



INFORMATION REPORT

TO:	Mayor and Members General Issues Committee
COMMITTEE DATE:	September 18, 2019
SUBJECT/REPORT NO:	First Ontario Place Operations Contingency Plan (PW18091(a)) (Ward 2)
WARD(S) AFFECTED:	Ward 2
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COUNCIL DIRECTION

At its meeting of December 7, 2018, City Council received Information Report PW18091, as a result of which, the Mayor asked a question regarding the expected remaining life of the brine lines, as well as the contingency plan if a catastrophic failure was to take place at First Ontario Centre (FOC).

INFORMATION

The primary purpose of this Report PW18091(a) is to address questions pertaining to the remaining life of the glycol piping (brine lines). The Energy, Fleet & Facilities Management (EFFM) team defined an inspection and testing regime designed to underpin a more scientific, engineering based investigative process resulting in a more refined Facility Risk Assessment on critical components of the arena.

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

Investigation:

In addition to the brine line investigation, there were other major building components/systems that were deemed highly critical in affecting the functionality of the arena/venue and therefore were part of the investigation process; building components/systems such as;

Rink Roofing - Any leak would not only damage the ice surface, but also the seating areas as well as possibly cause other health and safety issues.

Rink Slab from a Structural Viewpoint - The concrete rink slab itself which, if damaged on its surface or in between in-floor rink slab piping could lead to disruption.

Rink Slab from a Refrigeration Viewpoint (In-Floor Rink Slab Piping) - The in-floor rink slab piping may potentially be a source of leaks.

Original portion of refrigeration that was not replaced in 2014 - The header mains running through the old plant all the way to the trench, then to the nipples connecting to the in-floor rink slab piping.

The Inspection and Testing Program:

A variety of testing methodologies were used through this exercise; testing included:

- Ground Penetrating Radar (GPR);
- Visual examination;
- Ultrasonic testing;
- Infrared scanning and roof test cuts.

The Refrigeration System

While the plant is fairly new (2014), the headers and in-floor rink slab piping are original (1985). Therefore, the focus was to investigate them by carrying out a selected sampling for inspection and testing.

There have been two reported cases of glycol leaks in the last few years at the start of the ice-making season (August). When glycol levels drop due to ongoing leaks, the ice surface would be compromised. If the glycol leaks are sufficient enough, it could also damage the rink slab.

The Inspection and Testing included the following:

- Ground Penetrating Radar (GPR) of in-floor pipes of 4 feet area on each end of the rink slab. One end is where the pipes connect to the headers, the other is where the

pipe U-bends are. The intent was to investigate if any ponding of glycol was present. That would indicate a leak since the piping is under pressure even in the off season;

- Visual examination and ultrasonic testing of main and return headers and “nipple” pipes in the trench below;
- Establish the risk of potential failure of headers within the next three to five years and assess the potential risk of future piping leaks.

Structural Systems

The focus was on the steel roof structure (Subsystem #1) and the rink concrete slab (Subsystem #2).

- Subsystem #1: Partial or total failure of the steel roof structure could be construed as critical as it would be a major disaster. Structural investigations are usually mandated for arenas on a regular basis;
- Partial or total failure of the concrete rink slab including deep cracks from glycol leaks would affect the quality of the ice playing surface rendering it unusable.

Inspection Consisted In:

- Inspect and test the steel roof structure to ascertain the real condition;
- Inspect and test the concrete rink slab to determine if any structural damage had occurred after the glycol leaks using the recommended inspection methodology;
- Establish levels of risk and criticality for both subsystems if no remedial action is taken.

Roofing Systems

The focus was on the roofing membrane, insulation, roof drains and mechanical areas roofing systems.

Failure of the roofing membrane could cause roof leaks during significant precipitation events such as heavy rain or heavy snow. Water can leak inside the building. The arena roof and the upper and lower mechanical roofs were evaluated. If there is failure of the arena roof, it can cause leaks causing the ice to bubble, making it impractical for skating on the surface.

Using visual reviews, infrared scanning and roof test cuts resulted in an assessment of the roofing risk profile.

Proposed Risk Management Process:

It needs to be clearly noted the building systems at First Ontario Centre (FOC) are beyond the original life-cycle and the purpose of the investigation was to determine if there was additional or extend life in these critical systems. Overall the practical aim would be to manage the known and unknown risks for the next five (5) years to give the City time to formulate a long-term solution regarding the FOC.

Based on the findings and with a few operational adjustments along with regular monitoring of the systems, staff are indicating with a medium-to-high level of certainty that the replacement of these critical system can be deferred for a period of 5 years provided follow-up testing is conducted in future years. Nonetheless, if the FOC is to remain as a hockey and skating facility for the long term and given the timelines for planning, engineering and specification development for the replacement of the brine lines, a portion of the funding will be required in year 3 or 4 of the extending period of time.

Contingency Venue Assessment:

Meetings with key Stakeholders, Hamilton Bulldogs, Spectra and the Recreation Division of the City of Hamilton enabled EFFM to establish a number of criteria and requirements for an alternate venue. This option was investigated in the event of a total failure occurring at FOC, preventing the use of the facility.

It should be noted that the only operation of interest in this exercise, was ice hockey. The entertainment portion was not tackled. When including Ontario Hockey League (OHL) Standards, we were able to draw up a checklist, a filter through which each potential alternate facility could then be assessed.

In reviewing the inventory of City owned and private arenas only one (1) venue stood out: Dave Andreychuk Mountain Arena. In assessing its potential conversion to the above-mentioned standards, it was found that using it as a backup facility presented significant challenges. Increasing the seating capacity to over 4,000 seats as required by the OHL would have an extensive impact on the building structure, HVAC and plumbing systems. It would potentially trigger Building Code and Zoning Bylaws issues that may not be resolved within the confines of the existing site.

APPENDICES AND SCHEDULES ATTACHED

None.