Tri-County Water Board of Management Agenda

October 27, 2020, 7:00 p.m.

Electronic Participation Meeting via Zoom

Due to the COVID-19 Pandemic this meeting will be held electronically. Please contact the Clerk's Department if you require an alternate format or accessible communication support or wish to receive the link to the meeting, at 519-785-0560 or by email at clerk@westelgin.net.

Pages

1. Call to Order

2. Adoption of Agenda

   Recommendation:
   That Tri-County Water Board hereby adopts the Agenda for October 27, 2020 as presented.

3. Disclosure of Pecuniary Interest

4. Minutes 1

   Recommendation:
   That minutes of the Tri-County Water Board meeting on September 2, 2020 be adopted as circulated and printed.

5. Business Arising from Minutes

6. Staff Reports

   6.1. OCWA - Tri-County Drinking Water System Second Quarter Operations Report 5

   6.2. M. Taylor, OCWA - Building Condition Assessment & Capital Reserve Fund 17

7. Closed Session

Recommendation:
That Tri-County Water Board hereby proceeds into Closed Session at _____ p.m., under Section 239(2)(f) of the *Municipal Act*, consideration will be given to advice that is subject to solicitor-client privilege, including communications.

8. Report from Closed Session

9. Adjournment

Recommendation:
That the Tri-County Water Board hereby adjourn at _____ p.m. to reconvene on December 15, 2020 at 7:00 p.m. at West Elgin Recreation Centre or at the Call of the Chair.

Tri-County Water Board of Management

Minutes

September 2, 2020, 7:00 p.m.
Electronic Participation Meeting via Zoom

Present:	**Allan Mayhew, Southwest Middlesex** **Angela Cammaert, West Elgin** **Bonnie Rowe, West Elgin** **Doug Bartlett, Southwest Middlesex** **Duncan McPhail, West Elgin** **Ken Loveland, Dutton Dunwich** **Marigay Wilkins, Southwest Middlesex** **Taraesa Tellier, West Elgin** **Tim Sunderland, Chatham-Kent** **Michael Noe, Newbury** **Mike Hentz, Dutton Dunwich** **Bob Purcell, Chair**
Staff Present:	**Jana Nethercott, Recording Secretary** **Magda Badura, CAO/Treasurer** **Dale Le Britton, OCWA** **Mike Taylor, OCWA**
Also Present:	**Amy Dale, Gunn & Associates** **Jill Bellchamber-Glazier, Southwest Middlesex** **Kristen McGill, Southwest Middlesex** **Greg Storms, Southwest Middlesex** **Heather Bouw, Dutton Dunwich** **Joe McMillan, Dutton Dunwich** **Diane Brewer, Newbury** **Ron Challis, Newbury**

Due to the COVID-19 Pandemic and physical distancing requirements, this meeting will be held electronically.

1. Call to Order

Chair B. Purcell called the meeting to order at 7:00 p.m.

2. Adoption of Agenda

Moved: Allan Mayhew
Seconded: Ken Loveland

That Tri-County Water Board hereby adopts the Agenda for September 2, 2020 as presented.

For (11): Allan Mayhew, Angela Cammaert, Bonnie Rowe, Doug Bartlett, Duncan McPhail, Ken Loveland, Marigay Wilkins, Taraesa Tellier, Tim Sunderland, Mike Hentz, and Bob Purcell, Chair

Absent (1): Michael Noe

Disposition: Carried (11 to 0)

3. Disclosure of Pecuniary Interest

No disclosures

4. Minutes

Moved: Doug Bartlett
Seconded: Duncan McPhail

That minutes of the Tri-County Water Board meeting on June 30, 2020 be adopted as circulated and printed.

For (11): Allan Mayhew, Angela Cammaert, Bonnie Rowe, Doug Bartlett, Duncan McPhail, Ken Loveland, Marigay Wilkins, Taraesa Tellier, Tim Sunderland, Mike Hentz, and Bob Purcell, Chair

Absent (1): Michael Noe

Disposition: Carried (11 to 0)

5. Business Arising from Minutes

Chair Purcell stated he would like to pass on congratulations to Southwest Middlesex and Newbury who have reached an agreement regarding the infrastructure and delivery of water. Mayor Allan Mayhew expressed his thanks to the Board for their support and it happy this is finally complete.

5.1 Adverse Water Sample

Dale LeBritton, OCWA provided information on the process for an adverse water sample and stated that OCWA suggest that if all parties of the Tri-County system wish to be notified of any adverse water samples, the notification should be done through Tri-County, with the system operator notifying the Secretary of the Tri-County Water Board and the Secretary sending out notification that way.

Direction to bring reporting of adverse water samples back as part of an updated Tri-County Water Board Agreement.

6. Closed Session

Moved: Allan Mayhew
Seconded: Angela Cammaert

That the Tri-County Water Board hereby proceeds into Closed Session at 7:17 p.m. Under Section 239(2)(f) of the *Municipal Act*, consideration will be given to advice that is subject to solicitor-client privilege, including communications.

For (11): Allan Mayhew, Angela Cammaert, Bonnie Rowe, Doug Bartlett, Duncan McPhail, Ken Loveland, Marigay Wilkins, Taraesa Tellier, Tim Sunderland, Mike Hentz, and Bob Purcell, Chair

Absent (1): Michael Noe

Disposition: Carried (11 to 0)

7. Report from Closed Session

Chair B. Purcell reported that direction was given to Tri-County Solicitor Amy Dale to proceed with a draft of an update to the Tri-County Water Board Master Agreement and to consult with member municipalities.

Moved: Doug Bartlett
Seconded: Allan Mayhew

That direction be given to Tri-County Solicitor Amy Dale to proceed with a draft of an update to the Tri-County Water Board Master Agreement and to consult with member municipalities.

For (11): Allan Mayhew, Angela Cammaert, Bonnie Rowe, Doug Bartlett, Duncan McPhail, Ken Loveland, Marigay Wilkins, Taraesa Tellier, Tim Sunderland, Mike Hentz, and Bob Purcell, Chair

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Absent (1): Michael Noe

Disposition: Carried (11 to 0)

8. Adjournment

Moved: Tim Sunderland
Seconded: Ken Loveland

That the Tri-County Water Board hereby adjourn at 7:55 p.m. to reconvene on October 27, 2020 at 7:00 p.m. or at the Call of the Chair.

For (11): Allan Mayhew, Angela Cammaert, Bonnie Rowe, Doug Bartlett, Duncan McPhail, Ken Loveland, Marigay Wilkins, Taraesa Tellier, Tim Sunderland, Mike Hentz, and Bob Purcell, Chair

Absent (1): Michael Noe

Disposition: Carried (11 to 0)

