



BYRON DOBSON MEMORIAL ARENA FACILITY ASSESSMENT

PREPARED FOR:

FEBRUARY 27, 2017



AGENDA

- 1 INTRODUCTION
- 2 BACKGROUND
- 3 RESULTS
- 4 BUDGET REVIEW /
COST FOR
REPLACEMENT
- 5 CONCLUSION
- 6 QUESTIONS



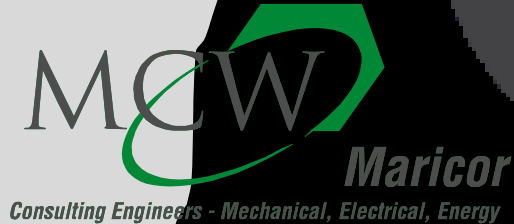
1

INTRODUCTION



INTRODUCTION

- Founded in 1964
- 450 Employees in Canada
- 16 Offices Across the Country
- 125 Professional Engineers
- 23 Active Partners
- 4 Maritime Offices including Moncton
- 70 Employees in New Brunswick



NATIONAL PRESENCE, **REGIONAL IMPACT**



MCW Office



INTRODUCTION



REGIONAL PRESENCE
**NATIONAL
IMPACT**



MCW has a reputation as the national leader in engineering for Recreational Centres

2

BACKGROUND

- Selected Oct 2016 – Prepare a Facility Condition Assessment and Capital Planning study.
- Evaluate the current condition of the building systems and the refrigeration plants.
- Prepare a financial summary of the anticipated capital investment over a 15 year term to upgrade and maintain the facility to current industry standards.
- Complete a Code review (NBC).
- Present energy performance benchmarking data, comparing the Dobson to other similar centres.
- Outline the immediate, short term, and long term capital requirements.
- Prepare a summary report that will guide the Town when evaluating future capital requirements or energy and operational performance upgrades.
- Outline deficiencies that have elements of risk for the Dobson's operation.
- *MCW Maricor was not commissioned to review the facilities functional space program, the requirements for public access, siting, nor the ability of the facility to meet the Town's recreational program requirements.*

3

RESULTS

- Overall the building structure is in good condition and well maintained.
- Addition and renovation project in 2005-2006 provided an improvement to the space functionality and user circulation. Code compliance catch-up at that time. Exterior envelop and roofing systems were upgraded to provide critical asset renewal and support longevity.
- The interior finishes of the 2005-2006 addition are in good condition.
- The original 1971 and 1982 sections of the building show signs of age due to wear and tear but no major physical deficiencies.
- MCW presents a Capital Renewal Component level summary of building deficiencies and component renewal work that needs to be consider and prioritized. Most of these items are anticipated for a building of this vintage.
- Facility 1971 and 1982 sections have seen minimal investment to renew core assets such as refrigeration plants, dasher boards, and floor slabs.

- Mechanical and electrical systems in the 1971 and 1982's sections are in poor condition (past the end of their anticipated service life although still functional) to moderate condition (at or greater than half way through the anticipated service life).
- The main electrical service entrance and refrigeration plants are at the end of expected useful life, significant repair and replacement will be required.
- The evaporative condenser units were installed in 2012-2013 but the majority of the components in the refrigeration plants are at the end of their anticipated useful life and plans for renewal will be required within 5 years for both rinks.
- The ice slabs have both exceeded their anticipated service life and the town has received longevity from these systems but renewal will be required.
- The mechanical and electrical systems in the 2005-2006 section are in good condition.

Two items of significance identified during the condition assessment:

UPPER RINK FLOOR SLAB

- In-floor piping within the Upper Rink floor slab dates back to the early 1970's construction and has worn to the point where leaks are occurring.
- A larger rupture to this piping system could result to a major leak in the system which would result in a closer of this ice surface until major repair and restoration work is completed.
- The Town needs to plan for a complete upgrade of this floor slab. That would normally include renewal of the header piping systems, dasher boards, in-floor piping, etc to ensure the artificial ice surface can be maintained as 'reliable' into the future.

REFRIGERATION PLANT MOTOR CONTROL CENTERS

- The refrigeration plant Motor Control Centers (MCC) and control panels for both the Lower and Upper Rinks are in very poor condition and a risk of failure.



CODE REQUIREMENTS

The Code review outlines the life safety requirements of the 2010 NBC. The Dobson is in general compliance with the exception of a few items including:

- Dead end corridors to access change rooms in the Upper Rink are slightly longer than what present code allows and would be addressed as part of renovations to the change rooms.
- Stairwell lighting is switched and should be modified to conform to NBC.
- A few systems do not use backflow preventing devices.
- General ventilation is required for the Lower Rink along with Carbon Monoxide (CO) monitoring and alarming. The Upper Rink meets these requirements from the 2005-2006 renovations but the control sensing devices will need to be replaced.
- Sealing is required for all miscellaneous wall penetrations in the refrigeration plant. The Town has completed extensive work in recent years to comply with the B51 requirements.
- Some building service spaces do not meet today's fire rating compliance.
- Room 005.1 being used as storage room which is not permitted.

The only immediate code issue that needs to be addressed right away would be the need for CO monitoring, alarming, and ventilation within the Lower Rink.



