



2021-2022 Thornlea Pool Restoration

General Committee

March 22, 2021



Agenda

1. Background
2. Scope of Work
3. Studies & Condition Assessments
4. Financial Considerations
5. Financial Summary
6. Recommendations



Thornlea Pool & Gymnasium

8079 Bayview Ave. Thornhill, ON L3T 4N4

Facility Size – 27,700 sq. Ft.

Age of Facility – 49 years

Maintained & Operated by:

- City of Markham Recreation Services

Facility amenities include:

- In-ground lane pool (6 lanes)
- grade-level gymnasium
- locker rooms
- ancillary rooms on level 1 and 2





Thornlea Pool – Community Benefits

- Only pool in Thornhill area that provides lane and recreation swim opportunities
- 6 lane x 25 m Pool
- Key aquatic amenity used for Aquatic Leadership Training:
 - National Lifeguard Service (NLS)
 - Aquatic Instructor Training
- Home to Markham Mallards – Community Aquatic Swim Club



Aquatic Participation	2015	2016	2017	2018	2019	5 Yr Avg.
Lane Swim & Rec Swims	9,485	10,313	11,675	12,128	10,727	10,866
Instructional Programs	12,434	13,493	14,592	13,683	13,115	13,463
Lifesaving Club of Markham	1,652	1,410	1,308	1,208	1,214	1,359
Camp Swims	2,038	2,269	2,064	2,041	1,720	2,026
Rental Participants	23,705	20,947	17,423	16,384	16,086	18,909
Gymnasium Participation						5 Yr Avg.
Programs	135	295	404	322	383	308
Summer Camp	781	707	613	633	591	654
Total	50,230	49,434	48,079	46,399	43,836	47,596



Background (1)

- Built in 1972 – Consist of Shared-Use Agreement between York Region District School Board (YRDSB) & Town of Markham
 - Land sold to Town of Markham for \$1.00
 - Town paid for all construction costs with facility.
 - YRDSB had full responsibility for ongoing maintenance, cleaning and chemical monitoring.
 - Town utilized 65% of all operating hours
 - Town paid YRDSB 65% for all operating and capital costs
- 2012 – City of Markham assumed maintenance and operation of facility.
 - Key Benefits: Allows for varied hours of operation which improves the overall level of service offered to community.
 - Assumed full maintenance responsibilities allows the improve energy efficiency through building operations and capital works planning
 - Condition Audit completed prior to transfer.
 - In recognition of the audit findings, the City received a one-time payment of \$150,000 from YRDSB with the agreement that the City would bear all capital and operating costs of the facility moving forward



Background - Continued (2)

Facility Maintenance – Contract (2012 – 2019)

- Recreation Services – continual maintenance and operation of Thornlea Pool
- Thornlea Pool & Building is maintained through a 3rd party vendor
 - PPL – Aquatics Fitness & Spa Group – Annual Contract ~\$185K

Capital & Lifecycle Investment

Year	Number of Capital Projects	Capital & Lifecycle Replacement
2017	3	~\$112K
2018	3	~\$311K
2019	5	~\$89K
Total	11	~\$512K



Background - Continued (3)

- February 2020
 - SIG (City mechanical contractor) was performing regular maintenance of the Dectron unit (Pool Dehumidifier). When the Dectron was turned back on the unit did not respond. Control board was found to be faulty and sent out for repairs.
- April, 2020
 - Staff reported concrete pieces falling from the pool roof during operational hours.
 - Staff observed loose pieces of concrete falling from the underside of the pool roof.
 - Recreation retained EngineerLink to perform a roof deck soffit condition assessment to determine future fall hazards and to provide remediation options.
 - Staff also raised concerns of corrosion issues on the steel connectors visible at the underside of the pool roof.
 - Recreation Services then connected with Sustainability & Asset Management (SAM) to investigate further issues at Thornlea Pool.
- May 2020
 - Concerned with further underlying issues, SAM retained Consulting Engineers Thornton Tomasetti Canada Inc. to complete a full building condition audit to the building envelope and structure at Thornlea.
- July 2020
 - After receiving the control panel back from the manufacturer and attempts to resolve the issue the City was informed that the Dectron control panel was broken and that the manufacturer no longer supports repairs to this unit. Replacement of the Dectron is required.
- November, 2020
 - Thornton Tomasetti Canada Inc completed Building Envelope and Structural Review
 - Referenced in this presentation as TT Report