Bob Purcell, Chair	Jana Nethercott, Recording Secretary

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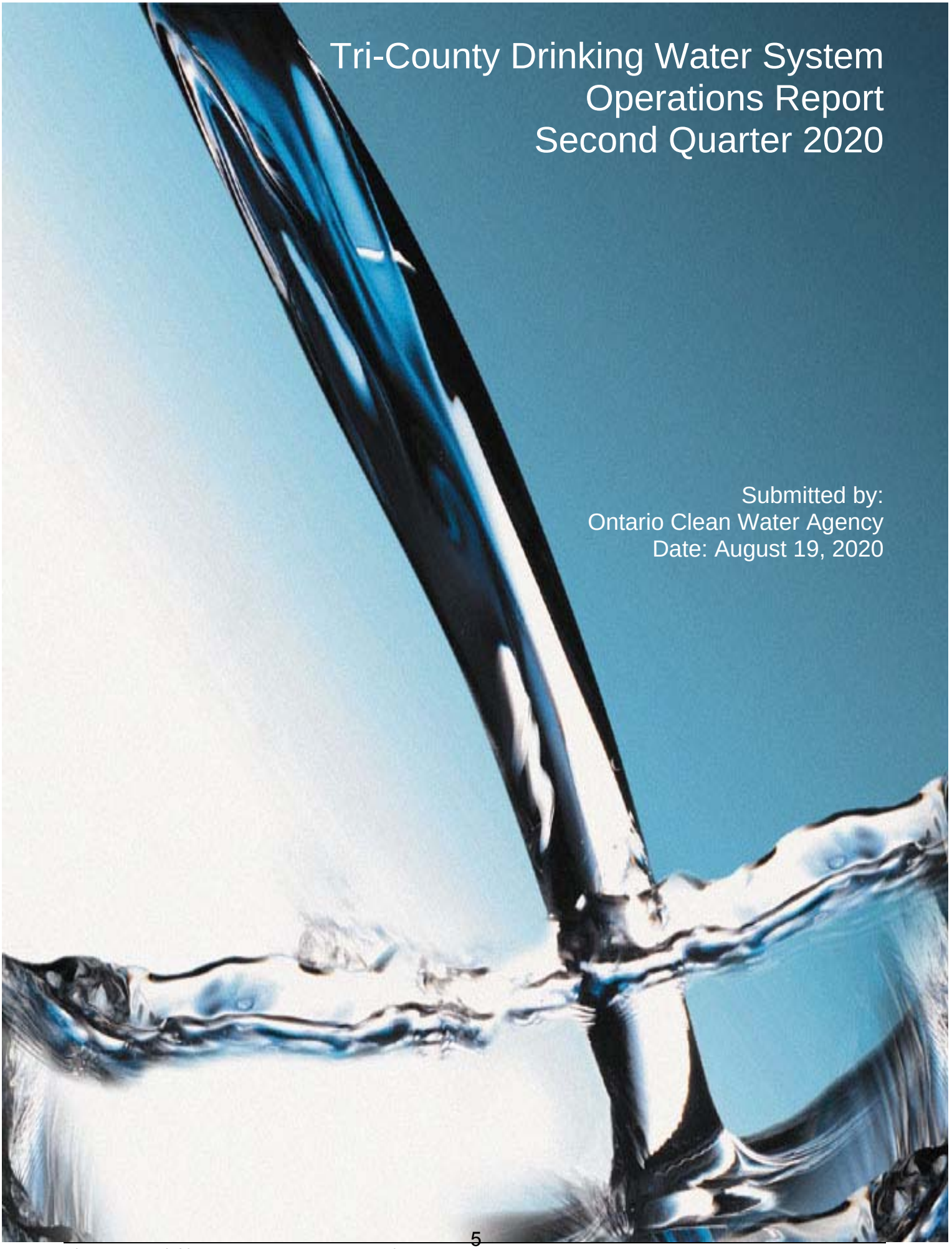


Tri-County Drinking Water System
Operations Report
Second Quarter 2020

Submitted by:
Ontario Clean Water Agency
Date: August 19, 2020

Facility Description

Facility Name:	Tri-County Drinking Water System
Regional Manager:	Dale LeBritton (519) 476-5898
Sr. Operations Manager:	Mike Taylor (226) 545-0414
Business Development Manager:	Susan Budden (519) 318-3271
Facility Type:	Municipal
Classification:	Class 2 Water Distribution, Class 2 Water Treatment
Title Holder:	Municipality

Service Information

Area(s) Serviced:	West Elgin, Dutton/Dunwich, Southwest Middlesex, Newbury and Bothwell
Population Serviced:	9,985
No. of Connections:	
Water Meters:	Commercial / Residential
In Service Date:	2009

Capacity Information

Total Design Capacity:	12.160 (1000 m^3/day)
Total Annual Flow:	1,381 (1000 m^3/year)
Average Day Flow:	3.770 (1000 m^3/day)
Maximum Day Flow:	5.380 (1000 m^3/day)

Operational Description

Water treatment with intake in Lake Erie, 4 low lift pumps, lifting up to the treatment plant. Membrane filtration followed by injection with Sodium Hypochlorite for primary disinfection and into the 2 Storage Tanks. Pumping to tower & distribution system with 4 high lift pumps.

SECTION 1: COMPLIANCE SUMMARY

FIRST QUARTER:

On March 29th, 2020 at 15:41 the historian had a failure likely due to a power surge during a wind storm. The historian alarm failed to call out at 15:41 due to a firewall on the system; however the normal plant alarms functioned. On March 30th the operator conducted the 72hr review of continuous monitoring data with no issues found as identified on round sheets. However, on March 31st, it was noticed that the previous data that was reviewed was no longer stored. The operator contacted the SCADA provider, Eramosa to see if the information could be retrieved from the PLC. Eramosa attempted to retrieve the data from the PLC and the Rockwell historian but was unsuccessful. A non-compliance was reported to the MECP for the loss of continuous monitoring data.

SECOND QUARTER:

There were no compliance or exceedance issues reported this quarter.

SECTION 2: INSPECTIONS

FIRST QUARTER:

There was no Ministry of Environment, Conservation and Parks (MECP) or MOL inspections conducted during the first quarter.

SECOND QUARTER:

There was no Ministry of Environment, Conservation and Parks (MECP) or MOL inspections conducted during the second quarter.

SECTION 3: QEMS UPDATE

FIRST QUARTER:

There were no QEMS updates this quarter.

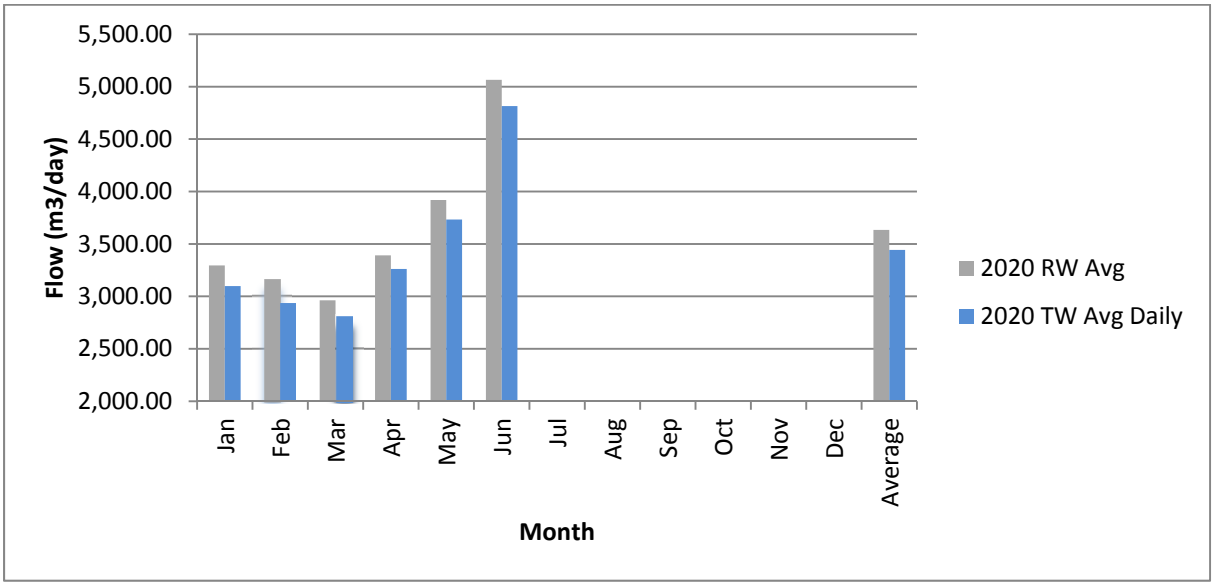
SECOND QUARTER:

There were no QEMS updates this quarter.

SECTION 4: PERFORMANCE ASSESSMENT REPORT

The plant is at 94.8% efficiency with the water taken from Lake Erie that is treated and sent to the distribution systems. Chart 1 below shows the raw water takings compared to the treated water distributed to the distribution system for the first quarter of 2020.

Chart 1: Average daily water takings compared to treated water distributed to the distribution system



Raw water is sampled on a weekly basis and tested for E. coli and Total coliforms as per regulatory requirements. There are no limits identified in the regulations for E. coli and total coliform found in the raw water source. Table 1 below identifies the sample results for the first quarter.