ENERGY PERFORMANCE ANALYSIS

Table 2.4.1 – Energy Performance Indices of Comparable Facilities

Comparable Building	# Ice Surface	Square Feet	Energy and Water Total Cost (\$)	EUI (ekWh/ft² - yr)	ECI (\$/ft² - yr)	
					Energy	Water
Byron Dobson Arena	2	67,555	\$271,034	28.8	\$3.35	\$0.66
Cap Pele	1	29,101	\$70,522	19.8	\$2.42	\$-
Fredericton	2	131,244	\$358,634	22.7	\$2.67	\$0.07
Fredericton	2	130,000	\$194,090	21.9	\$1.35	\$0.14
Memramcook	1	37,600	\$94,582	20.6	\$2.52	\$-
Saint John	1	27,610	\$83,373	23.9	\$2.76	\$0.26
Saint John	1	25,370	\$43,607	17.9	\$1.55	\$0.17
Saint John	1	25,370	\$50,333	19.7	\$1.83	\$0.15
Saint John	1	37,040	\$73,617	23.4	\$1.82	\$0.17
NB Power Energy Smart Data Commercial Building		Class II Building (average)	-	23.2	-	-

The Energy Utilization Index (EUI) and the Energy Cost Index (ECI) are used to compare the current energy consumption levels with other similar buildings.

Based on the benchmarking analysis, there is opportunity to improve energy efficiency and operational performance at the Dobson Arena.



ENERGY PERFORMANCE ANALYSIS

- The Town has completed a Energy Audit at the facility through the NB Power Energy Smart evaluation program.
- Many of the short term priorities within the capital renewal plan will significantly impact the energy and water consumption.
- The energy audit identifies projects to improve the energy efficiency in addition to the capital renewal items. These items are in the Budgetary Cost Estimates and have an ROI for the Town.

The outcome of the capital renewal and energy efficiency enhancements would result in an annual energy/water reduction of **\$77,629** with an expected EUI of **18.3 ekWh/ft², (36.5%)**.

The project would be eligible for \$75,000 in NB Power Energy Smart program incentives.

4

BUDGETARY COST ESTIMATES



BUDGETARY COST ESTIMATES

- **Budgetary Cost Estimates** represent capital costs that are anticipated for repairs, improvements, mechanical/electrical asset replacements and for elements that will have exceeded their Expected Useful Life or Remaining Useful Life over the fifteen (15) year evaluation period.
- **Immediate** Priority Capital Cost items are potential “Risk to Business”, Code Compliance related, or in very poor condition with material impact if not addressed.
- Energy Efficiency Measure (EEM’s) are listed separately for items with no impact on facility operations and are not necessary for capital renewal. These items will support the Town’s broader goals for reducing their environmental footprint and reducing Green House Gas (GHG) emissions, aligning with pending provincial carbon tax policies.

Priority	Probable Cost (\$)	Risk to Business / Code Compliance	Key Components Asset
Immediate	\$12,000		Site Work
	\$36,300		Building Exterior
	\$28,000		Building Interior
	\$1,200,000	✓	Upper Rink Floor Slab and Header Replacement
	\$5,000	✓	Upper Rink CO Controls
	\$50,000	✓	Lower Rink Ventilation and CO Controls
	\$200,000	✓	Refrigeration Plant MCC and Controls
	\$28,000	✓	Ice Plant B51 Code Compliance
	\$115,000		Upper Rink Sprinkler
	\$15,000	✓	Plumbing Backflow Prevention
	\$40,000		Lower Rink Dehumidification Replacement
	\$11,000		Miscellaneous Electrical
Sub-Total	\$1,740,300		
Short Term (1 – 5 Years)	\$116,250		Building Interior
	\$1,825,000		Refrigeration Plants
	\$198,500		Mechanical Systems
	\$258,500		Electrical Systems
Sub-Total	\$2,398,250		

Priority	Probable Cost (\$)	Risk to Business / Code Compliance	Key Components Asset
Long Term (6 – 15 Years)	\$10,000		Building Exterior
	\$56,250		Building Interior
	\$1,200,000		Lower Rink Floor Slab and Header Replacement
	\$195,000		Mechanical Systems
	\$216,000		Electrical Systems
Sub-Total	\$1,677,250		
Energy Efficiency (EEM's)	\$92,000		- Utilize low emissivity ceilings in Lower and Upper Arena. * Note: All other Energy Efficiency upgrades will be captured through the capital renewal exercise.
Total	\$5,907,800		



BUDGETARY COST ESTIMATES

PRESENT DAY COST FOR CONSTRUCTION OF A COMPARABLE FACILITY

- Based on project data for comparable facilities the anticipated replacement value of the existing facility is approximately **\$18.0 million**.
- This would provide a new facility of equivalent capabilities to the existing facility but no additional services or amenities have been included within this budget.

5

CONCLUSION

- Based on the observed and reported condition of the Dobson Arena, it is expected that the property will continue to function as intended during the fifteen (15) year evaluation period provided that the building continues to be maintained and the recommended capital projects are undertaken.
- There are a number of equipment and code related items that the Town needs to be prepared to address.
- Opportunities exist for the Town to improve energy efficiency and its operational performance which will reduce their environmental footprint.
- The Facility Condition Assessment is a first step towards the Town establishing an Asset Management Plan which will help the Town make the best possible decisions regarding their assets while minimizing risk and cost to taxpayers and maximizing service delivery.

6

QUESTIONS