

## EXECUTIVE SUMMARY

### 1.0 GENERAL DESCRIPTION

MCW Maricor was retained by the Town of Riverview to complete a facility condition assessment and capital planning study of the Bryon Dobson Arena located at 55 Biggs Drive in Riverview, NB. The engineering assignment included evaluating the current condition of the various structural, architectural, mechanical and electrical building systems including the refrigeration plants.

The plan includes a financial summary of the anticipated capital investment over a 15 year term (evaluation period) to upgrade and maintain the facility to current industry standards. 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.

Additional aspects of the study performed by MCW Maricor included a building code review and an energy performance benchmarking analysis to compare the facility to other similar centres within New Brunswick. The financial summary includes the immediate, short, and long term capital requirements that can be expected in the building over the next 15 years.

This document will provide guidance to the Town of Riverview when evaluating future capital requirements or energy and operational performance upgrades. It will assist in supporting risk management when making financial or operational decisions.

**Table 1.1 - Byron Dobson Arena – Property Description**

<b>Property Name</b>	Byron Dobson Arena
<b>Street Address</b>	55 Biggs Dr.
<b>Town/Province</b>	Riverview, New Brunswick
<b>Primary Use</b>	Arena
<b>Number of Buildings on Site</b>	One
<b>Foundation</b>	Concrete frost walls and slab on grade for artificial ice surfaces
<b>Superstructure</b>	Pre-engineered with steel moment frames and overlaid cold formed steel girders
<b>Cladding</b>	Vertical metal
<b>Roof Membrane</b>	Steel
<b>Roof Structure</b>	Sloped metal
<b>Year Built</b>	1971 / 1982 / 2005-2006
<b>Reported Building Area</b>	63,270 sq. ft
<b>Evaluation Period</b>	15 Years
<b>Site Assessment Conducted By</b>	MCW Maricor (Prime consultant including Mechanical, Electrical, and Energy Engineering) Breakwater Consultants (Architectural) Delray Engineering (Structural)
<b>Dates for Site Investigation</b>	November 8th and December 2 <sup>nd</sup> , 2016

## **2.0 DISCUSSION OF RESULTS**

### **2.1 Technical Provisions**

Overall, the building structure is in good condition and appears to be well maintained. No evidence of any major physical deficiencies was reported during the inspection of the visible structural components. The artificial ice was in-place at the time of the site inspections, so the slabs-on-grade could not be visually reviewed, however discussions with operations staff indicated that there have not been any structural issues with the slabs to date.

A significant addition and renovation project in 2005-2006 provided a much need improvement to the buildings space functionality and circulation. With this addition/renovation came a number of facility upgrades including addressing a number of code compliance issues for that time. The complete exterior envelop system was upgraded at that time along with the roofing system to provide critical asset renewal and to support facility longevity.

The interior finishes of the buildings appear to be in good condition for the 2005-2006 addition and with no indications of any major physical deficiencies. The original 1971 and 1982 sections of the building are showing signs of age due to wear and tear but no major physical deficiencies were noted.

The capital renewal component summary in Section 3.0 – Facility Condition Assessment and Appendix B – Component Summary and Cash Flow Analysis, provide a summary of building deficiencies or component renewal work that need to be consider and prioritized. Most of these items are anticipated for a building of this vintage which as seen minimal investment to renew these core assets such as refrigeration plants, dasher boards, and floor slabs.

The buildings mechanical and electrical systems in the 1971 and 1982's sections were reported and appear to be 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 ). These sections of the building house the main electrical services entrance and refrigeration plants. Based on the observed condition and typical expected useful life of these components most of which are past their useful life, it is expected that significant repair and replacement will be required during the evaluation period. The evaporative condenser units were installed in 2012-2013 but the majority of the remaining components within 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.

The outcomes of the Facility Condition Assessment will allow the town to formulize 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.

### **2.2 Risks to Operations**

It is important to note the condition of the in-floor piping within the Upper Rink ice sheet floor slab. The piping system 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. To be proactive the Town needs to plan for a complete upgrade of this floor slab, header piping systems, dasher boards, in-floor piping, etc to ensure the artificial ice surface can be maintained as 'reliable' into the future.

In addition, the refrigeration plant Motor Control Centres (MCC) and control panels for both the Lower and Upper Rinks are in poor condition and a risk of failure.

### 2.3 Code Requirements

The Code Review (Section 4.0) of the assessment report outlines the major life safety requirements outlined in Part 3 of the 2010 National Building Code of Canada (NBC) for the Byron Dobson Arena in Riverview, NB. The assessment concluded that the facility is in general compliance with the exception of a few items including:

- Fire rating for mechanical, electrical, janitorial, and elevator machine rooms.
- Room 005.1 being used as storage room which is not permitted.
- There are dead end corridors greater than 6m to access change rooms in the Upper Rink. These corridors are only slightly longer than what present code allows and would only be addressed as part of renovations to the change rooms.
- Generally, stairwell lighting is switched and should be modified to conform to NBC.
- A few systems did not use backflow preventing device and these devices should be installed.
- 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 to comply with B51 Machinery room requirements. The Town has completed extensive work in recent years to comply with the majority of the B51 requirements.