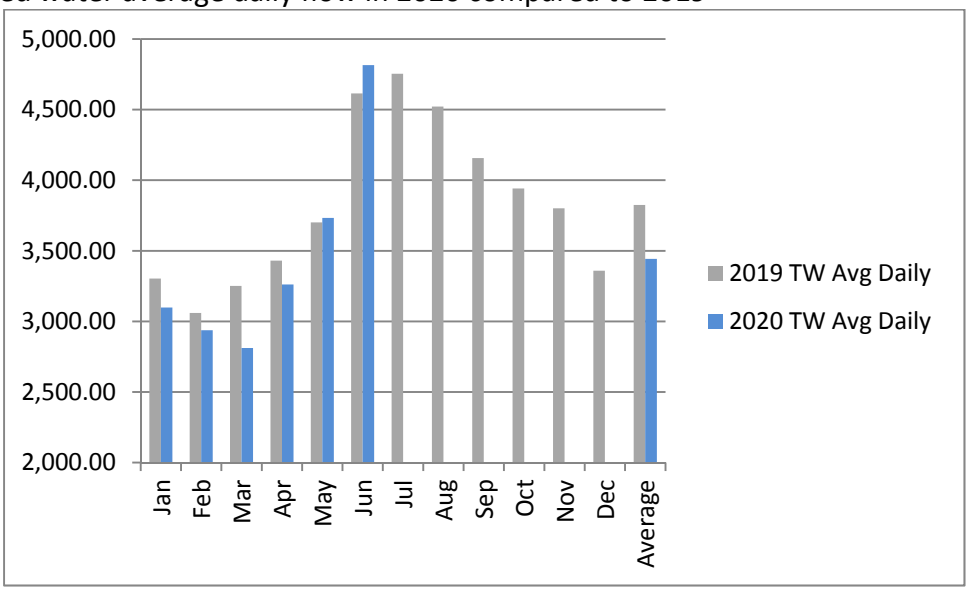
Table 1: Raw water sample results 2020

	# Samples	E. Coli Range (cfu/100mL)	Total Coliform Range (cfu/100mL)
January	4	9-100	210 - 10100
February	4	10-10	100 - 1600
March	5	10-100	60-4900
April	4	10-10	140-370
May	4	10-100	10-900
June	5	20-100	10-200

*NDOGT- no data, overgrown with target bacteria

The raw water is treated through membrane filtration and chlorine disinfection. The treated water is distributed to the systems it serves though the high lift pumps. The average daily treated water so far for was 2020 was 3,442.7m^3/d. The average treated water flow for 2020 is down 3.3% when compared against the average daily flow for 2019. The Tri-County Drinking Water System is currently at 28.3% of its rated capacity. Chart 2 below depicts the treated water flow for 2020 compared to 2019 average daily flows.

Chart 2: Treated water average daily flow in 2020 compared to 2019



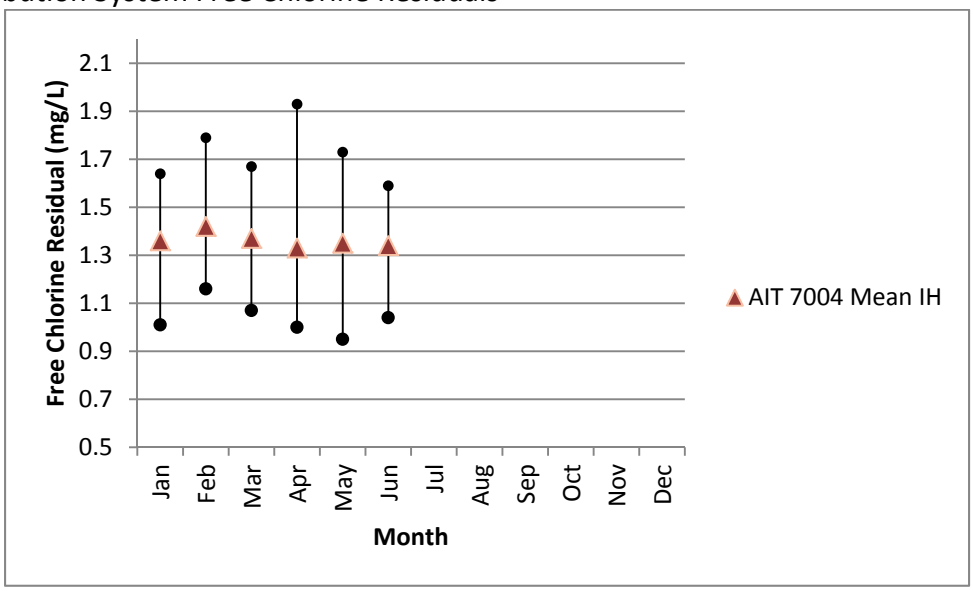
To ensure inactivation of viruses, bacteria and microorganisms the membrane filtration system is required to meet performance criteria for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month. The Tri-County Water Treatment Plant met all regulatory requirements for inactivation during the first quarter of 2020. Table 2 below shows the performance of each filter rack and the overall filter rack performance.

Table 2: Filter Rack Performance in 2020

	Rack 1 % Readings <0.1ntu	Rack 2 % Readings <0.1ntu	Rack 3 % Readings <0.1ntu	Rack 4 % Readings <0.1ntu	Overall Filter Performance (% readings <0.1ntu)
January	99.88	99.84	99.99	99.88	99.90
February	99.93	99.80	100.00	99.99	99.92
March	99.92	99.78	99.99	100.00	99.82
April	99.95	99.88	100.00	100.00	99.89
May	99.96	99.83	100.00	99.96	99.94
June	99.95	99.79	100.00	99.87	99.91

Along with turbidity, chlorine residuals are monitored throughout the treatment process by continuous online free chlorine analyzers. Residuals are maintained in order to provide adequate primary disinfection to meet inactivation of viruses, bacteria and microorganisms. The chlorine also provides adequate residuals in the distribution systems the treatment plant serves (secondary disinfection). Chart 3 below provides the online minimum, maximum and average readings of free chlorine provided to the distribution systems. All results have met regulatory requirements.

Chart 3: Distribution System Free Chlorine Residuals



On a weekly basis the treated water is tested for E. coli, Total Coliforms and heterotrophic plate count (HPC). The limit for Total Coliform and E. coli is zero; heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 3 below shows the number of samples taken each month along with the range of results. All samples have met regulatory requirements.

Table 3: Treated water sample results for 2020.

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	4	0 - 0	0 - 0	<10 – <10
February	4	0 - 0	0 - 0	<10 – <10
March	5	0 - 0	0 - 0	<10 – <10
April	4	0 - 0	0 - 0	<10 – <10
May	4	0 - 0	0 - 0	<10 – <10
June	5	0 - 0	0 - 0	<10 - 30

The transmission main (distribution system) is sampled on a weekly basis at two locations for E. coli, Total Coliforms and heterotrophic plate count (HPC) to meet regulatory requirements. As with the treated water the limit for Total Coliform and E. coli is zero, heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 4 below shows the number of samples taken each month along with the range of results.

Table 4: Distribution system sample results for 2020.

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	8	0 - 0	0 - 0	<10 – <10
February	8	0 - 0	0 - 0	<10 – <10
March	10	0 - 0	0 - 0	<10 - <10
April	8	0 - 0	0 - 0	<10 - <10
May	8	0 - 0	0 - 0	<10 - <10
June	10	0 - 0	0 - 0	<10 - <10

On a quarterly basis trihalomethanes are tested at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the THMs are forming in the system with retention time. There is an issue with elevated THMs in the distribution systems that the Tri-County Drinking Water System provides water to. Table 5 below provides the running average quarterly results; the running average limit for THMs is 100µg/L. All results are within regulatory requirements. However, THMs increase with increased retention time therefore THMs in the distribution system the WTP serves can be much higher, even reaching the regulatory limit.

Table 5: Trihalomethane sampling results.

	Limit (µg/L)	Treated Water THM Result (µg/L)	West Lorne Standpipe THM Result (µg/L)
July 2019		22	32
October 2019		49	63
January 2020	100	18	31
April 2020	100	21	33
Running Average	100	**27.5**	**39.8**

On a quarterly basis Haloacetic Acids (HAAs) are now required to be tested as per regulatory requirements. They are sampled at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the HAAs are forming in the system with retention time. Table 6 below provides the current running average quarterly results; the running average limit for HAAs is 80µg/L. All results are within regulatory requirements however, the limits are now enforced for 2020.