Condition Assessments

Brick Sampling. Spalled brick on lower right of photo too damaged to test



Contractor performing sawcut for probe opening at area of distressed bricks



Thornton Tomasetti Inc. was tasked to complete the following:

Structural Condition Assessment

- Foundation
- Structural Walls
- Roof Structure

Building Envelope Condition Assessment

- Façade
- Roof Membrane
- Windows



Life Safety Items - (URGENT - Prior to Reopening)

Phase 1 Items

The following items are urgent and will need to be addressed prior to reopening.

Item No.	Work Items	Description
LS#1 Phase 1	Pool Soffit Repairs (from TT Report)	<ul style="list-style-type: none">• Requirement for netting system to catch falling concrete pieces• Repair all corroded connectors between individual precast double tees• Anti-carbonation coating on soffit
LS#2 Phase 1	Mechanical Repairs	<ul style="list-style-type: none">• Replacement of Dectron Unit to control humidity within the pool area• Includes concrete pad and fencing to provide an enclosure
LS#3 Phase 1	Exterior Wall Repairs (from TT Report)	<ul style="list-style-type: none">• Exterior brick replacement required to fix spalling brick• Repointing and crack repair
LS#4 Phase 1	Fire Hydrant (SEE SLIDE 10 for more detail)	<ul style="list-style-type: none">• No fire hydrant was installed within 90m of the building• Inspection Order #18 254649 FP was issued, November, 2018 by the City of Markham Fire Department and it ordered that a fire hydrant be installed

Image 1 – Spalled brick and eroded mortar joints along east facade



Image 2 – Concrete spall at underside of precast double-tee above swimming pool area





URGENT (Work Item LS#4) – Fire Hydrant/Waterline

- Currently water is supplied to the Thornlea Pool site via a water connection from the school;
- As a result of the 2012 agreement to separate the property (school + pool), the City now requires a separate fire hydrant to operate the pool. Nearest hydrant must be within 90 metres per Fire Code;
- Construction of an independent waterline would be in the City's best interest - each property typically requires their own water line;
- Design and construction of the independent waterline and hydrant at the same time will be more cost effective than independently in the future;
- Anticipate a 175m to 275m run with a 4-6 inch water line
- Should this option not be feasible Staff will proceed with design and construction of the fire hydrant line only
- There are many unknowns at this point; property boundry issues, Region of York approval, items that may trigger other building code requirements, YRDSB work constraints
- **Recommendation - Design and construct to meet requirements**



Secondary Work Requirements – Phase 2 Items

The following items are urgent and will need to be addressed in 24 to 60 months

Item No	Work Items	Description
SWR#1 Phase 2	Concrete Repairs Below Pool (from TT Report)	<ul style="list-style-type: none">Localized concrete repairsCrack injection to repair leaks
SWR#2 Phase 2	Repair Leaks Below West Entry (from TT Report)	<ul style="list-style-type: none">Masonry and concrete repairsReplacement of ramp pavementSlab and sealant flashing
SWR#3 Phase 2	Replace Roof (from TT Report)	<ul style="list-style-type: none">Roof Replacement RequiredRoof is beyond its expected service life
SWR#4 Phase 2	Marquee	<ul style="list-style-type: none">Includes installation of two sided digital marquee with bas and electrical wiring

