinals.

## 8.9 FIRE PROTECTION SYSTEMS

The Mechanical fire protection systems in this building will consist of portable fire extinguishers and specifications for contractor designed automatic sprinkler systems.

An automatic wet sprinkler fire protection system will be provided throughout the building designed to light hazard in accordance with NFPA 13. All sprinkler drawings and calculations will be issued to the authority having jurisdiction for review and approval.

A fire hydrant will be required to be located within forty-five metres of the main building fire department Siamese connection as per the Alberta Building Code.

Acceptance testing of the entire fire protection system will be carried out as per NFPA 13 requirements. A certificate will be issued by the Fire Protection contractor that the fire protection system has been installed as per the NFPA requirements.

The portable fire extinguishers will be installed in accordance with the requirements of Alberta Building Code of Canada. Portable fire extinguishers located in finished areas will be housed in cabinets. Portable fire extinguishers in unfinished areas such as Mechanical Rooms will be mounted on brackets.

### 8.9.1 FIRE SEPARATIONS AND FIRE STOPPING

All ducts and piping passing through a fire separation will be provided with fire stopping in accordance with the Alberta Building Code. Any ducts passing through a fire separation will be provided with an approved fire damper.

### 8.9.2 DETECTION/ACTUATION

Sprinkler zoning and valve monitoring will be coordinated with the electrical fire alarm requirements.

## 8.10 THERMAL INSULATION

The Thermal insulation for the ductwork and piping systems will be provided as per the latest guidelines in the 2017 National Energy Code for Buildings.

All exhaust ductwork, roof drainage and plumbing vent pipes within 3.0 m of roof or exterior wall penetrations will be insulated. Combustion and outdoor intake ducts will also be thermally insulated.

All domestic water piping, and heating water piping will be insulated to the latest standards to meet the Model National Energy Code.

## 8.11 BUILDING AUTOMATION SYSTEMS

The BAS will provide a comfortable and stable environment for facility occupants and shall minimize energy consumption by:

- Optimizing start and stop times for equipment and systems that operate less than 24 hours a day

- Using a purge mode to ventilate warm spaces with cool unconditioned air before the start of occupancy in areas that operate less than 24 hours a day;
- Resetting air system supply air temperature set points using feedback from occupied

Individual thermostats will be provided for each of the spaces connecting to the terminal heating units. Thermostat zones will follow the guidelines as indicated in the 2017 National Energy Code for Buildings

The BAS shall also be designed to:

- A complete schedule of physical control points. For each point provide a short description, the point type, its mnemonic (system name) as well as any alarm limits and fail safe position.
- BAS control points will be identified according to the Alberta Infrastructure EMCS Standard for Logical Point Mnemonics. Points in the schedule will be grouped by mechanical system.
- A detailed control sequence will be provided for each mechanical system and any global optimization strategies.
- Laminated, permanently installed I/O lists shall be secured to all BAS panels. control valves, damper operators, etc

Proprietary, stand-alone control systems will not be accepted, with the exception of original OEM boiler sequencing controllers, and chiller plant controllers.

The BMS system will be interlocked with the building fire alarm system to allow for de-energizing air systems in fire alarm conditions.

The BMS system will monitor the pool pumps, pool water temperature and related heat exchangers.

Gas detection systems will be required for the pool chemical rooms and shall be alarmed back to the

Reception area and the building operator offices.

Gas detection systems installed in the following locations, all devices shall be NEMA 4X rated as a minimum, or as determined by the Hazardous Classification Study if the NEMA 4X rating is insufficient for the space:

- Natatorium mechanical room

## 8.12 CONTRACTOR START UP PROGRAM

The Contractor is required to complete the checking, starting, testing, balancing and final cleaning of equipment, and to ensure that the work is ready for use and purpose intended. Seasonal Systems are to be identified and their start-up will be deferred until the outdoor conditions permit their start-up operation.

Mechanical operating and maintenance manuals, complete with as-built mechanical plans, are to be provided to the Owner at project completion.

## 8.13 OUTLINE SPECIFICATIONS - MECHANICAL MATERIALS

### 8.13.1 PIPING SYSTEMS

Piping systems to be designed to meet the National Plumbing Code Standard and as approved by the governing authority. The quality of piping and fittings shall be determined by the following specification.



Service Description	Pipe Description	Fittings and Joints
Storm, Sanitary Drainage & Vent Piping (above grade)	DWV Copper	Wrought or Cast with 50-50 Solder Joint, Mechanical Joint
	Cast Iron	
	PVC-DWV (Fire Retardant) with Fire Stopping	Plastic complete with Solvent Joint
Service Description	Pipe Description	Fittings and Joints
Storm, Sanitary Drainage & Vent Piping inside building (below grade)	Plastic ABS-DWV or PVC-DWV	Plastic complete with Solvent Joint
Domestic Water Piping (above grade)	Type 'L' Hard Copper	Wrought or Cast with Lead Free Solder Joints, Crimped O-ring Gasket Insert
Gas Piping (above grade)	Schedule 40, Black Steel	Malleable Screwed or Butt Welded Joints
Heating Piping	Copper Type 'M' Schedule 40, Black Steel	Wrought Copper with 50-50 Solder Joints. Malleable Screwed up to 50mm Butt Welded over 50mm
In-slab Piping	Cross-linked polyethylene (IPEX) complete with oxygen barrier	Brass or copper with compression (above slab) No joints in-slab

Bronze body full port ball valves will be provided for isolation and drains for all systems, sizes up to 50mm, butterfly valves for sizes 65mm and over.

Floor drains in public use washrooms, staff locker/ shower rooms, janitor, and mechanical rooms. Drains will be cast iron body with removable strainer.

Pipes will be installed in such a way as to conserve head room and interfere as little as possible with free use of the space through which they pass.

All pipes which are to be concealed will be installed neatly and closely to the building structure so that the necessary furring can be kept as small as possible.

All piping installed will allow for expansion and contraction. Flexible pipe connections, expansion joints and compensators, pipe loops, swing joints and offsets will be provided. Steel and copper pipe will be isolated with insulated couplings.

Every plumbing fixture shall have its own isolation valves, trap and vent in accordance with local plumbing regulations. All vents will extend to a minimum of 100mm above finished roof.

Vacuum breakers on all hose connections and backflow preventers on the main supply to the building and on all domestic water connections will be provided, where required by code.

Cleanout will have brass ring and cover to suit floor finish.

Hot water heating / glycol heating systems will be cleaned and chemically treated.

Balancing, testing, and adjusting of hydronic systems and air systems will be provided for all mechanical systems.

### 8.13.2 DUCTWORK SYSTEMS

All ducts will be constructed of galvanized sheet metal sufficiently braced to prevent rattling or breathing. Duct gauge and joints and bracing shall be as shown on Table 1 of the SMACNA Manual Latest Edition.

Hinged access doors will be provided for inspection

and cleaning before and after all filters, fire and manual dampers and elsewhere as indicated on the drawings. Access doors will be rigid, close-fitting locking devices

Balancing dampers will be provided complete with indicators at all points on supply and return and exhaust systems where branches are taken from larger ducts, also where required for proper air balance.

ULC labelled and approved fire dampers will be located at all points where ductwork penetrates fire rated assemblies.

All breeching and chimneys will be provided for all gas fired equipment as required in accordance with CSA standards and local codes.

### 8.13.3 PIPING INSULATION TYPE AND THICKNESS SCHEDULE

Service Type and Nominal Pipe Diameter	Insulation Type	Insulation Thickness
Hot Water Heating (up to 93°C): 40 mm and larger	Hot Pipe	38
Glycol Heating (up to 93°C): 40 mm and larger	Hot Pipe	38
Domestic Hot Water & Recirculation: 50 mm and smaller	Hot Pipe Hot Pipe	25 38
Chilled Water (5°C to 13°C): All Sizes	Cold Pipe	25
Refrigerant (5°C to 13°C): All Sizes	Cold Pipe	25
Domestic Cold water: 38 and smaller	Cold Pipe	12
50 and larger	Cold Pipe	25
Plumbing Vents: All sizes	Cold Pipe	25
Storm Sewer Piping: All sizes for entire length through building to splash on grade.	Cold Pipe Cold Pipe	12 25

Heat Exchangers	Hot Equipment	50
Hot Water Storage Tanks	Hot Equipment	50
Heat Exchangers	Cold Equipment	50
Roof Drains	Cold Equipment	25

### 8.13.4 DUCTWORK INSULATION TYPE AND THICKNESS SCHEDULE

Service Type	Insulation Type	Insulation Thickness
Exhaust and relief ducts within 3m of exterior openings	Hot duct	50
Relief ducts and plenums	Hot duct	25
Supply ducts and plenums	Hot duct	25
Combustion air	Cold duct	50
Outside air	Cold duct	50
Medium pressure supply ducts	Cold duct	25
Low pressure supply ducts	Cold duct	25
Low pressure supply ducts	Cold duct	50
Ventilation equipment	Cold duct	25
Medium pressure supply ducts	Acoustic	25
Low pressure supply and return	Acoustic	25
Boilers	Breeching	50
Domestic hot water heaters, atmospheric burners	Breeching	25
Domestic hot water heaters, forced air burners	Breeching	50
Gas-fired unit heaters	Breeching	25



A blue-tinted photograph of swimmers in a pool, crouched on starting blocks numbered 4, 5, and 6, ready for a race. The image is used as a background for the page.

09

**ELECTRICAL  
REPORT**



# ELECTRICAL CONCEPT DESIGN REPORT

Prepared By: AECOM  
Author: Christine Andersen

Date: September, 2022

## 9.1 GENERAL

The general design intent for the proposed Electrical, Communications and Security Systems for the facility is summarized herein.

All Electrical systems will be designed and installed in accordance with the current versions of the following guidelines and standards.

## 9.2 QUALITY ASSURANCE DOCUMENTS

- CSA C22.1-21, Canadian Electrical Code, Part 1 (24nd Edition).
- National Building Code 2019 - Alberta.
- Canadian Standards Association
- Illuminating Engineering Society of North America, Institute of Electrical and Electronics Engineers, Insulated Cable Engineers Association
- Atco Electric, Service and Metering Guide
- Alberta Fire Code (AFC)
- CSA C22.1 Canadian Electrical Code (CEC) - Part 1
- CSA C282 Emergency Electrical Power Supply for Buildings
- Telecommunications applicable standards ANSI/TIA-568:
- ANSI/ASHRAE/IESNA, Standard 90.1 - Energy Standard for Buildings

- CAN/CSA-B651, Barrier-Free Design
- CAN/ULC-S524, Installation of Fire Alarm Systems
- CAN/ULC-S537, Verification of Fire Alarm Systems
- CAN/ULC-S1001, Integrated Systems Testing of Fire Protection and Life Safety Systems
- National Energy Code of Canada for Buildings (NECB) 2017

## 9.3 ELECTRICAL DESIGN INTENT

These building systems play a key role in energy efficiency and safety of the occupants. All systems will be provided using equipment that has been previously used in an Aquatics environment and has proven performance and maintenance history. The systems will include:

- Main Electrical Service and related equipment.
- Dry type Transformers
- Central Distribution Panels
- Branch Circuit Panelboards
- TVSS equipment
- Emergency Power Generation and Transfer Switches
- Motor Controls
- Power Receptacles & Wiring Devices
- Electrical Metering System
- Grounding & Bonding System and Equipment
- Emergency Lighting Equipment
- Interior Lighting
- Exterior Lighting
- Lighting Control System

- Fire Alarm System
- Data & Voice Systems
- Audio Video Communications Systems and Equipment
- Card Access and Security
- Video Surveillance System

## 9.4 QUALITY OF PRODUCTS

The electrical installation at the new Cold Lake Aquatics facility will be aligned with the guidance provide by the referenced standards, the owners design requirements and as pre recommended best practice. All products will be new and CSA approved for their intended use.

## 9.5 UNIFORMITY OF MANUFACTURE

Quality, uniformity, finishes and identification of the overall installation will be as described in the referenced standards to provide ease of future management and maintenance of the electrical components that have been installed.

Uniformity of manufacture will be maintained for similar products throughout the project to maintain consistent quality and commonality of components where possible.

## 9.6 USE OF PRODUCTS DURING CONSTRUCTION

The electrical installation will be turned over as new at the time of project completion in accordance with the general conditions of the project.

## 9.7 PRODUCT FINISHES & COLOUR CODING

The electrical installation will be color coded for the ease of future identification and tracking. The color coding conventions will be reviewed with the owner to ensure that any pre existing standards are maintained.

## 9.8 EQUIPMENT IDENTIFICATION

All electrical equipment will be provided with permanent limacoid labels to ensure easy and ongoing identification of the equipment.

Conductor identification and color coding will be standardized to provide lasting identification of the electrical installation for future considerations.



## 9.9 SINGLE LINE DIAGRAM

A digital electrical single line drawing diagram will be framed and mounted in each electrical room to provide accurate configuration and location information. Incident energy levels based on the final Arc Flash report will be incorporated into the SLD for ease of reference and safety during any future maintenance activities.

## 9.10 INCOMING ELECTRICAL SERVICES

Servicing provisions at the site will be in compliance with the requirements of the most recent edition of the ATCO Electric Service and Metering Guide and the installation guidelines as published by the communication service utilities.

The utility power transformer is anticipated to be located on the north side of the site, with primary servicing provisions entering from Energy drive. The exact service entry point and general service arrangement on the site will be coordinated and arranged with ATCO Electric. Secondary power conductors from the transformer will be run underground and rise inside the building to the main electrical switchgear.

It is anticipated that the existing communication network system can accommodate the increased bandwidth requirements for the new Aquatics Centre. No additional new underground infrastructure or pathways will be required to integrate the Centre into the existing campus style system.

## 9.11 BUILDING WIRES

All conductors will be copper, stranded for #8 AWG and larger. Minimum size: # 12 AWG for all applications. 600 V insulation of chemically cross-linked thermosetting polyethylene (XLPE) material rated RW90. 1000 V insulation, RWU90 will be used for incoming secondary service feeders and all underground installations exterior to the building.

All building wires will be installed in conduit systems with a ground conductor regardless of conduit type.

The Fire Alarm System will be wired with fire Alarm Cable, Non-Shielded, 300V, Solid Bare Copper, PVC, AIA, CSA, FT4 where installed in conduit. Shielded cables will be used where connections are made to devices subject to movement or vibration. Fire Alarm signaling Line Circuits will use twisted, shielded pair.

All motors that are connected directly to the load side of a VFD drive unit are to be wired using the installation of VFD cables. Cable shall be minimum 1000V rated, stranded tinned copper and suitable for use with variable frequency drives

Insulation thickness shall have a minimum average wall thickness of 30 mils, rated for 90 degrees Celsius wet/dry operating temperature. Material to be XLPE with a XHHW-2 listing per UL 44.

The use of armoured cable will be limited to individual drops from ceiling mounted junction boxes to light fixtures above accessible ceilings. Use one drop per fixture. No looping between fixtures will be allowed.

A separate neutral conductor from branch circuit panels to devices will be provided for all dimmer control circuits

## 9.12 GROUNDING & BONDING

A complete secondary grounding system and equipotential bonding system will be provided throughout the facility. All components of electrical system will be bonded to ground in accordance with requirements of all related sections in Canadian Electrical Code, Building Code, and local Electrical Inspection Branch.

The grounding system will remain accessible for future inspection and testing through the use of above ground bolted connection locations and inspection wells for the ground grid rod locations. All connections will meet IEEE 837 2014 performance requirements.

A #6 AWG ground conductor will run along the entire length of installed cable tray and it will be bonded to the tray at 15M intervals to provide a robust grounding system for the low-tension systems installed throughout the facility.

The equipotential bonding and grounding system that will be installed in the Aquatics area will undergo bonding studies in accordance with IEEE 81 Guide for Measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Grounding System. The components will be tested to ensure that adequate bonding connections have been made at all metal parts of the pool infrastructure and of other non-electrical conductive equipment located with-in 1.5 meters of the pool edge:

## 9.13 CONDUIT

A complete system of conduit and fittings will be provided for installation of wiring. Conduit system infrastructure shall be provided and installed for all power and system wiring as required for the installation of electrical work.

Minimum conduit size for all applications to be 21 mm. Communication and data to be minimum 25 mm.

Insulated bushings at all conduit terminations, regardless of size.

Fittings in dry locations: Steel set screw connectors with insulated throat. Steel set screw couplings. Fittings in locations subject to moisture: steel rain-tite connectors with insulated throat. Steel rain tite couplings

Rigid Steel Conduit to be used as raceways in all areas exposed to weather, locations where mechanical damage may occur.

E.M.T. Conduit in all indoor locations but it may not be used in wet or damp locations, corrosive atmosphere, concrete pours, underground, outdoors, nor in areas exposed to mechanical damage.

Rigid P.V.C. Conduit to be used as raceways in underground runs exterior to buildings, flexible Conduit to be used as raceways for Connections to f.h.p. motors in dry locations, final connections to indoor transformers, liquid Tight Flexible Conduit to be use as raceways at all motors, pipe mounted control devices, and other devices subject to movement or water.

Corrosion control in Natatorium areas, all fittings, outlet boxes, junction boxes, rack members, clamps, and fasteners to be zinc or cadmium plated. All conduit, couplings, and straps to be rigid PVC conduit.



## 9.14 CABLETROUGH

Where cabletray is installed to accommodate drive cables or low tension wiring, steel Class C1 ladder type tray will be installed. Where used in the Natatorium or Mechanical service spaces, Aluminum Ladder type, Class E tray will be provided.

The tray will be sized at a minimum 600 mm wide with depth of 100 mm to provide adequate capacity for current and future use consideration. Larger sizes of tray will be used as dictated by local cable loading requirements.

## 9.15 WIRING DEVICES

Wiring devices will be located within all areas to suit usage. Wiring devices will be specification grade for all areas utilizing standard CEMA configurations. Stainless steel cover plates will be provided for all installations for durability. Wiring devices will be color coded ivory (normal power) or red (emergency power) to reflect source of supply.

Where the design requires floor boxes they will be heavy duty flush type, able to close while in use and be resistant to water ingress when not in use.

Provisions for the future installation of Electric Vehicle charging equipment will be reviewed with the owner. Capacity will be designed into the local distribution to accommodate 4 x 32A, 208V circuits that can be delivered by future load management equipment.

Energized parking provisions will be made to accommodate 8 parking stalls located within the designated staff parking areas. Prefabricated style parking pedestals on above grade concrete pilings will be specified to provide a robust installation.

Control of the staff parking receptacles will be via the building management system for both time and

temperature control. The receptacles will be designed to shut off all power to outlets when outside temperature is above -10°C and inhibit cycling below -30C. BMS to cycle energized outlets on and off at a maximum 30 minute period.

Individual electric hand / hair dryers will be provided in all public washrooms and dressing rooms as per the programming requirements.

## 9.16 TRANSFORMERS

Dry type distribution transformers will be provided to step the utilization voltage down from 600 Volts to 120/208 Volts. All transformers will be located in electrical service rooms, installed on housekeeping pads, utilize copper windings.

All Indoor Transformers over 45 kVA will be floor mounted on housekeeping pad. The transformers will be mounted on vibration and sound absorbing pads with final flexible connections to enter enclosure below coils.

The transformers will be standard rated as the majority of the non-linear lighting loads will be serviced at the primary voltage of 347V. The transformers will be sized such that average demand loading is at least 60% of rating.

## 9.17 ELECTRICAL SERVICE & EQUIPMENT

Power distribution and service equipment will be located in a secure dedicated room on the main floor.

A separate communication room will be located adjacent to the main electrical room and serve as the main demarcation point for incoming utility communication services and electronic equipment.

The main distribution equipment will be sized to suit building usage and include allowance for future equipment capacity. Based on current load calculations, the main distribution service breaker will be rated 1000 A at 347/600 V, 3 phase, 4 wire.

The rated short-circuit current rating of the equipment will be as required by the projects coordination arc flash study. This study will be based on the final equipment selection, protected loads and the locations and distances of the electrical equipment.

The main switchgear will feature an advanced power quality meter device to monitor the main service and display true RMS values for phase voltage (line to line and line to neutral), phase currents, kVA, kVAR, kW, PF, Hz, MWhr, kWd and kVAd. Additional metering will be provided at all lighting panels and panels intended to serve lease space for portioned cost allocation by the owner.

Electrical distribution switchgear will use molded case breakers with thermal-magnetic, instantaneous or electronic trip units to suit load characteristics. Panelboards will use bolt on style breakers, 225A bussing for panelboards with 42 or more positions. Panels will be filled to a maximum of 75% capacity at project completion and the electrical rooms specifically identify wall space reserved for a future double tub electrical panel.

## 9.18 MOTOR CONTROL

Full voltage non reversing magnetic motor starters will be provided for all 3-phase motors that are not controlled by a variable frequency drive unit.

Starters to be NEMA rated, Size 1 minimum, complete with hand-off-auto selector switch, minimum of 2 N.O. and 2 N.C. auxiliary contacts and pilot lights. Single phase protection for all three phase motors will be provided by either by relaying, differential overloads or BMS shutdown.

Packaged mechanical units incorporating control panels/ starters/VFD's will be serviced from breakers in sub-distribution panels.

## 9.19 EMERGENCY POWER GENERATION SYSTEM

The emergency generator will be installed to supply emergency power services within the building to meet the National Building Code as well as owner defined requirements for building freeze protection. Sizing of the generator will be based on the generator servicing the following building life safety and emergency loads in the new Aquatics Centre:

1. Emergency and exit lighting as required by the National Building Code.
2. Mechanical loads as determined required for minimal heating and freeze protection of the Centre.
3. Building Management System control panels

The sizing of generator (estimated to be in the order of 450 kW) will allow for resistive and non-resistive loads including VFD installations.

The generator will be located in separate outdoor enclosure at the north end of the facility near the electrical room. This location was selected to provide ease of access for maintenance, testing and fueling. The generator will be a four-stroke diesel fired engine with electronic governor. Breaker style transfer switches will be utilized to couple the generator to the building emergency power distribution system. A load bank connection will be available at the Generator location to facilitate the load testing of the emergency generator.



Automatic transfer switches will be provided at the head end of the emergency distribution to organize the loads into life safety and non-life safety emergency. Panels, feeders and equipment power supplies will be provided to suit the emergency loads and systems as described above.

Life safety systems within the facility such as emergency lighting, exit lighting and fire alarm equipment will be provided with 2 hour emergency power. Standby emergency power will be provided to select building mechanical and control equipment to provide freeze and non-life safety emergency event protection. The facility has not been designated as a post disaster site. It is expected that an extended utility power failure will require the orderly evacuation of the building.

Local UPS back up power supplies will be provided ahead of sensitive electronic systems such as the BMS panels where even a short duration power interruption is undesirable.

## 9.20 HARMONICS

Use of variable frequency drives (VFD's) for control of large motor loads will be coordinated with mechanical and pool equipment during design to ensure compatibility of equipment. Building electrical and mechanical control equipment will be specified to meet IEEE 519 requirement at the Point of Common Coupling (PCC) and ATCO Electric's Quality guidance.

## 9.21 ARC FLASH/ COORDINATION STUDY

An arc flash and coordination study will be specified that encompasses all electrical system components including Utility Service, MDP, CDP's, transformers, MCC's, panels,

VFD's, emergency generator and major motor loads.

The arc flash hazard analysis in accordance with CSA Z462 will examine the new power distribution system. All incident energy values will be tabulated and assigned to the electrical distribution single line diagram. The system will be designed and equipment selected to provide that 8 cal/cm<sup>2</sup> is not exceeded at any point in the distribution.

The equipment will be provided with the appropriate warning and rating labels as required by the CSA Z462.

## 9.22 LIGHTING

Lighting throughout the facility will be selected based on quality and energy efficiency performance criteria.

Luminaires will be selected to be fully compatible with the related ceiling system and will provide required illumination performance for the specific usage within all areas. Luminaires will be located to provide optimum performance as well as to ensure access to maintenance (i.e. Luminaires will be located on walls in stairwells at landing levels in lieu of locating fixtures on underside of landings/ceilings).

Lighting levels will be designed to be in accordance with the Illuminating Engineering Society of North America (IESNA) recommendations and industry best practice.

The facility will be lit using LED fixtures that will be selected based on performance and efficiency and be available from a major manufacturer with a proven track record. A consistent color temperature of 3500K will be specified for all products.

The new exterior public parking will be lit with dark sky compliant fixtures that utilize LED lamps to meet the energy and NECB requirements for the project.

Exit signage will be provided throughout the facility in accordance with governing code requirements.

Proposed units will be universal mounting type, aluminum or PVC gasketed construction for durability with high intensity LED style lamping to minimize energy consumption.

## 9.23 LIGHTING CONTROLS

The Facility consists of 2 floors of building area and a basement, which serves as a mixture of pool, multi-purpose, offices, change rooms, and service spaces. Spaces will be controlled via various control devices: occupancy sensors, dual technology sensors, daylight sensors, central master control switches, wall mounted dimmers, and wall mounted switches.

All lighting to be feed from 347V lighting panels. Lighting loads to be sub-metered at each 347V lighting panel for load performance monitoring purposes as well as any EM lighting circuits in emergency panels.

All enclosed and open areas (regularly occupied spaces) within 4.5m of the perimeter walls that shares an exterior window within the space will have daylight sensor control where it will dim lighting continuously dependent on occupancy and ambient light levels in the vicinity when energized.

All enclosed (non-regularly occupied) areas such as meeting rooms, LAN rooms, storage rooms will be controlled with either manual ON switches or dimmers, with vacancy sensors. Washrooms are controlled with full occupancy sensors.

The general interior lighting for the building is based on the following strategies:

- General open lobby are multi zone switching, master switch control, programmable ON/OFF.
- Individual office has local dimming, Manual ON, vacancy sensors OFF.

- Multi-occupant offices have local dimming, Manual ON and vacancy sensors OFF.
- Aquatics pool area will have local multi-level switching, master switch, programmable ON/OFF.
- Multi-purpose rooms will have local multi zone dimming, Manual ON, vacancy sensors OFF.
- Aquatics change rooms and washrooms are master switch, programmable ON/OFF.
- General washrooms are fully occupancy sensor controlled with Auto ON and Auto OFF.
- Janitor and storage rooms are Manual ON and vacancy sensor OFF.
- Electrical and mechanical rooms will be Manual ON, Manual OFF.
- Stairwells will be occupancy sensor controlled to dim down 50% when unoccupied and up 100% when occupied.
- Exterior lighting will be controlled by photocell and/or timeclock and will be integrated with the overall facility control methodology.

All new exterior lighting will include astronomic scheduling, dusk till dawn control, and ability for reduce total exterior lighting power consumption to 70% as per NECB requirements.

Lighting control system will be capable of BMS integration via BACnet to detect and control lighting area and status.



## 9.24 DATA NETWORK

The structured cabling system provided to the project will be based on a Category 6, signal transmission up to 250 MHz, ANSI/TIA/EIA 568-B.

The cabling will be installed in cable tray, conduit, or above finished ceiling space. Cable tray will be installed to facilitate the majority of the low-tension cabling for the project.

Telecom outlets will be delivered via a single gang deep box, 25mm minimum conduit with 2 x blue colored Category 6 cables and 2 data jack connections at each outlet box location.

The Main Network Room on the main floor will contain the cross connect facilities for the integration the communication systems. The communications rooms will also house the floor mounted network data racks, AV racks, Security and Video Surveillance cabinets and Fire Alarm System Communication equipment. Floor mounted equipment racks and cabinets will house all termination fields for all UTP and fibre cabling. Each rack will be provided with cable management, power supply, equipment mounting provisions, grounding and bonding facilities.

Secondary IT network rooms will be located on each floor plate to facilitate local distribution and network connectivity.

The data cabling will be plenum (FT6) Rated Category 6, 24 AWG, four pair UTP, ULC CMR rated having lead free blue PVC jacket.

Backbone cabling between the new and existing network rooms will be multi-mode fibre optic cabling (to be confirmed with owner)

The facility will also be provided with an analog 50 pair backbone cable between network rooms to facilitate connectivity between various systems where needed.

## 9.25 AUDIO/VIDEO

The public address, audio and video installation for the project will be designed in conjunction with the owner. This approach will ensure that the specific program requirements for each occupancy throughout the facility are met.

Select locations throughout the facility will be provided with local audio and video equipment for visual and sound program distribution throughout. The level of sophistication will be tailored to meet the program requirements of each space.

The facility will be provided with a zoned paging system consisting of distributed speakers and centralized amplification and program equipment. The system will permit paging of individual selected zones or an “All Call” page from either the console mounted microphone at the Control Point Desk or alternatively via the telephone system.

The provision, installation, termination and commissioning of the public address, audio and visual system components, pathways and cable/wiring will be incorporated into design to best match the owners planned use and programming.

## 9.26 FIRE ALARM SYSTEM

The facility will be equipped with a Networked Fire Alarm System which will be a fully addressable, zoned, annunciated, non-coded, single stage, Class A (communications network), microprocessor based.

The fire alarm system will be networked to operate as an extension of the existing campus wide Edwards EST3 fire alarm system.

Fire alarm notification within the facility will be provided via a combination horn/strobe enclosures to serve as both fire alarm audible and visual notification.

A fire alarm annunciator panel will be provided at the principal firefighting entrance for the Aquatics Facility as part of the overall campus system. The exact location of these panels will be determined in co-ordination with fire marshal and emergency response plan for the facility.

All audible and initiating device circuits will be loaded to a maximum of 80% of their rating. The system will have integral battery backup and will be serviced from the building’s emergency generator.

The Fire Alarm System will be designed, installed and verified in accordance with all applicable Building Codes, ULC codes as well as governing OHS requirements.

## 9.27 INTRUSION AND CARD ACCESS SYSTEM

The facility will be provided with a perimeter intrusion detection security system consisting of a central alarm panel, detection and monitoring devices including door and window contacts, motion and glass break sensors, sirens and signaling equipment.

The new system control panel will be integrated into the existing intrusion detection system or the devices themselves will be zoned and added to the existing as appropriate.

A card access system for select doors will be provided to improve control and ease of access to the most commonly used doors in the facility. The exact door locations will be coordinated with the owner’s team to best suit the operational intent. Integration with the existing card access system will be provided where practical.

## 9.28 VIDEO SURVEILLANCE CAMERAS

The Video Surveillance and monitoring installation for the project will be designed in conjunction with the owner to accurately document the specific requirements for each area and to meet the operational program and security requirements.

The provision, installation, termination and commissioning of the Video Surveillance Camera system, pathways and cable/wiring will be incorporated into the project after consultation with the owners security specialists and/or service providers.

## 9.29 WI-FI SYSTEM

The facility will be provided with a complete and operational W-Fi installation to be managed by the owner’s network equipment. Equipment locations will be selected to provide coverage to all occupiable floor space in the building.



A close-up, blue-tinted photograph of a person wearing a white lab coat. Their hands are positioned on a brown, textured belt buckle. The image is semi-transparent, allowing the text to be overlaid.

# 10

**CIVIL  
REPORT**

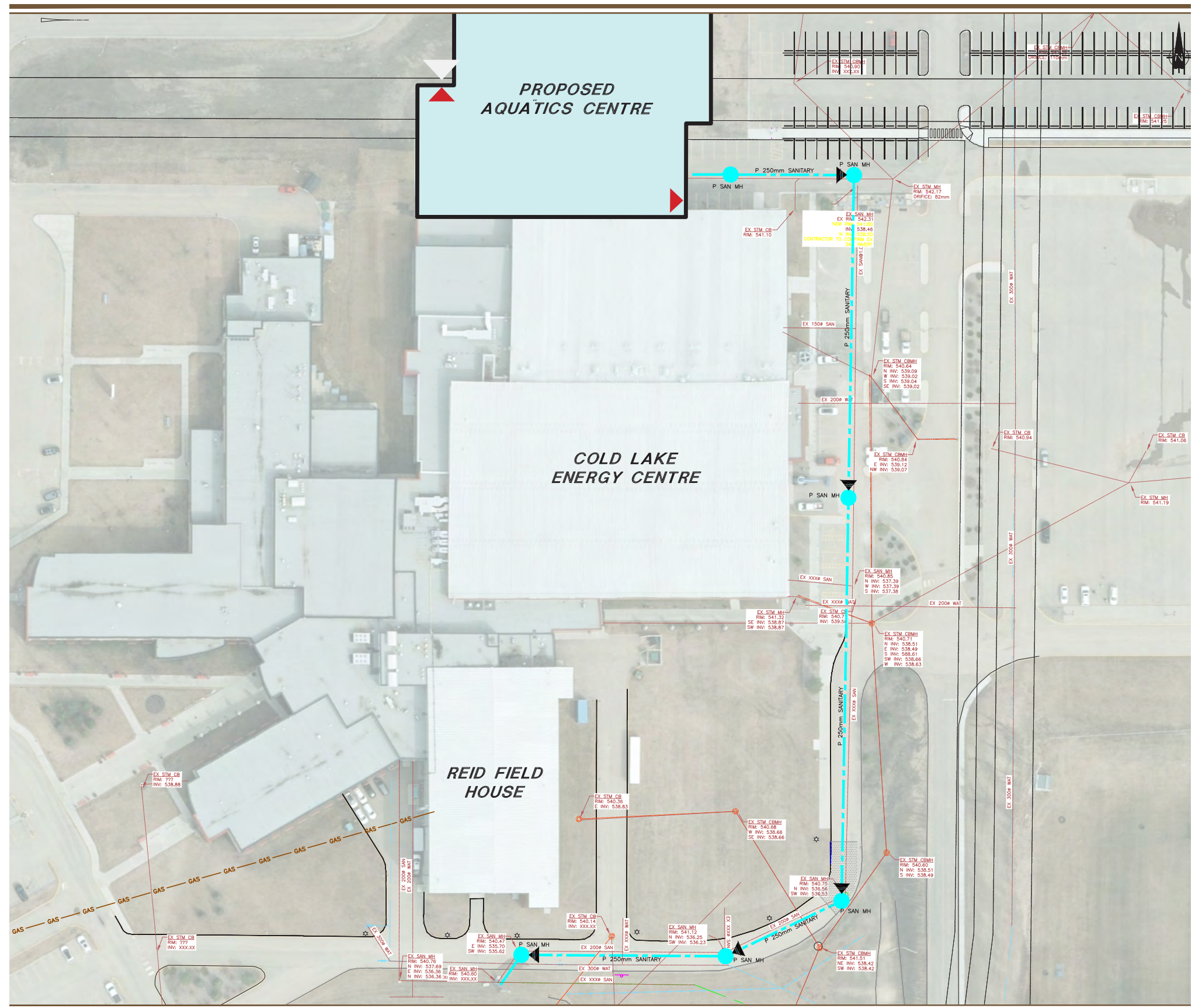


## 10.1 UTILITIES

The current provisions for sanitary connections to the Aquatics Centre footprint are not sized to accommodate the maximum flow rates anticipated leaving the facility. This max flow rate is based on the backwashing of the pool basins. Based on the current facility design using regenerative media filter, the current pool mechanical design anticipates a 350 GPM (gallon per minute) flow rate for about 5 to 7 mins for each filter. The filters can be flushed one at a time, and at off peak times.