Table 6: Haloacetic Acid sampling results.

	Limit (µg/L)	Treated Water HAA Result (µg/L)	West Lorne Standpipe HAA Result (µg/L)
July 2019		6.5	16
October 2019		26.2	36.8
January 2020	80	<5.3	14.3
April 2020	80	<5.3	8.5
Running Average	**80**	**16.4**	**18.9**

SECTION 5: OCCUPATIONAL HEALTH & SAFETY

FIRST QUARTER:

Due to the COVID-19 pandemic, which has been brought to the attention of all OCWA staff; precautionary protection measures have been implemented at all facilities. In addition to the mandatory PPE worn by all operational staff, the following additional steps were taken to assure safety:

- Additional PPE and supplies were sourced as applicable.
- The frequency of facility and vehicle cleaning and surface disinfection was increased and documented
- Staff re-organization was implemented to meet social distancing requirements where applicable.
- Facility access to essential contractors and/or delivery personal are closely monitored.

There were no additional Health & Safety issues identified during the first quarter.

SECOND QUARTER:

There were no Health & Safety issues identified during this quarter.

SECTION 6: GENERAL MAINTENANCE

FIRST QUARTER:

JANUARY:

04: Air Liquide on site to deliver CO2.
04: Completed repair of valve v3306 on rack #3.
08: FloChem on site for chemical delivery.
14: Changed pH and chlorine probes at analyzer AIT5006.
23: Venture Automation was on site to check air manifold cards on racks.
29: Eramosa on site to test High Lift pump #4 and do programming.

FEBRUARY:

03: Changed actuator on rack #3 valve V3*06 .
06: Changed the belt on air makeup unit, and installed new coolant heat pump on low lift generator.
10: Air Liquide on site to deliver CO2.
13: Kone Crane on site for inspection of mono rail lifting device.
18: Gerber Electric on site to install new motor on heat pump.
19: Franklin Empire on site to calibrate milltronics.
24: Air Liquide on site to deliver CO2.
25: Installed new pH and ORP probe on neutralization tank.

MARCH:

02: Installed and calibrated new chlorine probe at chlorine analyzer AIT -2003.
04: Gardner Denver on site to do maintenance on compressors.
11: Lakeside on site to calibrate thermometer TIT 1403 at the low lift.
16: Air Liquide on site for CO2 delivery.
18: Flowmetrix on site to calibrate flow meters.
19: Installed and calibrated new pH probe on Chlorine analyzer 7001.
24: Anchem on site for chlorine (NaOCl) delivery.

SECOND QUARTER:

APRIL:

01: Captor chemical delivery.
02: Brown's enterprise onsite at Silver Clay chamber to fix drain pipe for sump pump.
02: Completed monthly meter readings.
07: ASL Roteq onsite to remove and rebuild low lift pump #3.
07: Install new pH probe on AIT-7004.
08: ASL Roteq onsite to remove and rebuild low lift pump #3.
08: Air Liquide onsite for CO2 delivery.
08: Calibrated Cl analyzer AIT7001
09: Flowmetrix onsite to check meter at Eagle East chamber.
20: Chlorine residual adjusted and set higher for hydrant flushing.
27: Flowmetrix onsite to fix water meters at Silver Clay and Pioneer.
28: Eramosa onsite to work on SCADA remote sites.
30: Air Liquide onsite to deliver CO2.

MAY:
01: Lowered chlorine residual set point as spring flushing is complete.
05: Installed new sump pump in Pioneer chamber.
12: Pre-chlorination system started at low lift. Residual set to 0.40mg/L.
13: pH and chlorine analyzer at low lift, AIT1401 calibrated and electrolyte added.
13: Chlorine residual at plant lowered due to pre-chlorination at low lift.
15: Gerber Electric onsite for maintenance on cooling system.
21: Air Liquide onsite for CO2 delivery.
28: Gerber Electric onsite to install VFD on low lift pump #3.

JUNE:
01: VFD solutions onsite for troubleshooting for highlift pump 4.
09: Started chamber inspections.
10: Completed chamber inspections.
11: Gerber Electric onsite to check wire connections.
15: Air Liquide onsite to deliver CO2.
16: Schneider Electric onsite to fix power corrector.
17: Pall onsite to perform health check analysis on Pall system.
18: Pall onsite to perform health check analysis on Pall system.
19: Albert's Generator onsite to perform annual generator maintenance.
22: Gerber Electric onsite to install new air conditioning unit.
23: Gerber Electric onsite to install new air conditioning unit.
24: Gerber Electric onsite to finish installation of new air conditioning unit.
25: Flochem onsite for chemical delivery.
25: Gerber Electric onsite to perform work on low lift pump #3.
29: Closed valve at Silver Clay chamber and Marsh Line chamber to push more water down Marsh Line East.
30: Hach onsite for membrane maintenance for turbidimeters.

SECTION 7: ALARM SUMMARY

FIRST QUARTER:

JANUARY:
05: Operator received alarm for AIT-7004 analyzer low chlorine residual. Operator attended the site, chlorine was 0.99 mg/l, tested analyzer and got a grab sample of 1.02 mg/l, calibrated meter to 1.02 mg/l and tested AIT-7001 chlorine analyzer it was 1.16 mg/l and grab sample was 1.31 mg/l calibrated this meter. Started high lifts to allow flow to distribution system and the analyzer is now reading 1.27 mg/l. Notified ORO.
31: Operator received page for PALL critical failure. Operator came on site and found that rack # 1,2,3 disabled due to high pressure. Able to get rack 1 & 2 running but rack 3 air scrub valve V3306 faulting unable get the valve working, notified ORO and asked to put rack 3 in idle and rack 4 into forward flow. Monitor system.

FEBRUARY:
11: Operator received alarm, PALL system critical. Logged in on SCADA laptop and found Rack # 2 was idle and rack #3 was disabled due to high pressure. Reset the system, put rack # 2 and 3 on forward flow and started to produce water.

MARCH:

15: Operator got alarm for High Lift and Low Lift pump faulted. Operator attended the water plant and reset pumps and plant started to produce water. Completed rounds, checked all systems for normal operation. Suspected power flicker was the cause.

29: Operator received alarm for water storage low level. Arrived on site because could not remotely access the SCADA. After investigation still could not able access the SCADA, notified ORO, advised to reset SCADA and PLC. After resetting PLC the situation did not resolve. Notified ORO and was advised to call Eramosa. Eramosa was not able to remotely access system. After investigation found a UPS battery that's responsible for remote access was not functioning; replaced UPS with a power bar. System returned to normal. SCADA up and running and plant started to produce water again. Storage tanks level was below 6.4m. Tested remote access; works well now. Monitored system until out of alarm and reset dialer.

SECOND QUARTER:

APRIL:

11: Operator received call from spectrum for low storage tanks at 16:15. Logged onto SCADA and observed storage tank at 6.46M and high lifts were pumping water to Wallacetown. Pall system was not making water; reset low lifts and Pall system started. Turned off high lift pumps to Wallacetown (currently at 10.01M) and changed low lift set-points in order to have only one low lift pump on. System currently now making water, will continue to monitor system remotely.

MAY:

05: Alarm for Wallacetown high level, high lift pumps were sending water to West Lorne in order to fill Rodney. Changed set-points to turn off high lift pumps.

09: Alarm for high lift and low lift pump fault. Logged onto SCADA and reset pumps. Arrived at the plant to ensure all systems were working as designed. Pump fault due to power flicker.

13: Alarm for discharge turbidity high high now normal. Logged onto SCADA and found the discharge turbidity spiked after the start-up of high lift pumps. The turbidity now normal.

JUNE:

06: Alarm for storage tank fault. Logged onto SCADA and observed storage tank at 6.38m, reset communication fault from CP1000 to CP2000. System started up and is now producing water. Operator to monitor remotely.

10: Alarm for power outage. Logged onto SCADA remotely and reset low lift pumps. On route to plant received a call for loss of communication with Wallacetown. Dutton-Dunwich operator was contacted and communication was restored. Plant was operating on normal power upon arrival and operating as designed. Currently sending water to both Wallacetown and West Lorne and producing water.