The Town should plan to address these items with planned or future renovations. Historically, the Town appears to have been proactive in dealing with immediate code compliance issues as they have been identified. The only immediate code issue that need to be addressed right away would be the need for CO monitoring, alarming, and ventilation within the Lower Rink.

### 2.4 Energy Performance Analysis

The Energy Utilization Index (EUI) and the Energy Cost Index (ECI) is used to compare the current energy consumption levels with other similar buildings across the province. The facility's EUI level was compared with industry targets and this formed the basis to forecast energy reductions potential for the Byron Dobson Memorial Arena.

Table 2.4.1 – Energy Performance Indices Comparison provides comparable annualized EUI for the Byron Dobson Memorial Arena against comparable facilities in our region.

**Table 2.4.1 – Energy Performance Indices of Comparable Facilities**

Comparable Building	# Ice Surface	Square Feet	Energy and Water Total Cost (\$)	EUI (ekWh/ft <sup>2</sup> - yr)	ECI (\$/ft <sup>2</sup> - yr)	
					Energy	Water
<b>Byron Dobson Arena</b>	<b>2</b>	<b>67,555</b>	<b>\$271,034</b>	<b>28.8</b>	<b>\$3.35</b>	<b>\$0.66</b>
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	-	-

Based on the benchmarking analysis, there is opportunity to improve energy efficiency and operational performance at the Dobson Arena. The Town has recently commissioned a detailed energy audit at the facility through the NB Power Energy Smart energy efficiency evaluation program to further identify specific areas of focus and expected results from a focus on energy efficiency and retrofit investment.

Many of the items identified as short term priorities within the proposed capital renewal plan for the Dobson Arena will have a significant impact on reducing the annual energy and water consumption. The energy audit report identifies additional projects that are recommended to improve the facilities energy performance in addition to the capital renewal items. These items are identified in the Budgetary Cost Estimates and have an attractive Return on Investment (ROI) for the Town.

The outcome of the required capital renewal and energy efficiency enhancements would result in an annual energy and water expenditure reduction of \$77,629. The energy performance upgrades recommended in this report are expected to reduce the EUI rating to 18.3 ekWh/ft<sup>2</sup>, which is an annual reduction of 36.5%. This would bring the facility energy performance indices in line with other comparable facilities.

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

### 3.0 BUDGETARY COST ESTIMATES

The 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 year evaluation period.

Immediate Priority Capital Cost represents items that are potential “Risk to Business”, Code Compliance related, or in very poor condition with material import of not addressed as soon as possible.

Energy Efficiency and Conservation Measure (ECM) implementation costs are listed separately for items that have no impact on facility operations and are items not necessary for capital renewal from a useful lifecycle perspective. These items will complement the Town’s broader goals for reducing their environmental footprint and reducing Green House Gas (GHG) emissions as they align with pending provincial carbon tax policies.

The estimated costs are based on observations made during the site assessment. Quantities and areas are based on field measurements, field observations and / or site interviews. Replacement and repair costs are approximate and based on industry standards. It is recommended that quotations from qualified contractors be obtained for any specific item to be addressed.

**Table 3.1 - Probable Cost Summary Table**

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
<b>Sub-Total</b>	<b>\$1,740,300</b>		
Short Term (1 – 5 Years)	\$116,250		Building Interior
	\$1,825,000		Refrigeration Plants
	\$198,500		Mechanical Systems
	\$258,500		Electrical Systems
<b>Sub-Total</b>	<b>\$2,398,250</b>		
Long Term	\$10,000		Building Exterior

Priority	Probable Cost (\$)	Risk to Business / Code Compliance	Key Components Asset
(6 – 15 Years)	\$56,250		Building Interior
	\$1,200,000		Lower Rink Floor Slab and Header Replacement
	\$195,000		Mechanical Systems
	\$216,000		Electrical Systems
<b>Sub-Total</b>	<b>\$1,677,250</b>		
Energy Efficiency (ECM'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.
<b>Total</b>	<b>\$5,907,800</b>		

The Town of Riverview has requested in the Scope of Service that MCW Maricor identify the capital cost for replacement of the Dobson Arena. Based the recent project data for comparable facilities we would anticipated an overall replacement value for the existing facility with its current space functions to be approximately \$18.0 million. This would provide a new facility of equivalent capabilities to the existing facility but no additional services or amenities would be included have been included within this budget'.

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 year evaluation period provided that the building continues to be maintained and the recommended capital projects are undertaken.