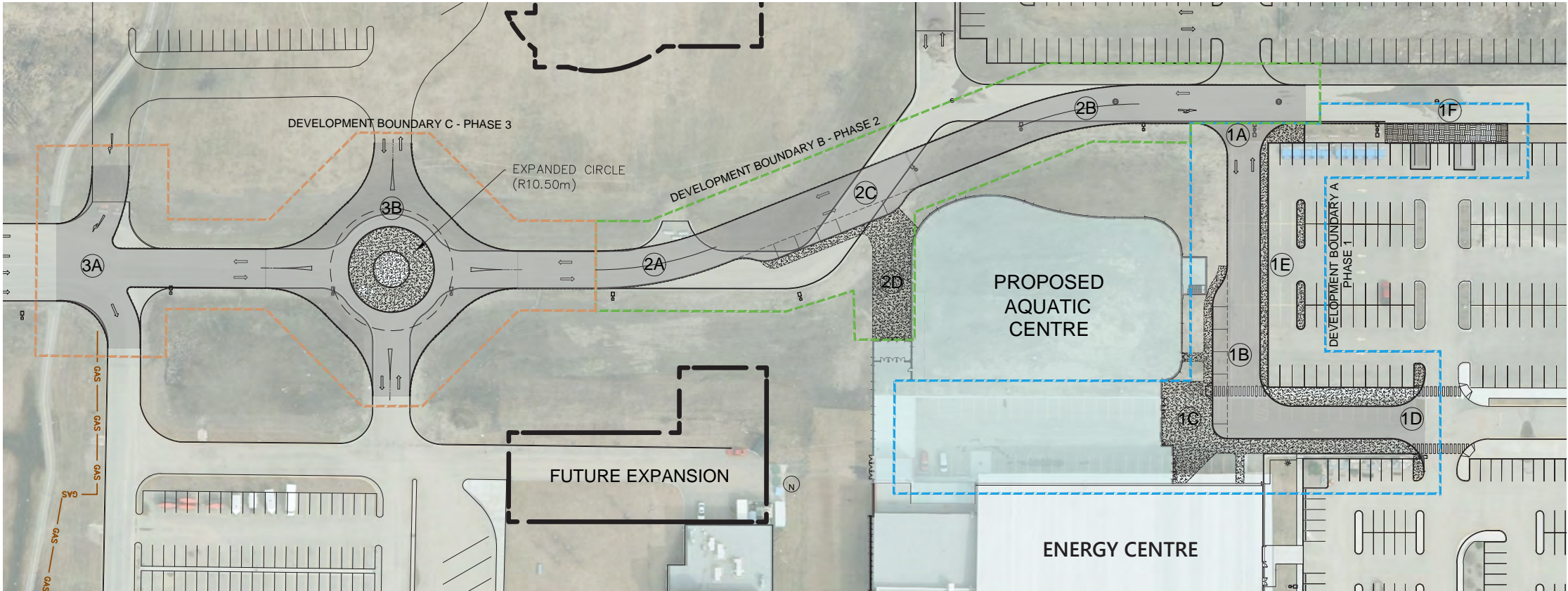
In order to accommodate this flow rate, a new sanitary line is proposed to be connected back to the existing lift-station on the south side of the site. This new infrastructure and modifications of the existing lift station will accommodate the capacity needed for the aquatics facility, but will not provide additional capacity for future expansions of the Energy Centre.

Improvements will require a temporary shutdown of the existing sanitary pump station, however these can be timed during shut-down and low-usage hours to minimize impacts to the existing facility.





# 10.2 TRANSPORTATION



- PROPOSED ROAD
- PHASE 1 - DEVELOPMENT BOUNDARY A
- PHASE 2 - DEVELOPMENT BOUNDARY B
- PHASE 3 - DEVELOPMENT BOUNDARY C

## PHASE 1

Phase 1 includes the improvements to the parking field east of the proposed Aquatic Centre.

- 1A: A new bi-directional access will be constructed to the north of the parking field as shown. This access will serve as the main entrance to the aquatic centre.
- 1B: A drop-off/loading area will be constructed adjacent to the entrance of the aquatic centre as shown. A total active length of 28.7m has been provided.
- 1C: A concrete walkway will be constructed to conform to all entrances as shown on the new proposed aquatic centre layout.
- 1D: Improvements will be made to the curb returns at the central access to the parking field whereby

the western curb returns will be increased to 8.0m radii to conform with the opposing curb returns.

- 1D: Pedestrian crossings will also be allowed for on either side of the intersection as shown. This will serve as the main flow of pedestrian traffic travelling from the parking stalls in the east and south-east, to the entrance of the aquatic centre.
- 1E: A concrete island will be constructed to serve as a barrier between the access and the parking field as shown. This will also include the construction of two floating concrete islands and the re-configuration of the parking field as shown.
- 1F: The existing entrance for the parking field to the north will be closed off as shown.

## PHASE 2

Phase 2 includes the improvements along the access road, between the roundabout and the parking field under consideration.

- 2A & 2B: The radii on the existing reverse curves on the access road will be improved from approximately 12.50m to a proposed radius of 80.00m as shown. The positions of the reverse curves must also be shifted to allow for this improvement. This implies that the angles are increased from approximately 126° to 158° which creates a much smoother layout.
- 2C: A drop-off area will be constructed adjacent to the western entrance of the aquatic centre as shown. A total active length of 28.7m has been provided.
- 2D: A concrete walkway will be constructed to conform to the western entrance of the aquatic centre as shown.

## PHASE 3

Phase 3 includes the improvements envisaged for the access to the Energy Centre as well as the roundabout improvements.

- 3A: The entrance to the Energy Centre will be reconfigured to include a "Right-In Only" and "Right-Out Only" adjacent to the main access road, as shown.
- 3B: The existing traffic roundabout will be improved to accommodate a B-12 Standard Single Unit Bus. This will be done by providing a 9m width (2 lane) around the circle, improving the curb returns, as well as increasing the circle radius from 4.50m to 10.50m. This increase in the circle size allows for a turning radius of 15m for the bus, which is greater than the minimum curb to curb turning radius of 12.9m.



## 10.3 PARKING

Based off of current City of Cold Lake parking stall requirements this facility would require approximately 479 stalls. This number is derived from the requirement to have 10 stalls per 100 square meters of building area. As this exceeds the peak operating load of 450 people it is recommended that parking requirements for this facility be looked at on a more defined usage basis; subject to discussion and approval from the City of Cold Lake. Review of standards provided by other communities would establish this requirement as closer to the 250 stall range.

Based off the proposed parking lot configuration, there are 227 stalls directly adjacent to the aquatic centre as well as numerous other stalls to the south and with access to the east side of the facility as a whole.

Being a multi-use facility and with a low probability of all indoor spaces requiring the utilization of peak operation parking stalls on a given day, it is reasonable to assume that facility users would have ample stalls accessible to them in the facility's current provisions for parking. A more in depth study to support this assumption that shared parking stall usage meets the parking requirements of all indoor spaces will be conducted in the early stages of detailed design, now that the Aquatics Centre bather load and anticipated visitation/usage has been developed through the concept design stage.

Long Term master planning of the Energy Centre site identifies two parking parcels north of the existing Energy Centre drive. These parking fields are not proposed to be included in the current project construction budget, but the new facility entrances proposed with the Aquatics Facility would make these parking fields more accessible to the overall facility in the long term.





An aerial photograph of several children playing in a swimming pool, overlaid with a semi-transparent blue filter. The children are scattered across the frame, some sitting on inflatable rings and others in the water. The water's surface is textured with ripples and splashes.

# 11

## **BUILDING CODE REVIEW**



11.1 BUILDING CODE ANALYSIS

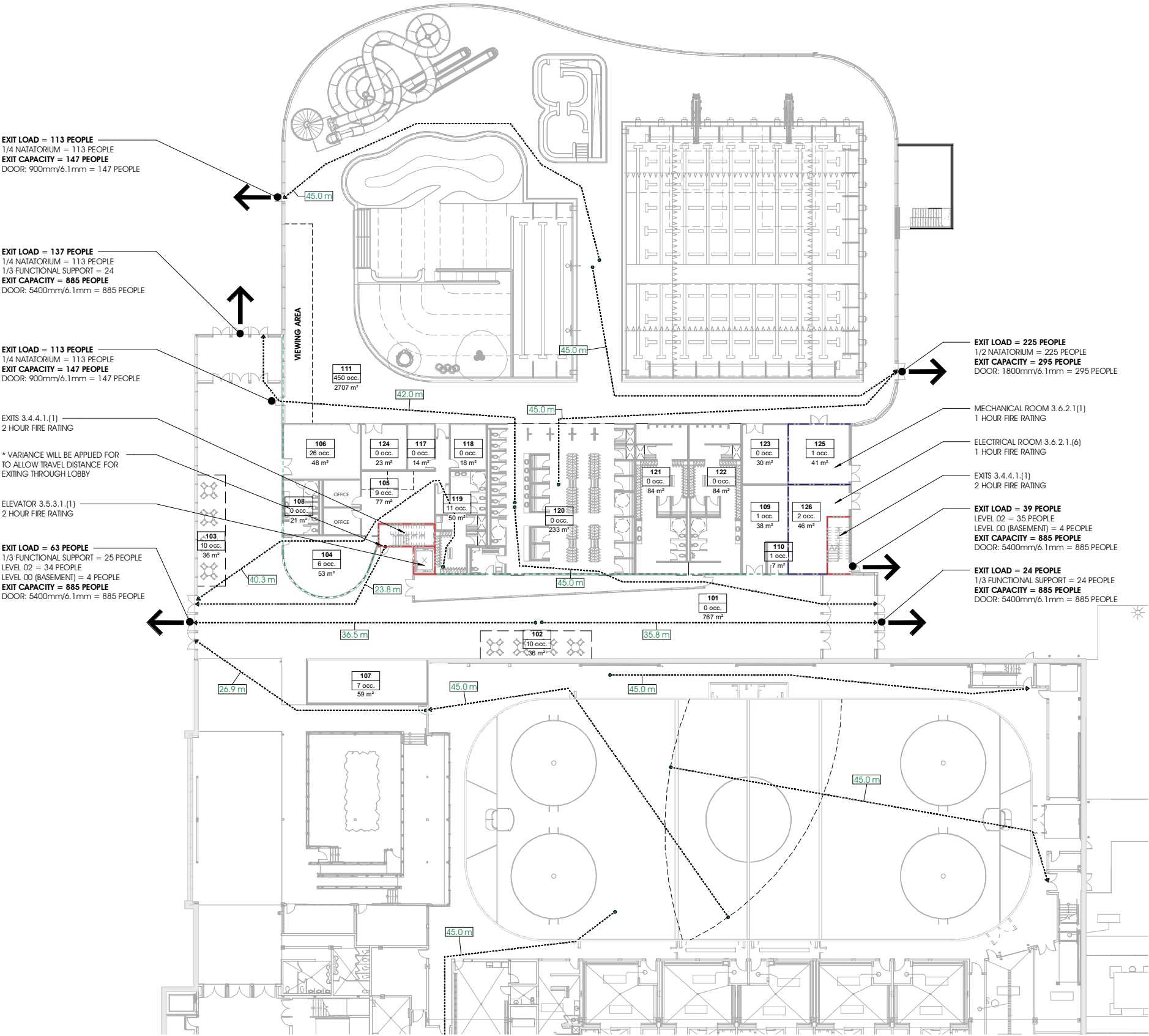
COLD LAKE AQUATIC CENTRE - BUILDING CODE SYNOPSIS																		
ITEM	NATIONAL BUILDING CODE - 2019 ALBERTA EDITION					ABC: 2019 CLAUSE		ITEM	NATIONAL BUILDING CODE - 2019 ALBERTA EDITION					ABC: 2019 CLAUSE				
1	PROJECT DESCRIPTION: INDOOR SWIMMING POOL, CONCESSION, ADMINISTRATION, MULTI-PUPOSE SPACE <div><input type="checkbox"/> NEW<input type="checkbox"/> RENOVATION <input checked="" type="checkbox"/> ADDITION<input type="checkbox"/> CHANGE OF USE</div>					■ PART 3 [A] 1.3.3.2		19	45m TRAVEL DISTANCE TO ONE EXIT ON SPRINKLERED FLOORS					[B]3.4.2.5.(1)(C) & (D)				
2	MAJOR OCCUPANCY (S): GROUP A, DIVISION 3 MINOR OCCUPANCY (S): N/A					[B]3.1.2.1.(1)		20	SPATIAL SEPERATION - CONSTRUCTION OF EXTERIOR WALLS:					[B]3.2.3				
3	BUILDING FOOTPRINT (m²): EXISTING: 12,600 m² ( 135,625 ft²) NEW: 4,742 m² ( 51,042 ft²)					[A]1.4.1.2			<div>WALL FACE</div> <div>AREA OF EXPOSED BUILDING FACE (m²)</div> <div>LIMITING DISTANCE (m)</div> <div>L/H OR H/L</div> <div>PERMITTED (MAX.) % OF OPENINGS</div> <div>PROPOSED % OF OPENINGS</div> <div>MINIMUM REQUIRED FRR (HOURS)</div> <div>TYPE OF CONSTRUCTION REQUIRED (C: COMBUSTIBLE NC: NONCOMBUSTIBLE)</div> <div>TYPE OF CLADDING REQUIRED (C: COMBUSTIBLE NC: NONCOMBUSTIBLE)</div>	NORTH	>150m²	>9m	N/A	100%	100%	N/A	C OR NC	C OR NC
4	GROSS AREA (m²): EXISTING: 19,830 m² ( 213,448 ft²) NEW: 6,378 m² ( 68,652 ft²)					[A]1.4.1.2				SOUTH	>150m²	>9m	N/A	100%	100%	N/A	C OR NC	C OR NC
	BASEMENT N/A 681 m² (OPTB: 1,290 m²)									EAST	>150m²	>9m	N/A	100%	100%	N/A	C OR NC	C OR NC
	LEVEL 01 12,600 m² 4,742 m²									WEST	>150m²	>9m	N/A	100%	100%	N/A	C OR NC	C OR NC
	LEVEL 02 4,991 m² 955 m²																	
	LEVEL 03 2,239 m² N/A																	
TOTAL 19,830 m² 6,378 m²																		
5	NUMBER OF STOREYS: ABOVE GRADE 2 BELOW GRADE 1 MEZZANINE 0 HEIGHT OF BUILDING (m): 11.0m ABOVE AVERAGE GRADE					[A]1.4.1.2 & [B]3.2.1.1												
6	NUMBER OF STREETS/ACCESS ROUTES: 2					[B]3.2.2.10 & [B]3.2.5												
7	BUILDING CLASSIFICATION: GROUP A, DIVISION 3, ANY HEIGHT, ANY AREA, SPRINKLERED					[B]3.2.2.29		21	WASHROOM COUNT:					[B]3.7.2.2, TABLE 3.7.2.2.-A [B]3.7.2.3				
8	SPRINKLER SYSEM: ■ ENTIRE BUILDING <input type="checkbox"/> IN LIEU OF ROOF RATING <input type="checkbox"/> NOT REQUIRED					[B]3.2.2.29		OCCUPANCY		OCCUPANT LOAD		MIN. NO. OF W/C		W/C'S PROVIDED		LAVATORIES		
9	STANDPIPE REQUIRED <input type="checkbox"/> YES ■ NO					[B]3.2.5.8		SUPPORT SPACE		200 (100 PER SEX)		6 (2M, 4F)		7 TOTAL (7 UNISEX)		4		
10	FIRE ALARM REQUIRED: ■ YES <input type="checkbox"/> NO					[B]3.2.4.1.(1)		POOL		450 (225 PER SEX)		14 (5M, 9F)		16 TOTAL (1 URINAL, 2M, 3F, 10 UNISEX)		8		
11	WATER SERVICE / SUPPLY IS ADEQUATE: ■ YES <input type="checkbox"/> NO					[B]3.2.5.7		DRESSING ROOM REQUIRED AREA: OCCUPANT/BATHING LOAD: 450 PERSONS INCLUSIVE CHANGE ROOM: (300 PERSONS) 150 m² 164 m² MALE CHANGE ROOM: (75 PERSONS) 37.5 m² 44 m² FEMALE CHANGE ROOM: (75 PERSONS) 37.5 m² 44 m²									[B]7.2.4.3	
12	HIGH BUILDING: <input type="checkbox"/> YES ■ NO					[B]3.2.6												
13	PERMITTED CONSTRUCTION: <input type="checkbox"/> COMBUSTIBLE ■ NON-COMBUSTIBLE <input type="checkbox"/> BOTH ACTUAL CONSTRUCTION: <input type="checkbox"/> COMBUSTIBLE ■ NON-COMBUSTIBLE <input type="checkbox"/> BOTH					[B]3.2.2.29		22	EXIT WIDTH CALCULATION: (REFER TO PLANS)					[B]3.4.3.1 - [B]3.4.3.4				
14	MEZZANINE(S) AREA: N/A					[B]3.2.1.1.(4)-(8)		23	FIRE SEPARATIONS:									
15	OCCUPANT LOAD BASED ON DESIGN OF BUILDING:					[B]3.1.17			LOCATION			F.R.R.		CLOSURE		[B]TABLE 3.1.8.4		
	BASEMENT 8 PERSONS					BASED ON 7.2.2.1.(1) BASED ON PROGRAM LOAD			PUBLIC CORRIDOR SEPARATIONS			0 HR FIRE SEPARATION NOT REQUIRED		0 HR		[B]3.3.1.4.(3) [B]3.3.1.4.(4)(A)		
	LEVEL 01 573 PERSONS								EXIT STAIRS			2 HR		1.5 HR		[B]3.4.4.1.(2)		
	LEVEL 02 69 PERSONS								ELEVATOR HOISTWAY			2 HR		1.5 HR		[B]3.5.3.1.(1) TABLE 3.5.3.1		
	TOTAL 650 PERSONS																	
16	BARRIER-FREE DESIGN: ■ YES <input type="checkbox"/> NO					[B]3.8			MAIN ELECTRICAL ROOM			1 HR		45 MIN		[B]3.6.2.1.(6)		
17	HAZARDOUS SUBSTANCES: ■ YES ■ NO					[B]3.3.1.2 & [B]3.3.1.20			MECHANICAL ROOMS CONTAINING FUEL FIRED APPLIANCES			1 HR		45 MIN		[B]3.6.2.1.(1)		
18	REQUIRED FIRE RESISTANCE RATING (FRR)	HORIZONTAL ASSEMBLIES FRR (HOURS)			LISTED DESIGN NO. OR DESCRIPTION (SB-2)		[B]3.2.2.29 & [B]3.2.1.4 APPENDIX D TABLE D-2.2.1.A											
		FLOORS 2 HOURS			200mm MIN. TYPE N CONCRETE		[B]3.2.2.18.(3)(A)											
		ROOF N/A HOURS			ROOF N/A HOURS													
		MEZZANINE N/A HOURS			200mm MIN. TYPE N CONCRETE													
		SUPPORTING MEMBERS FRR (HOURS)			LISTED DESIGN NO. OR DESCRIPTION (SB-2)													
		FLOORS 2 HOURS			250mm MIN. TYPE N CONCRETE													
		ROOF N/A HOURS			ROOF N/A HOURS													
MEZZANINE N/A HOURS			MEZZANINE N/A HOURS															



11.2 LIFE SAFETY PLANS

OCCUPANCY AND EXITING WIDTH								
ROOM NUMBER	ROOM NAME	AREA	OCCUPANT LOAD RATE 3.1.17 (m²)	CALCULATED OCCUPANT LOAD	POSTED OCCUPANT LOAD	OCCUPANT LOAD	EXITING WIDTH (mm)	TOTAL EXIT WIDTH (mm)
T.O. BASEMENT								
001	POOL MECHANICAL ROOM	367 m²	46.00 m²	8.0		8	6.1	48.8
002	CORRIDOR	217 m²						
003	OPTION B ADDITION	503 m²						
T.O. MAIN FLOOR								
101	LOBBY	767 m²						
102	CAFE SEATING	36 m²	3.70 m²	9.7		10	6.1	61
103	CAFE SEATING	36 m²	3.70 m²	9.7		10	6.1	61
104	FACILITY CONTROL POINT	53 m²	9.30 m²	5.7		6	6.1	36.6
105	ADMINISTRATION	77 m²	9.30 m²	8.3		9	6.1	54.9
106	MULTIPURPOSE ROOM	48 m²	1.85 m²	25.8		26	6.1	158.6
107	CRU	59 m²	9.30 m²	6.4		7	6.1	42.7
108	INCLUSIVE W/C	21 m²						
109	GENERAL STORAGE	38 m²	46.00 m²	0.8		1	6.1	6.1
110	JANITOR	7 m²	46.00 m²	0.2		1	6.1	6.1
111	NATATORIUM	2707 m²			450		6.1	
117	FIRST AID ROOM	14 m²						
118	LIFEGUARD OFFICE	18 m²						
119	LIFEGUARD CHANGE ROOM	50 m²	4.60 m²	11.0		11	6.1	67.1
120	INCLUSIVE CHANGE ROOM	233 m²						
121	FEMALE CHANGE ROOM	84 m²						
122	MALE CHANGE ROOM	84 m²						
123	POOL STORAGE	30 m²						
124	POOL STORAGE	23 m²						
125	MECHANICAL ROOM	41 m²	46.00 m²	0.9		1	6.1	6.1
126	ELECTRICAL ROOM	46 m²	46.00 m²	1.0		2	6.1	12.2
EL-1	ELEVATOR 1	6 m²						
ST-1	STAIR 1	13 m²						
ST-2	STAIR 2	14 m²						
T.O. SECOND FLOOR								
201	OFFICE / SHELL SPACE	581 m²	9.30 m²	62.5		63	6.1	384.3
202	MECHANICAL ROOM	274 m²	46.00 m²	6.0		6	6.1	36.6
203	CORRIDOR	31 m²						

- FIRE RATING LEGEND**
- 0 HOUR FIRE SEPARATION (SMOKE)
  - 1 HOUR FIRE RATED PARTITION
  - 1.5 HOUR FIRE RATED PARTITION
  - 2 HOUR FIRE RATED PARTITION



LIFE SAFETY PLAN LEVEL 01  
SCALE 1:500









## LIFE SAFETY PLAN LEVEL 02

SCALE 1:500

### FIRE RATING LEGEND

-  0 HOUR FIRE SEPARATION (SMOKE)
-  1 HOUR FIRE RATED PARTITION
-  1.5 HOUR FIRE RATED PARTITION
-  2 HOUR FIRE RATED PARTITION



## LIFE SAFETY PLAN BASEMENT LEVEL

SCALE 1:500

-  BASEMENT OPTION A EXTENTS
-  BASEMENT OPTION B ADDITION



# 12

**CLASS D  
COST  
ESTIMATE**





# 12.1 TOTAL PROJECT BUDGET SUMMARY

The following table summarizes total project costs including both construction and soft costs. Included within construction costs are scopes associated with the Aquatics Facility (building), Site/Transportation (site), and Utility improvements (sanitary). Detailed construction cost estimates for each of those elements have been included in the following sections within this chapter (12.2 – Aquatics Facility, 12.3 – Site/Transportation, 12.4 – Utilities).

Based on the project still being in the Concept Design Phase, It is recommended to still carry a 20% contingency on the construction cost subtotal. This will provide coverage for detailed elements of the project not yet fully resolved with the project team as well as programmatic and design changes that will evolve during the detailed design phases prior to construction.

Additional project soft costs; Fixtures, Furniture, Equipment as well as project Consulting Fees have been included in the total project costs. Consulting fees include not only design fees for the detailed design of the facility, but also provide a budget for additional owners representatives/consultants that may be required during construction. Examples of those include; additional geotechnical studies, materials monitoring during construction, independent roof consultant/inspector, commissioning agent. If there are any internal City administrative costs assigned to the detailed design and management of the project, these have not been accounted for in the following summary.

The current project budget is summarized in 2022 dollars. It should be noted that cost consultants have advised for projects which may not enter construction until future months or years to carry escalation rates above what the market has traditionally incurred. Cost escalation for work not initiated until 2023 is recommended to carry a 9% escalation for purposes of budgetary planning while a 6.5% escalation figure is recommended for 2024.

CONSTRUCTION COST	
Aquatics Facility Construction Subtotal	\$ 46,000,000
Site/Transportation Phase 1	\$ 900,000
Site/Transportation Phase 2	\$ 800,000
Utilities Sanitary Line	\$ 800,000
Construction Cost Subtotal	\$ 48,600,000
DESIGN / CONSTRUCTION CONTINGENCIES	
Design Contingency (15%)	\$ 7,300,000
Construction Contingency (5%)	\$ 2,400,000
Subtotal - Including Contingencies	\$ 58,300,000
PROJECT SOFT COSTS	
FFE (5%)	\$ 2,900,000
Consulting Fee (10%)	\$ 5,850,000
Soft Cost Subtotal	\$ 8,750,000
TOTAL PROJECT COSTS	\$ 67,050,000

- \* **NOTE:** Budget Summary does not include:
- Phase 3 Site Work \$1.25 M
  - Option 'B' Basement \$1.90 M



# 12.2 AQUATICSFACILITY COST

## 12.2.1 INTRODUCTION

### PURPOSE

This Class 'D' Estimate is intended to provide a realistic allocation of direct construction costs for the Cold Lake Aquatic Facility, New Construction, located in Cold Lake, Ab, with the exception of the items listed in 1.6 Exclusions.

### DESCRIPTION

The Cold Lake Aquatic Facility, New Construction located in Cold Lake, Ab is comprised of the following key elements:

*The project includes the construction of a new aquatic facility with approximately 6,467 m² gross floor area (GFA). The scope of work includes but is not limited to substructure, structure, building envelope, architectural interiors and finishes, mechanical and electrical systems and a 10mx25m movable pool floor and bulkhead. The project will meet all applicable codes and standards.*

### METHODOLOGY

Hanscomb has prepared this estimate(s) in accordance with generally accepted principles and practices. Hanscomb staff are available to discuss its contents with any interested party.

From the documentation and information provided, quantities of all major elements were assessed or measured where possible and priced at rates considered competitive for a project of this type under

a stipulated sum form of contract in Cold Lake, AB. Pricing shown reflects probable construction costs obtainable in the Cold Lake, Ab area on the effective date of this report. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the work.

### SPECIFICATIONS

For building components and systems where specifications and design details are not available, quality standards have been established based on discussions with the design team.

### ESTIMATE CLASSIFICATION AND COST PREDICTABILITY

Estimates are defined and classified based on the stage of a project's development and the level of information available at the time of the milestone estimate.

*This Class 'D' Estimate is considered to have an expected degree of accuracy of +/- 20-30%. In other words, bid results might vary by this amount if the construction budget were set at this milestone estimate.*

At the initial stages of a contemplated project, the cost accuracy of the estimate is low as there may be little or no information available to inform a first high-level concept estimate or order of magnitude estimate. As a project nears design completion and is ready to be released to market for tender, the level of accuracy of the estimate is high as the detail is generally extensive and typically represents the information on which contractors will bid.

Milestone cost estimates or "checks" are

recommended as the project design develops to keep track of scope and budget. Early detection of potential budget overruns will allow for remedial action before design and scope are locked in. The number of milestone estimates will depend on a project's size and schedule and cost predictability will improve as the design advances.

According to the Canadian Joint Federal Government/ Industry Cost Predictability Taskforce, industry standards for estimate classification and cost estimate accuracy may be summarized as seen in the table below.

While the classification categories differ from one authority to the next, the overarching principle for cost predictability remains the same – as the level of detail and design development increases, so does the level of accuracy of the estimate.

### EXCLUSIONS

This Class 'D' Estimate does not provide for the following, if required:

- Cost of contaminated soil removal
- Rock excavation and removal
- Cost of hazardous material (e.g. asbestos, lead, PCB, etc.) removal
- Equipment beyond that identified in this estimate
- Site Development
- Escalation contingency
- Financing costs
- Loose furniture, furnishings and equipment
- Special audio, visual, security equipment or installation other than provision of empty conduit systems carried in electrical division
- Window treatments
- Winter Construction (Concrete foundation )
- Value-added tax (e.g. Harmonized Sales Tax, Goods and Services Tax, or other)
- Premiums associated with Public-Private Partnership procurement model
- Soft Costs
- Building permit
- Development charges
- Easement costs
- Fund raising costs
- Land acquisition costs and impost charges

COST ESTIMATE CLASSIFICATION SYSTEM						
AACE	Class 5	Class 4	Class 3		Class 2	Class 1
DND			Indicative		Substantive	
RAIC	OME	Sketch Design	Design Develop		Contract Documents	Tender Documents
GOC	OME	D	C	← B →		A
	↓	↓	↓		↓	↓
Design Documentation % Complete		12.5%	25.0%		95%	100.0%
Cost Estimate Accuracy (+/-%)	+/- 30%	+/- 20-30%	+/- 15-20%		+/- 10-15%	+/- 5-10%

Legend  
AACE Association for the Advancement of Cost Engineering  
DND Department of National Defence

GOC Government of Canada  
RAIC Royal Architectural Institute of Canada  
OME Order of Magnitude Estimate



- Legal fees and expenses
- Owner’s staff and associated management
- Preventative maintenance contracts
- Professional fees and expenses
- Relocation of existing facilities, including furniture and equipment
- Right of way charges
- 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

### 12.2.2 DOCUMENTATION

This Class 'D' Estimate has been prepared from the documentation included in Appendix AA of this report.

All of the above documentation was received from TBD Architecture + Urban Design and was supplemented with information gathered in meeting(s) and telephone conversations with the design team, as applicable.

Design changes and/or additions made subsequent to this issuance of the documentation noted above have not been incorporated in this report.

### 12.2.3 COST CONSIDERATIONS

#### COST BASE

All costs are estimated on the basis of competitive bids being received by the Design-Builders in September 2022 from contractors and all major subcontractors and suppliers based on a stipulated sum form of contract. If these conditions are not met, bids received could be expected to exceed this estimate.

#### UNIT RATES

The unit rates in the preparation of this Class 'D' Estimate include labour and material, equipment, subcontractor’s overheads and profit. Union contractors are assumed to perform the work with the fair wage policy in effect.

#### GENERAL REQUIREMENTS AND FEE

General Requirements and Fee cover the General Contractor’s indirect costs which may include but not be limited to supervision, site set up, temporary utilities, equipment, utilities, clean up, etc. as covered in Division 1 General Conditions of the Contract Documents. It also includes the contractor’s fees and should not be confused with Design or Consultant fees which are excluded from the Construction Costs and carried separately in the Owner’s Total Project Costs.

#### DESIGN AND PRICING ALLOWANCE

An allowance of 15.0% has been included to cover design and pricing unknowns. This allowance is not intended to cover any program space modifications but rather to provide some flexibility for the designers and cost planners during the remaining contract document stages.

It is expected that this allowance amount will be absorbed into the base construction costs as the design advances. The amount by which this allowance is reduced corresponds to an increase in accuracy and detailed design information. Hanscomb recommends that careful consideration be made at each milestone estimate to maintain adequate contingency for this allowance.

As a project nears completion of design, Hanscomb recommends retaining some contingency for this

allowance for the final coordination of documents.

#### ESCALATION ALLOWANCE

All costs are based on September 2022 dollars. No allowance per annum has been made for construction cost escalation that may occur between September 2022 and the anticipated bid date for the project. Escalation during construction is included in the unit rates.

For escalation, the budgeted amount will typically decline as the time to award nears. Forecasting escalation requires careful assessment of a continually changing construction market which at best is difficult to predict. The escalation rate should be monitored.

#### CONSTRUCTION ALLOWANCE

An allowance of 5.0% has been made to cover construction (post contract) unknowns. This allowance, also known as the Post Contract Contingency (PCC), is intended to cover costs for change orders during construction that are not foreseeable. It is not intended to cover scope changes to the contract. The amount carried in a budget for this allowance is typically set at the initial planning stage and should be based on the complexity of the project and the probability of unknowns and retained risks.

#### CASH ALLOWANCE

Cash allowances are intended to allow the contractor to include in the bid price the cost for work that is difficult to fully scope at the time of tendering based on factors that are beyond the Owner and Prime Consultant’s control. Cash allowances attempt to reduce the risks by dedicating a set amount for use

against a certain cost that cannot yet be detailed. The Contractor is obligated to work as best as possible within the limitations of the Cash Allowance.

Examples of Cash Allowances include hardware, inspection and testing, site conditions, replacement of existing elements during demolition for renovation, hazardous materials abatement, signage, etc.

Any Cash Allowances if applicable are included either in the details of this estimate under the appropriate discipline or at the summary level.

#### TAXES

No provision has been made for the Goods & Services Sales Tax. It is recommended that the owner make separate provision for GST in the project budget.