11: Alarm for power outage. Logged onto SCADA and reset low lift pumps, also observed plant was running on generator power. On route to plant observed a tree had fallen onto the power line down the road from plant. Contacted Hydro One and left site as power was expected to be restored at a later time. Received call from Hydro One stating power was back on, upon arrival to site power had cycled twice and therefore placed power input to only generator. Returned facility back to normal power, currently making water and sending to Wallacetown.

12: Alarm for generator running. Arrived onsite, power had returned to normal. Observed a communication error with low lift. Went to low lift and reset a tripped breaker in PLC cabinet and communication had been restored. Returned to plant and reset low lift pumps, plant now producing water and sending water to West Lorne.

21: Alarm for channel 32, less than 3 high lift pumps available. Found high lift pump #1 and #4 to be in fault. Reset both pumps and placed high lift pump #1 in manual due to pump not opening and closing properly.

SECTION 8: COMMUNITY COMPLAINTS & CONCERNS

FIRST QUARTER:

There were no complaints or concerns this quarter.

SECOND QUARTER:

There were no complaints or concerns this quarter.

Building Condition Assessment & Capital Reserve Fund

Service Buildings in West Lorne Ontario
8662 Graham Road,
West Lone, Ontario

Prepared for:

Ontario Clean Water Agency
Suite 370 - 450 Sunset Drive
St. Thomas, ON
N5R 5V1

IRC Building Sciences Group
Engineers and Consultants

4026 Meadowbrook Drive, Suite 131
London, Ontario, N6L 1C7
Tel: (519) 652-5985
Fax: (519) 652-9926

Date August 12, 2020

IRC LB20-024CR-23145

Table of Contents

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1 Introduction

1.1 Terms of Reference

IRC Building Sciences Group (IRC) was authorized by Ontario Clean Water Agency to perform a Building Condition Assessment & Capital Reserve Fund Planning for Service Buildings in West Lorne Ontario property located at 8662 Graham Road in West Lone, Ontario.

The purpose of the assessment was to evaluate the condition of the primary building components, complete with recommendations for repair and/or replacements within the next 30-year period (Building Condition Assessment).

1.2 Scope of Work

The work was performed in general accordance with IRC proposal LO11237P dated June 16, 2020 and Ontario Clean Water Agency's Request For Proposal (RFP). It is noted that the scope of work excludes all the mechanical, plumbing and electrical systems that serve the water treatment operations of the buildings. The scope of work is limited to the review of systems and elements that serve the buildings. This work included:

- Review of all drawings and documentation made available to IRC for review.
- Performance of a site review of the buildings' primary components to evaluate the physical condition and standard of components.
- Preparation of Building Condition Assessment report noting general observations and component conditions, together with recommendations for future repair options and associated budgetary costing.
- Develop a 30-year cash expenditures projection, listing each of the identified components that will require repair, retrofit or replacement.
- Identify all financial factors and assumptions used in the expenditures projections (if applicable).

1.3 Buildings Description

Old Water Treatment Plant – Site Building A					
Year Constructed	**Building Footprint**	**No. of Stories**	**Primary Use**	**Basement**	**Balconies**
Circa 1989	840 sq. ft.	Two	Electrical service	None	None

Low-lift Building – Site Building B					
Year Constructed	**Building Footprint**	**No. of Stories**	**Primary Use**	**Basement**	**Balconies**
Circa 1992	1249 sq. ft.	One plus mezzanine	Pump and electrical service building	None	None

Chlorine Building – Site Building C					
Year Constructed	**Building Footprint**	**No. of Stories**	**Primary Use**	**Basement**	**Balconies**
Circa 1989	455 sq. ft.	One	Service Building	Yes	None

Buildings Construction	
Foundation & Exterior Wall Components	**Building A:** The building is constructed with cast-in-place, concrete slab-on-grade (no basement level) concrete foundation walls and a steel framed (steel columns and open web steel joists supporting a composite steel roof decking) support structure. The second floor office consists of a composite (concrete laid within a steel pan) floor decking supported on steel

Buildings Construction			
	columns. The exterior walls are cladded with prefinished metal siding with concrete block masonry backup. **Site Building B:** The building is constructed with cast-in-place, concrete slab-on-grade (no basement level) and loadbearing concrete walls supporting a steel framed roof support structure. The exterior walls are cladded with split-faced concrete masonry units, with cast-in-place concrete back-up system. **Site Building C:** The building is constructed with a basement level cast-in-place concrete slab-on-grade. The substructure consists of concrete foundation walls supporting open web joists and a composite (concrete laid within a steel pan) floor slab. The superstructure consists of loadbearing concrete block masonry walls supporting a composite roof slab. The exterior walls are cladded with vertical split-faced concrete block masonry units.		
Roof Components	**Building A:** The roof system consist of a gravel surfaced, Built-Up asphalt Roof (BUR) system installed a top a rigid thermal insulation and corrugated metal roof decking supported on open web steel joists. **Building B:** The roof system consists of single-ply, Poly-Vinyl Chloride (PVC) membrane installed atop a rigid thermal insulation on a corrugated metal roof decking supported on steel beams and purlins. There are four dome-shaped operable skylights on the roof. **Site Building C:** The roof system consists of exposed concrete surface of a composite decking (i.e., concrete laid within a steel pan), supported on open web steel joists. The underside of the decking is finished with what appears to be Spray Polyurethane Foam (SPF) insulation. No waterproofing membrane exists atop the roof decking.		
Windows & Doors	**Building A:** There are two windows within the second story office portion. The windows consist of operable and fixed Insulated Glass (IG) panels installed within punched window openings. Based on the date stamp on the window spacers they were installed in 1989. **Building B:** Windows are located on the south elevation. The windows consist of fixed, sloped IG units in metal frames in a horizontal strip configuration, along the roofline on the south elevation. There are six panels, two fixed and four operable (i.e., casement) IGUs located on the top portion of the south wall beneath the sloped glazing. Based on the date stamps on the window spacers they were installed in 1992. **Building C:** Building C does not have any exterior windows there is one internal window at the main entrance lobby. Ventilation louvers and dampeners are on three elevations.		
Electrical Systems	600A, 3-Phase main distribution with 600V complete with square D, disconnect switch located within Building A serves all buildings. A 600 A, 600 V sub panel exists in Building B.		
Mechanical Systems	Buildings are heated with suspended electric space heaters. An electric Domestic Hot Water (DHW) heater tank was located in Building A which appeared to be decommissioned.		
Passenger Elevator	No	**Sprinklered**	No

Other	
Site Components	Asphalt paved driveway. Metal chain-link fence and a gate. Stone masonry retaining walls throughout the site. Grassed areas with trees, shrubs and natural vegetation.
Reference Direction	Graham Road runs north-south and is located west of Building A.

Photographs

Photographs

2 Methodology

2.1 General

A survey of the building was conducted on July 8, 2020 by IRC staff. Observations of the exterior wall assemblies and roofs were made from the ground and roof levels.

This report was prepared based on the findings of the visual assessment and includes:

- evaluations of the building components reviewed
- recommendations for repairs and replacement
- budget estimates, for all rehabilitation work, and
- photographs of typical deficiencies

2.2 Limitations

Only the specific information or locations noted in the report have been reviewed. Although every reasonable effort was taken to identify defects, latent and hidden defects may affect the accuracy of this report. No physical or destructive testing and no design calculations have been performed unless indicated elsewhere in this report.

2.3 Code Compliance

During the visual reviews of the buildings and properties, it has been generally determined, “in a global sense”, that compliance with the current laws and regulations governing its operations are correct unless specifically noted. Comments provided are detailed as to the nature of the non-conformance. A full code compliance review was not required as part of the Scope of Work.

2.4 Information provided to IRC

Financial information with regards to the Capital Reserve Fund was not provided to IRC; as such, cash flow planning and/or, reserve fund balance/contribution adequacy analysis has not been completed as part of this assessment.