Image 3 – leak at pipe seal near circuit breakers



Image 4 – Existing HVAC infrastructure with galvanized coating corroded





Project Plan

- Work be completed in two phases
- Phase 1 (2021) – design and repairs to address the urgent Life Safety Items LS#1 to LS#4 and complete design work for Secondary Work Requirements SWR#1 to SWR#4

Rationale

1. Minimize building shutdown;
 2. Minimize draining of the pool;
 3. Reduce impact to community users.
- Phase 2 (2022) – construct items listed under Secondary Work Requirements



Financial Considerations

Work Item No.	Phase	Work Items	Project Cost + Contingency
LS#1	1	Pool Soffit Repairs	\$385,000
LS#2	1	Mechanical Repairs	\$450,000
LS#3	1	Exterior Wall Repair	\$227,664
LS#4	1	Fire Hydrant	\$302,500
SWR#1	2	Concrete Repairs Below Pool	\$41,408
SWR#2	2	Repair Leaks Below West Entry	\$31,484
SWR#3	2	Replace Roofing	\$417,446
SWR#4	2	Marquee	\$87,600
		Totals	\$1,943,102



Thornlea Pool -Confidence in Cost Estimates

PROJECT STAGE:	Pre-Project Identification	Project Identification	Building Assessment	Detailed Design	Construction
CONFIDENCE IN ESTIMATE:	NO CONFIDENCE + 80%	LOW CONFIDENCE + 60%	LOW TO MEDIUM CONFIDENCE + 30%-50%	MEDIUM TO HIGH CONFIDENCE + 10%-20%	HIGH TO VERY HIGH CONFIDENCE + 0%-10%
UNKNOWN:	• Completed	• Completed	• Completed	<ul style="list-style-type: none">• Design based on Building Condition Assessment has not been completed• Detailed Site Conditions not known (i.e. Where the <u>watermain</u> can go, route)	<ul style="list-style-type: none">• Detailed Site Conditions – i.e.. areas of the building that cannot be assessed• Market conditions• Effects from COVID-19• Time of year work will be undertaken
RISKS:				<ul style="list-style-type: none">• Increased cost due to incomplete detailed design and lack of site conditions• Longer construction time	<ul style="list-style-type: none">• Weather – can delay or lengthen the schedule.• COVID-19 can delay or lengthen schedule due to material production/delivery delays• Increase cost due to unforeseen site conditions not discovered design (i.e.. corroded rebar inside concrete)



Financial Summary by Year

Project Summary by Year	2021 Phase 1	2022 Phase 2	(2021 + 2022) Phase 1 & 2
Total Project Cost (A)	\$1,249,396	\$693,706	\$1,943,102
Confidence/Risk Cost Estimate (10%) (B)	\$124,940	\$69,371	\$194,310
Internal Chargeback (10%) (C)	\$120,000	\$50,000	\$170,000
Total incl. Chargeback & Risk Estimate (D) = (A) + (B) + (C)	\$1,494,336	\$813,076	\$2,307,412

NOTE: A new resource will be contracted through SAM Dept. (12 months) for a grouping of projects including this one.



Recommendation

1. THAT the presentation entitled “2021-2022 Thornlea Pool Restoration” be received; and
2. THAT a capital project for Phase 1 and 2 be established in the amount of \$2,307,412. The capital project will include the design and construction as outlined in this presentation; and
3. THAT the project be funded from the Lifecycle Reserve; and
4. THAT authority be given to the Sr. Manager of Procurement & Accounts Payable to work with the applicable Director to undertake an informal pre-qualification and award process with a minimum of three (3) vendors and consultants to expedite the procurement process when necessary, by allowing a preferred vendor list to be developed, used and released to the market; and
5. THAT authority be given to the CAO to award the tenders outlined in recommendation 4; and
6. That a new contract Project Manager position in the Sustainability and Asset Management Department be funded from this project; and
7. THAT Staff be authorized and directed to do all things necessary to give effect to this resolution.



End of Presentation