#### SCHEDULE

Pricing assumes a standard schedule of work appropriate to the size and scope of this project. Premiums for off-hour work, working in an operational facility, accelerated schedule, etc., if applicable, are identified separately in the body of the estimate.

#### STATEMENT OF PROBABLE COSTS

Hanscomb has no control over the cost of labour and materials, the contractor’s method of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of experience, qualifications and best judgment of the professional consultant familiar with the construction industry. Hanscomb cannot and does not guarantee that proposals, bids or actual construction costs will not vary from this or subsequent cost estimates.



ONGOING COST CONTROL

Hanscomb recommends that the Owner and design team carefully review this document, including line item description, unit prices, clarifications, exclusions, inclusions and assumptions, contingencies, escalation, and mark-ups. If the project is over budget, or if there are unresolved budgeting issues, alternative systems/ schemes should be evaluated before proceeding into the next design phase.

It is recommended that a final updated estimate at the end of the design stage be produced by Hanscomb using Bid Documents to determine overall cost changes which may have occurred since the preparation of this estimate. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. Hanscomb cannot reconcile bid results to any estimate not produced from bid documents including all addenda.

This estimate does not constitute an offer to undertake the work, nor is any guarantee given that an offer, to undertake the work at the estimate(s) price, will subsequently be submitted by a construction contractor. Unless explicitly stated otherwise, it is assumed that competitive bids will be sought when tender documents have been completed. Any significant deviation between bids received and a pre-tender estimate prepared by Hanscomb from the same tender documents, should be evaluated to establish the possible cause(s).

MARKET CONDITIONS

This cost estimate is being generated in a time of considerable volatility in the market (supply chain issues, labour availability, willingness to accept risk transfer, etc.). Best efforts have been made to source unit rates to allow for the evaluation, however the

market will continue to evolve, and unit rates may exceed those carried.

Hanscomb is taking all necessary steps to stay abreast of the potential impacts to the Canadian construction industry that may result from the recent pandemic and current global events. We are in close contact with consultants, contractors, suppliers and industry to help understand the current and future risks to our local markets. As noted herein, this estimate report is based on current market data. Formal risk assessment for the project, including construction costs is assumed to be done by others.

12.2.4 GROSS FLOOR AND SITE DEVELOPED AREAS

GROSS FLOOR AND SITE DEVELOPED AREAS

Gross Floor Area	
Description	m2
Basement - Option A (extents)	661
Level 01	4,846
Level 02	960
Total Gross Floor Area	
6,467	
Option B- Basement ADD	609

The above areas have been measured in accordance with the Canadian Institute of Quantity Surveyors’ Method of Buildings by Area and Volume.

12.2.5 CONSTRUCTION COST ESTIMATE SUMMARY

- New Construction-Main Building	32,501,800
Sub-Totals	32,501,800
- Location Factor	6,500,400
- General Site Requirements	4,875,300
- Contractor's Fee	2,193,900
Sub-Total- Excl. Contingencies	46,071,400
-Design and Pricing Allowance	6,910,700
-Escalation Allowance	Excluded
-Construction Allowance	2,649,100
Sub-Total- Incl. Contingencies	55,631,200
- Goods & Services Tax	Excluded
Total Construction Estimate	55,631,200
The following all-inclusive cost is specifically <b>Excluded</b> from the above total	
Option B- Basement expansion (add 609m²)	
ADD	\$1,907,300



12.2.6 UNDERSTANDING THE ELEMENTAL COST SUMMARY

The cost information prepared and presented by Quantity Surveyors is organized in a form referred to by Quantity Surveyors as an ‘Elemental Cost Summary’. In this format, the more ‘intuitive’ elements

(e.g. foundations, exterior cladding, plumbing, etc.) of a building are evaluated rather than materials or trades. Quantity Surveyors track this information consistently from project to project to benchmark not just the overall unit rate of a building type but also rates and ratios for key elements. Below are some of the key features on the Elementary Cost Summary of this estimate:

Building components are summarized as elements ‘A2 Structure’ and then sub-elements ‘A23 Roof Construction’. This allows review of Roof Construction costs whether it is steel, concrete or wood - something difficult with a trade summary.

Ratio to GFA evaluates design efficiency and highlights outliers. It is arrived at by dividing the parametric quantity of a sub-element (i.e. overall exterior wall area) by the building gross floor area (GFA). A ratio greater than 0.600 for ‘A32 Walls Above Grade’ is considered high and may be due to articulation, courtyard design or high floor to floor heights.

The ‘Unit Rate’ is the blended rate of a sub-element’s costs divided by its parametric quantity and allows a review of its reasonableness relative to bench-marks. A rate of \$559/m2 indicates a good quality exterior wall cladding.

The last column expresses the cost of each element as a percentage of total construction cost. At 18.7% of total construction costs, mechanical and electrical systems are considered basic.

The ‘Rate per SF’ (m<sup>2</sup>) column converts costs for each element or sub-element to a \$/SF (m<sup>2</sup>) of GFA for comparison to benchmark rates. A rate of \$217/m<sup>2</sup> indicates basic electrical design.

General Requirements & Fee cover General Contractor’s overheads (site set up, supervision, etc.) and contractor’s expenses. Fee is not for Consultants.

Allowances are critical for estimates. Design & pricing compensates for a lack of detail early in design; escalation considers changes to labour & material; construction allowance is for unforeseen conditions; and, cash allowances offer flexibility for items difficult to detail at bid.

Project: Cold Lake Aquatic Centre Location: New Construction Owner: Cold Lake, AB Consultant: TBD Architecture + Urban Design Report date: 19 Jul 2017 Page No.: A-1 Bldg Type: 420 C.T. Index: 0.0 GFA: 1,582 m2									
SAMPLE ELEMENTAL SUMMARY									
Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate per m2		%	
		Quantity	Unit Rate	Sub-Total	Total	Sub-Total	Total		
A SHELL		1,582 m2		1,829,500	1,829,500	1,156.70	35.6		
A1 SUBSTRUCTURE					250,000	158.03	4.9		
A11 Foundations	0.000	1,582 m2	158.03	250,000		158.03			
A12 Basement Excavation	0.001	1 Nil	0.00	0		0.00			
A13 Special Conditions	0.001	1 Sum	0.00	0		0.00			
A2 STRUCTURE					488,800	296.33	9.1		
A21 Lowest Floor Construction	1.000	1,582 m2	64.02	102,700		64.02			
A23 Roof Construction	1 Nil	1 Nil	0.00	0		0.00			
A23 Roof Construction	1.013	1,602 m2	228.53	366,100		231.42			
A3 EXTERIOR ENCLOSURE					1,111,100	702.34	21.8		
A31 Walls Below Grade	0.001	1 Nil	0.00	0		0.00			
A32 Walls Above Grade		1,006 m2	559.22	561,900		387.42			
A33 Windows & Entrances	0.003	4 Lvs	3,275.00	13,100		8.28			
A34 Roof Coverings	1.013	1,602 m2	220.22	352,800		223.01			
A35 Projections	1.000	1,582 m2	83.63	132,300		83.63			
B INTERIORS		1,582 m2		1,033,400		653.22	20.1		
B1 PARTITIONS & DOORS				362,300		242.04	7.4		
B11 Partitions	1.504	2,380 m2	105.28	250,800		158.41			
B12 Doors	0.036	60 Lvs	2,209.00	132,300		83.63			
B2 FINISHES				398,400		251.83	7.7		
B21 Floor Finishes	1.000	1,582 m2	75.35	119,200		75.35			
B22 Ceiling Finishes	1.000	1,582 m2	91.28	144,400		91.28			
B23 Wall Finishes	2.314	3,660 m2	36.83	134,800		85.21			
B3 FITTINGS & EQUIPMENT				252,100		159.36	4.9		
B31 Fittings & Fixtures	1.000	1,582 m2	159.36	252,100		159.36			
B32 Equipment	1.000	1,582 m2	0.00	0		0.00			
B33 Elevators	0.001	1 Nil	0.00	0		0.00			
B34 Escalators	0.001	1 Nil	0.00	0		0.00			
C SERVICES		1,582 m2		864,400		608.41	18.7		
C1 MECHANICAL				621,100		392.60	12.1		
C11 Plumbing & Drainage	1.000	1,582 m2	145.26	229,800		145.26			
C12 Fire Protection	1.000	1,582 m2	31.04	49,100		31.04			
C13 HVAC	1.000	1,582 m2	170.35	269,500		170.35			
C14 Controls	1.000	1,582 m2	45.95	72,700		45.95			
C2 ELECTRICAL				343,300		217.00	6.7		
C21 Service & Distribution	1.000	1,582 m2	42.54	67,300		42.54			
C22 Lighting, Devices & Heating	1.000	1,582 m2	116.81	184,800		116.81			
C23 Systems & Ancillaries	1.000	1,582 m2	57.95	91,200		57.95			
NET BUILDING COST - EXCLUDING SITE				\$ 3,827,700		2,419.53	74.4		
D SITE & ANCILLARY WORK		1,582 m2		799,800		505.56	15.6		
D1 SITE WORK				799,800		505.56	15.6		
D11 Site Development	0.541	10,348 m2	48.71	504,100		318.65			
D12 Mechanical Site Services	0.001	1 Sum	167,400.00	167,400		105.82			
D13 Electrical Site Services	0.001	1 Sum	128,300.00	128,300		81.10			
D2 ANCILLARY WORK				0		0.00	0.0		
D21 Demolitions	0.001	1 Nil	0.00	0		0.00			
D22 Alterations	0.001	1 Nil	0.00	0		0.00			
NET BUILDING COST - INCLUDING SITE				\$ 4,627,500		2,925.09	89.9		
Z1 GENERAL REQUIREMENTS & FEE				520,100		328.76	10.1		
Z11 General Requirements	8.0%		370,200						
Z12 Fee	3.0%		149,900			94.75			
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES				\$ 5,147,600		3,253.85	100.0		
Z2 ALLOWANCES				830,300		588.18			
Z21 Design & Pricing Allowance	10.0%		514,800			325.41			
Z22 Escalation Allowance	2.5%		141,600			89.51			
Z23 Construction Allowance	3.0%		174,100			110.05			
Z24 Cash Allowances	1 Sum	100,000.00	100,000			63.21			
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES				\$ 6,078,100		3,842.04			
VALUE ADDED TAX (GST/HST)				0		0.00			
Value Added Tax (GST/HST)				0.0 %	0	0.00			
TOTAL CONSTRUCTION ESTIMATE				\$ 6,078,100		3,842.04			
CLASS C ESTIMATE									

12.2.7 DETAILED ELEMENTAL ESTIMATE SUMMARY

Project: Cold Lake Aquatic Centre	ELEMENTAL COST SUMMARY							Report Date: 28 Sep 2022
New Construction								Page No.: A-1
Location: Cold Lake, AB								Bldg Type: 550
Owner: City of Cold Lake								C.T. Index: 0.0
Consultant: TBD Architecture + Urban Design								GFA: 6,467 m2
Element	Ratio to GFA	Elemental Cost		Elemental Amount		Rate per m2		%
		Quantity	Unit Rate	Sub-Total	Total	Sub-Total	Total	
A SHELL		6,467 m2			16,642,400		2,573.43	36.1
A1 SUBSTRUCTURE					3,570,500		552.11	7.7
A11 Foundations	0.749	4,846 m2	254.90	1,235,400		191.03		
A12 Basement Excavation	1.272	8,223 m3	56.00	460,100		71.15		
A13 Special Conditions	0.000	1 Sum	1,875,000.00	1,875,000		289.93		
A2 STRUCTURE					6,953,500		1,075.23	15.1
A21 Lowest Floor Construction	0.749	4,846 m2	298.20	1,445,300		223.49		
A22 Upper Floor Construction	0.251	1,621 m2	749.70	1,215,200		187.91		
A23 Roof Construction	0.749	4,846 m2	885.90	4,293,000		663.83		
A3 EXTERIOR ENCLOSURE					6,118,400		946.10	13.3
A31 Walls Below Grade	0.243	1,571 m2	678.90	1,066,500		164.91		
A32 Walls Above Grade	0.242	1,563 m2	856.70	1,339,000		207.05		
A33 Windows & Entrances	0.146	941 m2	2,098.90	1,975,100		305.41		
A34 Roof Coverings	0.749	4,846 m2	358.60	1,737,800		268.72		
A35 Projections				0		0.00		
B INTERIORS		6,467 m2			6,847,500		1,058.84	14.9
B1 PARTITIONS & DOORS					1,775,400		274.53	3.9
B11 Partitions	0.586	3,789 m2	404.80	1,533,700		237.16		
B12 Doors	0.015	95 No	2,544.20	241,700		37.37		
B2 FINISHES					2,279,500		355.27	5.0
B21 Floor Finishes	0.867	5,610 m2	117.90	997,800		154.29		
B22 Ceiling Finishes	0.867	5,610 m2	104.70	587,600		90.86		
B23 Wall Finishes	1.269	8,208 m2	86.80	712,100		110.11		
B3 FITTINGS AND EQUIPMENT					2,774,600		429.04	6.0
B31 Fittings & Fixtures	1.000	6,467 m2	97.60	631,300		97.62		
B32 Pool Equipment	1.000	6,467 m2	77.50	501,300		77.52		
B33 Elevators	0.000	1 No	225,000.00	225,000		34.79		
B34 Movable Pool Floor	0.039	250 m2	5,668.00	1,417,000		219.11		
C SERVICES		6,467 m2			8,383,700		1,296.38	18.2
C1 MECHANICAL					5,980,000		924.69	13.0
C11 Plumbing & Drainage	1.000	6,467 m2	254.20	1,644,000		254.21		
C12 Fire Protection	1.000	6,467 m2	34.90	226,000		34.95		
C13 HVAC	1.000	6,467 m2	542.80	3,510,000		542.76		
C14 Controls	1.000	6,467 m2	92.80	600,000		92.78		
C2 ELECTRICAL					2,403,700		371.69	5.2
C21 Service & Distribution	1.000	6,467 m2	100.00	646,700		100.00		
C22 Lighting, Devices & Heating	1.000	6,467 m2	201.80	1,305,000		201.79		
C23 Systems & Ancillaries	1.000	6,467 m2	69.90	452,000		69.89		
NET BUILDING COST - EXCLUDING SITE					\$31,873,600		4,928.65	69.2
D SITE & ANCILLARY WORK		6,467 m2			628,200		97.14	1.4
D1 SITE WORK					423,300		65.46	0.9
D11 Site Development	0.000	1 m2	73,300.00	73,300		11.33		
D12 Mechanical Site Services	0.000	1 Sum	200,000.00	200,000		30.93		
D13 Electrical Site Services	0.000	1 Sum	150,000.00	150,000		23.19		
D2 ANCILLARY WORK					204,900		31.68	0.4
D21 Demolitions	0.000	1 Sum	100,000.00	100,000		15.46		
D22 Alterations	0.072	446 m2	225.0	104,900		16.22		
NET BUILDING COST - INCLUDING SITE					\$32,501,800		5,025.79	70.5
Z1 GENERAL REQUIREMENTS & FEE					13,569,600		2,098.28	29.5
Z10 Location Factor	20.0%			6,500,400		1,005.16		
Z11 General Requirements	12.5%			4,875,300		753.87		
Z12 Fee	5.0%			2,193,900		339.25		
TOTAL CONSTRUCTION ESTIMATE - EXCLUDING ALLOWANCES					\$46,071,400		7,124.08	100.0
Z2 ALLOWANCES					9,559,800		1,478.24	
Z21 Design & Pricing Allowance	15.0%			6,910,700		1,068.61		
Z22 Escalation Allowance	0.0%			0		0.00		
Z23 Construction Allowance	5.0%			2,649,100		409.63		
TOTAL CONSTRUCTION ESTIMATE - INCLUDING ALLOWANCES					\$55,631,200		8,602.32	
VALUE ADDED TAX (GST/HST)					0		0.00	
Value Added Tax (GST/HST)				0.0%	0		0.00	
TOTAL CONSTRUCTION ESTIMATE					\$55,631,200		8,602.30	



# 12.3 SITE/TRANSPORTATION COST

## 12.3.1 PHASE 1 - EAST PARKING AND DROP-OFF AREA

NOTE: The specification number refers to specification covering measurements and payment of the respective item					
Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS					
1.1	1501	General project requirements	1 l.s.	\$ 80,000.00	\$ 80,000.00
1.2	1502/2000	Traffic accommodation	1 l.s.	\$ 10,000.00	\$ 10,000.00
TOTAL FOR SCHEDULE 1.0					\$ 90,000.00
SCHEDULE 2.0 - PHASE 1 REMOVALS					
2.1	2000	Removal and salvage of existing road structure (millings) to 100mm depth c/w stockpiling at City of Cold Lake milling yard	1,400 m²	\$ 24.00	\$ 33,600.00
2.2	2000	Removal and dispose off site of existing gravel structure and subcut excavation up to 400mm depth	1,400 m²	\$ 12.00	\$ 16,800.00
2.3	2000/2070	Saw cut, remove and dispose offsite of existing pin on curb	170 l.m.	\$ 58.00	\$ 9,860.00
2.4	2000/2070	Saw cut, remove and dispose offsite of existing miscellaneous concrete to 150mm thickness and 150mm subcut	30 m²	\$ 75.00	\$ 2,250.00
TOTAL FOR SCHEDULE 2.0					\$ 62,510.00
SCHEDULE 3.0 - REMOVALS					
3.1	2000	Removal and salvage of existing road structure (millings) to 100mm depth c/w stockpiling at City of Cold Lake milling yard	1,300 m²	\$ 24.00	\$ 31,200.00
3.2	2000	Removal and dispose off site of existing gravel structure and subcut excavation up to 400mm depth	1,570 m²	\$ 12.00	\$ 18,840.00
3.3	2000/2070	Saw cut, remove and dispose offsite of existing pin on curb	390 l.m.	\$ 58.00	\$ 22,620.00
3.4	2000/2070	Saw cut, remove and dispose offsite of existing miscellaneous concrete to 150mm thickness and 150mm subcut	200 m²	\$ 75.00	\$ 15,000.00
PROVISIONAL REMOVALS					
3.5	2233	Stripping and stockpiling existing topsoil for reuse (avg. 150mm depth)	660 m²	\$ 3.50	\$ 2,310.00
TOTAL FOR SCHEDULE 3.0					\$ 89,970.00

NOTE: The specification number refers to specification covering measurements and payment of the respective item					
Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 4.0 - SURFACE WORKS					
4.1	2340/2232	Subgrade preparation to 300 mm depth at 100% Standard Proctor Density c/w 20 kg/m2 cement stabilization	1,360 m²	\$ 18.00	\$ 24,480.00
4.2	2340/2232	Increase or decrease cement content in increments of 5kg/m2 for cement stabilization	1,360 m²	\$ 3.00	\$ 4,080.00
4.3	2721	Supply, place and compact 300 mm depth minus 20 mm gravel to 100% Standard Proctor Density	1,360 m²	\$ 45.00	\$ 61,200.00
4.4	2745	Prime coat	1,210 m²	\$ 1.00	\$ 1,210.00
4.5	2741	Supply, place and finish 60 mm hot-mix asphalt (first lift)	1,210 m²	\$ 30.00	\$ 36,300.00
4.6	2745	Tack coat	1,210 m²	\$ 1.00	\$ 1,210.00
4.7	2741	Supply, place and finish 50 mm hot-mix asphalt (second lift)	1,210 m²	\$ 26.00	\$ 31,460.00
4.8	2770	Supply, place and finish pin on curb	300 l.m.	\$ 165.00	\$ 49,500.00
4.9	2770	Supply, place and finish miscellaneous concrete complete with gravel level course	870 m²	\$ 450.00	\$ 391,500.00
4.10	2631	Manhole adjustment second stage paving including new frame and grate	1 ea.	\$ 1,500.00	\$ 1,500.00
4.11		Relocate street lights c/w electrical connections and support	2 ea.	\$ 8,000.00	\$ 16,000.00
TOTAL FOR SCHEDULE 4.0					\$ 618,440.00
SCHEDULE 5.0 - LANDSCAPING					
5.1	2000	Topsoiling and broadcast seeding of disturbed landscaped areas c/w 100mm depth of new screened topsoil	730 m³	\$ 25.00	\$ 18,250.00
TOTAL FOR SCHEDULE 5.0					\$ 18,250.00



NOTE: The specification number refers to specification covering measurements and payment of the respective item

Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 6.0 - PROVISIONAL					
6.1	2000	Supply and place borrow material compacted to 98% Standard Proctor Density	150 m³	\$ 25.00	\$ 3,750.00
6.2	2000	Supply and install geogrid	500 m²	\$ 6.00	\$ 3,000.00
6.3	2000	Waste excavation and disposal offsite of unsuitable material	100 m³	\$ 20.00	\$ 2,000.00
TOTAL FOR SCHEDULE 6.0					\$ 8,750.00

OPC SUMMARY

SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS	\$	90,000.00
SCHEDULE 2.0 - PHASE 1 REMOVALS	\$	62,510.00
SCHEDULE 3.0 - REMOVALS	\$	89,970.00
SCHEDULE 4.0 - SURFACE WORKS	\$	618,440.00
SCHEDULE 5.0 - LANDSCAPING	\$	18,250.00
SCHEDULE 6.0 - PROVISIONAL	\$	8,750.00
SUBTOTAL	\$	887,920.00
CONTINGENCY (30%)	\$	266,376.00
ENGINEERING AND MATERIAL TESTING (10%)	\$	88,792.00
TOTAL PROJECT COST	\$	1,243,088.00

Estimate Class and Contingency:  
Class A Estimate includes 10% contingency  
Class B Estimate includes 20% contingency  
Class C Estimate includes 30% contingency

Disclaimer of Estimate:  
This estimate is an opinion of probable costs of construction and is not guaranteed. The estimate is based on information provided from the client regarding project requirements and is compared to the latest industry prices available. Actual cost may change once all project elements are finalized. Estimate is valid for 180 days.

12.3.2 PHASE 2 - WEST PARKING AND DROP-OFF AREA

NOTE: The specification number refers to specification covering measurements and payment of the respective item

Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS					
1.1	1501	General project requirements	1 l.s.	\$ 70,000.00	\$ 70,000.00
1.2	1502/2000	Traffic accommodation	1 l.s.	\$ 10,000.00	\$ 10,000.00
TOTAL FOR SCHEDULE 1.0					\$ 80,000.00
SCHEDULE 2.0 - REMOVALS					
2.1	2000	Removal and salvage of existing road structure (millings) to 100mm depth c/w stockpiling at City of Cold Lake milling yard	1,960 m²	\$ 24.00	\$ 47,040.00
2.2	2000	Removal and dispose off site of existing gravel structure and subcut excavation up to 400mm depth	2,880 m²	\$ 12.00	\$ 34,560.00
2.3	2000/2070	Remove and dispose offsite of existing curb and gutter	410 l.m.	\$ 58.00	\$ 23,780.00
2.4	2000/2070	Saw cut, remove and dispose offsite of existing miscellaneous concrete to 150mm thickness and 150mm subcut	0 m²	\$ 75.00	\$ -
PROVISIONAL REMOVALS					
2.6	2233	Stripping and stockpiling existing topsoil for reuse (avg. 150mm depth)	2,830 m²	\$ 3.50	\$ 9,905.00
TOTAL FOR SCHEDULE 2.0					\$ 115,285.00



NOTE: The specification number refers to specification covering measurements and payment of the respective item					
Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 3.0 - SURFACE WORKS					
3.1	2340/2232	Subgrade preparation to 300 mm depth at 100% Standard Proctor Density c/w 20 kg/m2 cement stabilization	1,980 m²	\$ 18.00	\$ 35,640.00
3.2	2340/2232	Increase or decrease cement content in increments of 5kg/m2 for cement stabilization	1,980 m²	\$ 3.00	\$ 5,940.00
3.3	2721	Supply, place and compact 300 mm depth minus 20 mm gravel to 100% Standard Proctor Density	1,980 m²	\$ 45.00	\$ 89,100.00
3.4	2745	Prime coat	1,790 m²	\$ 1.00	\$ 1,790.00
3.5	2741	Supply, place and finish 60 mm hot-mix asphalt (first lift)	1,790 m²	\$ 30.00	\$ 53,700.00
3.6	2745	Tack coat	1,790 m²	\$ 1.00	\$ 1,790.00
3.7	2741	Supply, place and finish 50 mm hot-mix asphalt (second lift)	1,790 m²	\$ 26.00	\$ 46,540.00
3.8	2770	Supply, place and finish straight face curb and gutter	340 l.m.	\$ 225.00	\$ 76,500.00
3.9	2770	Supply, place and finish miscellaneous concrete complete with gravel level course	360 m²	\$ 450.00	\$ 162,000.00
3.10		Relocate street lights c/w electrical connections and support	3 ea.	\$ 8,000.00	\$ 24,000.00
TOTAL FOR SCHEDULE 3.0					\$ 497,000.00
SCHEDULE 4.0 - LANDSCAPING					
4.1	2000	Topsoiling and broadcast seeding of disturbed landscaped areas c/w 100mm depth of new screened topsoil	2,660 m³	\$ 25.00	\$ 66,500.00
TOTAL FOR SCHEDULE 4.0					\$ 66,500.00

NOTE: The specification number refers to specification covering measurements and payment of the respective item					
Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 5.0 - PROVISIONAL					
5.1	2000	Supply and place borrow material compacted to 98% Standard Proctor Density	460 m³	\$ 25.00	\$ 11,500.00
5.2	2000	Supply and install geogrid	900 m²	\$ 6.00	\$ 5,400.00
5.3	2000	Waste excavation and disposal offsite of unsuitable material	200 m³	\$ 20.00	\$ 4,000.00
TOTAL FOR SCHEDULE 5.0					\$ 20,900.00

OPC SUMMARY

SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS	\$ 80,000.00
SCHEDULE 2.0 - REMOVALS	\$ 115,285.00
SCHEDULE 3.0 - SURFACE WORKS	\$ 497,000.00
SCHEDULE 4.0 - LANDSCAPING	\$ 66,500.00
SCHEDULE 5.0 - PROVISIONAL	\$ 20,900.00
SUBTOTAL	\$ 779,685.00
CONTINGENCY (30%)	\$ 233,905.50
ENGINEERING AND MATERIAL TESTING (10%)	\$ 77,968.50
TOTAL PROJECT COST	\$ 1,091,559.00

Estimate Class and Contingency:

Class A Estimate includes 10% contingency  
Class B Estimate includes 20% contingency  
Class C Estimate includes 30% contingency

Disclaimer of Estimate:

This estimate is an opinion of probable costs of construction and is not guaranteed. The estimate is based on information provided from the client regarding project requirements and is compared to the latest industry prices available. Actual cost may change once all project elements are finalized. Estimate is valid for 180 days.



12.3.3 PHASE 3 - TRAFFIC CIRCLE AREA

NOTE: The specification number refers to specification covering measurements and payment of the respective item					
Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS					
1.1	1501	General project requirements	1 l.s.	\$ 80,000.00	\$ 80,000.00
1.2	1502/2000	Traffic accommodation	1 l.s.	\$ 10,000.00	\$ 10,000.00
TOTAL FOR SCHEDULE 1.0					\$ 90,000.00
SCHEDULE 2.0 - REMOVALS					
2.1	2000	Removal and salvage of existing road structure (millings) to 100mm depth c/w stockpiling at City of Cold Lake milling yard	2,060 m²	\$ 24.00	\$ 49,440.00
2.2	2000	Removal and dispose off site of existing gravel structure and subcut excavation up to 400mm depth	3,110 m²	\$ 12.00	\$ 37,320.00
2.3	2000/2070	Remove and dispose offsite of existing curb and gutter	350 l.m.	\$ 58.00	\$ 20,300.00
2.4	2000/2070	Saw cut, remove and dispose offsite of existing miscellaneous concrete to 150mm thickness and 150mm subcut	60 m²	\$ 75.00	\$ 4,500.00
PROVISIONAL REMOVALS					
2.6	2233	Stripping and stockpiling existing topsoil for reuse (avg. 150mm depth)	2,650 m²	\$ 3.50	\$ 9,275.00
TOTAL FOR SCHEDULE 2.0					\$ 120,835.00

NOTE: The specification number refers to specification covering measurements and payment of the respective item					
Item	Spec. No.	Description	Quantity and/or Unit	Unit Price \$	Contract Value \$
SCHEDULE 3.0 - SURFACE WORKS					
3.1	2340/2232	Subgrade preparation to 300 mm depth at 100% Standard Proctor Density c/w 20 kg/m2 cement stabilization	3,040 m²	\$ 18.00	\$ 54,720.00
3.2	2340/2232	Increase or decrease cement content in increments of 5kg/m2 for cement stabilization	3,040 m²	\$ 3.00	\$ 9,120.00
3.3	2721	Supply, place and compact 300 mm depth minus 20 mm gravel to 100% Standard Proctor Density	3,040 m²	\$ 45.00	\$ 136,800.00
3.4	2745	Prime coat	2,480 m²	\$ 1.00	\$ 2,480.00
3.5	2741	Supply, place and finish 60 mm hot-mix asphalt (first lift)	2,480 m²	\$ 30.00	\$ 74,400.00
3.6	2745	Tack coat	2,480 m²	\$ 1.00	\$ 2,480.00
3.7	2741	Supply, place and finish 50 mm hot-mix asphalt (second lift)	2,480 m²	\$ 26.00	\$ 64,480.00
3.8	2770	Supply, place and finish straight face curb and gutter	420 l.m.	\$ 225.00	\$ 94,500.00
3.9	2770	Supply, place and finish miscellaneous concrete complete with gravel level course	340 m²	\$ 450.00	\$ 153,000.00
3.10		Relocate street lights c/w electrical connections and support	2 ea.	\$ 8,000.00	\$ 16,000.00
TOTAL FOR SCHEDULE 3.0					\$ 607,980.00
SCHEDULE 4.0 - LANDSCAPING					
4.1	2000	Topsoiling and broadcast seeding of disturbed landscaped areas c/w 100mm depth of new screened topsoil	1,940 m³	\$ 25.00	\$ 48,500.00
TOTAL FOR SCHEDULE 4.0					\$ 48,500.00



NOTE: The specitication number refers to specification covering measurements and payment of the respective item

Item	Spec. No.	Description	Quantity and/or Unit		Unit Price \$	Contract Value \$
		SCHEDULE 5.0 - PROVISIONAL				
5.1	2000	Supply and place borrow material compacted to 98% Standard Proctor Density	740	m³	\$ 25.00	\$ 18,500.00
5.2	2000	Supply and install geogrid	1,240	m²	\$ 6.00	\$ 7,440.00
5.3	2000	Waste excavation and disposal offsite of unsuitable material	200	m³	\$ 20.00	\$ 4,000.00
TOTAL FOR SCHEDULE 5.0						\$ 29,940.00

OPC SUMMARY

SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS	\$ 90,000.00
SCHEDULE 2.0 - REMOVALS	\$ 120,835.00
SCHEDULE 3.0 - SURFACE WORKS	\$ 607,980.00
SCHEDULE 4.0 - LANDSCAPING	\$ 48,500.00
SCHEDULE 5.0 - PROVISIONAL	\$ 29,940.00
SUBTOTAL	\$ 897,255.00
CONTINGENCY (30%)	\$ 269,176.50
ENGINEERING AND MATERIAL TESTING (10%)	\$ 89,725.50
TOTAL PROJECT COST	\$ 1,256,157.00

**Estimate Class and Contingency:**  
Class A Estimate includes 10% contingency  
Class B Estimate includes 20% contingency  
Class C Estimate includes 30% contingency

**Disclaimer of Estimate:**  
This estimate is an opinion of probable costs of construction and is not guaranteed. The estimate is based on information provided from the client regarding project requirements and is compared to the latest industry prices available. Actual cost may change once all project elements are finalized. Estimate is valid for 180 days.