2.5 Documentation Provided to IRC

Construction Drawings

- Structural Drawing S110 titled ‘Existing WTP Building Modification’, prepared by Stantec Consultants Ltd. Dated June 25, 2010
- Structural Drawing S101 titled ‘Low Lift Pumping Station Roof Modifications’ prepared by Stantec Consultants Ltd. Dated June 25, 2010.

Other Documents

- Roof inspection Report – Low Lift Building, prepared by Tremco, dated August 08, 2018.

2.6 Condition Ratings

The following definitions have been used in the text to describe the condition of each component reviewed:

Good Condition:	No deficiencies or concerns noted. No capital expenditure is anticipated within next 10-years.
Good / Fair Condition:	Reasonable condition as whole; minor deficiencies noted. No capital expenditure is anticipated within next 10-years.
Fair Condition:	Reasonable condition as whole; deterioration and/or damage noted. Capital expenditure is anticipated within 5 – 10 years.
Fair / Poor Condition:	Deterioration and/or damage noted; component is nearing end of service life. Capital expenditure is recommended in 2 – 5 years.
Poor Condition:	Deterioration and/or damage noted; component at end of service life. Capital expenditure is recommended in 0 – 2 years.
Very Poor	Immediate action is recommended to repair or improve the condition and further investigation is recommended.

n/a Component does not currently exist and installation is recommended for building functionality or as a cost-effective upgrade.

2.7 Priority Rating

To assess the priorities of the **short-term** repairs/replacements required **within the next 5 years** for the various components at each property, the following ratings from "A" to "E" have been used:

Priority A – Health & Safety

Hazardous conditions which cannot be deferred and which could lead to loss of life or critical or extremely severe injury.

Guideline:

This priority is for those conditions which are extremely hazardous and which, if not corrected, could lead to critical injury or loss of life. The required scope of work will generally be localized and normally include only a portion of a particular building element or building system.

Priority B – Structural Integrity

Conditions that lead to the deterioration of structural elements of a property must be investigated and corrected if necessary. Failure to do so may lead to unsafe, life threatening conditions and will eventually render the building structurally unsound and physically obsolete; incapable of performing the task it was designed to do.

Guideline:

This priority is to be assigned to the rehabilitation of structural building elements which have deteriorated to such an extent that they are no longer structurally sound and are not capable of performing their intended task. Examples such as cracked columns, severe spalling or cracked shear walls, failing shelf angles, corroded structural steel supporting members and decaying wood support members are characteristic of the priority.

Priority C – Code Requirement

All buildings and building systems must be upgraded so that they comply with revision to existing legislation or to the requirements of newly adopted legislation.

Guideline:

This priority is to be assigned to work that is required to ensure that buildings comply with new requirements brought about by changes to applicable existing legislation, such as the Fire Code, or newly adopted legislation. Building elements that have deteriorated to an extent that they no longer comply with existing codes are not assigned this priority.

Priority D – Building Functionality

Replacement required for building components which have a direct and significant impact on the building or operation of the building as a whole – generally limited to the building structure and envelope as well as the primary mechanical and electrical systems. These building components and systems must be maintained in order to protect the value and operational viability of the asset. This work is necessary in order to maintain building users health/comfort and to prevent the building from becoming physically or functionally obsolete.

Guideline:

Certain building systems must be maintained in order to protect the "value" and operational viability of the asset. Accordingly, work that directly and significantly affects the overall performance of a primary building system, or a major part thereof, is assigned this priority.

Priority E – General Upgrades

Upgrades of components that have surpassed their useful service life, that do not have a direct bearing on the safe operation or functionality of the building, i.e. not building envelope components or primary mechanical and electrical systems. Also includes upgrades with either cost-effective or other initiatives that improve the operational efficiency or marketability of the property and which are considered to have a reasonable payback or add non-tangible value.

Guideline:

General replacement of components that have surpassed their useful life but replacement may be deferred without affecting the safe operation and functionality of the property as a whole. Examples include carpets, appliances, asphalt paving and concrete components. This rating is also assigned to components where operating efficiencies and initiatives, and upgrades with a perceived payback may be achieved. Typically energy management, water conservation programs; and/or upgrades to improve non-tangibles such as 'curb appeal', aesthetic appearance and marketability of the buildings as a whole.

Priority – None

This priority is assigned to components where no significant repairs or replacement is expected within the next 5-year period, or where the component has no significant bearing on the operation or function of the property as a whole.

Guideline:

A projected priority rating of a component beyond a 5-year period cannot be accurately assessed due to the many variables that may affect the condition beyond this period. Variables such as regular maintenance, weather deterioration, general wear and tear, new technologies, changing code requirements etc. Priority ratings should be re-assessed every 5-year period when updates to the building condition assessment are recommended.

Components that are considered to have no significant bearing on the operation or function of the property as a whole, such as furnishings, office equipment, maintenance/storage sheds, benches, general site signage etc. may be assigned this rating.

2.8 Expenditure Type

Recommended

Costs accounted for in the Table of Expenditures account for the quantifiable cost of replacement recommended within the foreseeable future, i.e. next 5-years, based on the condition assessment and the industry norm for typical service life between replacement/upgrades/restoration.

Projected

Costs accounted for in the Table of Expenditures account for the quantifiable cost of replacement or an estimated allowance for components where the replacement date cannot be accurately assessed, i.e. 5-years and beyond, based on the condition assessment and the industry norm for typical service life between replacement/upgrades/restoration.

Allowance

A cash allowance is accounted for in the Table of Expenditures as the costs cannot be accurately measured either due to the work being non-cyclical in repair or replacement, or that the 'quantity' to account for cannot be calculated as a single entity. Examples include partial restoration of concrete components and foundation leak repairs.

Discretionary

Costs are accounted for in the Table of Expenditures for upgrades/replacement of components that are considered to be cost effective or worthwhile; however, are not necessary for the continued operation of the building as it currently is. Costs may be omitted or discounted from budgets if deemed not necessary. Examples include application of concrete balcony waterproofing and installation of roof anchors, upgrade of attic insulation and replacement of older 'standard' flush toilets.

Operating

Costs are not accounted for in the Table of Expenditures. Expenditures that are considered to be a small capital value under $500 and that may be performed by maintenance staff or by contractors by under general work order. Examples include repair of damaged insect screens and singular replacements such as exterior doors that are not part of the planned expenditures.

Maintenance

Costs are not accounted for in the Table of Expenditures. Minor costs for the day-to-day maintenance of the building that may be completed by maintenance staff. Examples include replacement of bathtub sealants and adjustment of doors.

2.9 Expected Life Cycle

Each component has been assessed with an expected life cycle for the component reviewed. The numbers shown indicate the industry 'norm' for that component with the average value bolded. For example, *Roof Shingles: 15 – **20** – 25 +* indicates that the average life expectancy for roof shingles is approximately 20 years, with a deviation of approximately ± 5 years depending upon variables such as material quality, standard of installation and level of preventative maintenance.

2.10 Maintenance

Items that require general maintenance have been identified and outlined within the report. Costs associated with these items are considered to be maintenance costs and have not been accounted for in the Table of Expenditures.

Samples of types of items that are considered to be maintenance are:

- Repair of sealants around the vanities
- Securing of handrails

- Repairs to damaged insect screens to and windows
- Fixing loose edges of sheet vinyl or carpets
- Weather-stripping around doors and windows
- Weather-stripping around attic access hatch
- Secure loose eavestroughs fixings and connectors
- Installing splash-pads at downspout locations

2.11 Mechanical, Electrical & Fire System Review

The estimated service life and basic remaining life of mechanical and electrical systems may be highly variable due to the quality of equipment, local environment and installation as well as the level of maintenance performed during the life of the equipment.

The remaining life expectancy for each component or system is based upon the industry norms for the equipment; including an assessment of any maintenance information provided by the Client. By using this approach, monies required for replacement or upgrades are identified in the reserve fund at the expected time of replacement. Predicting the exact replacement year is very difficult, and actual replacement may be based upon current technologies, energy efficiencies, availability of replacement parts and frequency of repairs rather than failure of the component.