12.4 UTILITIES COST

12.4.1 SITE SANITARY SERVICING

NOTE: The specitication number refers to specification covering measurements and payment of the respective item

Item	Spec. No.	Description	Quantity and/or Unit		Unit Price \$	Contract Value \$
		SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS				
1.1	1501	General project requirements	1	I.s.	\$ 100,000.00	\$ 100,000.00
1.2	1502/2000	Traffic accommodation	1	I.s.	\$ 10,000.00	\$ 10,000.00
		TOTAL FOR SCHEDULE 1.0				\$ 110,000.00
		SCHEDULE 2.0 - REMOVALS				
2.1	2000	Removal and salvage of existing road structure (millings) to <b>100mm</b> depth c/w stockpiling at City of Cold Lake milling yard	1,500	m²	\$ 24.00	\$ 36,000.00
2.2	2000	Removal and dispose off site of existing gravel structure and subcut excavation up to <b>400mm</b> depth	1,500	m²	\$ 12.00	\$ 18,000.00
2.3	2000/2070	Saw cut, remove and dispose offsite of existing pin on curb	40	I.m.	\$ 58.00	\$ 2,320.00
2.4	2000/2070	Saw cut, remove and dispose offsite of existing miscellaneous concrete to 150mm thickness and 150mm subcut	40	m²	\$ 75.00	\$ 3,000.00
2.5	2070/2000	Removal and disposal offsite of existing sanitary manhole	5	ea.	\$ 1,300.00	\$ 6,500.00
		PROVISIONAL REMOVALS				
2.6	2070	Fillcrete and abandon existing sanitary pipe	330	I.m.	\$ 80.00	\$ 26,400.00
		TOTAL FOR SCHEDULE 2.0				\$ 92,220.00
		SCHEDULE 3.0 - SANITARY SEWER SERVICING				
3.1	2315	Trenching & backfilling to 98% Standard Proctor Density including disposal of surplus trench excavation (use of tench box)	330	I.m.	\$ 400.00	\$ 132,000.00



NOTE: The specitication number refers to specification covering measurements and payment of the respective item

Item	Spec. No.	Description	Quantity and/or Unit		Unit Price \$	Contract Value \$
		SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS				
1.1	1501	General project requirements	1	I.s.	\$ 100,000.00	\$ 100,000.00
1.2	1502/2000	Traffic accommodation	1	I.s.	\$ 10,000.00	\$ 10,000.00
TOTAL FOR SCHEDULE 1.0						\$ 110,000.00
		SCHEDULE 2.0 - REMOVALS				
2.1	2000	Removal and salvage of existing road structure (millings) to <b>100mm</b> depth c/w stockpiling at City of Cold Lake milling yard	1,500	m²	\$ 24.00	\$ 36,000.00
2.2	2000	Removal and dispose off site of existing gravel structure and subcut excavation up to <b>400mm</b> depth	1,500	m²	\$ 12.00	\$ 18,000.00
2.3	2000/2070	Saw cut, remove and dispose offsite of existing pin on curb	40	I.m.	\$ 58.00	\$ 2,320.00
2.4	2000/2070	Saw cut, remove and dispose offsite of existing miscellaneous concrete to 150mm thickness and 150mm subcut	40	m²	\$ 75.00	\$ 3,000.00
2.5	2070/2000	Removal and disposal offsite of existing sanitary manhole	5	ea.	\$ 1,300.00	\$ 6,500.00
		PROVISIONAL REMOVALS				
2.6	2070	Fillcrete and abandon existing sanitary pipe	330	I.m.	\$ 80.00	\$ 26,400.00
TOTAL FOR SCHEDULE 2.0						\$ 92,220.00
		SCHEDULE 3.0 - SANITARY SEWER SERVICING				
3.1	2315	Trenching & backfilling to 98% Standard Proctor Density including disposal of surplus trench excavation (use of tench box)	330	I.m.	\$ 400.00	\$ 132,000.00

NOTE: The specitication number refers to specification covering measurements and payment of the respective item

Item	Spec. No.	Description	Quantity and/or Unit		Unit Price \$	Contract Value \$
		SCHEDULE 5.0 - PROVISIONAL				
5.1	2000	Supply and place borrow material compacted to 98% Standard Proctor Density	250	m³	\$ 25.00	\$ 6,250.00
5.2	2000	Supply and install geogrid	500	m²	\$ 6.00	\$ 3,000.00
5.3	2000	Waste excavation and disposal offsite of unsuitable material	250	m³	\$ 20.00	\$ 5,000.00
TOTAL FOR SCHEDULE 5.0						\$ 14,250.00

OPC SUMMARY

SCHEDULE 1.0 - GENERAL PROJECT REQUIREMENTS	\$ 110,000.00
SCHEDULE 2.0 - REMOVALS	\$ 92,220.00
SCHEDULE 3.0 - SANITARY SEWER SERVICING	\$ 323,720.00
SCHEDULE 4.0 - SURFACE WORKS	\$ 269,400.00
SCHEDULE 5.0 - PROVISIONAL	\$ 14,250.00
SUBTOTAL	\$ 809,590.00
CONTINGENCY (30%)	\$ 242,877.00
ENGINEERING AND MATERIAL TESTING (10%)	\$ 80,959.00
TOTAL PROJECT COST	\$ 1,133,426.00

Estimate Class and Contingency:

Class A Estimate includes 10% contingency  
Class B Estimate includes 20% contingency  
Class C Estimate includes 30% contingency

Disclaimer of Estimate:

This estimate is an opinion of probable costs of construction and is not guaranteed. The estimate is based on information provided from the client regarding project requirements and is compared to the latest industry prices available. Actual cost may change once all project elements are finalized. Estimate is valid for 180 days.





A

**PROJECT PILLARS**



# PROJECT PILLARS

When considering how you will make decisions in the process, the following are the primary decision making categories that will be explored. The intent of the pillars is to create absolute alignment in decision making and provide clear expectations, as well as support the rapid ability of leaders to react to opportunities and municipal risk. The four pillars have been defined, and weighting has been assigned to each of them.

These pillars were developed primarily from the identified values of the project team. These values were agreed upon early in the process and worked as the “guiding principles” for the decision making pillars. These values encompass goals of operational efficiency and product leadership, but are most focused on creating a brand based in customer intimacy. This goal focuses on providing best customer solutions and services, tailored to the unique needs and wants of the community. Innovation is focused on benefits to stakeholders, the public, and the community at large. Because of this primary goal, *Quality of Life and Experience* and *Diversity and Inclusion/Participation* were most heavily weighted as decision making criteria.







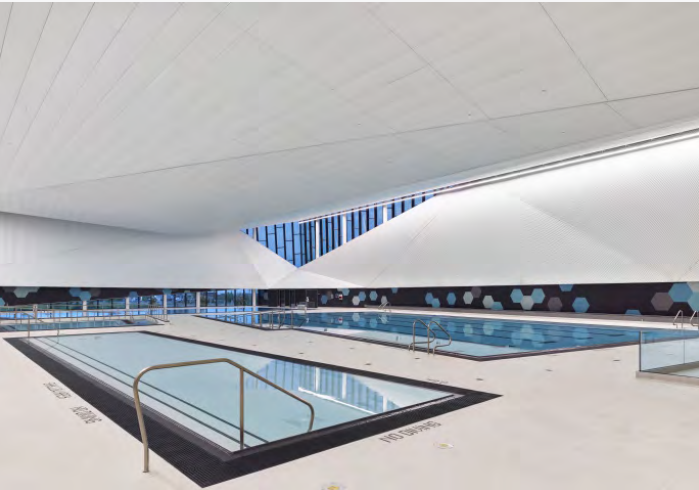
**B**

**SITE TOURS**



# COMBINED RESULTS OVERALL RATINGS

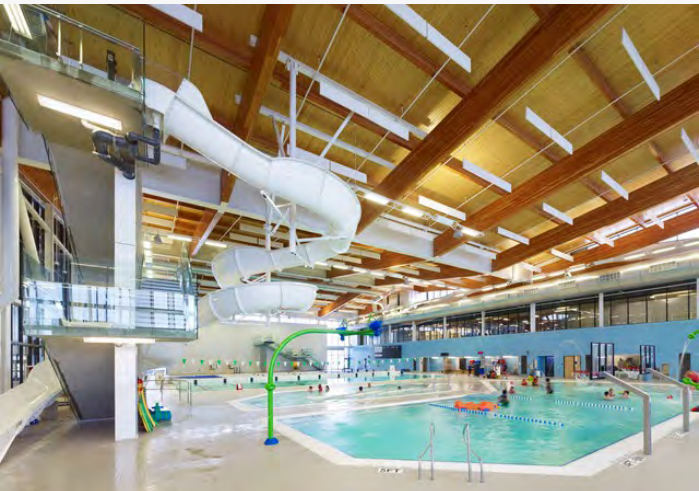
EMERALD HILLS LEISURE CENTRE



SERVUS CREDIT UNION PLACE



THE MEADOWS RECREATION CENTRE

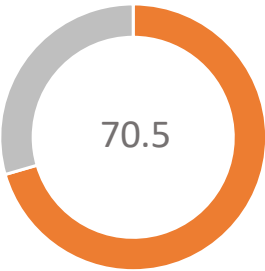


TERWILLEGAR RECREATION CENTRE

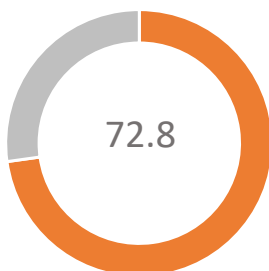


## OVERALL RATING (% MATCH)

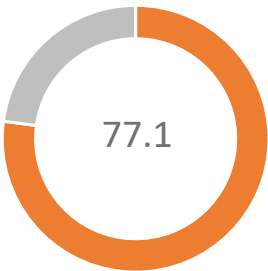
Emerald Hills Leisure Centre



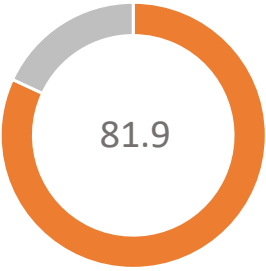
Servus Credit Union Place



The Meadows Recreation Centre



Terwillegar Recreation Centre



RATING CRITERIA	EMERALD HILLS	SERVUS PLACE	THE MEADOWS	TERWILLEGAR
Interior Aesthetics	54.0	82.6	73.4	73.4
Exterior Aesthetics	61.6	80.8	70.0	82.9
Programming Options	71.0	73.0	75.0	79.4
Utilization	83.6	43.9	85.3	89.9
Parking Quality	82.9	72.9	85.8	82.4
Commercial Opportunities	40.0	79.1	73.8	86.5
Accessibility	93.8	77.4	83.6	81.5
Sustainability	76.3	73.0	69.9	79.4



# EMERALD HILLS LEISURE CENTRE - OVERALL RATING

### IDENTIFIED POSITIVES

- Clean sight lines for guarding, etc. / Open Space Concept
- Universal Change Rooms
- Varied basins for different programming
- Superior air and water quality
- Saltwater Pool
- Cargo lift for back of house ease of operations
- Front Office/Reception area
- Staff Rooms/Guard Rooms
- Viewing Glass (to see bottom of basin)
- Movable Floor
- Multiple Options for spectator viewing

### IDENTIFIED NEGATIVES

- Access to fix pool issues is difficult
- Lacks pure recreation
- Missing connectivity to different parts of the facility
- Too angular
- Too much glass
- Meeting rooms, etc. too far away from basins

POSITIVE TAKEAWAY:  
"SIMPLE BUT FUNCTIONAL"

NEGATIVE TAKEAWAY:  
"NO BELLS AND WHISTLES"

### COLD LAKE AQUATIC CENTRE "WANTS" FROM THIS TOUR

- Some (well-designed) glass features
- Universal change rooms
- Fun "play" amenities (i.e. slides, lazy river)
- Saltwater pool
- High quality air and water
- Separate guard room on the deck

### COLD LAKE AQUATIC CENTRE "STOP THAT THOUGHTS" FROM THIS TOUR

- Glass causing glare
- License plate registration
- Inaccessibility of any plumbing features
- Suspended ceilings
- Low proximity to meeting/party rooms

RATING CRITERIA	SCORE
Interior Aesthetics	54.0
Exterior Aesthetics	61.6
Programming Options	71.0
Utilization	83.6
Parking Quality	82.9
Commercial Opportunities	40.0
Accessibility	93.8
Sustainability	76.3

### ADDITIONAL FEEDBACK

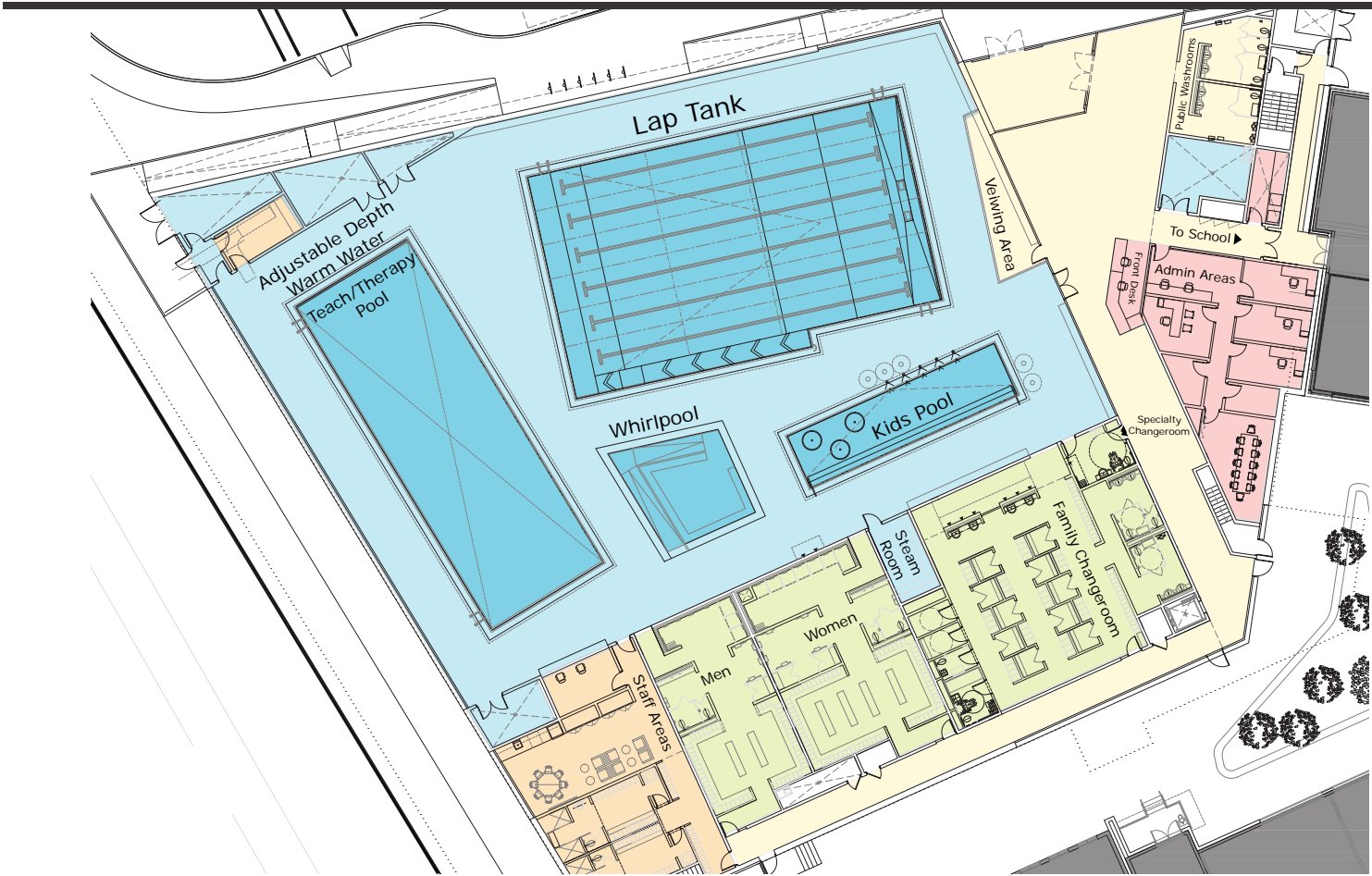
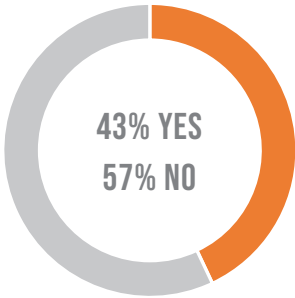
"We will only have one pool - it has to be able to do it all."

"LOVE the universal change room."

"Main floor flows well."



Would you consider the visited venue to be a strong example for your community?





# THE MEADOWS RECREATION CENTRE - OVERALL RATING

### IDENTIFIED POSITIVES

- Functional connectivity
- Some fun features and unstructured play/water slide
- Good variety of viewing area/spectator access
- Overall integration with existing recreation centre
- Movable floor in 25m pool
- Food and beverage availability
- Diving spot
- Caters to a variety of programming options
- Variety of swim tanks

### IDENTIFIED NEGATIVES

- Excessive basement area - wasted space in back of house
- Is a wood ceiling the right choice?
- Change rooms are closed off - not bright or functional
- Deep diving tank limits programing and seems under-utilized
- Too much hot tub area

POSITIVE TAKEAWAY:  
"WELL PLANNED  
WITH A SIMPLE  
DESIGN"

NEGATIVE TAKEAWAY:  
"WE DON'T LIKE  
CLOSED OFF SPACES"

### COLD LAKE AQUATIC CENTRE "WANTS" FROM THIS TOUR

- Open viewing area with vendors / Concourse hall and patio concept
- Movable floor
- Open mechanical room in basement
- Strong leisure area that can be sectioned off for flexibility in programing
- Zero entry whirlpool area

### COLD LAKE AQUATIC CENTRE "STOP THAT THOUGHTS" FROM THIS TOUR

- Closed off change areas / gendered change
- High diving boards / diving tank and moving bulkhead configuration
- Excessive basement size
- The pool designed for kids and tots is too small - Cold Lake's demographics are skewed highly toward children.

### RATING CRITERIA

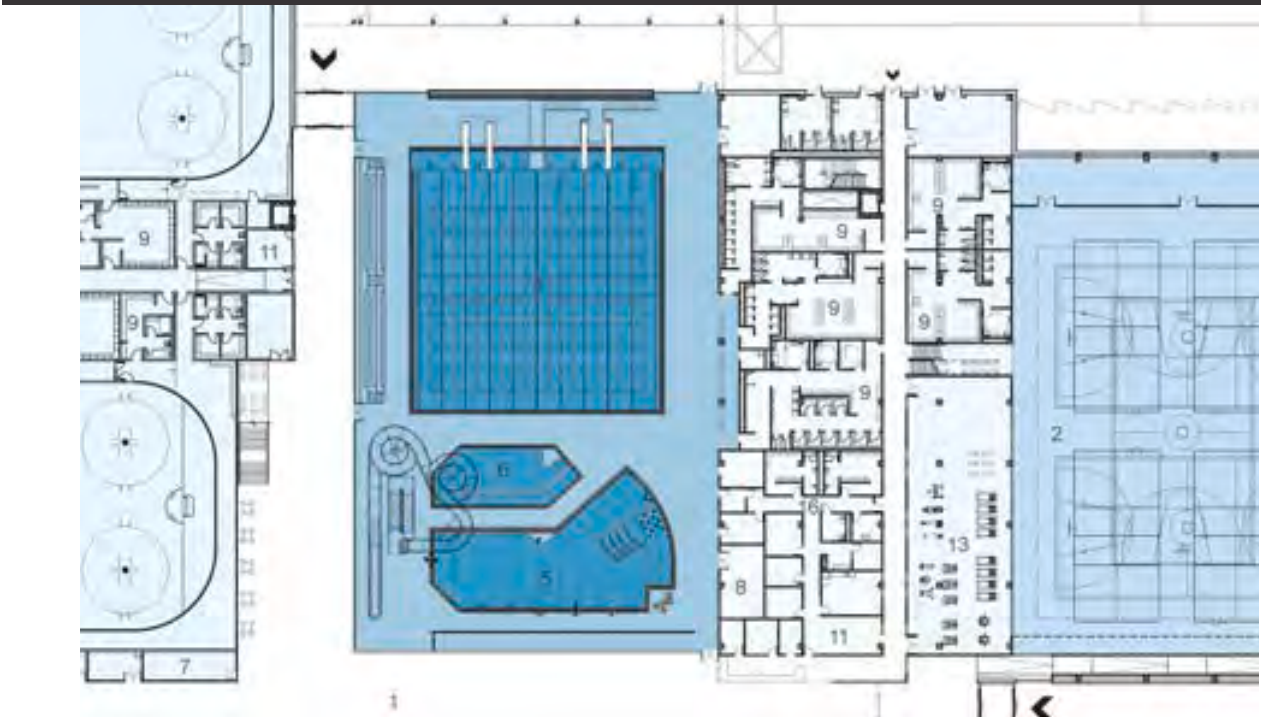
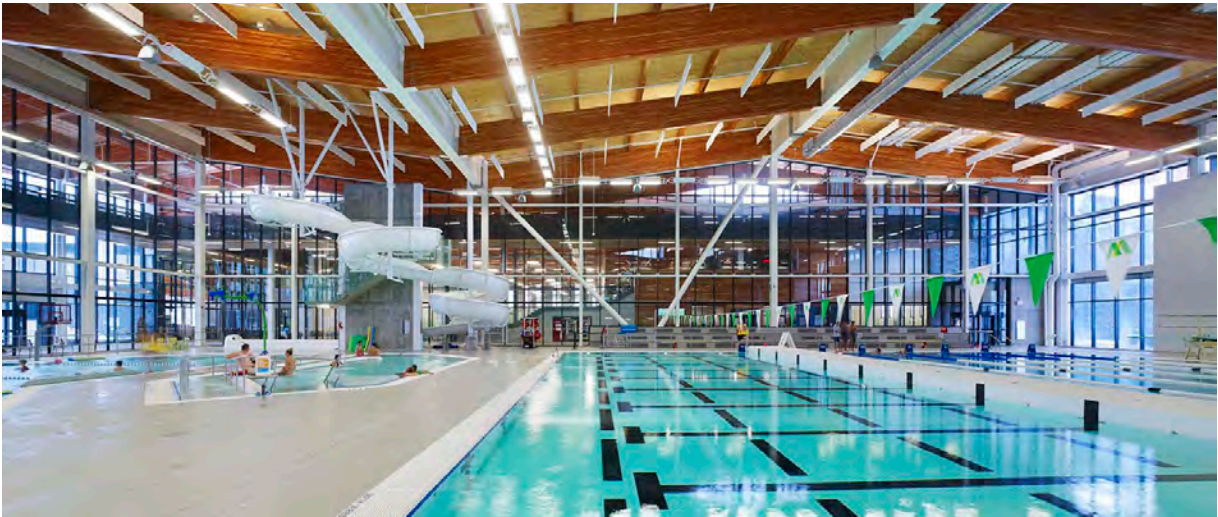
RATING CRITERIA	SCORE
Interior Aesthetics	73.4
Exterior Aesthetics	70.0
Programming Options	75.0
Utilization	85.3
Parking Quality	85.8
Commercial Opportunities	73.8
Accessibility	83.6
Sustainability	69.9

### ADDITIONAL FEEDBACK

"Water slide fits better than I thought."

"This facility is functionally way better than Emerald Hills." / vs / "This facility is not as well laid out as Emerald Hills."

"Closer to what we want... Just open it up."





# SERVUS PLACE LANDREX WATER PLAY CENTRE - OVERALL RATING

### IDENTIFIED POSITIVES

- Simple build
- Reasonable footprint
- Good for open recreation
- Mechanical area is organized
- Viewing area is well located
- Concession/Vendor space
- Good leisure amenities: water slide, leisure pool, lazy river

### IDENTIFIED NEGATIVES

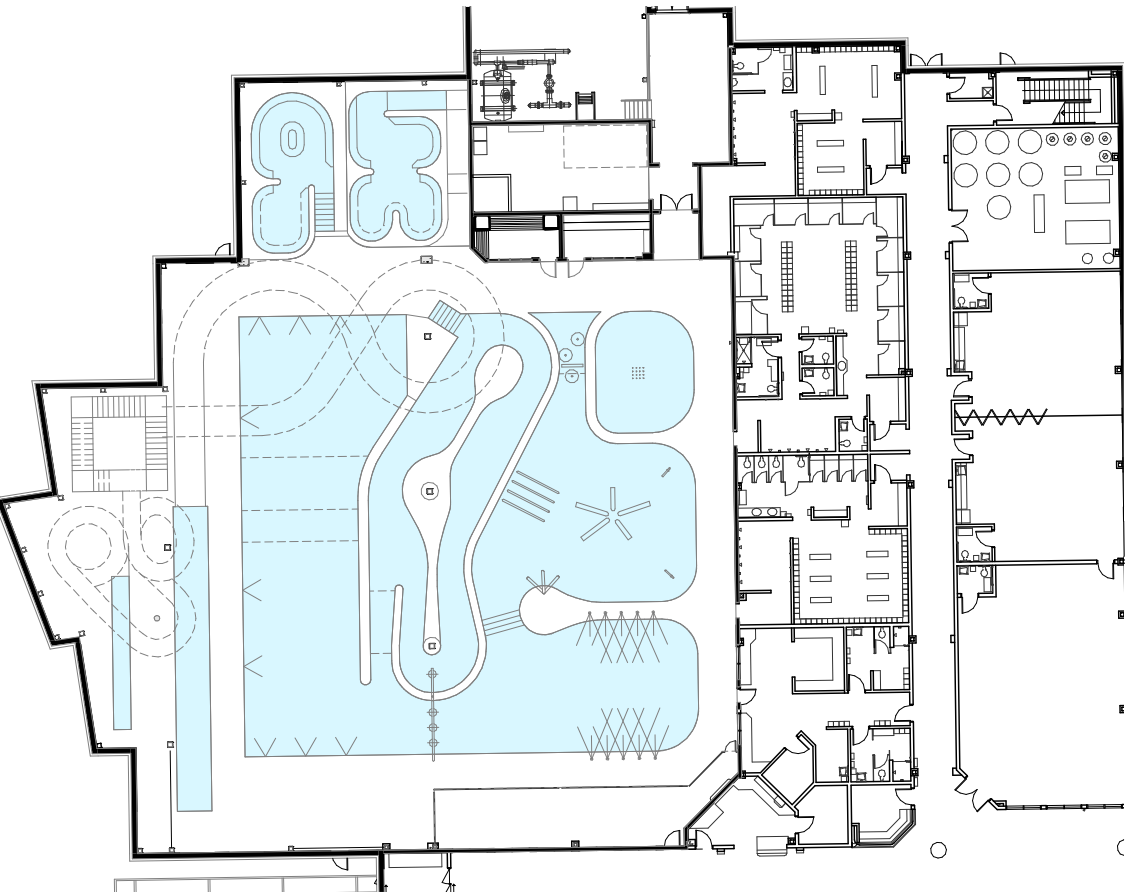
- Hot tubs are tucked away
- Everything in one basin
- Low availability for lane swim
- Low amount of storage
- Needs noise control
- Change rooms are cramped
- No basement around the basins
- Few programming options
- Viewing area is small

### COLD LAKE AQUATIC CENTRE “WANTS” FROM THIS TOUR

- Slide configuration
- Lazy river
- Mechanical room / storage / chemical room nice and neat with good access

### COLD LAKE AQUATIC CENTRE “STOP THAT THOUGHTS” FROM THIS TOUR

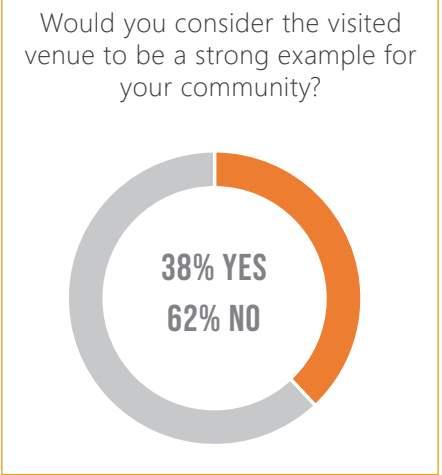
- Single-basin design
- Horizontal filters
- Confined space of washrooms and hallway
- Open beams, poor acoustics
- Small change rooms
- Main pool inadequately sized



POSITIVE TAKEAWAY: “THE UNSTRUCTURED PLAY AMENITIES”

NEGATIVE TAKEAWAY: “FLOW AND FUNCTION IS NOT OUR FAVOURITE”

RATING CRITERIA	SCORE
Interior Aesthetics	82.6
Exterior Aesthetics	80.8
Programming Options	73.0
Utilization	43.9
Parking Quality	72.9
Commercial Opportunities	79.1
Accessibility	77.4
Sustainability	73.0



### ADDITIONAL FEEDBACK

- “Other than the slides and mechanical, this is an old design that may not work with our community.”
- “It has the leisure factor but is missing the program space.”
- “Slides are good and a must.”





# TERWILLEGAR RECREATION CENTRE - OVERALL RATING

### IDENTIFIED POSITIVES

- 50m pool IF with movable bulkhead(s)
- Good inverted lighting
- Programing flexibility
- Layout of pools with multi-functional design
- Slide and kid zone
- Options between structured and unstructured play
- Lots of seating
- Hot tub and steam area
- Acoustics and noise reduction

### IDENTIFIED NEGATIVES

- High walls of various basins create surveillance issues
- Guard room is very closed off
- Salt erosion on metal elements
- No lift for mechanical room in basement
- Main basin is too large
- Columns creating visibility issues
- Cramped change rooms

### COLD LAKE AQUATIC CENTRE “WANTS” FROM THIS TOUR

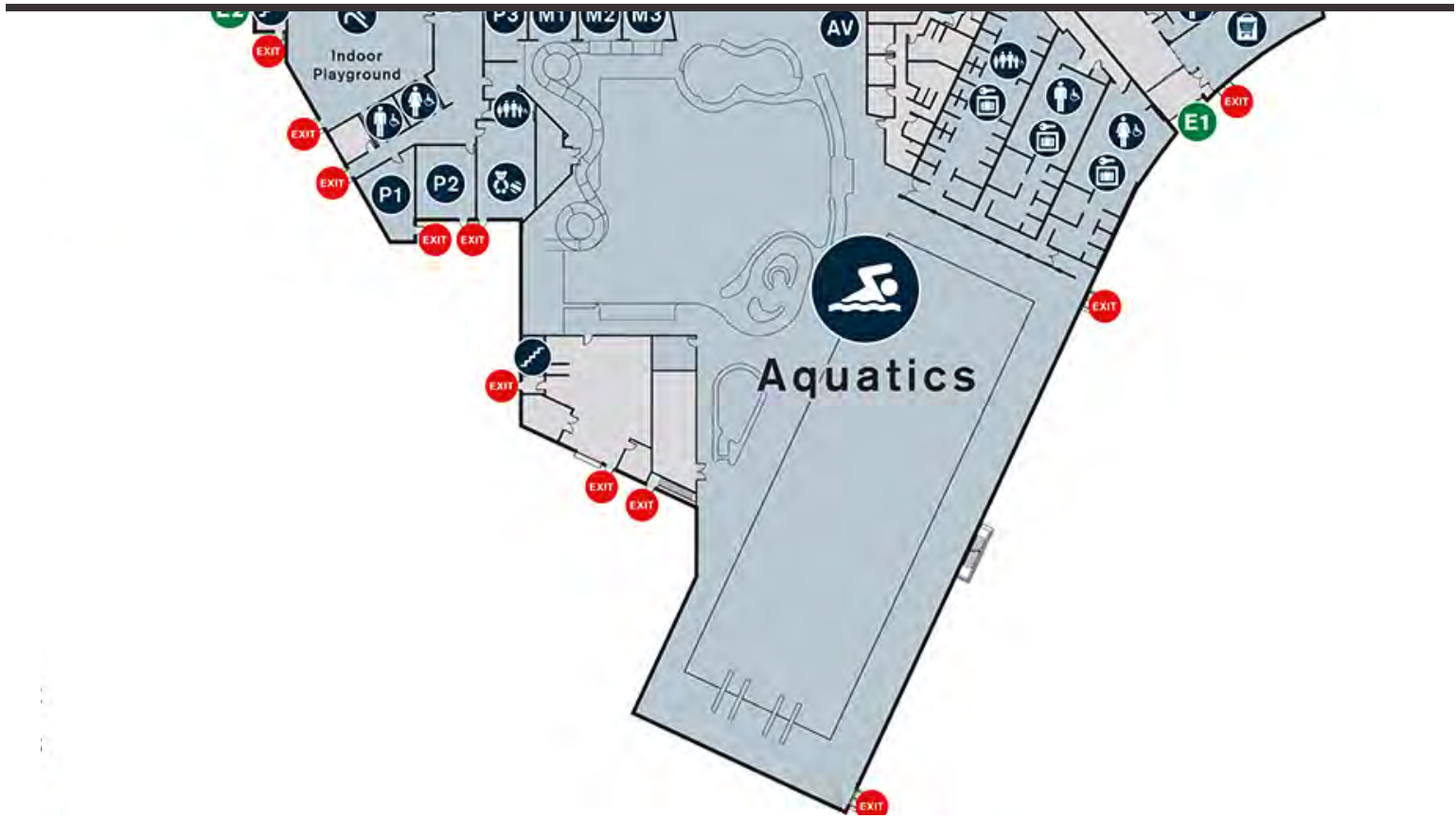
- Pool split into sections
- Good lighting
- Programming flexibility
- Lazy river
- Movable floor
- Ceiling/walls with acoustic paneling

### COLD LAKE AQUATIC CENTRE “STOP THAT THOUGHTS” FROM THIS TOUR

- Visual obstructions (Columns and walls around swimming areas)
- Closed off change rooms and guard room
- Basement without elevator
- Limited mechanical room space
- High walls around lazy river
- Salt

POSITIVE TAKEAWAY: “LOTS OF OPTIONS FOR GREATEST UTILIZATION”

NEGATIVE TAKEAWAY: “OVERALL TOO LARGE W/ SURVEILLANCE ISSUES”

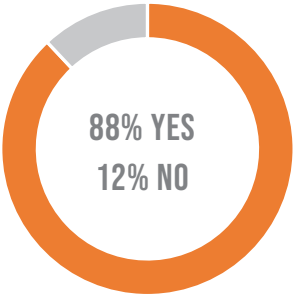


### RATING CRITERIA

### SCORE

Interior Aesthetics	<div></div>	73.4
Exterior Aesthetics	<div></div>	82.9
Programming Options	<div></div>	79.4
Utilization	<div></div>	89.9
Parking Quality	<div></div>	82.4
Commercial Opportunities	<div></div>	86.5
Accessibility	<div></div>	81.5
Sustainability	<div></div>	79.4

Would you consider the visited venue to be a strong example for your community?



### ADDITIONAL FEEDBACK

- “Keeping the aesthetic design to the basics could save money to be reinvested into operating systems and features.”
- “Lots of cameras for surveillance are good.”
- “Rental rooms should be closer to the pool.”







C

**STAKEHOLDER  
AND COMMUNITY  
MEETING MINUTES**



PUBLIC ENGAGEMENT SURVEY SUMMARY

In March 2022, the City of Cold Lake released an online survey using a link and QR code that was published by the City of Cold Lake and developed by TBD Architecture + Urban Planning in collaboration with the City and Council. This link and QR code was published to the City’s website to ask for feedback from the community regarding their wants and needs for a new aquatics centre. The survey ran for approximately one month, and a total of 1,287 respondents completed the survey during this time. The following pages outline some of the key findings from this survey, complemented by the findings from the in-person public engagement.

IN-PERSON PUBLIC ENGAGEMENT SUMMARY

Members from TBD Architecture + Urban Planning and the City of Cold Lake set up tables at the Cold Lake Energy Centre on March 14, 2022 and welcomed the public to talk about their wants and needs for a new pool. It is estimated that +/- 250 people provided feedback through this verbal method. The vast majority of participants who we spoke to were generally supportive, and most had already completed the online survey. Here are some of most significant qualitative findings from the engagement:

- During the in-person engagement, significant interest was shown from the students, who expressed excitement for the opportunity to use the facility during and after school.
- Most people we spoke with were attracted to the leisure/lifestyle basin components of what a new pool could bring.
- Many were interested in just having access to a facility to engage them to enroll their kids in programming or enjoy drop-in programming.

- Some respondents expressed that they would even like to just use a sauna or the hot-tub after a workout, if they did not see other ways that they would like to participate as patrons of the pool.
- General support was given for inclusive change rooms from all age demographics.
- The public expressed strongly negative reviews of the current availability and accessibility of other pools in the area, whether due to excessive downtime or the significant cost and time associated with traveling to other facilities.
- According to the feedback we received, public support for the facility encourages its construction sooner rather than later.

Quantitative counting of mentions for specific amenities were compiled and included in the findings on the following pages.

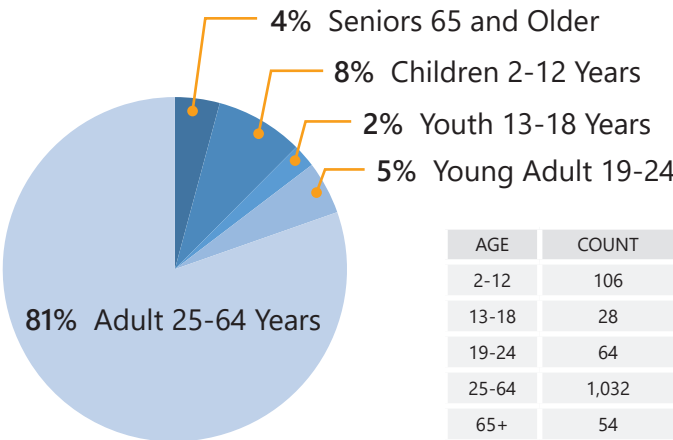
STAKEHOLDER ENGAGEMENT SUMMARY

A total of 31 Stakeholder groups were invited to engage at this stage of public and stakeholder consultation. They were each given the option to attend an in-person forum on March 15, 2022, and/or completing an online survey that was similar to the public engagement summary but which was targeted with questions to identify key needs. The 9 stakeholder groups that responded to provide engagement at this stage include:

- Military Family Resource Centre (MFRC)
- Alberta Health Services
- Sports Groups
- Lifesaving Society - Red Cross
- Cold Lake Seniors Society
- Age Friendly Cold Lake
- School Districts
- Marlins Swim Club
- Lakeland Scuba Society

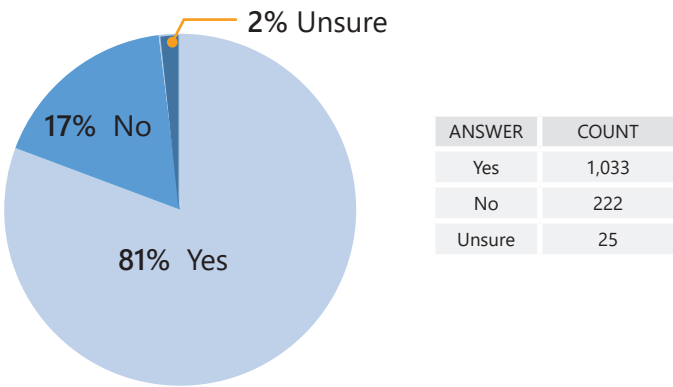
RESULTS FROM THESE ENGAGEMENT SESSIONS AND SURVEYS HAVE BEEN OUTLINED ON THE FOLLOWING PAGES.

WHICH AGE GROUP DO YOU BELONG TO?



With a population of 15,661 in Cold Lake in 2021, a public engagement survey with a respondent total of 1,284 is a significant and representative sample size from which to extract data for this project. With an additional 250 in-person responses (not calculated in the numbers across) adding primarily to the youth and senior demographic representation, these numbers correspond well to the population distribution in the city.

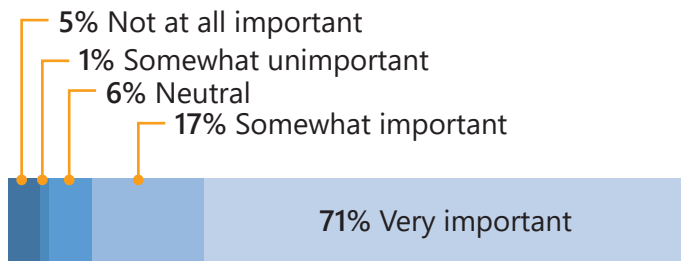
WERE YOU AWARE THAT THE CITY IS CONSIDERING A NEW INDOOR POOL ADDITION TO THE COLD LAKE ENERGY CENTRE?



This question is utilized primarily to gauge the degree to which the City’s and region’s public process is working to inform residents of potential projects in the area and identify any communication gaps, if any present themselves, so that future public and stakeholder engagement can address this need. The significant number of respondents choosing “Yes” for this question indicates that the City of Cold Lake is doing well in their communications processes and in ensuring that the public is well informed.

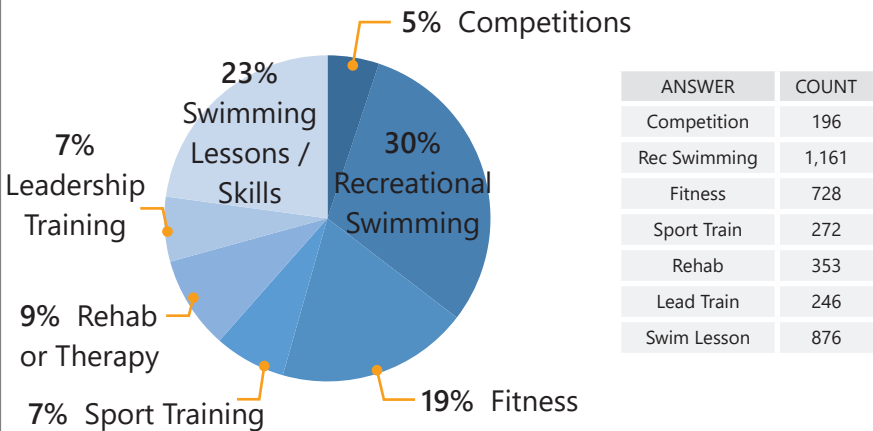


HOW IMPORTANT IS A NEW POOL TO YOU?



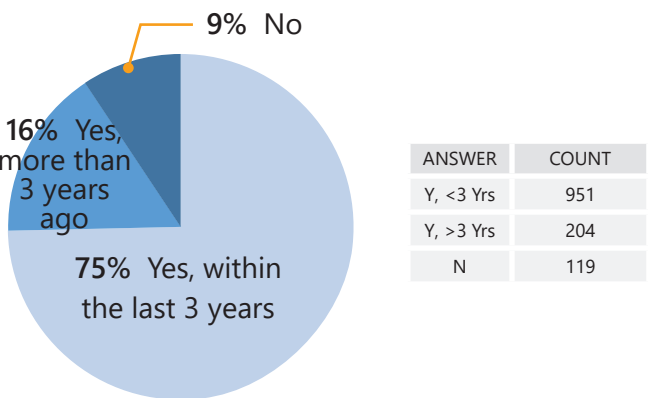
88% of respondents have identified that a new pool is either somewhat or very important. 12% of respondents were either neutral or did not feel that a pool is important. This strong response in favour of a pool was echoed by respondents in the in-person engagement and by stakeholder groups. Amongst some of the commentary surrounding this question, the public in favour of the pool emphasized that not only having the pool is important, but also that it be built as quickly as possible so that it could be utilized right away; many identified that this is an amenity that is desperately needed by the community and there is a distinct gap in terms of the availability and accessibility of both the pool on the base and other regional pools.

WHAT POOL-RELATED ACTIVITIES / FUNCTIONS ARE YOU MOST INTERESTED IN?



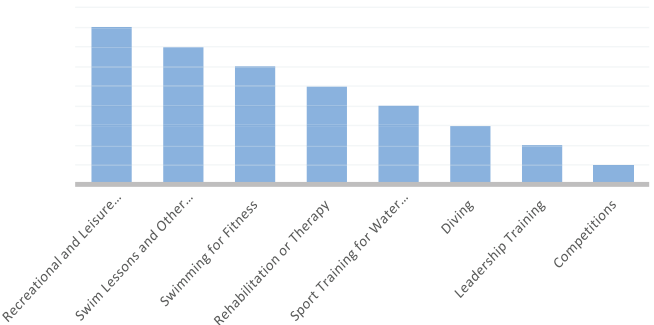
For this question, respondents were asked to identify any number of 7 key activities that they would be interested in for the pool. Respondents are interested in a wide range of activities within the new pool, with the majority interested in recreational swimming, lessons and skill development programs, and fitness activities. Nearly 30% of respondents have identified interest in competitive, training, or rehabilitation uses.

HAVE YOU OR A HOUSEHOLD MEMBER ACTIVELY USED A POOL, WITHIN YOUR COMMUNITY OR ELSEWHERE?:



This question confirms that the majority of respondents currently are, have been, or could be active patrons in a pool. Given that approximately 75% of respondents have been recent patrons of a pool, there is a high confidence that these respondents have a vested interest in the development of a pool within the region. This will lead to more optimized answers and results throughout the remainder of the survey. If, for instance, the majority of respondents answered “No,” more study may have been required to ensure that the

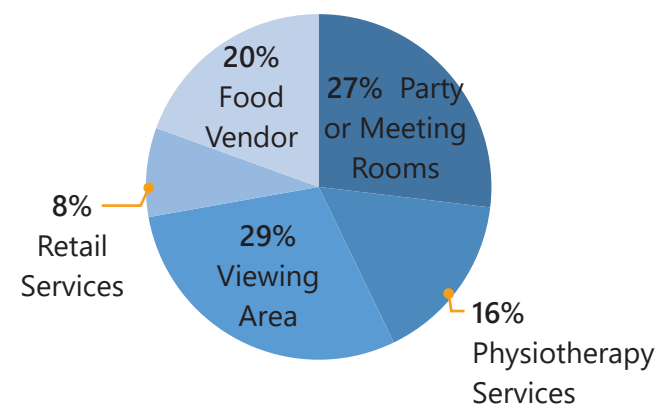
RANK THE ACTIVITIES / FUNCTIONS FOR THE NEW POOL



As a variation of the previous question, respondents were asked to rank all 7 activities from most relevant to them to least relevant. This is used to validate the overall priorities of the public as even respondents who have not identified a particular item in the question above were ranked to score all activities and functions. Of note, diving was broken out from competitions, training, and leisure for this question as it could be applied to all three. The results are consistent with the previous question, indicating a solid consensus regarding the prioritization of key activities. That said, key users, stakeholder groups, other special users, and the City of Cold Lake/ regional goals and partnerships with less representation in this survey may still sway the overall priorities of the pool.



WHAT (IF ANY) NON-AQUATICS SERVICES WOULD YOU LIKE TO SEE INCLUDED AS PART OF THIS ADDITION?



The majority of the non-aquatics services ranked, overall, in the mid- to low-range in terms of importance to the public. The two major exceptions include the viewing area and the party or meeting rooms. The viewing area ranked the highest on this survey item, with 29% of respondents indicating that this component is an important feature. The viewing area ranked within the top 10 most desired activities, amenities, and spaces with a match confidence of 82%. The second most highly rated response item, the party or meeting rooms, was identified as something 27% of respondents would like to see in this facility. This amenity was ranked 11th overall.

WHAT POOL-RELATED ACTIVITIES ARE YOU MOST INTERESTED IN?

BOTTOM 5	ANSWER	Match Score
1	50m Lane Pool / 25m Lane Pool	60%
2	Climbing Wall	54%
3	Cold Water Pool	52%
4	Deep Tank for Competition or Sport Training	52%
5	Dryland Training Space	50%

The “Bottom 5” answers (the least highly-rated of all pool-related activities, amenities, and spaces) each scored a minimum of 50% match confidence but a maximum of 60% match confidence, indicating that while these amenities are seen as the least desirable of the list that was presented, they ranked at least neutrally or positively. None of these features could be described to have an aggregate score corresponding to “somewhat unimportant” or “very unimportant” to the public. Of note, the majority of these features would be most utilized by swim clubs and specialty training groups, which may skew their importance for this project as key stakeholder amenities.

WHAT POOL-RELATED ACTIVITIES ARE YOU MOST INTERESTED IN?

TOP 10	ANSWER	Match Score
1	Warm Water Pool	90%
2	Leisure Pool	88%
3	Water Slide(s)	86%
4	Shallow End or “Beach Entry”	86%
5	Deep End	84%
6	Hot Tub	82%
7	Viewing Area	82%
8	Toddler Pool	80%
9	Lazy River	76%
10	Wave Pool	72%

The top 10 most highly rated activities, amenities, and spaces include, primarily, spaces that support leisure uses and family-friendly participation. The incorporation of all 10 of these items will reach a wide range of participants and have an excellent chance of supporting the goal of an inclusive environment for all ages and abilities. Where the “Top 10” lack representation is in the lane pools, with match confidence scores of approximately 60%, and ranking in or near the bottom 5 of the 23 total rated components.



OPEN-ENDED RESPONSES: TOP OBSERVATIONS

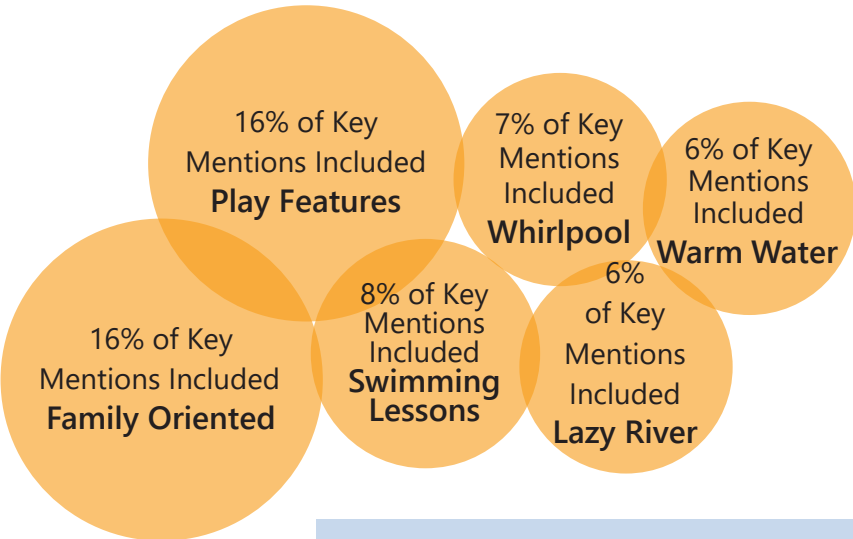
A warm water pool is seen as much more desirable than colder water	→	This is likely due to a number of factors, including the preference to leisure swimming and on the accessibility for younger children and seniors, who prefer warmer water. The colder temperatures are typically preferred by competition or fitness swimmers, although the functions in the pool which necessitate colder water were rated relatively low compared to warm water activities.
Competition and Training amenities are of a lower priority	→	While competition and training were rated significantly lower than recreational uses, public during the in-person engagement (separate from this survey) indicated that they would be interested in the possibility of competition swimming or using the pool for training if this was cultivated as part of this pool’s purpose and programming in a meaningful way (i.e. if schools offered swim clubs as part of their programming, students may elect to take this up.)
Public is neutral regarding the 25m pool versus the 50m pool	→	The average of all responses for the importance of both the 25m and 50m pool were each ranked 3 out of 5. This indicates that the public does view the lane pool as an important feature but no clear preference is given to either length.
Most top-rated features for the pool include “play” amenities	→	The public is looking for a place to have fun! This includes, among some of the top rated amenities, a water slide, a lazy river, water spray features, splash pad, small diving boards (1m, etc.), and a wave pool.
Shallow entry areas are prioritized significantly over deep end areas	→	There was some desire for a deep end amongst stakeholder groups such as the scuba diving club and youth who would enjoy high dive. However, the vast majority of respondents and stakeholders value the accessibility of shallow entry spaces over deep water for accessibility and for varied programming.



OPEN-ENDED RESPONSES: TOP MENTIONS

The following key words were most frequently used amongst respondents to the online public survey in to the following questions:

- 1. Either I or a household member would use the new pool if it had...
- 2. When designing the new pool, please consider...
- 3. Any other feedback?

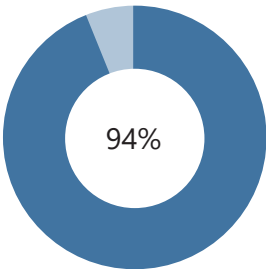


Amongst water play features, the following items were mentioned most frequently:

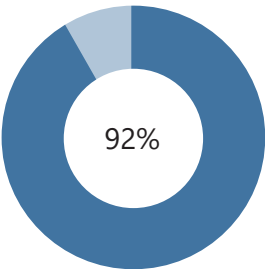
- 1. Water Slides (77%)
- 2. Rope Swing (8%)
- 3. Climbing Wall (3%)
- 4. Basketball Hoops (2%)

SOCIAL AND DEMOGRAPHIC GOALS: MATCH CONFIDENCE SUMMARY

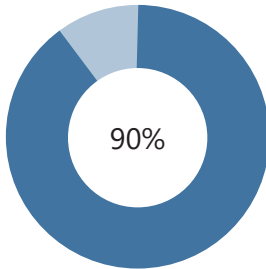
"The pool should provide young children with a fun leisure aquatics experience."



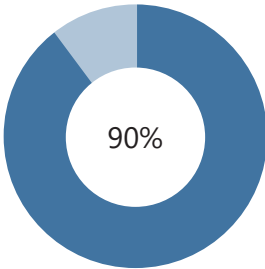
"The pool should provide teens and older youth with a fun leisure aquatics experience."



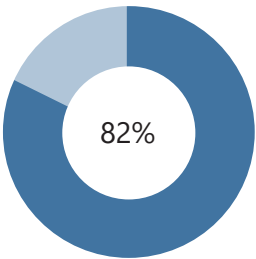
"The pool should provide fitness opportunities for adults and seniors."



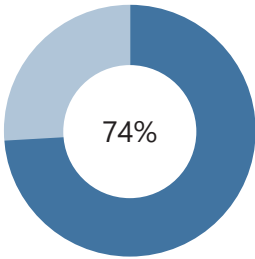
"This pool needs to be fully accessible for wheelchair users and persons with disabilities."



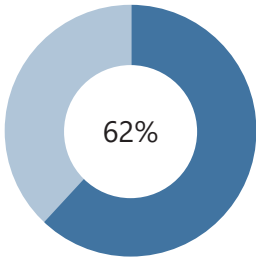
"All children in the region should take swimming lessons at this pool."



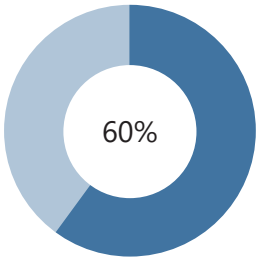
"This pool should be able to host swim meets and competitions."



"A universal or gender neutral change room option should be provided in addition to gendered change spaces."

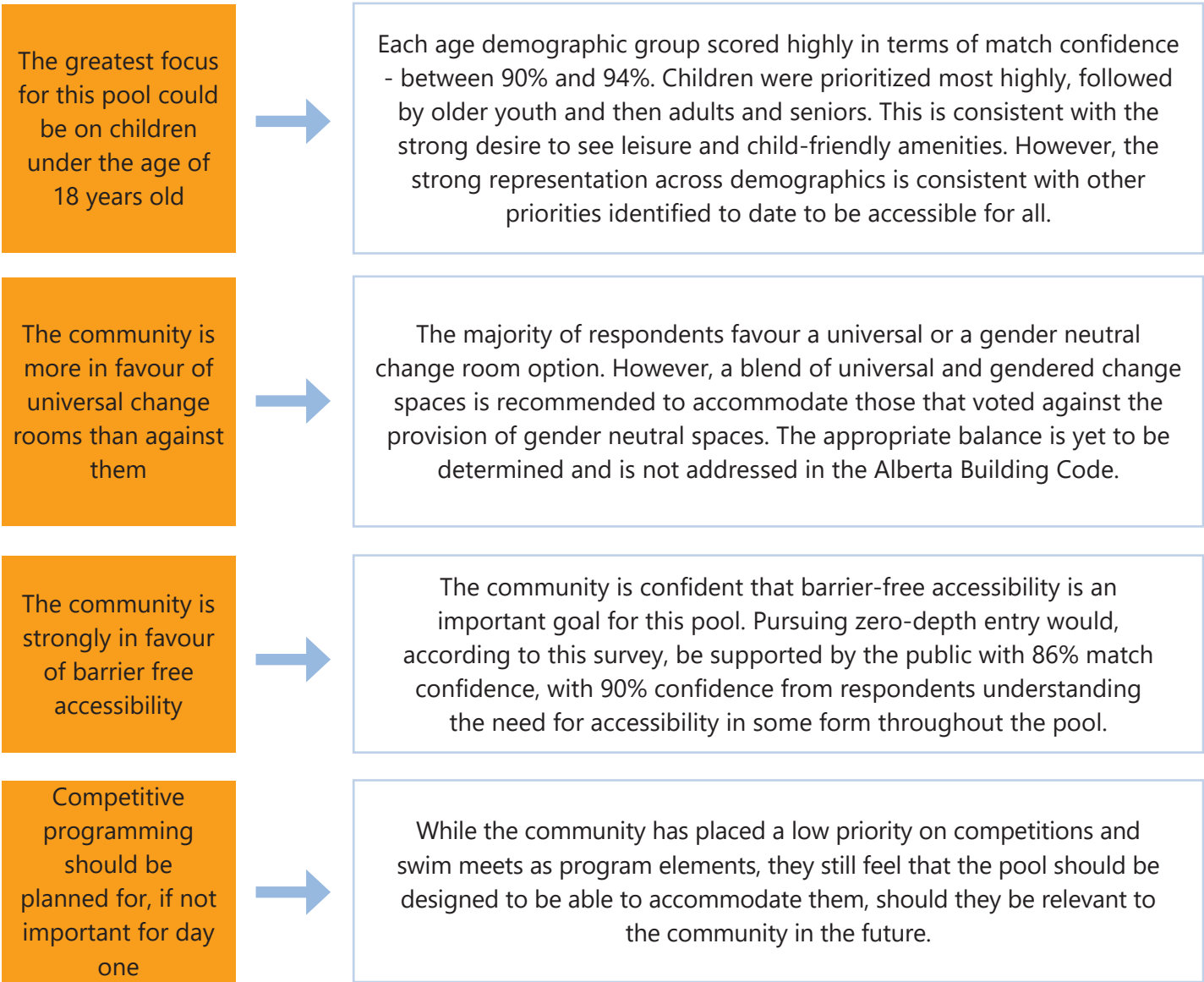


"It would be OK for the leisure pool and the lane pool to be connected into one big basin."

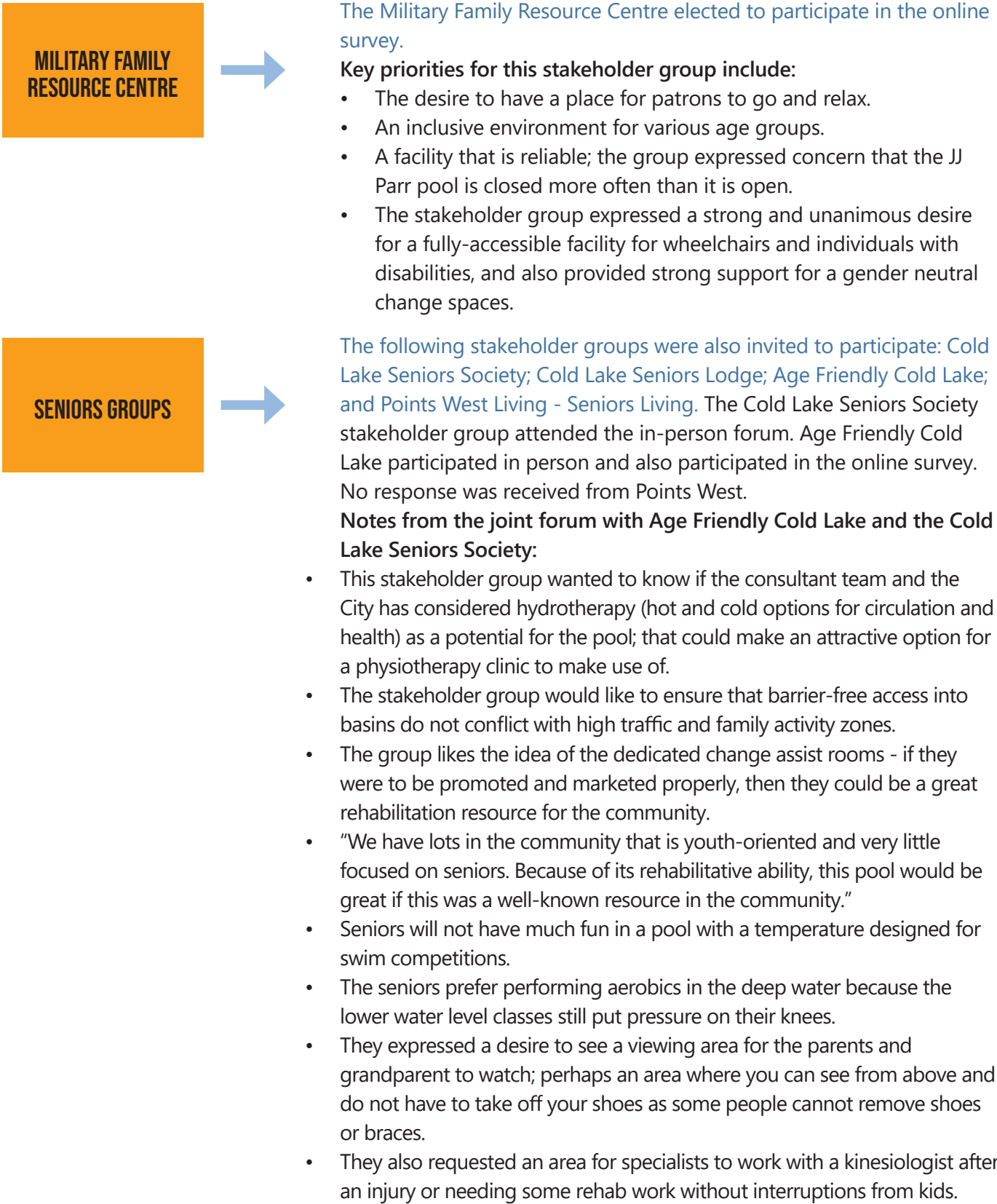




SOCIAL AND DEMOGRAPHIC CONCLUSIONS



STAKEHOLDER ENGAGEMENT SUMMARY





## SPECIAL NEEDS GROUPS



The following stakeholder groups were invited to participate: Family Supports for Children with Disabilities; the Dove Center; Indigenous and Metis - Disabled Individuals; Lakeland Special Olympics; and Home Care - Veterans Affairs.

The stakeholder groups did not choose to participate.

## LAKELAND SCUBA SOCIETY



The Lakeland Scuba Society participated in the in-person forum.

### Notes from the Lakeland Scuba Society In-Person Forum:

- For this stakeholder group to make use of the pool, they need a minimum of 10 feet of depth, and preferably over 12 feet. 17.5 feet would be the ideal depth to support their group (even if this depth is within only a very small localized area) as this is a recognized standard for full certification.
- A 17.5 foot depth would draw regionally (if not provincially), as you the pool could support full certification within an indoor facility (which currently only West Edmonton Mall old submarine ride basin provides depth to do this). Anything less, and they could still complete a portion of training in the basin, but the remainder would have to return to open water to complete.
- The type of flooring is important to this stakeholder group (prefers no tile, as tiles break easily if/when they drop tanks and weights).

## SWIM CLUBS



The Marlins Swim Club participated in the in-person forum.

### Notes from the Marlins Swim Club Forum:

- 30-45 People are typically registered in the club.
- The stakeholder group will need 4 lanes for training to meet the group needs, and they would like to swim every day, and up to twice daily (but are currently limited to 4 days a week and can only get 3 lanes at a time).
- Sanctioned meets are currently only offered in either Fort McMurray or Edmonton; there is absolutely a regional gap here.

Regarding the hosting of meets:

- The stakeholder group would like to have up to 75 swimmers on deck for a fun meet, with a really large observation area. Given the choice, the group would rather have more space on deck to actually handle meets and provide some dryland training opportunities than have 10 lanes of water and not enough support spaces. It is also important, depending on where your blocks are, to have enough room for participants to queue behind the blocks even if you have multiple heats, etc.
- Storage space is not much of a concern for the club.
- 8 Lanes would be ideal for the club, but they have expressed understanding that if it is fiscally responsible to only have 6, that would be adequate.

## SPORTS GROUPS



The following stakeholder groups were invited to participate: Cold Lake Rowing Club; Cold Lake Minor Hockey; Cold Lake Soccer; Cold Lake Ice; the Aeros; Cold Lake Lacrosse; and Cold Lake Minor Ball. The sports groups did not participate in either the in-person forum or the engagement survey.

## SCHOOL DISTRICTS



The following stakeholder groups were contacted from the school districts: Northern Lights Public School Board; Lakeland Catholic School Board; Portage College; and Ecole Voyageur.

Lakeland Catholic School District was unable to attend an in-person forum but participated through a video conference-based forum. Other school districts did not respond to the invitation to participate in any kind of engagement. One survey was also completed by Ecole Voyageur. The remainder of the stakeholder groups did not respond.

### Notes from the Lakeland Catholic Forum:

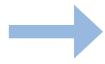
- The stakeholder group asked whether it would be possible for some kind of cardio equipment that borders onto viewing area (so that parents and caregivers can take care of personal health and wellness while watching their dependents swimming in the pool, while not having to go all the way to the fitness centre elsewhere in the facility).
- The school would like to be able to offer swimming lessons as part of the physical education program (they currently try to offer programming, but have to go to Bonnyville to do so). Schools could also extend their course credit options to include classes or extracurriculars such as water polo, diving, etc. They have also expressed a desire to team up with post-secondary to earn certifications and expand upon that potential within the area.
- The stakeholder group has expressed a desire to start to form school-based swim teams.

### Notes from the Ecole Voyageur Survey:

- The stakeholder survey indicated that the most significant complaint they currently have includes the inability for easy access to swimming lessons.
- They strongly encourage that the design of the new pool considers the ability for large groups to come to the pool at once.



## LIFESAVING SOCIETY AND RED CROSS

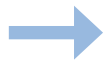


The Lifesaving Society and the Red Cross were invited to participate. The Lifesaving Society participated in a forum held by video conference, and the Red Cross did not participate.

### Notes from the Lifesaving Society Forum:

- The stakeholder group was interested primarily in where the City was at in the design process. They would like to stay involved in the process and will identify when along the design schedule they would like to see plans.
- The group presented a desire to see quality of life and risk reduction merged together.

## ALBERTA HEALTH SERVICES



Alberta Health Services (AHS) was invited to participate. They did not participate in the in-person engagement but did respond to the online survey.

### Key themes from the AHS survey include:

- The desire to see rehabilitation, physiotherapy services, and/or fitness opportunities prioritized within the pool.
- A desire to see the proper lifts and equipment for the elderly or persons with disabilities in the pool in the building and at entrances and exits. Stairs or ramp with wheelchair access, a lift for disabled patients to access water, and wheelchair accessible change rooms and washrooms were requested.
- The desire to have access to a pool to run any physiotherapy rehabilitation programs for their patients and seniors.
- The stakeholder group identified that the water at the base is extremely cold and that facilities are always out of order at the current pool. They have also identified a desire to see both cold and warm pools.

## KEY TAKEAWAYS

The following key takeaways should be considered as some of the most important considerations and/or pillars for the public, based on the frequency and enthusiasm with which the community spoke about each point:

### “WE NEED IT NOW.”

Respondents were resoundingly clear in their desire to see the pool built as soon as possible. Many expressed a feeling that this should have been a priority years or even decades ago, and that a pool is a sorely needed amenity for the community and the surrounding region.

This need is exacerbated by some common themes relating to the operational practices of pools in the region. Concerns include lack and/or inconsistent of access or availability of the pools in the area, overcrowding, very excessive downtimes, operational policies such as pool temperatures, customer service, and usage priorities, or the understanding that other facilities are nearing the end of their usable life. Parents and caregivers are especially emphatic that the availability of swimming lessons and other lifesaving skill classes are often under-served and/or inconsistently available, and cancellations due to operational policies seem to be pushing customers outside of the community to access services. Moreover, regional gaps in competition, therapy, and training amenities have posed limitations for both the growth and the ease of operations of those clubs.

Residents will very likely respond favourably to advancements in this project within a short time frame.

### “IT HAS TO BE RELIABLY USABLE.”

Respondents were clear that the current pools in the area do not meet their needs in two key areas (amongst other concerns). First, water temperature in other facilities has been identified as too cold for many participants (especially small children and seniors). This impedes their enjoyment and ability to participate. Secondly, the existing facilities are often closed or portions of the facility (i.e. hot tub) are restricted. The public does not believe that the degree of closures they experience are acceptable, and request that any new pool be built with considerations to how shutdowns will affect the public. **The lack of reliability with current facilities will make reliability a priority for this pool. The durability of materials, the separation and organization of basins, the required maintenance time frames for pool systems, the overall size of the building, and the availability of lanes will all be important.**

### “THIS IS A POOL FOR EVERYONE, BUT ESPECIALLY FOR OUR KIDS.”

All demographic groups must be represented in this facility.

“From Ages 0-100” is a concept the project team is working toward, and this has been echoed by the community.