The review process for this building condition assessment does not include for a design review for the adequacy and function of the system for the particular use at this property. It is assumed that the design was to the standards of the day of installation and that the system is considered to meet the needs of the Client unless identified as deficient during interviews. See specific system Observations for details.

3 Executive Summary

3.1 Building Condition Assessment

3.1.1 Component Summary

Priority A – Health & Safety	Hazardous conditions which cannot be deferred and which could lead to loss of life or critical or extremely severe injury.
Priority B – Structural Integrity	Conditions that lead to the deterioration of structural elements of a property must be investigated and corrected if necessary.
Priority C – Legislative Requirements	Components or systems must be upgraded so that they comply with revision to existing legislation.
Priority D – Building Functionality	Replacement required for building components which have a direct and significant impact on the building as a whole.
Priority E – General Upgrades	Upgrades of components that have surpassed their useful service life, that do not have a direct bearing on the safe operation or functionality of the building.
Priority – None	This priority is assigned to components where no significant repairs or replacement is expected within the next 5-year period.

Structural Components

Component		Priority Rating						Condition Rating	Expenditure Recommended
4.1.1	Foundations & Structure - Building A				D			Good / Fair	5 - 10 Years
4.1.2	Foundations & Structure - Building B						None	Good / Fair	10 - 20 Years
4.1.3	Foundation & Structure - Building C		B					Poor	0 - 2 Years

Building Exterior Components

Component		Priority Rating						Condition Rating	Expenditure Recommended
4.2.3	Low Slope Roofing - BUR (Building A)				D			Fair/Poor	5 - 10 Years
4.2.4	Low Slope Roofing - PVC (Building B)				D			Poor	2 - 5 Years
4.2.5	Low Slope Roofing - Exposed Concrete (Building C)					E		Fair / Poor	2 - 5 Years
4.2.8	Concrete Block Masonry				D			Fair / Poor	2 - 5 Years
4.2.10	Siding - Building A						None	Fair	5 - 10 Years
4.2.14	Windows				D			A: Poor B: Fair/Good	0 - 2 Years 20 – 25 Years
4.2.15	Skylights - Building B				D			Good/Poor	0 - 2 Years
4.2.21	Exterior Doors - Entrance Doors				D			Fair / Poor	2 - 5 Years
4.2.22	Exterior Doors - Metal Roll-up						None	Good / Fair	10 - 20 Years
4.2.39	Sealants/Caulking				D			Poor	0 - 2 Years

Building Interior Components

Component		Priority Rating						Condition Rating	Expenditure Recommended
4.3.3	Washroom - Building A					E		Poor	0 - 2 Years

Building Interior Components										
Component		Priority Rating							Condition Rating	Expenditure Recommended
4.3.10	Interior Finishes - Building A					E			Poor	0 - 2 Years

Mechanical & Plumbing Systems										
Component		Priority Rating							Condition Rating	Expenditure Recommended
4.4.1	Ventilation Units				D				Poor	0 - 2 Years
4.4.3	Electric Space Heaters				D				Poor	0 - 2 Years
4.4.16	Domestic Hot Water (DHW) Heater				D				Various	Annually

Electrical Systems										
Component		Priority Rating							Condition Rating	Expenditure Recommended
4.5.1	Power & Distribution						None		Good / Fair	10 - 20 Years
4.5.11	Interior Lighting Fixtures						None		Fair	5 - 10 Years
4.5.17	Emergency Generator & Transfer Switch						None		Fair	5 - 10 Years

Fire & Life Safety Systems										
Component		Priority Rating							Condition Rating	Expenditure Recommended
4.6.1	Fire & Life Safety Components -All Buildings	A					None		Fair	5 - 10 Years

Site Components										
Component		Priority Rating							Condition Rating	Expenditure Recommended
4.8.1	Asphalt Pavement					E			Fair / Poor	2 - 5 Years
4.8.4	Concrete Components						None		Fair	5 - 10 Years
4.8.14	Chain Link Fencing						None		Fair	5 - 10 Years
4.8.19	Site Lighting						None		Good / Fair	10 - 20 Years
4.8.20	Retaining Walls				D				Fair / Poor	2 - 5 Years

Organizational Elements										
Component		Priority Rating							Condition Rating	Expenditure Recommended
4.9.10	Mould Assessment	A							Poor	0 - 2 Years
4.9.11	BCA & CRF						None		Good	2 – 5 Years

3.1.2 Prioritization Summary

Priority A – Health & Safety

- Un-illuminated 'Exit' signs were noted within the Buildings, which may pose safety hazards for the Building users.
- Presence of mould is suspected within the second level of Building A. Mould remediation is recommended prior to any repair work.

Priority B – Structural Integrity

- Corrosion was noted on the underside of main floor composite decking (basement ceiling) of Building C.

Priority C – Code Requirements

- There were no items that were considered to be a code violation/deficient noted during the site review.

Priority D – Building Functionality

- The foundation of Building A was noted in fair to good condition. A corroding cut-section of a non-functional beam was imbedded in the concrete which may cause delamination of concrete. Concrete repair and coating of the section of the beam is recommended.
- The Built-Up asphalt Roof (BUR) system of Building A, will reach the end of its useful life in 5 – 6 years, replacement is recommended.
- The Poly-Vinyl Chloride (PVC) roof membrane atop Building B was noted in poor condition with areas of surface deterioration, membrane tenting and ponding water. Replacement allowance has been carried in 0 – 2 years.
- Areas of damaged concrete block masonry and mortar joints were noted throughout. Repair allowances have been carried within 2 – 5 years.
- Windows of Building A were noted in poor condition. Replacement is anticipated within 0 - 2 years.
- Failed and leaking skylights were noted on Building B. Allowance for replacement has been carried in 2 – 5 years.
- Entrance doors are expected to require replacement within the next 3 – 5 years.
- Failed sealants were noted at the perimeters of doors, windows and at the control joints. Replacement is recommended within 0 – 2 years.
- Emergency Generator & Transfer Switch despite being functional will reach the end of their useful life within 5 to 10 year.

Priority E – General Upgrades

- The exposed concrete surface of the roof composite decking on Building C is prone to excessive damaged due to water, elements and freeze-thaw cycles. Installation of a roofing membrane despite being an upgrade is highly recommended. Allowance has been carried in 2 – 5 years.
- The washroom located on the second level of Building A, appeared to be in poor condition. Upgrades are needed within the early portion of the term of analysis.
- Interior finishes of the of the second level of Building A, were noted to be in poor condition. Upgrades are recommended within 0 – 2 years.

3.1.3 Maintenance

Items that require general maintenance were noted during the review and have been listed below. This is not intended to be an exhaustive list of all the repair maintenance items required, rather those noted during general review. Costs associated with these items are considered to be maintenance costs and have not been accounted for in the Table of Expenditures.

- Repair of sealants around the vanities
- Securing of handrails
- Repairs to damaged insect screens to and windows

- Fixing loose edges of sheet vinyl or carpets
- Weather-stripping around doors and windows
- Weather-stripping around attic access hatch
- Secure loose eavestroughs fixings and connectors
- Installing splash-pads at downspout locations

3.2 Capital Reserve Fund Study

3.2.1 5-Year Summary Table of Expenditure

Below is a summary table of expenditures expected within the next 5-year period – see *Table of Expenditures* in *Section 5 – Reserve Fund Study* for full projected expenditures. The costs indicated are future value and account for inflation as outlined in *Section 5*.

Assessment and priority rating for each component cannot be accurately rated beyond a period of approximately five (5) years as the level of deterioration and maintenance within a defined period may have significant impact on the assessed rating. It is recommended that the condition assessment and reserve fund be reviewed each year and updated every five (5) years to re-assess condition and deterioration of each component item and to ensure that the current contribution is sufficient and meets the planning needs.

		2020	2021	2022	2023	2024
4.1	Structural Components	$9,605	–	–	–	–
4.2	Building Exterior Components	–	$13,970	$40,654	–	$26,053
4.3	Building Interior Components	–	$10,604	$7,642	–	–
4.4	Mechanical & Plumbing Systems	–	$5,187	$5,290	$1,199	$1,223
4.5	Electrical Systems	–	–	–	–	–
4.6	Fire & Life Safety Systems	–	–	–	–	–
4.8	Site Components	–	–	$64,661	$65,954	$139,109
4.9	Organizational Elements	$2,825	–	–	–	–
	TOTALS	**$15,114**	**$35,091**	**$140,787**	**$78,569**	**$201,278**

Average Calculated Annual Expenditures

The averaged **present day** calculated annual expenditure **for the initial 5-year period** is $88,965.