That said, there is an acknowledgment by the community that the significant population of young people in the community should be well serviced. Both swimming lessons and leisure catered toward younger children were prioritized over other key facility uses. Design features that were most requested include elements that will support all ages and abilities, and will be especially useful for children, caregivers, and seniors. **Design decisions moving forward will necessitate a balance between the kid-friendly nature of the facility and ensuring that there are adequate amenities for all ages and swim styles.**

### “FOCUS ON LEISURE, BUT BE FLEXIBLE FOR OTHER ACTIVITIES TOO.”

While leisure swimming was seen as the main focus for the facility, a number of stakeholder groups and a variety of patrons should be considered and accommodated as well. Moreover, what is right for the community today may not be exactly the same in 20 years. The pool should be designed with the growth of the importance and role of an aquatics centre in mind. As one example, although the Marlins have expressed that a total of 6 lanes in a lap pool would be more than sufficient, will this remain adequate if partnering schools begin to cultivate swimmers through school-led programming? What will be the required balance of competitive swimming to leisure swimming as the City evolves its relationship to sports, health, and wellness over time?

**The overall footprint and basin plan should be designed with as much flexibility as possible to accommodate varied bather loads and purposes.**

### “MAKE SURE IT’S ACCESSIBLE AND AFFORDABLE.”

Respondents are excited to see this facility represent their needs. One of those needs is affordability; a small minority of residents were concerned about tax raises that this facility may bring, and another expressed the desire to see admission rates to the pool compete with pools within the region to maintain affordability for seniors and young families.

Respondents were also favourable to accessibility throughout the facility and were strong proponents of a fully barrier-free building.

The majority were also comfortable with/supportive of increasing social accessibility through the provision of gender-neutral change rooms, sensory-friendly experiences, and amenities for those who may require caretaker support to participate.

**Affordability and accessibility will be key drivers to buy-in by typically marginalized members of the community, but also by the general public. This should be explored wherever possible.**





D

**COMMUNITY  
COMPARABLES**



## CITY OF COLD LAKE

- **Population:** 15,661
- **Area:** 66.61 KM<sup>2</sup>
- **Population Density:** 235.1 / KM<sup>2</sup>
- **Comparable Municipalities:**  
Lacombe, High River, Strathmore,  
Canmore, Brooks, Stony Plain,  
Camrose, Lloydminster

## M.D. OF BONNYVILLE

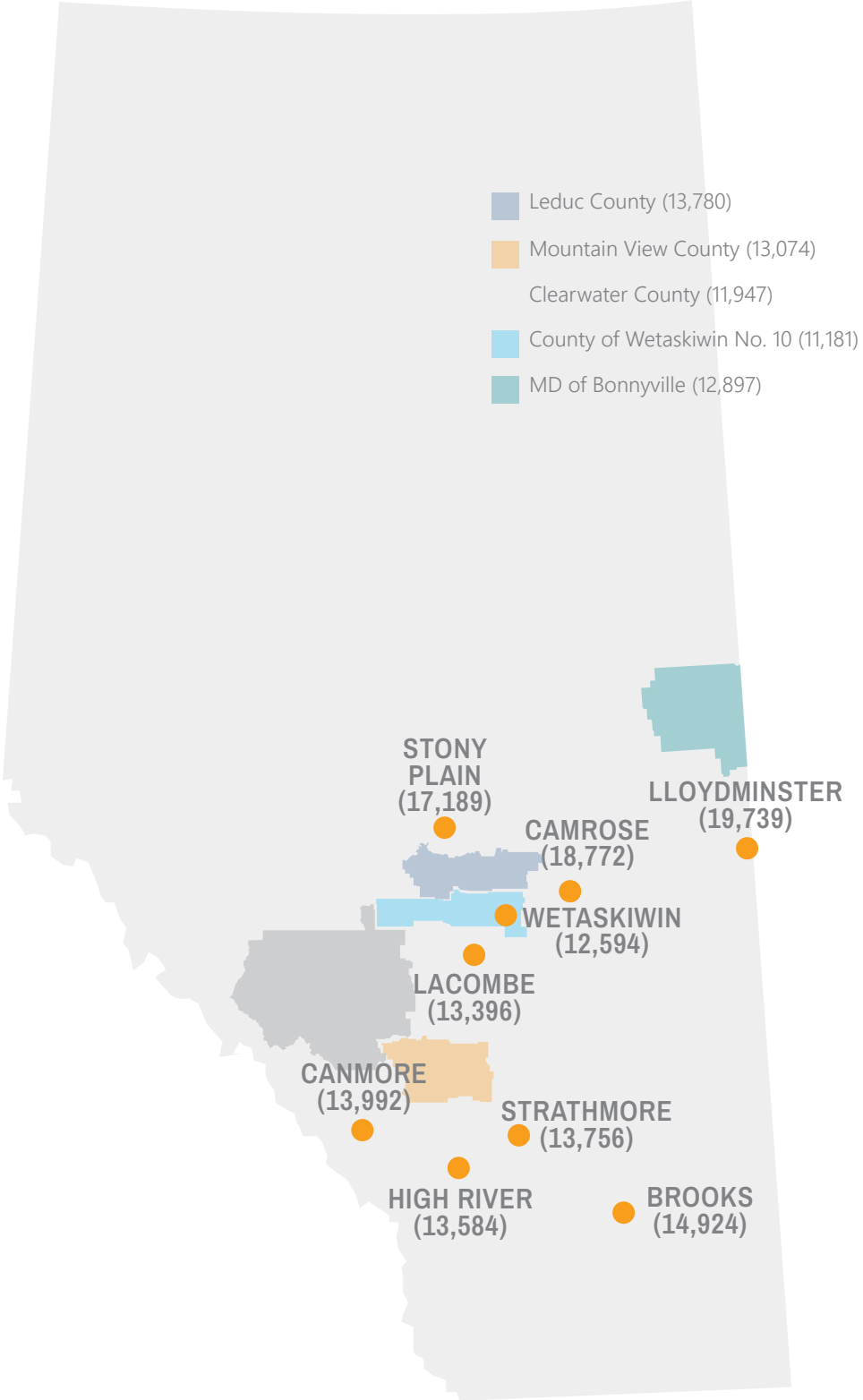
- **Population:** 12,897
- **Area:** 6,005.3 KM<sup>2</sup>
- **Population Density:** 2.1 / KM<sup>2</sup>
- **Comparable Municipalities:**  
Leduc County, Mountain View  
County, Clearwater County, County  
of Wetaskiwin No. 10

### NOTE:

- *All pools researched include approved competition pools by Swim Alberta and follow the Facility Rules and Guidelines of Swimming Canada.*

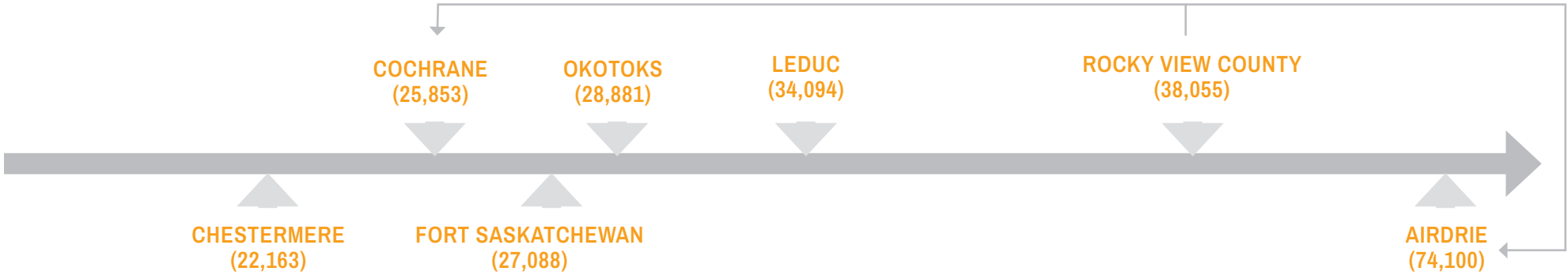


# COMPARABLE MUNICIPALITIES - APPROXIMATE SIZE OF COLD LAKE

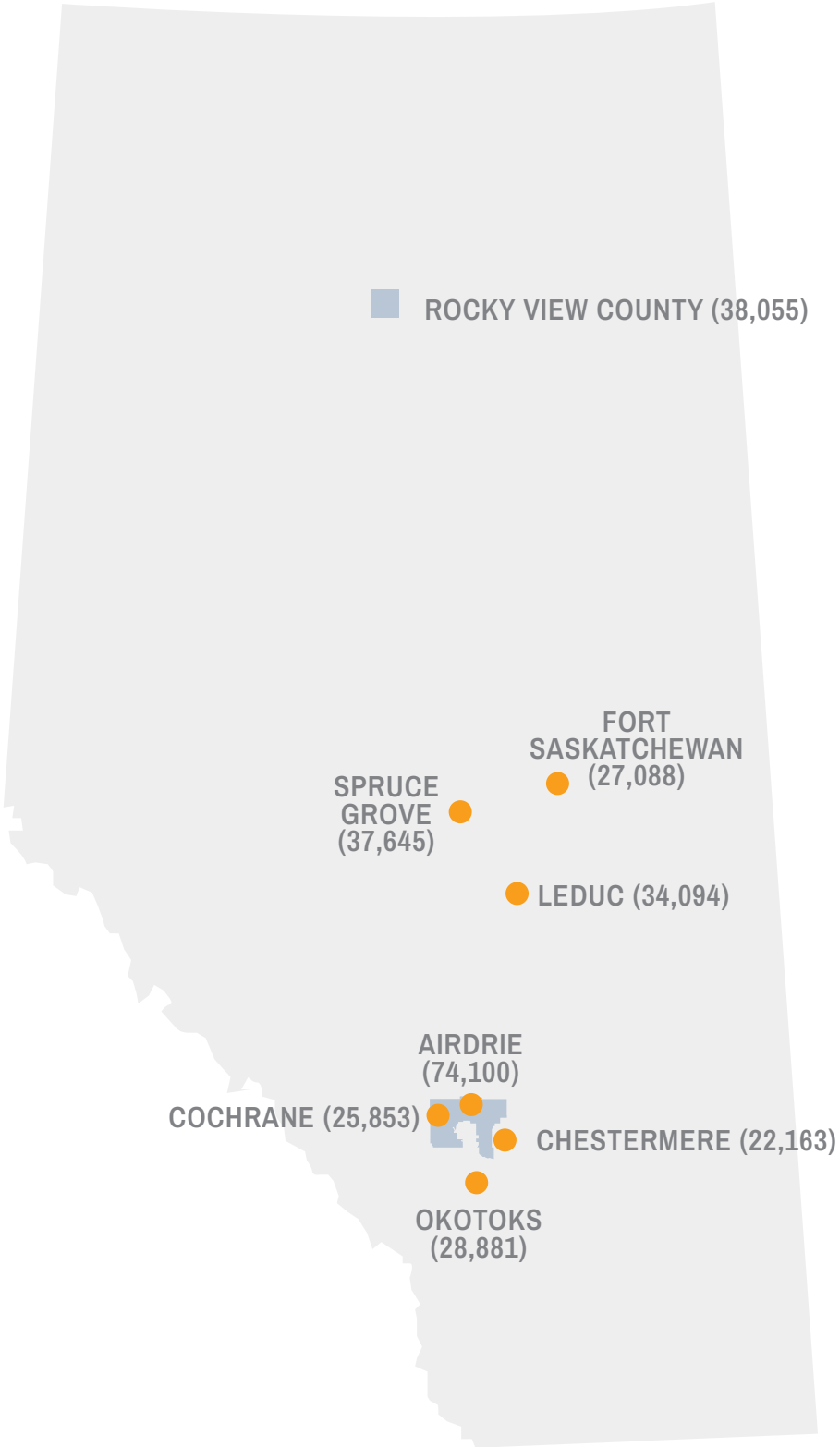




# COMPARABLE MUNICIPALITIES -LARGER THAN COLD LAKE



	CHESTERMERE	COCHRANE	FORT SASKATCHEWAN	OKOTOKS	LEDUC	SPRUCE GROVE	AIRDRIE	
Leisure / Tot Pool	✗	✓	✓	✓	✓	✓	✓	6/7
6 Lane 25m Pool	✗	✗	✓	✓	✓	✗	✓	4/7
8 Lane 25m Pool	✗	✓	✗	✗	✗	✓ <sup>10</sup>	✗	2/7
50m Pool, Any Lane Configuration	✗	✗	✗	✗	✗	✗	✗	0/7
Greater than 1m Diving	✗	✗	✗	✗	✗	✗	✗	0/7
Water Slide	✗	✓	✗	✗	✓	✓	✓	4/7
Lazy River	✗	✓	✗	✗	✗	✓	✓	3/7
Wave Pool	✗	✗	✗	✗	✗	✗	✗	0/7
Spray Park	✗	✓	✗	✗	✗	✗	✗	1/7
Standalone Facility	✗	✗	✓	✗	✗	✗	✗	1/7





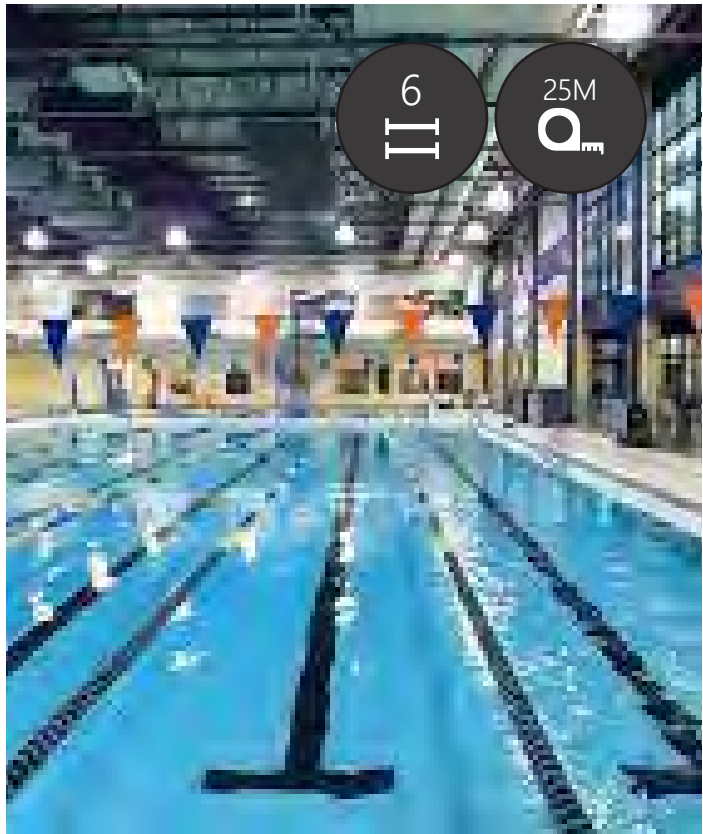
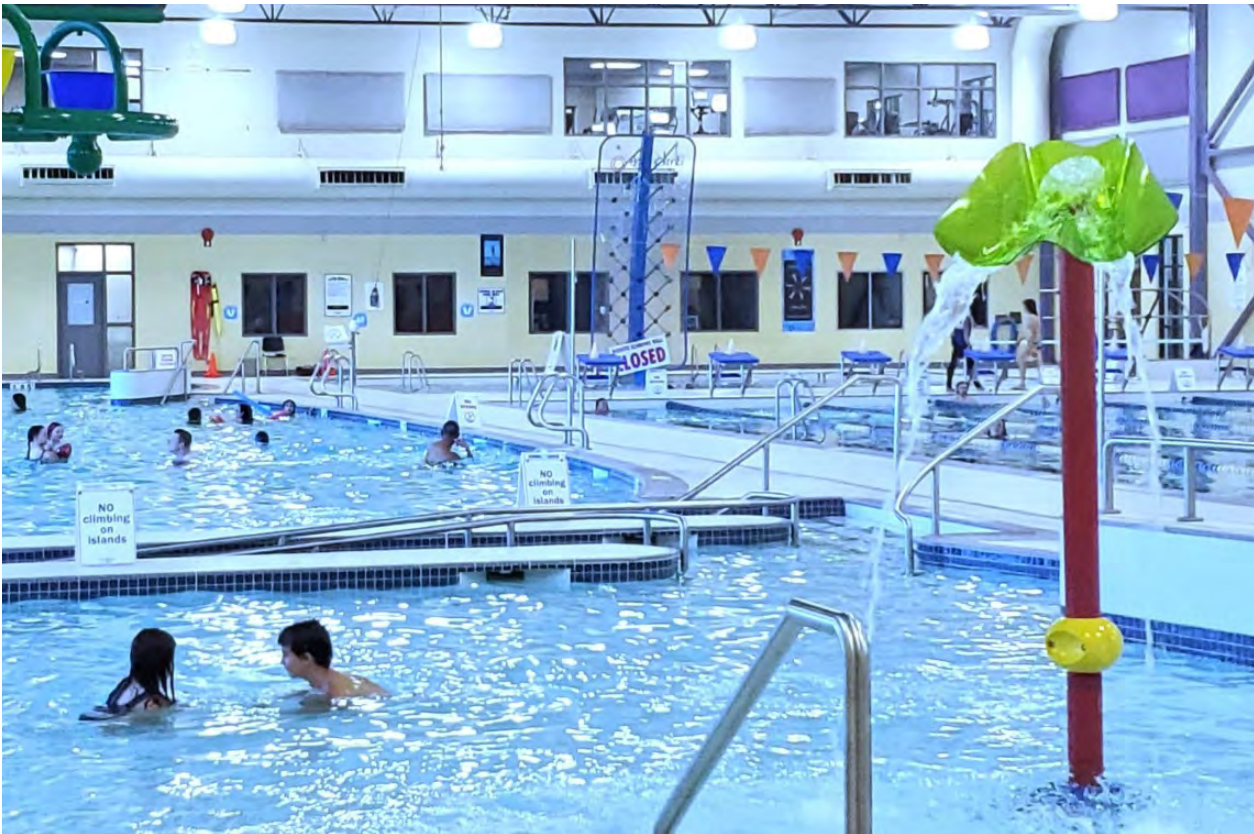
ROCKY VIEW COUNTY (38,055) /  
AIRDRIE (74,100)

GENESIS PLACE

- Six-lane 25-meter pool
- Dive tank
- Water slide
- Aquatic climbing wall
- Hot tub
- Leisure pool with spray toys and a lazy river
- Tot pool
- Steam room.

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

REGIONAL FACILITY



SPRUCE GROVE (37,645)

TRANSALTA TRI LEISURE CENTRE

- 25m pool with 10 lanes
- A leisure pool with a play structure and water features
- An indoor waterslide
- An enormous hot tub
- A steam room

Leisure / Tot Pool	✓
6 Lane 25m Pool	✗
8 Lane 25m Pool	✓ 10 Lanes
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

REGIONAL FACILITY



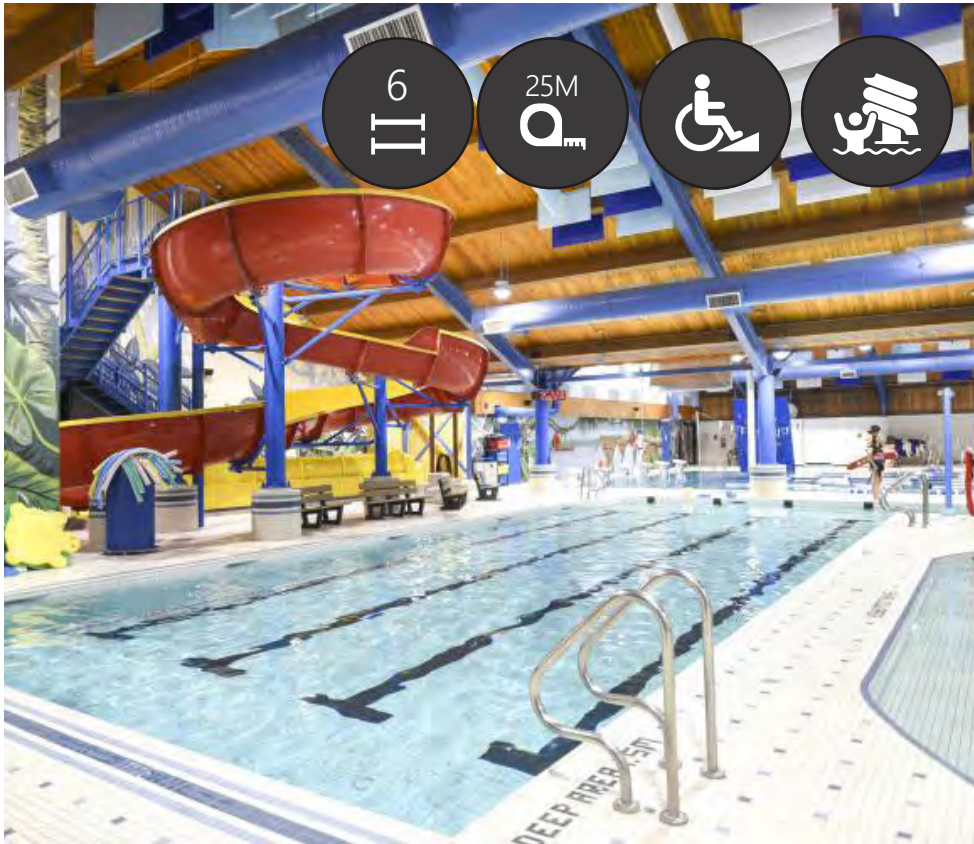


LEDUC (34,094)

LEDUC RECREATION CENTRE

- 25m, 6-lane Main Pool
- 17.5m, 4-lane Leisure Pool with Zero Depth Entry
- Leisure Tot Zone with Interactive play structure with slides and Zero Depth Entry
- Waterslide
- Wheelchair Accessible Whirlpool, hot tub, and steam room
- Area where spectators can enjoy food and drink without removing outdoor footwear.

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

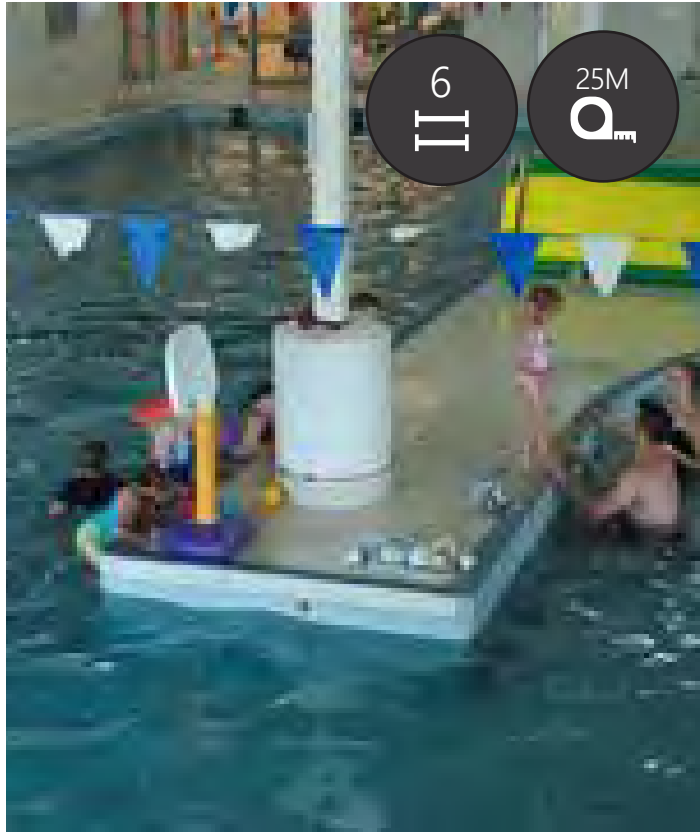


OKOTOKS (28,881)

OKOTOKS RECREATION CENTRE

- 4 lane x 25m leisure pool (Swindells) with tot area
- 6 lane x 25m lap pool (Riley Minue Pool)
- 40-person, wheelchair accessible hot tub
- Dry sauna
- 1m diving board, tarzan rope & inflatable toys
- Large change rooms and dedicated inclusive change room
- Viewing areas
- Easy access stairs
- Portable chair lifts
- Rental opportunities

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗



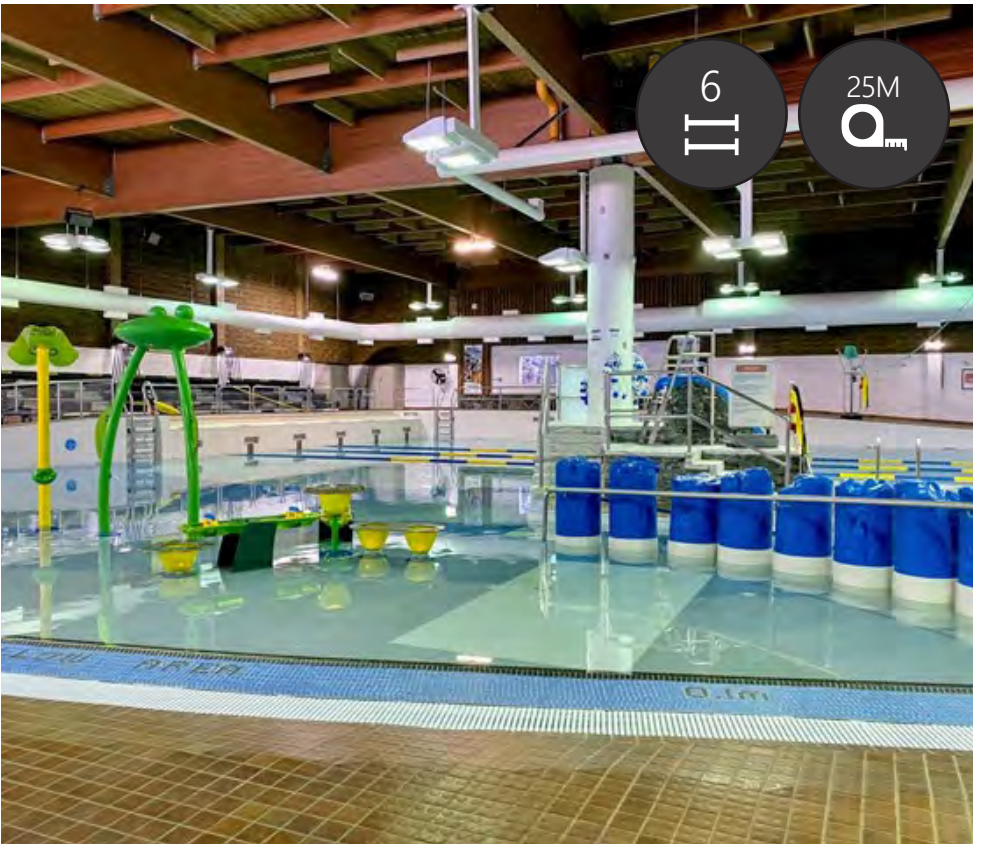


**FORT SASKATCHEWAN (27,088)**

**HARBOUR POOL**

- Harbour Pool is a wheelchair accessible facility that offers year round leisure swimming, swimming lessons, and leadership programs.
- 6 x 25 m main pool (30°C)
- Warm pool (32°C)
- Whirlpool (40°C)
- Zero depth walk-in bay area
- Diving board

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✓

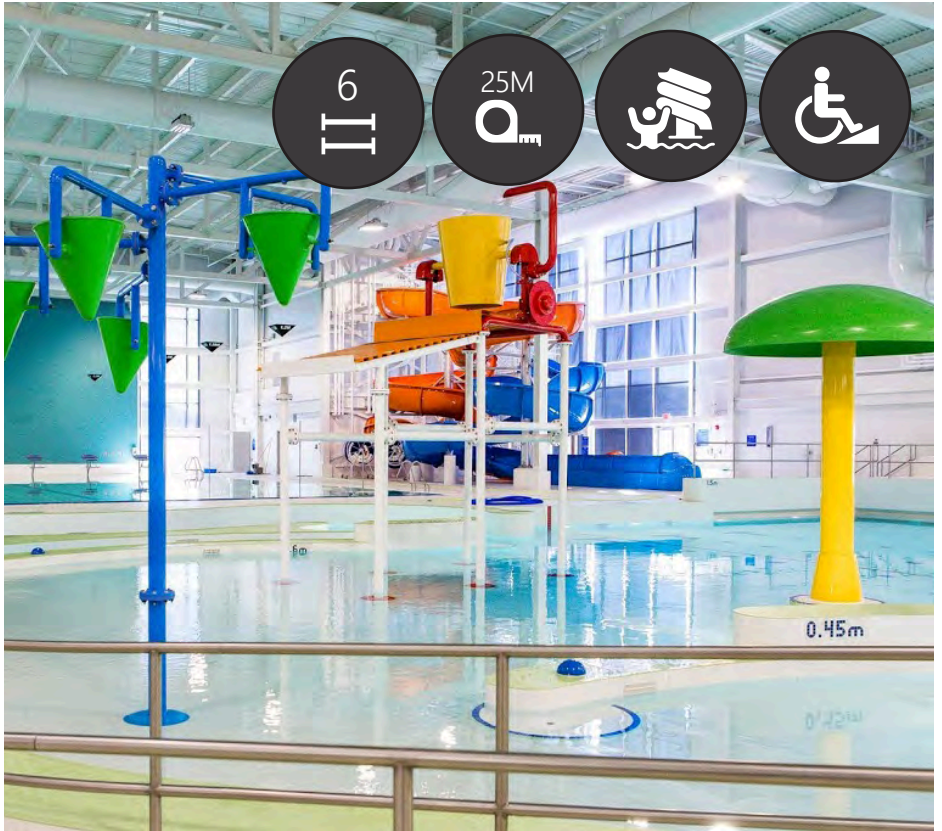


**ROCKY VIEW COUNTY (38,055) / COCHRANE (25,853)**

**SPRAY LAKE SAWMILLS FAMILY SPORTS CENTRE**

- Lap pool, leisure pool with spray features, lazy river, hot tub, warm therapy pool, a spray park outside and two water slides.

Leisure / Tot Pool	✓
6 Lane 25m Pool	✗
8 Lane 25m Pool	✓
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✗
Spray Park	✓
Standalone Facility	✗





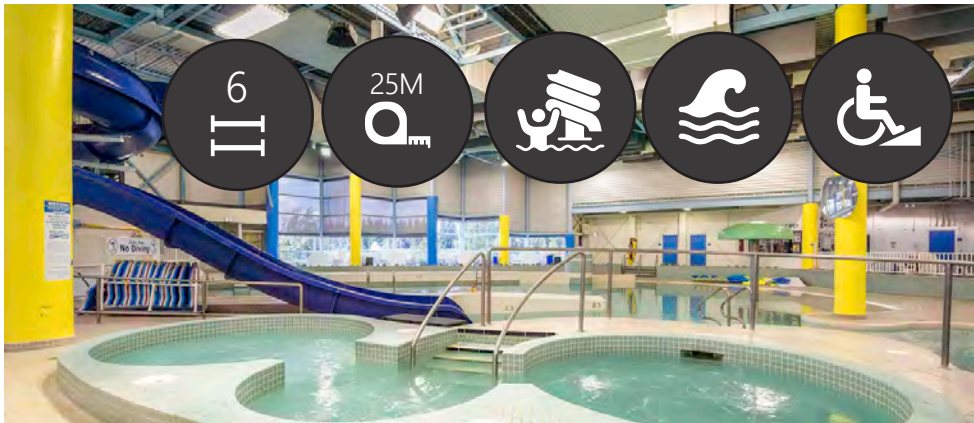
LLOYDMINSTER (19,739)

BIOCLEAN AQUATIC CENTRE

- Instructional pool (25 metre, 6-lane tank)
- Wave pool (1 metre high rolling waves)
- Whirlpool (18 patrons)
- 150’ waterslide
- 1 metre diving board
- Steam room
- Dry sauna
- Fitness room
- Concession
- Meeting rooms
- Wheelchair accessible
- Tot play area with zero depth entry
- Spectator viewing area
- Upper mezzanine viewing area

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✗
Wave Pool	✓
Spray Park	✗
Standalone Facility	✓

BUILT IN 1988 (26,845 SQ. FT)



CAMROSE (18,772)

MAYER AQUATIC CENTRE

- Includes competitive diving blocks with sliding rails, a recreational diving board, integrated steps for easy access, and anchors for basketball hoops.
- <https://www.youtube.com/watch?v=vRzRZjRChcw>
- A water slide exits into a trough for fun and safe use.
- Change room facilities include a Universal Change Room.
- Touch Pads Not Permitted for Record Attempts during competitions
- Spray park directly adjacent

Leisure / Tot Pool	✓
6 Lane 25m Pool	✗
8 Lane 25m Pool	✓
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✗
Spray Park	✓
Standalone Facility	✗

BUILT IN 1979 WITH RECENT ADDITION AND RENOVATIONS





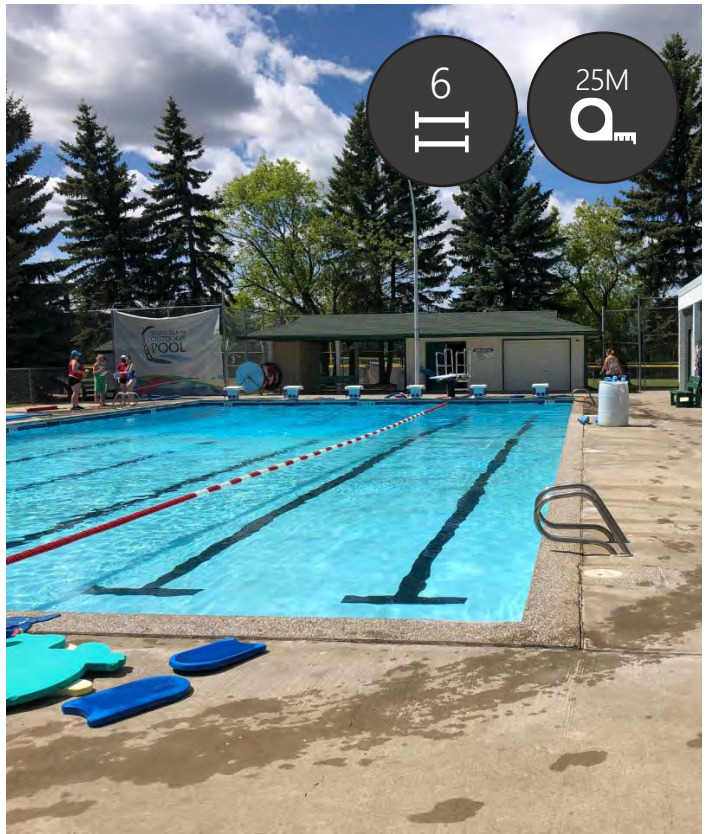
STONY PLAIN (17,189)

STONY PLAIN OUTDOOR POOL

- six-lane 25 meter outdoor pool with 1m shallow end to 2.5m deep end
- Diving Board
- Outdoor spray park
- Community is adjacent to the Trans-Alta Tri-Leisure Centre; community relies on the Stony Plain Outdoor Pool during the summer months only

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✗
Wave Pool	✗
Spray Park	✓
Standalone Facility	✓

BUILT IN 1972



BROOKS (14,924)

EID AQUATIC CENTRE

- 6-lane, 25 meter pool, 1 meter diving board.
- Leisure/wave pool with Zero-Depth Entry
- 200 feet waterslide
- 13 different spray features, lazy river, tot's area, waves. Handicap accessible
- Large hot tub (40 degrees Celsius / 104 degrees Fahrenheit).
- Dry sauna.
- Steam room (46 degrees Celsius / 115 degrees Fahrenheit).
- Attached to the Lakeside Leisure Centre

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

BUILT IN 2004





CANMORE (13,992)

ELEVATION PLACE

- 25 metre pool with eight lanes
- A leisure pool that simulates a beach edge, moving to 1.5 metres deep
- A lazy river, water slide and a children's play area
- A steam room as well as a 25-person hot tub
- Modern locker rooms with showers

Leisure / Tot Pool	✓
6 Lane 25m Pool	✗
8 Lane 25m Pool	✓
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

BUILT IN 2013



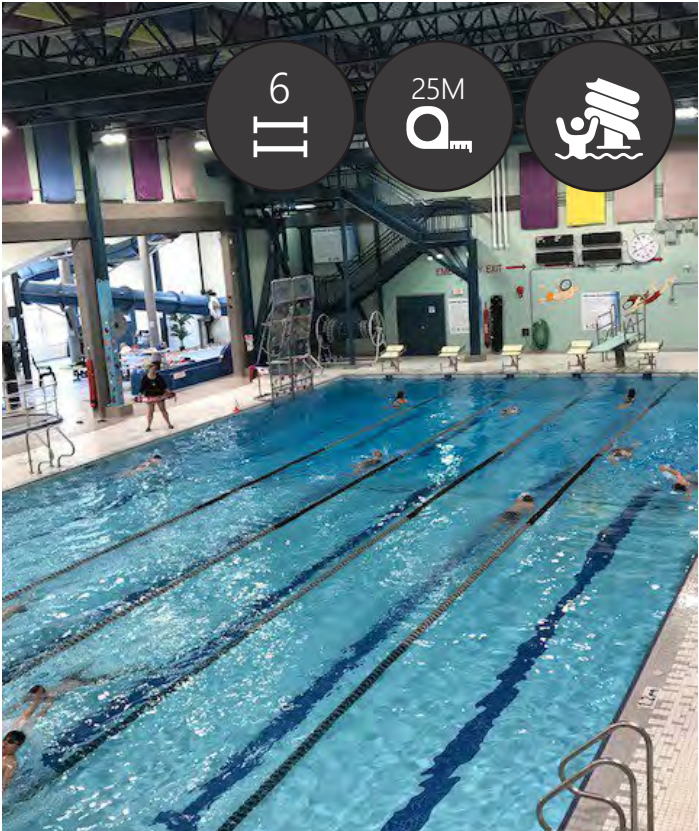
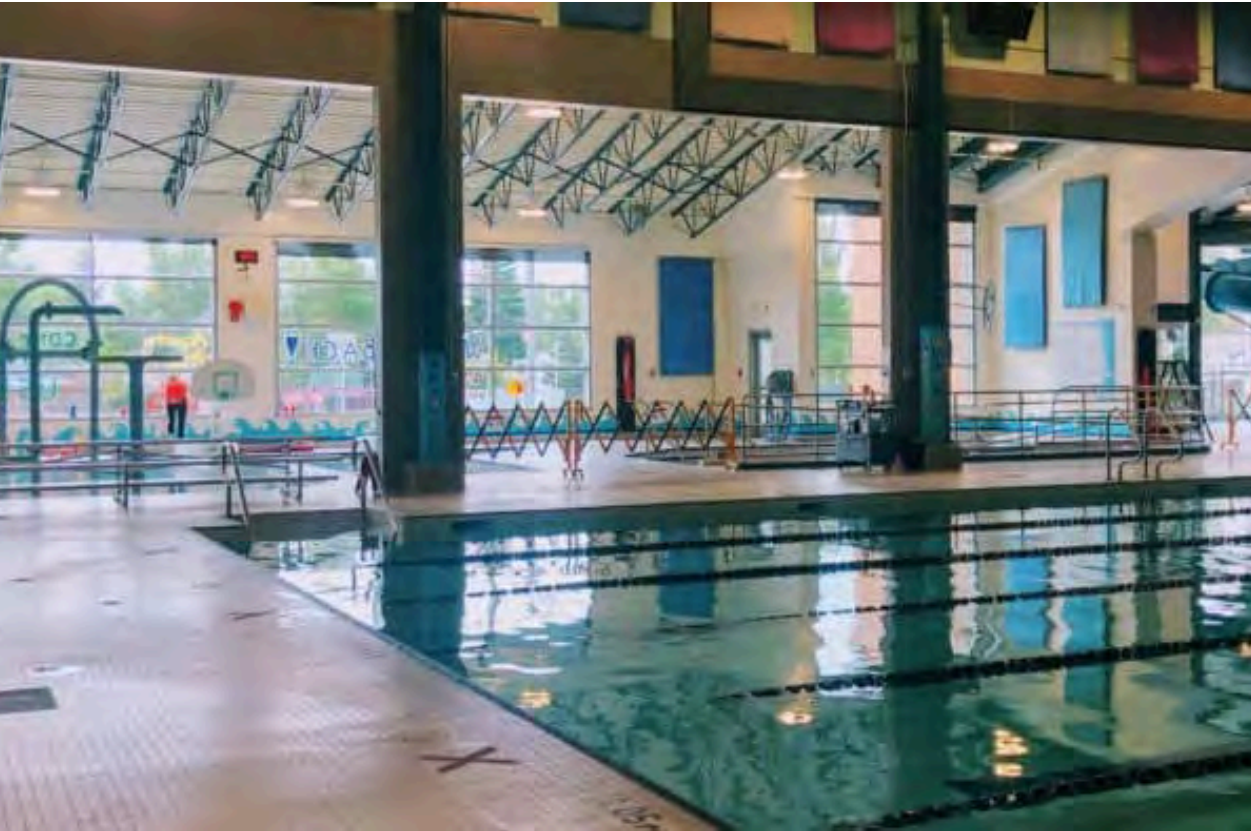
STRATHMORE (13,756)

STRATHMORE AQUATIC CENTRE

- 6-lane, 25-meter swimming pool
- Diving board
- Climbing wall
- Leisure pool for children
- Hot tub
- Waterslide
- Multi-purpose room
- Steam Sauna
- No records permitted for competitions
- Strathmore Water Polo Club

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

OPENED 2002 WITH EXPANSIONS  
IN 2011 AND 2018





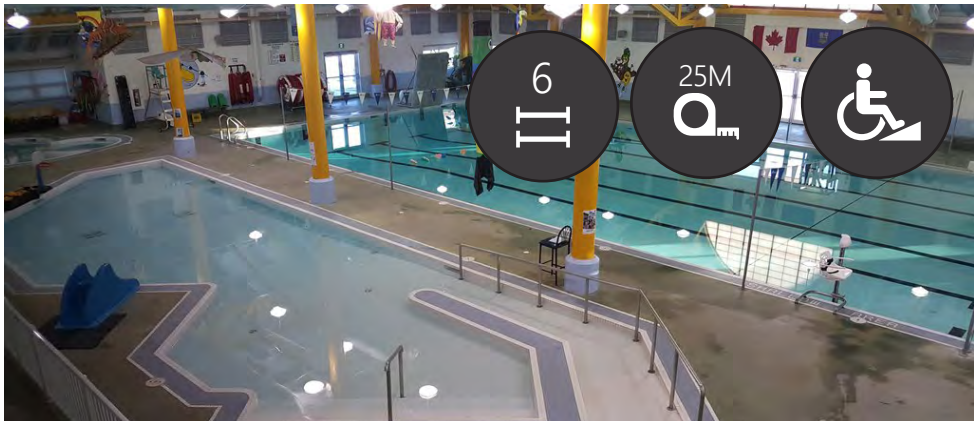
LACOMBE (13,396)

KINSMEN AQUATIC CENTRE

- 25 metre six-lane main pool
- teaching/leisure pool (Tot-Sized) with zero-depth entry
- hot tub
- No Water Slide
- Lacombe Spray Park (Renovated and Re-Landscaped 2013)
- Pool is not spontaneous use

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

BUILT IN 1996



HIGH RIVER (13,584)

BOB SNODGRASS RECREATION COMPLEX

- 6 lane 25m pool
- 1m diving board
- Tarzan rope and Tot slide
- Hot tub
- Cedar sauna (no steam)
- PAL accessibility lift
- On July 11, High River Town Council unanimously approved the decision to borrow up to \$15 million for a pool expansion at the Bob Snodgrass Recreation Complex. During the July 11 meeting, council also directed administration to begin looking for a parcel of land to be used for a future new recreational facility as part of the Town's long-range planning.

Leisure / Tot Pool	✗
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗





WETASKIWIN (12,594)

MANLUK AQUATIC CENTRE

- A 25m, six-lane competition pool.
- A tot pool with three lane leisure pool, beach entry and spray features.
- Fully accessible 25-person hot tub
- Lazy River
- Two Waterslides: one fast, one winding
- Steam Room
- BoardRider Surf Machine (Closed until further notice)

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✓
Lazy River	✓
Wave Pool	✓
Spray Park	✗
Standalone Facility	✗

REGIONAL FACILITY



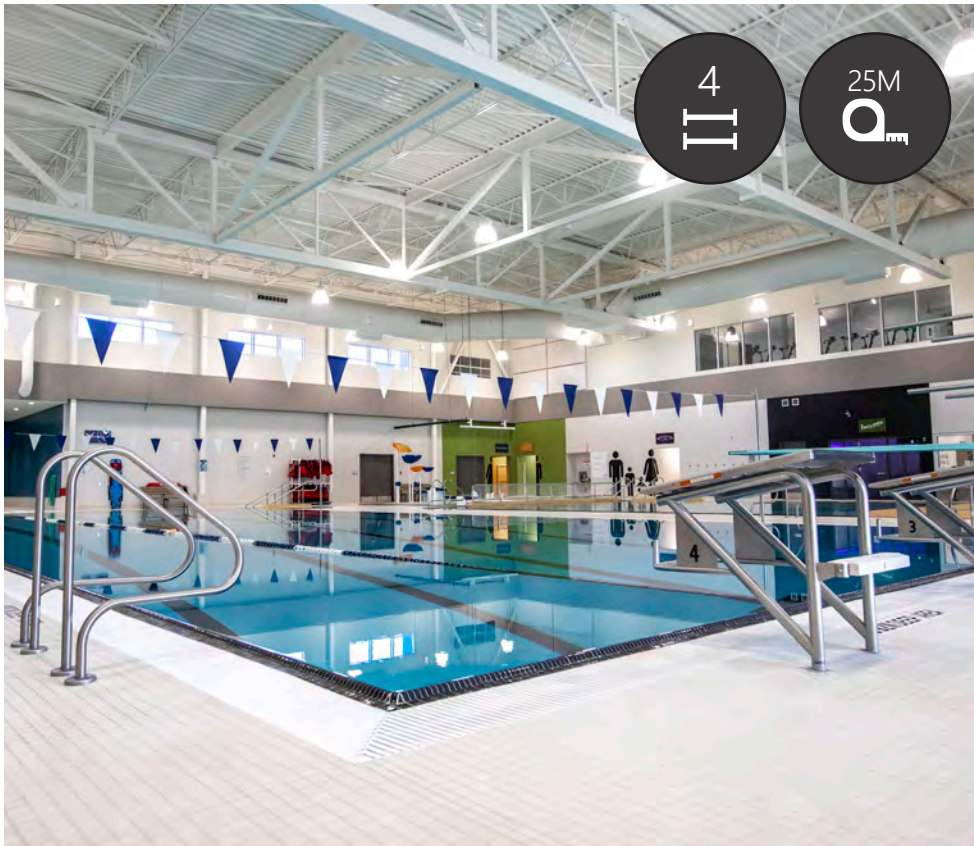
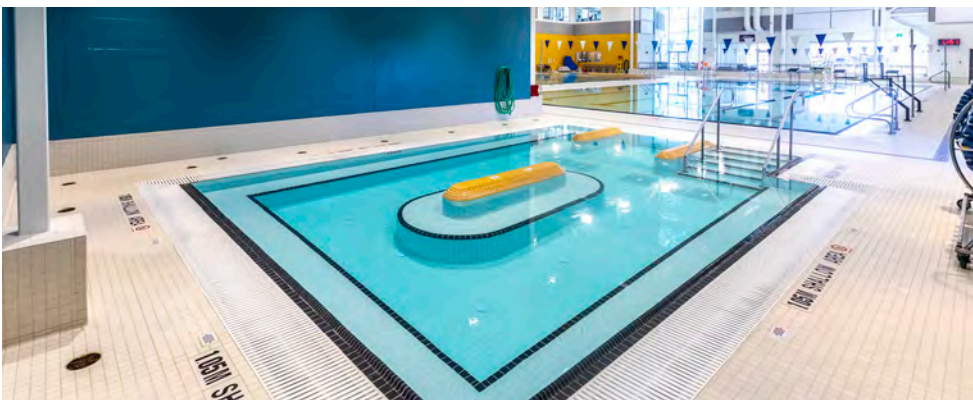
M.D. OF GREENVIEW (8,584)

GREENVIEW REGIONAL MULTIPLEX

- 4 lane 25m pool
- Tot Pool with 0.04M to 0.37M shallow area
- 1m diving board
- Small Lazy River
- Hot tub with 1.05M shallow area
- Steam Room

Leisure / Tot Pool	✓
6 Lane 25m Pool	✗
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✓
Wave Pool	✗
Spray Park	✗
Standalone Facility	✗

BUILT IN 2017





BONNYVILLE (5,975)

BONNYVILLE SWIMMING POOL

- Includes Dry Sauna
- Standalone Facility

Leisure / Tot Pool	✓
6 Lane 25m Pool	✓
8 Lane 25m Pool	✗
50m Pool, Any Lane Configuration	✗
> 1m Diving	✗
Water Slide	✗
Lazy River	✗
Wave Pool	✗
Spray Park	✗
Standalone Facility	✓

BUILT IN 1980





# SWIM ALBERTA RECOMMENDATIONS

## FOR COMPETITION-CERTIFIED LANE POOL OPTIONS

### OPTION A - LOCAL COMMUNITY POOL

EXPECTED USE: **LOCAL** SWIMMING COMPETITIONS WITH A MAXIMUM OF **150-200 PARTICIPANTS**.

Format: 6 lanes x 25 metres with a 1 metre diving board  
 Lane Width: 2.2 metres  
 Depth: Deep end: 3.5 metres for 12 metres, Shallow end: 1.0 metres  
 Blocks: Basic starting blocks  
 Deck Space: 3.0 metres around pool  
 Seating: 150 retractable spectator seating, 150 temporary bleachers  
 Rooms: 2 Multi-purpose rooms with fridge & kitchen, fitness/dance studio  
 Other: Strength Training & Fitness Centre

### OPTION B – MULTI-USE COMMUNITY POOL

EXPECTED USE: **LOCAL AND REGIONAL** SWIMMING COMPETITIONS WITH A MAXIMUM OF **200-250 PARTICIPANTS**, MAY INCLUDE TRAINING FOR LOCAL WATER POLO OR ARTISTIC SWIMMING CLUBS.

Format: 8 lanes x 25 metres with a 1 metre diving board, separate leisure pool  
 Lane Width: 2.5 metres  
 Depth: Deep end: 3.5 metres for 12 metres, Shallow end: 1.5 metres  
 Blocks: Adjustable wedge starting blocks  
 Deck Space: 3.0 metres around pool  
 Seating: 250 permanent spectator seating, 150 temporary bleachers  
 Rooms: 2 Multi-purpose rooms with fridge & kitchen, fitness/dance studio, Meeting space for up to 100 people  
 Other: Strength Training & Fitness Centre

### OPTION C – COMPETITION POOL

EXPECTED USE: **LOCAL REGIONAL AND ENTRY LEVEL PROVINCIAL** COMPETITIONS WITH A MAXIMUM OF **350 PARTICIPANTS**. NOVICE DIVING, REGIONAL WATER POLO AND ARTISTIC SWIMMING COMPETITIONS.

Format: 8 lanes x 53 metres with 2 bulkheads and 15m hydraulic floor, 1 metre and 3 metre diving boards, 5 metre dive tower, 6 lanes x 25 metres in a separate tank which is part of a leisure pool.  
 Lane Width: 2.5 metres  
 Depth: Deep end: 4.5 metres for 12 metres, Shallow end: 2.0 metres  
 Blocks: Adjustable wedge starting blocks with, backstroke ledges  
 Deck Space: 4.0 metres around pool  
 Seating: 350 permanent spectator seating, 250 temporary bleachers  
 Rooms: 3 Multi-purpose rooms with fridge & kitchen, fitness/dance studio, Large meeting space for 250 people

### OPTION D – PREMIUM AQUATIC FACILITY

EXPECTED USE: PROVINCIAL CHAMPIONSHIPS AND NATIONAL COMPETITIONS. DIVING, WATER POLO AND ARTISTIC SWIMMING CAN HOST COMPETITIONS OF ANY SPORT AT THE **PROVINCIAL LEVEL AND ABOVE**.

Format: 10 lanes x 54 metres with 2 bulkheads, 6 lane x 25 metre pool with 1 & 3 metre diving boards and 3, 5, 7.5 & 10 metre dive towers in a separate tank, 8 lanes x 50 (or 25m) metres in a separate warm-up tank.  
 Lane Width: 2.5 metres  
 Depth: Competition Tank: 2.5 metres, Warm-up Tank: 1.5 metres, Dive Tank: 4.5 metres  
 Blocks: Adjustable wedge starting blocks with backstroke ledges  
 Deck Space: 5 metres around pool with one side at 10 metres from side of pool  
 Seating: 1200+ permanent spectator seating, 600+ temporary bleachers  
 Rooms: 4 Multi-purpose rooms with fridge & kitchen, fitness/dance studio, Large meeting space for 500 people



### SUMMARY AVERAGE OF STUDIED POOLS - COMPONENTS



Leisure /  
Tot Pool



6 Lane  
25M Pool



≤ 1M  
Diving



Water  
Slide



Lazy River  
Optional



Attached to  
Other Amenities





E

# **OPERATIONAL ANALYSIS**





# OPERATIONAL ANALYSIS



# City of Cold Lake Aquatics Centre Public Engagement

## SUMMARY

The City of Cold Lake performed a public engagement process which allowed the public to give input into the project. Public Participation has to be meaningful in that it needs to be value based, decision oriented and goal driven. The most important part of the process is to give the public a sense that their opinions matter and that they have a say in the decision-making process. Involving the public offers a sense of empowerment and collaboration but only if they feel assured that the feedback they provide will be heard and taken into consideration.

Response to the Cold Lake Aquatics Centre Public Engagement was strong with 8.2% of the population participating in the online survey. Noteworthy is that 81% of the respondents were between 25-64 years old.

Testing the city and region's public process relative to keeping residents informed on potential public projects, 81% of respondents said that they were aware of the city's New Aquatic Centre plans. This indicates that the City of Cold Lake is doing very well in their communications process and the public appears to be well informed.

Asked about the importance of a new pool, 71% identified that it was very important and 17% said it was somewhat important. This sentiment was also strongly stated at stakeholder and public in-person engagement sessions with a sense that it needs to be built as soon as possible. The results of the in-person consultations were not included/amalgamated into the on-line survey results.

In terms of community usage of a local pool 75% of respondents stated that they had utilized a pool within the last 3 years with 30% of those using a pool for recreational swimming, 23% for swimming lessons/development and 19% for fitness/rehabilitation. Asked to rank the activities users would like to see in a new facility, the results were consistent with the numbers above. However, the in-person stakeholder responses, not included in the survey results, could potentially sway the overall priorities of the pool towards competitions.

Testing the public's interest in non-aquatic services offered, 29% indicated a viewing area, 27% indicated party/meeting rooms, 20% selected food vendors and 16% selected physiotherapy services.

The top 10 most highly rated activities, amenities and spaces include, primarily, spaces that support leisure uses and family-friendly participation. The incorporation of all 10 would reach a wide range of participants and offer an inclusive environment for all ages and abilities.

Competitive/Lane pools ranked in the bottom 5 when asked what amenities users were most interested in, however, stakeholder group rankings, including swim clubs and specialty training groups, would differ from the general public needs and wants.

### Top observations from open-ended responses were:

- Warm water pool is preferred over cold water
- Competition and training amenities are a low priority
- Public is neutral regarding a 25m vs. 50m pool
- Top-rated features include 'play' amenities
- Shallow entry areas preferred over deep end areas

### Top 'mentions' from open-ended responses were:

- Family Oriented
- Play features
- Swimming Lessons
- Whirlpool
- Warm water
- Lazy river

### Social and demographic conclusions:

- Greatest focus should be children under 18
- Community is more in favour of universal change rooms than against them
- The community is strongly in favour of barrier-free accessibility
- Competitive swimming should be planned for



# Project Goals and Objectives

The City of Cold Lake currently has access to aquatics recreation opportunities provided by the J.J. Parr recreational facility located on the National Defense facility at 4-Wing. In review of the needs assessment work that has been prepared by the City of Cold Lake with the support of internal administration and a number of consultants, the primary driver of need for the exploration of a modernized aquatics facility was accessibility and amenities. In prior work performed, one of the critical limitations facing the current J.J. Parr Recreation Facility was the hours of operation and consistent access to the public.

Although the City of Cold Lake and 4-Wing have achieved a long-standing partnership agreement supporting the access to the facility, it was a common theme within engagement that the limited or inconsistent access was compromising recreational accessibility for the community. This limitation is further restricted with 4-Wing facing elevated operational risks or operational readiness requirements. In addition to the accessibility limitations identified at the J.J. Parr recreation facility, the facility, although well maintained, is aging and does not provide the space flexibility or amenities that would be considered consistent with a modern aquatic competitive or leisure patron expectation. Based on the prior work performed, it would suggest that a modernized facility should consider maximizing operational availability to the public and providing an appropriate patron experience for a diverse range of aquatic patrons.

# Understanding the Project Scope

## PROJECT SCOPE

In review of the engagement work performed, and in review of best practices associated with the development of new aquatics recreational facilities, there are a number of project scope and programing considerations that should influence the design. These items are highlighted below and should be reviewed in conjunction with design concepts to ensure the recommended aquatics facility configuration meets the needs and objectives of the local community.

### Competitive or Performance Aquatics

Should meet the needs of the local swim clubs, performance bathers, and the opportunity to host sport tourism aquatic opportunities. This may include expanded needs for synchronized swimming, water polo and other sports.

### Leisure or Passive Bather Experience

Should consider water park amenities, water slide options, splash park amenities, lazy river opportunities, and hot tub or whirlpool programming.

### Swimming Lesson and Aquatic Safety Development

The facility design should consider the opportunity to meet the diverse needs of swimming lessons for beginners, families, and advance lessons. This should consider water temperatures, water heights, and the possibility of adjustable floor grades to support maximized flexibility.

### Accessibility & Inclusion

Accessibility, diversity, and flexible gender accessibility should be considered within the support space design.

### Community Connection

Consideration of including the aquatics facility in connection with the Energy Centre would expand upon the current program plan, utilize prior design considerations, and encourage participation from the academic market place.



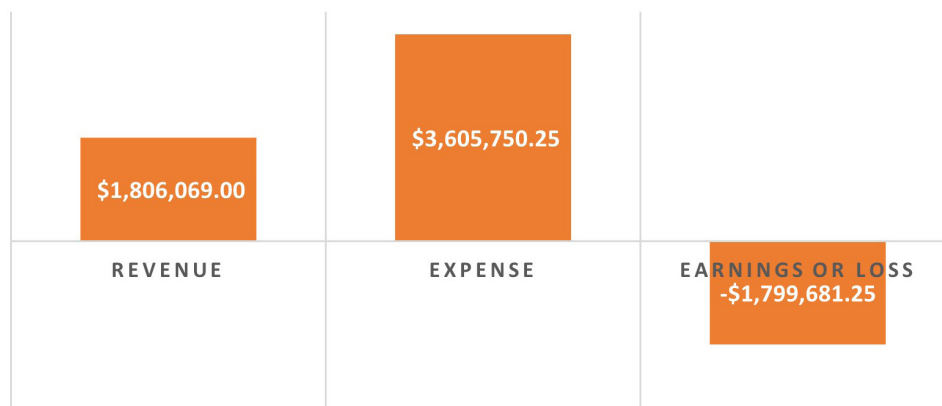
# Understanding the Cold Lake Energy Centre Performance

In review of the current performance of the Cold Lake Energy Centre there were a number of baseline results that were analyzed to support the preliminary operational planning for the new aquatic facility. Some of the key analysis results have been shown below. For the consistency of this data Principal and Interest debenture payments have been removed:

## Cold Lake Energy Centre

Revenue	\$1,806,069.00
Expense	\$3,605,750.25
Earnings of Loss	\$(1,799,681.25)
Cost recovery	50%

## COLD LAKE ENERGY CENTRE OPERATIONS



The Cold Lake Energy Centre generates \$1.8 Million in annual revenue. The primary sources of this revenue are as follows:

- \$493,000 from annual program services. This represents 27.3% of total revenue.
- \$478,000 from annual rental revenue. This represents 26% of total revenue.
- \$30,000 from annual advertising revenue. This represents 1.7% of total revenue.
- \$800,000 from annual government grants. This represents 44% of total revenue.
- Additional revenue comes from miscellaneous small sources.

The Cold Lake Energy Centre costs \$3.6 Million annually to operate. The primary sources of these expenses are as follows:

- \$1,719,000 from annual labour costs including benefits. This represents 48% of total expenses.
- \$570,000 from contracted service costs. This represents 15% of total expenses.
- \$80,000 from lease expenses. This represents 2% of the total expenses.
- \$213,000 from insurance expenses. This represents 6% of the total expenses.
- \$85,500 from supplies and materials expenses. This represents 2% of the total expenses.
- \$89,000 from allocated supplies and contract work. This represents 2% of the total expenses.
- \$581,000 from utilities expenses. This represents 16% of the total expenses.
- \$100,000 from programing supplies. This represents 3% of the total expenses.
- Additional expenses come from miscellaneous small sources.



Revenue		
Category	Value	Percent of Total
Program Services	\$315,000.00	17.4%
Program Services	\$55,000.00	3.0%
Program Services	\$60,000.00	3.3%
Program Services	\$1,000.00	0.1%
Program Services	\$50,000.00	2.8%
Program Services	\$12,000.00	0.7%
Advertising	\$30,000.00	1.7%
Rentals	\$226,750.00	12.6%
Rentals	\$153,750.00	8.5%
Rentals	\$80,000.00	4.4%
Rentals	\$17,569.00	1.0%
Miscellaneous	\$5,000.00	0.3%
Government Grants	\$800,000.00	44.3%
<b>Total</b>	<b>\$1,806,069.00</b>	<b>100.0%</b>
<b>Earnings of Loss</b>	<b>-\$1,799,681.25</b>	
<b>Cost Recovery</b>	<b>50%</b>	
<b>Debenture Interest</b>	<b>\$1,067,142.00</b>	
<b>Debenture Principal</b>	<b>\$1,624,338.00</b>	

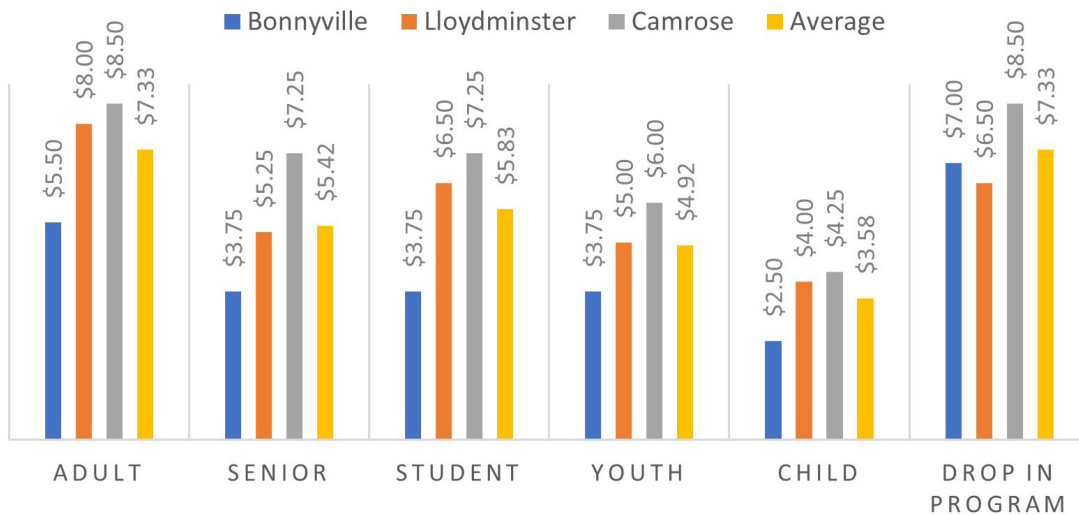
Expense		
Category	Value	Percent of Total
Salaries Regular	\$1,218,390.05	34%
Salaries Casual	\$110,000.00	3%
Salaries Summer	\$12,000.00	0%
Overtime	\$31,126.47	1%
Employer Contributions	\$338,110.67	9%
Employer Contributions Casual	\$8,800.00	0%
Employer Contributions Summer	\$960.00	0%
Training	\$8,500.00	0%
Subsistence	\$8,966.00	0%
Postage and Freight	\$2,050.00	0%
Allocated Contracted E&M	\$20,410.00	1%
Allocated Contracted Buildings	\$118,114.50	3%
Contracted Services	\$529,625.59	15%
Contracted Services	\$40,000.00	1%
Equipment Lease	\$80,000.00	2%
Licenses, Permits, Fees	\$1,200.00	0%
Insurance	\$213,538.52	6%
Supplies	\$34,985.02	1%
Sale of Inventory	\$-	0%
Allocated Supplies Building	\$40,820.00	1%
Allocated Supplies E&M	\$7,660.00	0%
Allocated Fuel	\$2,050.00	0%
Allocated Non Contracted Build.	\$40,317.00	1%
Non Contracted Services	\$48,590.45	1%
Utilities	\$581,535.98	16%
Program Supplies	\$100,000.00	3%
Bank Charges	\$8,000.00	0%
<b>Total</b>	<b>\$3,605,750.25</b>	<b>100%</b>



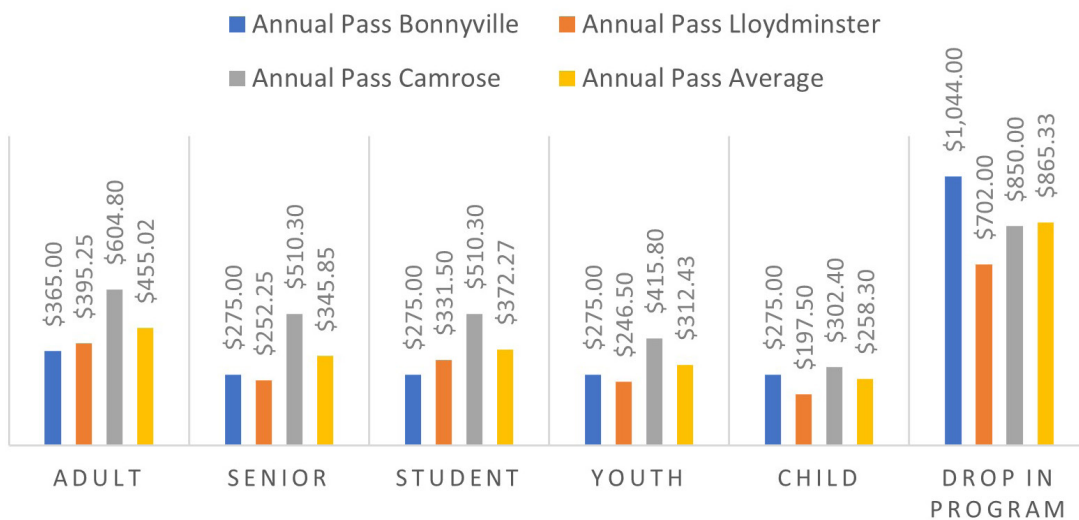
# Operational Best Practices

For the purpose of this report the Administrative team at the City of Cold Lake provided comparable facilities that should be considered within this report. A review of drop-in rates and annual membership rates were considered within this document. The results of this analysis is provided below.

## DROP IN RATE COMPARISON



## ANNUAL RATE COMPARISON





## PROGRAMMING RATES

Rates, fees and programming are listed below for the following comparative municipalities: Bonnyville Swimming Pool, Lloydminster Bioclean Aquatic Centre, Camrose Mayer Aquatic Centre and Stony Plain Outdoor Pool.

All pools compared offer flexible rates from drop-in, to 1 month, 1 year and 10-pass admissions. Bonnyville offers the most economic pricing but has the least number of amenities included.

Lloydminster offers multi-facility memberships, which grant unlimited access to fitness and water aerobics classes at: Servus Sports Centre, Bioclean Aquatic Centre and the Outdoor Pool. General admission includes access to the following amenities:

lane swim, public swim times, waterslide, sauna, steam room and gym. Group membership pricing is also available and requires the purchase of a senior or adult membership at regular price.

Camrose Mayer Aquatic Centre has the highest fees however the rates include access to the adjacent fitness center and walking track. Fees are included when purchasing any type of admission to the Aquatic Centre. All programming is considered 'drop-in' and includes lane swims, water therapy, water aerobics and public swims.

Stony Plain Outdoor Pool offers a variety of instructional programming for members and non-members. This includes pre-school swimming, adapted programming, private lessons, youth and adult swimming. The swimming season begins in May/June (dependant on weather) and ends first week of September annually.

### Bonnyville Swimming Pool

Type of Admission	Drop-in Rate	10x Ticket	1 Month	1 Year
Adult	\$5.50	\$50.00	\$58.00	\$365.00
Senior/Youth	\$3.75	\$34.00	\$42.00	\$275.00
Family	\$13.75	--	\$70.00	\$485.00
Child (3-5)	\$2.50	--	--	--
Water Aerobics Class	\$7.00	\$58.00	\$78.00	--

### Camrose Mayer Aquatic Centre

Type of Admission	Drop-in Rate	10x Ticket	1 Month	1 Year
Adult	\$8.50	\$71.40	\$75.60	\$604.80
Senior	\$7.25	\$60.27	\$63.79	\$510.30
Student	\$7.25	\$60.27	\$63.79	\$510.30
Youth (8-17)	\$6.00	\$49.04	\$51.98	\$415.80
Child (3-7)	\$4.25	\$35.70	\$37.80	\$302.40
Water Classes	*All Considered Drop In			

### Lloydminster Bioclean Aquatic Centre

Type of Admission	Drop-in Rate	10x Ticket	1 Month	1 Year
Adult	\$8.00	\$72.00	\$46.50	\$395.25
Senior	\$5.25	\$47.25	\$32.00	\$252.25
Student	\$6.50	\$58.50	\$39.00	\$331.50
Youth (7-12)	\$5.00	\$45.00	\$29.00	\$246.50
Child (2-6)	\$4.00	\$36.00	\$23.25	\$197.50
Water Aerobics Class	\$6.50	\$58.50	--	--

### Stony Plain Outdoor Pool (\*Drop in Rate and Seasonal Rate)

Type of Admission	Drop-in Rate	10x Ticket	1 Month	1 Year
Adult	\$6.50	--	--	\$115.00
Senior	\$5.25	--	--	\$100.00
Student (13-17)	\$5.25	--	--	\$100.00
Child (7-12)	\$4.75	--	--	\$90.00
Tot	\$3.50	--	--	\$80.00
Private Pool Party	\$125/hr for 40 Guests	--	--	--



## DEMOGRAPHICS COMPARISON

Statistical data relating to the population and particular groups within it:

	Cold Lake	Camrose	Bonnyville	Stony Plain	Lloydminster
Population	15,661	18,772	6,404	17,993	19,739
Median Age	32.4	43.2	36	40.8	37.6
Median Income	\$110,575	\$73,605	\$100,608	\$94,248	\$102,054
Labour Force	8,940	9,680	3,130	9,005	11,115
Employment Rate	73.7%	59.1%	65.6%	61.9%	67.2%
Unemployment Rate	8.5%	9.4%	11.5%	9.2%	10.9%
Average House Price	\$331,000	\$441,000	\$290,000	\$418,000	\$310,000
Top 3 Levels of Education	36% High School 19% University 16% Apprenticeship	35% High School 25% No Certificate 18% University	34% High School 26% No Certificate 26% Apprenticeship	37% High School 25% No Certificate 17% Apprenticeship	38% High School 24% No Certificate 23% University
Distance From Edmonton	300 KM	96 KM	246 KM	42 KM	251 KM

### OF THE CITIES RESEARCHED, COLD LAKE HAS THE:



Youngest population



Lowest unemployment rate



Highest median income



And a well-educated population



Largest labour force

The above demographic information was compiled from review of the following:

Statistics Canada Business Register Feb 2020

Statistics Canada Census Feb 2022

Statistics Canada Census April 2022

Statistics Canada Census August 2022

Statistics Canada Census November 2017



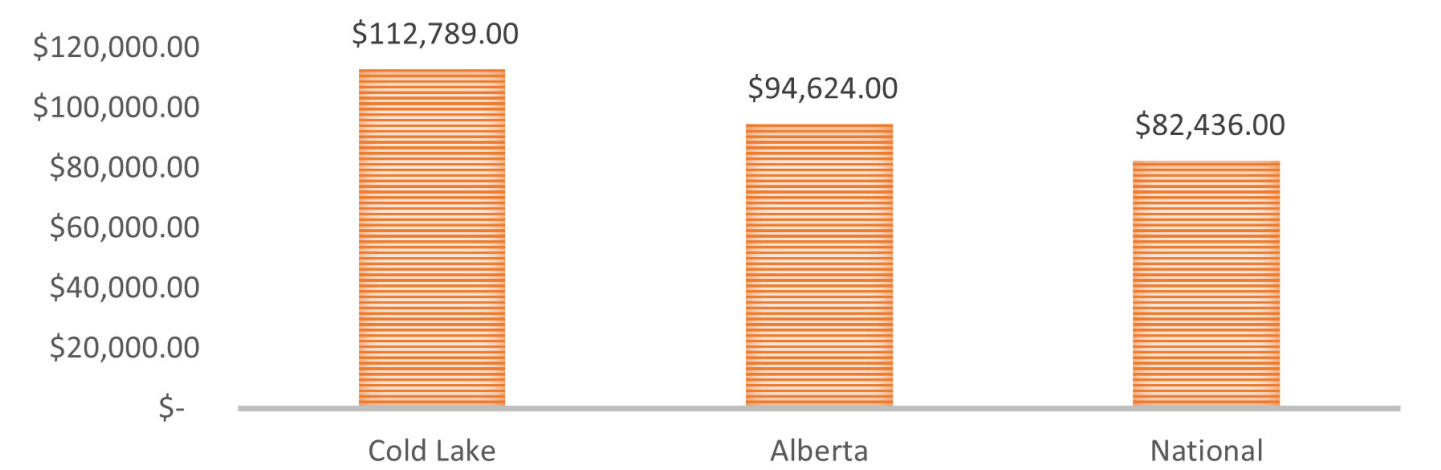
LABOUR ANALYSIS

In review of the labour market, the City of Cold Lake finds itself in a unique labour setting. This is an important consideration when considering the development of a facility that requires a balance of skilled labour that traditionally required a very high percentage of part time of casual labour.

The Cold Lake Employment data suggests that the market has an above average household income, below average unemployment, and a high percentage of citizens actively contributing to the labour market. This may require that the marketplace compensation will be above provincial norms and may require some specialized recruiting strategies to meet the labour needs of the proposed new development. The Cold Lake average household income is 19% above the Alberta average and 37% above the National average. It should also be noted that considering the relatively low current participation rate (based on Statistics Canada results in Arts, Culture, Recreation and Sport) on average only 1.1% of the market labour is currently in this field. This translates to less than 100 potential employees.

	Cold Lake	Alberta	National
Median Household Income	\$112,789.00	\$94,624.00	\$82,436.00
Unemployment Rate	4.8%	5.1%	6.4%
In Labour Force	82.7%	70.0%	63.9%

MEDIAN HOUSEHOLD INCOME





Using the online recruitment agency, *Indeed*, it is suggested that an average lifeguard hourly wage within Alberta, Canada over the past 36 months is \$20.14 per hour. Leveraging a current search of posted positions, the following results were obtained.

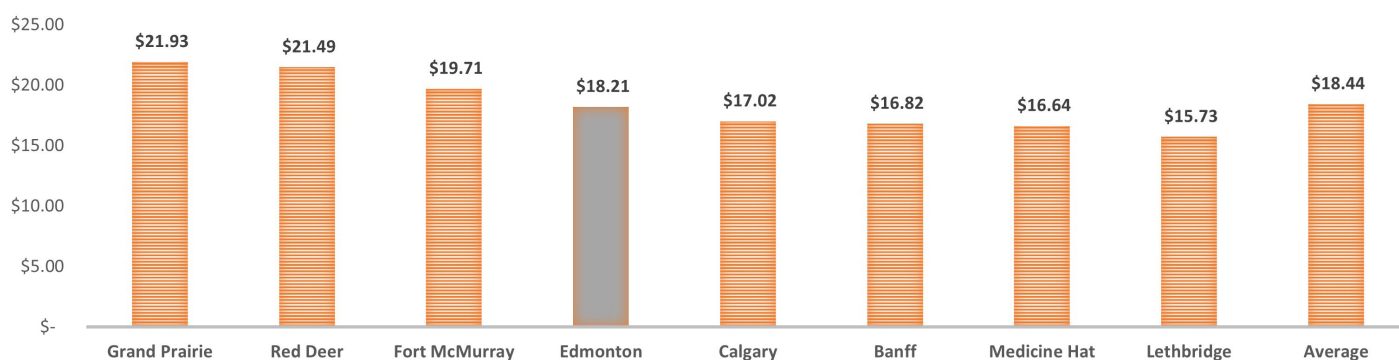
### LIFEGUARD AVERAGE RATES IN ALBERTA (AUGUST 2022)



For the purpose of this operational review, it was determined that Edmonton, Alberta provided the most reasonable representation of market rates. It should be noted that Edmonton, Alberta has a market rate for lifeguards of \$18.34, which is below the average rate of \$23.02 for the cities reviewed above. Given the high employment rates within the City of Cold Lake and the above average compensation, this may provide some risk. The recommended total wage base rate for a lifeguard at the proposed aquatic facility is \$18.34 with a fully loaded rate (includes benefits adjustments) of \$19.81 per hour.

Using the online recruitment agency, *Indeed*, it is suggested that an average custodial rate hourly wage within Alberta, Canada over the past 36 months is \$19.35 per hour. Leveraging a current search of posted positions, the following results were obtained.

### AVERAGE CUSTODIAL RATES IN ALBERTA (AUGUST 2022)



For the purpose of this operational review, it was determined that Edmonton, Alberta provided the most reasonable representation of market rates. It should be noted that Edmonton, Alberta has a market rate for custodians of \$18.21 and is slightly below the average rate of \$18.44 for the cities reviewed above. Given the high employment rates within the City of Cold Lake and the above average compensation, this may provide some risk. The recommended total wage base rate for a custodian at the proposed aquatic facility is \$18.21 with a fully loaded rate (includes benefits adjustments based on full time employment) of \$23.13 per hour assume full time employment.

Rates for full time staff including programming staff, head life guards, and operations staff were developed in consultation with the City of Cold Lake Administrative team.



# Operational Modeling Labour Analysis

Working closely with the Administrative Team at the City of Cold Lake while concurrently understanding market compensation rates and facility design modeling the following conceptual operational models have been developed to support the performance modeling of the proposed aquatic facility.

For the purpose of this study it was proposed that the facility would operate on weekdays (Monday to Friday) from 6:00 am until 10:00 pm and on weekends (Saturday and Sunday) from 8:00 am until 8:00 pm. For the purpose of understanding the lifeguard positions considered a conceptual guard positioning chart was developed and included to support the staffing requirements and lifeguard requirements based on operational projections.

## LIFEGUARD COVERAGE MODEL

### Number of Lifeguards on Duty



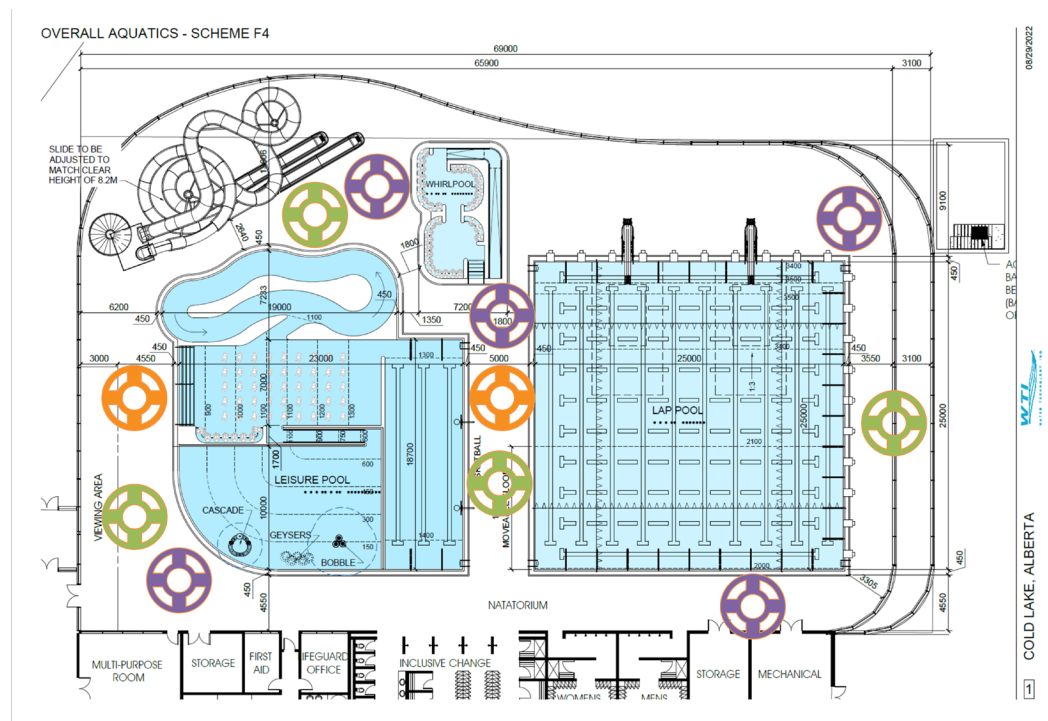
2 Guards



4 Guards



5 Guards



The above graphic shows coverage scenarios of 2, 4, or 5 lifeguards on duty. Each symbol indicates the proposed location of one lifeguard.



# Operational Modeling

## Weekly Facility Program Models

Working with the administrative team at Cold Lake and aligning with best practices in aquatic facility management the following tables were developed to understand the base programing and staffing needs associated with weekly facility operations.

Weekday Operational Overview (Monday to Friday)						
Operational Hours	Competitive Tank	Guards	Leisure Tank	Guards	Custodial	
6:00	Lane and Swim Club		2 Closed	0	0	<b>Guard Labour Summary</b>
7:00	Lane and Swim Club		2 Closed	0	1	Guard Hourly Rate
8:00	Lane and Fitness		2 Closed	0	1	\$ 18.34
9:00	Lane and Fitness		2 Closed	0	1	Applied Guard Benefits
10:00	Lane and Family		2 Open and Lesson	1	1	8%
11:00	Lane and Family		2 Open and Lesson	1	1	Total Hourly Guard Cost
12:00	Lane		2 Open	1	1	\$ 19.81
13:00	Lane and School		2 Open	1	1	Total Daily Guard Hours
14:00	Lane and School		2 Open and Lesson	1	1	58
15:00	Lane and Lesson		2 Open and Lesson	1	1	Total Lifeguard Daily Cost
16:00	Lane and Lesson		3 Open and Lesson	2	1	\$ 1,148.82
17:00	Lane and Lesson		3 Open and Lesson	2	1	<b>Custodial Labour Summary</b>
18:00	Lane and Lesson		3 Open and Lesson	2	1	Custodial Hourly Rate
19:00	Scheduled Program		3 Open	2	1	\$ 18.21
20:00	Scheduled Program		2 Open	2	1	Applied Benefits
21:00	Open Swim		2 Open	2	1	27%
22:00	Open Swim		2 Open	2	1	Total Hourly Custodial Cost
<b>Total Labour Hours by Category</b>		<b>38</b>		<b>20</b>	<b>16</b>	\$ 23.13
						Total Daly Custodial Hours
						16
						Total Custodial Daily Cost
						\$ 370.03
						<b>Total Daily Cost Casual Staff</b>
						\$ 1,518.84

Weekend Operational Overview (Saturday - Sunday)						
Operational Hours	Competitive Tank	Guards	Leisure Tank	Guards	Custodial	
6:00	Closed		0 Closed	0	0	<b>Guard Labour Summary</b>
7:00	Closed		0 Closed	0	0	Guard Hourly Rate
8:00	Closed		0 Closed	0	0	\$ 18.34
9:00	Lane and Lesson		2 Closed	0	0	Applied Guard Benefits
10:00	Lane and Lesson		2 Open and Lesson	2	1	8%
11:00	Lane and Lesson		3 Open and Lesson	2	1	Total Hourly Guard Cost
12:00	Lane and Lesson		3 Open and Lesson	2	1	\$ 19.81
13:00	Lane and Lesson		3 Open and Lesson	2	1	Total Daily Guard Hours
14:00	Lane and Fitness		3 Open	2	1	56
15:00	Lane and Fitness		3 Open	2	1	Total Lifeguard Daily Cost
16:00	Open Swim		3 Open	2	1	\$ 1,109.20
17:00	Open Swim		3 Open	2	1	<b>Custodial Labour Summary</b>
18:00	Open Swim		3 Open	2	1	Custodial Hourly Rate
19:00	Scheduled Program		3 Open	2	1	\$ 18.21
20:00	Scheduled Program		3 Open	2	1	Applied Benefits
21:00	Closed		0 Closed	0	0	27%
22:00	Closed		0 Closed	0	0	Total Hourly Custodial Cost
<b>Total Labour Hours by Category</b>		<b>34</b>		<b>22</b>	<b>11</b>	\$ 23.13
						Total Daly Custodial Hours
						11
						Total Custodial Daily Cost
						\$ 254.39
						<b>Total Daily Cost Casual Staff</b>
						\$ 1,363.60



Based on the anticipated programing model that was developed and outlined previously the following summary operational model has been assembled to outline the casual and full-time costs of labour associated with the operations of the proposed aquatic facility.

For the purpose of understanding the cost of labour it was assumed that the proposed aquatic facility would operate 48 weeks of each year. The results of this analysis suggest the cost of casual employment required is approximately \$495,000 or 45% of labour cost and the cost of Full time employment is \$612,000 or 55% of labour cost.

The following tables summarize the proposed labour cost of operations based on the desired programing model.

Casual Employment Costs of Operations						
Day	Guard Hours	Guard Cost	Custodian Hours	Custodian Cost	Total Hours	Total Cost
Monday	58.00	\$ 1,148.82	16.00	\$ 370.03	74	\$ 1,518.84
Tuesday	58.00	\$ 1,148.82	16.00	\$ 370.03	74	\$ 1,518.84
Wednesday	58.00	\$ 1,148.82	16.00	\$ 370.03	74	\$ 1,518.84
Thursday	58.00	\$ 1,148.82	16.00	\$ 370.03	74	\$ 1,518.84
Friday	58.00	\$ 1,148.82	16.00	\$ 370.03	74	\$ 1,518.84
Saturday	56.00	\$ 1,109.20	11.00	\$ 254.39	67	\$ 1,363.60
Sunday	56.00	\$ 1,109.20	11.00	\$ 254.39	67	\$ 1,363.60
<b>Total</b>	<b>402</b>	<b>\$ 7,962.49</b>	<b>102</b>	<b>\$ 2,358.92</b>	<b>504</b>	<b>\$ 10,321.42</b>
Annual Weeks of Operations (Holidays and Scheduled Maintenance)						48
<b>Total Casual Employment Cost of Operations</b>						<b>\$ 495,428.05</b>

Full Time Employment Cost of Operations				
Role	Quantity	Annual Rate	Applied Benefits	Total Annual Cost
Aquatics Manager	1	\$ 90,000.00	\$ 24,300.00	\$ 114,300.00
Head Lifeguard	1	\$ 70,000.00	\$ 18,900.00	\$ 88,900.00
Assistant Head Guard	1	\$ 56,000.00	\$ 15,120.00	\$ 71,120.00
Programing Lead	1	\$ 56,000.00	\$ 15,120.00	\$ 71,120.00
Operations Foreman	1	\$ 80,000.00	\$ 21,600.00	\$ 101,600.00
Senior Operator	1	\$ 65,000.00	\$ 17,550.00	\$ 82,550.00
Operator	1	\$ 65,000.00	\$ 17,550.00	\$ 82,550.00
<b>Total Full Time Labour Cost of Operations</b>				<b>\$ 612,140.00</b>

<b>Full Time Labour Cost</b>	<b>\$ 612,140.00</b>	55%
<b>Part Time Labour Cost</b>	<b>\$ 495,428.05</b>	45%
<b>Total Labour Cost</b>	<b>\$ 1,107,568.05</b>	



# Utilization, Activation & Revenue Assumptions

The following section outlines the projected operational model for the proposed aquatic facility based on best industry practices, consultation from the local leadership team, and the facility design. It is important to note that all valuations are in current 2022 funds and as such will likely have growth opportunity in the future, this inflationary cost will additionally impact the expense position. It is for this reason that decision to use 2022 dollars was made.

For the purpose of this revenue and utilization assessment it was anticipated that the average cost of drop-in rate would be applied to support programing cost, lane swim, lane rentals, and would be a reasonable per visit accounting of more long term membership offerings that are currently undecided. It is suggested however that through the future exploration of alignment between the Energy Centre and the proposed Aquatic Centre there may be increased value in a facility wide membership that may offer revenue potential for the existing Energy Centre Membership base and the future value of the aquatic centre. This will require further consideration and coordination.

At this time, the revenue model for the operations of the proposed aquatic facility was developed with Independence. The model was developed based on the weekday and weekend operational plans that had been previously outlined. It is anticipated that total potential revenue be projected at \$947,000 and annual bathers should consider more than 165,000 annual visits, these will often be repeat visitors to the facility and not unique visits.

The following tables outline the utilization and proposed revenue mix for the aquatic centre.

Weekday Bather Model									
Time	Primary Use	Adult	Senior	Student	Youth	Child	Total Bathers by Hour	Total Bathers by Week	Total Bathers by Year
Rate		\$ 7.33	\$ 5.42	\$ 5.83	\$ 4.92	\$ 3.58		5.00	48.00
6:00	Lane and Swim Club	10.00	4.00	8.00	4.00	-	26.00	130.00	6,240.00
7:00	Lane and Swim Club	10.00	6.00	8.00	4.00	-	28.00	140.00	6,720.00
8:00	Lane and Fitness	8.00	10.00	1.00	4.00	-	23.00	115.00	5,520.00
9:00	Lane and Fitness	8.00	10.00	1.00	4.00	-	23.00	115.00	5,520.00
10:00	Lane and Family	8.00	10.00	-	4.00	8.00	30.00	150.00	7,200.00
11:00	Lane and Family	8.00	10.00	-	4.00	8.00	30.00	150.00	7,200.00
12:00	Lane	10.00	6.00	-	2.00	8.00	26.00	130.00	6,240.00
13:00	Lane and School	6.00	4.00	14.00	2.00	4.00	30.00	150.00	7,200.00
14:00	Lane and School	6.00	4.00	14.00	2.00	4.00	30.00	150.00	7,200.00
15:00	Lane and Lesson	10.00	6.00	-	2.00	8.00	26.00	130.00	6,240.00
16:00	Lane and Lesson	10.00	6.00	10.00	8.00	8.00	42.00	210.00	10,080.00
17:00	Lane and Lesson	10.00	6.00	12.00	8.00	8.00	44.00	220.00	10,560.00
18:00	Lane and Lesson	10.00	6.00	12.00	8.00	8.00	44.00	220.00	10,560.00
19:00	Scheduled Program	12.00	4.00	12.00	4.00	4.00	36.00	180.00	8,640.00
20:00	Scheduled Program	12.00	4.00	12.00	2.00	4.00	34.00	170.00	8,160.00
21:00	Open Swim	6.00	2.00	6.00	2.00	-	16.00	80.00	3,840.00
22:00	Open Swim	6.00	2.00	6.00	2.00	-	16.00	80.00	3,840.00
Total Bathers by Type		150.00	100.00	116.00	66.00	72.00	504.00		
Total Projected Revenue		\$ 1,099.50	\$ 542.00	\$ 676.28	\$ 324.72	\$ 257.76	\$ 2,900.26		
Total Weekday Weekly Revenue		5 Days						14,501.30	
Total Weekday Annual Revenue		48 Weeks						696,062.40	120,960.00

Weekend Bather Model									
Time	Primary Use	Adult	Senior	Student	Youth	Child	Total Bathers by Hour	Total Bathers by Week	Total Bathers by Year
Rate		\$ 7.33	\$ 5.42	\$ 5.83	\$ 4.92	\$ 3.58		2.00	48.00
6:00	Closed	-	-	-	-	-	-	-	-
7:00	Closed	-	-	-	-	-	-	-	-
8:00	Closed	-	-	-	-	-	-	-	-
9:00	Lane and Lesson	10.00	8.00	6.00	6.00	8.00	38.00	76.00	3,648.00
10:00	Lane and Lesson	10.00	8.00	6.00	6.00	8.00	38.00	76.00	3,648.00
11:00	Lane and Lesson	10.00	8.00	6.00	6.00	8.00	38.00	76.00	3,648.00
12:00	Lane and Lesson	10.00	4.00	6.00	6.00	8.00	34.00	68.00	3,264.00
13:00	Lane and Lesson	10.00	4.00	6.00	6.00	8.00	34.00	68.00	3,264.00
14:00	Lane and Fitness	12.00	4.00	6.00	6.00	8.00	36.00	72.00	3,456.00
15:00	Lane and Fitness	12.00	4.00	6.00	6.00	8.00	36.00	72.00	3,456.00
16:00	Open Swim	14.00	4.00	8.00	8.00	8.00	42.00	84.00	4,032.00
17:00	Open Swim	14.00	4.00	8.00	8.00	8.00	42.00	84.00	4,032.00
18:00	Open Swim	14.00	4.00	8.00	8.00	8.00	42.00	84.00	4,032.00
19:00	Scheduled Program	16.00	2.00	10.00	10.00	2.00	40.00	80.00	3,840.00
20:00	Scheduled Program	16.00	2.00	10.00	10.00	2.00	40.00	80.00	3,840.00
21:00	Closed	-	-	-	-	-	-	-	-
22:00	Closed	-	-	-	-	-	-	-	-
Total Bathers by Type		148.00	56.00	86.00	86.00	84.00	460.00		
Total Projected Revenue		\$ 1,084.84	\$ 303.52	\$ 501.38	\$ 423.12	\$ 300.72	\$ 2,613.58		
Total Weekend Weekly Revenue		2 Days						5,227.16	
Total Weekend Annual Revenue		48 Weeks						250,903.68	44,160.00

Total Revenue	\$	946,966.08
Total Bathers		165,120.00



# Projected Operational Model

Assembling the prior work performed, coordinating with the design team and the Administrative team, evaluating the current performance of the Cold Lake Energy Centre, and best practices in similar facilities in communities of similar size the following operational financial plan has been developed.

Revenue				
Revenue	Moderate	As Percent	Conservative (75%)	Optimistic (125%)
Weekday Drop In Revenue	\$ 696,062.00	66%	\$ 522,046.50	\$ 870,077.50
Weekend Drop in Revenue	\$ 250,903.00	24%	\$ 188,177.25	\$ 313,628.75
Sponsorship	\$ 60,000.00	6%	\$ 45,000.00	\$ 75,000.00
Advertising	\$ 40,000.00	4%	\$ 30,000.00	\$ 50,000.00
<b>Total Revenue</b>	<b>\$ 1,046,965.00</b>		<b>\$ 785,223.75</b>	<b>\$ 1,308,706.25</b>

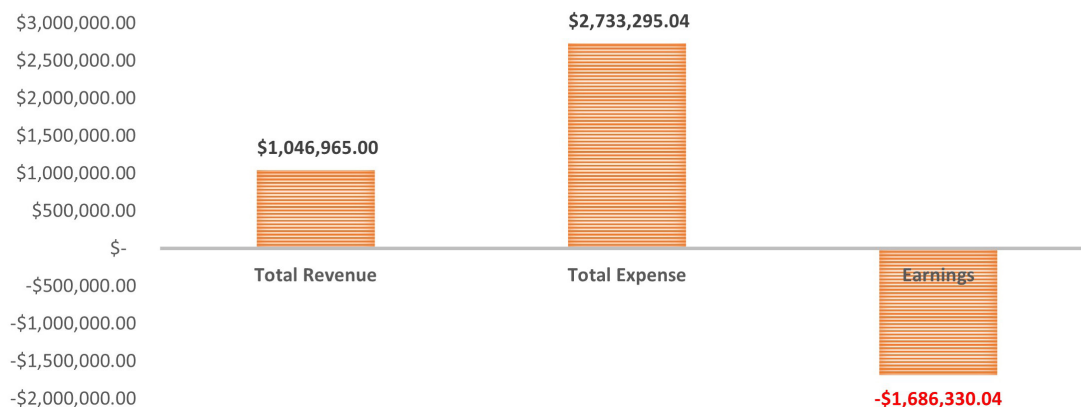
  

Expense				
Expenses	Moderate	As Percent	Moderate	Moderate
Full Time Labour	\$ 612,140.00	22%	\$ 612,140.00	\$ 612,140.00
Casual Labour	\$ 495,428.00	18%	\$ 495,428.00	\$ 495,428.00
Overtime	\$ 33,227.04	1%	\$ 33,227.04	\$ 33,227.04
Sponsorship Cost	\$ 12,000.00	0%	\$ 9,000.00	\$ 15,000.00
Advertising Cost	\$ 8,000.00	0%	\$ 6,000.00	\$ 10,000.00
Maintenance	\$ 115,000.00	4%	\$ 115,000.00	\$ 115,000.00
Aquatic Chemical and Plant	\$ 250,000.00	9%	\$ 250,000.00	\$ 250,000.00
Equipmentment	\$ 100,000.00	4%	\$ 100,000.00	\$ 100,000.00
Utilities	\$ 620,000.00	23%	\$ 620,000.00	\$ 620,000.00
Insurance	\$ 250,000.00	9%	\$ 250,000.00	\$ 250,000.00
Contracted Services	\$ 90,000.00	4%	\$ 90,000.00	\$ 90,000.00
Allocated Contract Services	\$ 100,000.00	4%	\$ 100,000.00	\$ 100,000.00
Training	\$ 30,000.00	1%	\$ 30,000.00	\$ 30,000.00
Bank Fees	\$ 10,000.00	0%	\$ 10,000.00	\$ 10,000.00
Administrative Fees	\$ 7,500.00	0%	\$ 7,500.00	\$ 7,500.00
<b>Total Expense</b>	<b>\$ 2,733,295.04</b>		<b>\$ 2,728,295.04</b>	<b>\$ 2,738,295.04</b>
<b>Earnings</b>	<b>-\$ 1,686,330.04</b>		<b>-\$ 1,948,071.29</b>	<b>-\$ 1,424,588.79</b>
<b>Cost Recovery</b>	<b>38%</b>		<b>29%</b>	<b>48%</b>

JJ Parr Contributions	\$ 360,000.00		\$ 360,000.00	\$ 360,000.00
<b>Net Contribution Variance</b>	<b>-\$ 1,326,330.04</b>		<b>-\$ 1,588,071.29</b>	<b>-\$ 1,064,588.79</b>

## AQUATIC CENTRE PERFORMANCE





# Sport Tourism Economic Assessment on the Impact of an Aquatics Event

The following is the Estimated Economic Impact (EEI) of an aquatics event using the Sport Tourism Economic Assessment Model (STEAM). STEAM uses standardized visitor expenditure profiles in the preparation of the impact assessment based on demographic characteristics, as well as the location of the event. This spending estimate is then combined with capital and operational expenditures to produce an overall EEI associated with hosting an event.

## Event #1 Assumptions:

- Event: Speedo Canadian Junior and Senior Championships (National level swim tournament, multi-regional)
- Swim event takes place over 2.5 days
- 400 total athletes (75% are out from out of town)
- Average of 1.5 spectators per athlete (50% are out of town spectators)
- Average 3-night stay in local accommodations

## Aquatics Event #1 EEI Model: Speedo Canadian Junior and Senior Championships

	Total Athletes	Total Spectators	Total Out of Town Athletes	Total Out of Town Spectators
200 Junior Athletes, 200 Senior Athletes	400	600	300	450
STEAM Results	Overall Economic Activity in Region: \$472,794 Canada: \$702,661			

## Event #2 Assumptions:

- Event: Swim Alberta Provincial Championships (provincial level swim tournament)
- Swim event takes place over 2.5 days
- 400 total athletes (50% are out from out of town)
- Average of 1.5 spectators per athlete (50% are out of town spectators)
- Average 2-night stay in local accommodations

## Aquatics Event #2 EEI Model: Swim Alberta Provincial Championships

	Total Athletes	Total Spectators	Total Out of Town Athletes	Total Out of Town Spectators
*All Lane Pool Swim Disciplines	400	600	200	300
STEAM Results	Overall Economic Activity in Region: \$203,242 Canada: \$302,086			



# Recommendations

It is the recommendation of the consultancy team that based on the concept architectural model and the proposed programming model outlined within this document that the owner should be prepared to operate and manage an aquatic facility with a number of specific operational outcomes. Some of these key findings include the following:

1. The proposed cost recovery of the aquatic centre will range between 29% and 48% cost recovery. This is not inconsistent with the operations of municipal aquatics facilities in Alberta. It is anticipated that the proposed plan will operate at 38% cost recovery. This is lower than the current cost recovery of the Cold Lake Energy Centre.
2. It is projected that the cost of operations for the proposed aquatic centre will require an annual investment of \$1,326,330 from sources external to operations to be sustainable. This is highly likely a municipal grant subsidy or some form of alternative funding program traditionally from government. This annual investment supports the cost of annual operations and basic facility maintenance and repair and is exclusive of lifecycle replacement planning.
3. It is anticipated that the facility will create opportunity for 165,120 users to enjoy this upgraded recreational amenity while concurrently supporting life safety skills through aquatic training and development. With a significant number of bathers and users the use of the proposed facility may enhance the performance of existing operations and provide potential for commercial growth and site enhancement.
4. It should be noted that all models shared may be influenced by hours of operations, labour rates, utilization, programming rates, and variable cost that may be subject to change. Based on consultation with the local team and review of best practices the following models are submitted for the consideration of the planning team and decision makers