The averaged **present day** calculated annual expenditure **for the 30-year study period** is $39,831.

4 Building Condition Assessment

4.1 Structural Components

4.1.1 Foundations & Structure - Building A

General Condition

Installed / Last Major Repairs	1989					**Typical Restoration Period**	- 20 – **50** – 80 +				
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐ None
Condition	☐	Good	☑	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☐ Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$4,500	Item	5 - 10 Years	Allowance	Contingency for potential repairs
n/a	Item	As required	Operating	One-off repairs, minor crack injection repairs

Design & Specification Recommended: ☑ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

- The structural components include concrete slab-on-grade and foundation walls as well as loadbearing steel columns.
- There were no visible signs of structural concern in terms of settlement, major cracking of foundation/exterior walls or other related components.
- Continued assessment every 5-year period as part of building condition assessment.
- An exposed cut-section of a corroding steel beam was noted to be imbedded at the foundation wall of Building A.
- The beam section does not appear to have any structural significance and may have been part of a former adjacent structure which has been removed.
- The corroding beam section will cause the concrete to delaminate over time and must either be removed or coated with a corrosion resistant coating.
- Some minor cracks were noted at the foundation walls.
- The allowance carried here is for repair of the foundation walls and coating of the exposed cut-section of the beam.

General Comments

- Budgetary costs, if included in the Table of Expenditures, account for any further structural assessment that may be determined from the site review. The costs do not include for major structural repair or complete installation of waterproofing. Observation of the structural components is limited to exposed sections from the interior and exterior.
- No destructive investigation was undertaken to review hidden structural components.
- The building foundations and structure should last the life of the building, i.e. 80+ years and generally should require little or no repair. Structural deficiencies may become evident in the first 5 – 20 years of operation; however, it may be longer periods before any deficiencies are evident.

Photographs

Concrete sub structural components were noted in fair to good condition.

Exposed corroded steel was noted imbedded at the foundation wall of Building A. Epoxy coating may be considered.

Minor cracking was noted on the foundation wall.

End of Foundations & Structure - Building A Section

4.1.2 Foundations & Structure - Building B												
General Condition												
Installed / Last Major Repairs	1992			**Typical Restoration Period**	- 20 – **50** – 80 +							
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☐	General	☑	None
Condition	☑	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☐	Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$4,500	Item	10 - 20 Years	Allowance	Repair the corroded area of the flooring decking. Repair cracked concrete foundation walls.
n/a	Item	As required	Operating	One-off repairs, minor crack injection repairs
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations

- There were no visible signs of major structural concern in terms of settlement or major cracking of foundation, exterior walls or other related components.
- Isolated minor cracks and areas of minor delaminated concrete were noted on the exterior face of the concrete foundation walls.
- Areas of corrosion stains were also noted on the exterior face of the foundation walls.
- Continued assessment every 5-year period as part of building condition assessment.

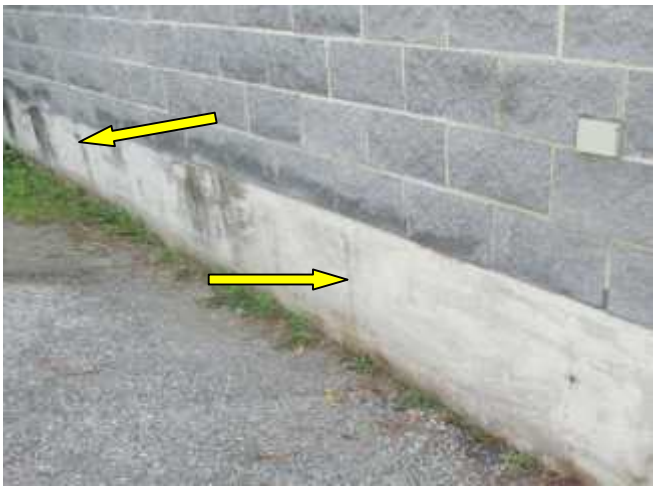
General Comments

- Budgetary costs, if included in the Table of Expenditures, account for any further structural assessment that may be determined from the site review. The costs do not include for major structural repair or complete installation of waterproofing. Costs associated with any foundation leaks or waterproofing have been accounted for under Miscellaneous Capital Components.
- Observation of the structural components is limited to exposed sections from the interior and exterior.
- No destructive investigation was undertaken to review hidden structural components.
- The building foundations and structure should last the life of the building, i.e. 80+ years and generally should require little or no repair. Structural deficiencies may become evident in the first 5 – 20 years of operation; however, it may be longer periods before any deficiencies are evident.

Photographs

General view of the slab-on-grade floor of building B.

The steel framing of building B were noted to be in good condition.



Surface cracks minor delamination and moisture staining were noted on the exterior face of foundation walls.

Cracks and staining on the exterior face of the west wall of Building B.

End of Foundations & Structure - Building B Section

4.1.3 Foundation & Structure - Building C

General Condition

Installed / Last Major Repairs	1989			**Typical Restoration Period**	- 10 – **15** – 20 +						
Priority	☐	Safety	☑	Structural	☐	Code	☐	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☑	Fair / Poor	☐	Poor	☐	Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$8,500	Item	0 - 2 Years	Recommended	Repair the damaged foundation walls, slab-on-grade and underside of the floor slab.
n/a	Item	0 – 1 Year	Recommended (Optional)	IRC recommends waterproofing of the foundation walls.

Design & Specification Recommended: ☑ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

- Corrosion was noted on the underside of composite decking.
- IRC noted corroded and leaking water pipes within the basement of Building C, which are contributing to the water damage of the foundation walls. IRC recommends replacement of all piping within the basement. The piping is part of the Water Treatment Operations within the building and has therefore, been excluded from this assessment.
- Evidence of water infiltration was noted in the basement of Building C.
- IRC recommends that consideration be given to waterproofing the foundation walls of Building C, as the basement is roughly at the same level as the neighbouring lake.
- Waterproofing of the walls is considered an upgrade since it is not part of the original design and therefore, excluded from the BCA.

General Comments

- Observation of the structural components is limited to exposed sections from the interior and exterior.
- No destructive investigation was undertaken to review hidden structural components.
- The building foundations and structure should last the life of the building, i.e. 80+ years and generally should some repairs. Structural deficiencies may become evident in the first 5 – 20 years of operation; however, it may be longer periods before any deficiencies are evident.

Photographs

The basement of Building C was noted to be wet.

Corrosion was noted on the underside of the floor decking.

Water infiltration was noted within the basement of Building C.

Surface deterioration was noted at the basement floor slab.

Corroding piping and valves noted n the basement of Building C.

End of Foundation & Structure - Building C Section

4.2 Building Exterior Components

4.2.3 Low Slope Roofing - BUR (Building A)

General Condition

Installed / Replaced	2007			**Typical Service Life**	- 15 – **20** – 25 +						
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐ None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☑	Fair / Poor	☐	Poor	

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$15,480	968 sq. ft.	5 - 10 Years	Projected	Replace the roofing system
n/a	Item	As required	Operating	Add gravel to cover the areas of exposed membrane.

Design & Specification Recommended: ☑ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

Blisters	☐	Severe	☑	Moderate	☐	Minor	☐ None
Membrane Bleedthrough	☑	Severe	☐	Moderate	☐	Minor	☐ None
Ponding	☐	Severe	☐	Moderate	☐	Minor	☑ None
Reported Roof Leaks	☐	Yes			☑	No	

- The low slope roof of Building A consists of Built Up asphalt Roof (BUR) installed atop a layer of rigid thermal insulation and corrugated metal decking. A single-ply modified bitumen membrane was noted on the control joint located at the central portion of the roof.
- The roof was noted to be in fair to poor condition.
- Deficiencies in the form of wind scouring, blisters and asphalt membrane bleed through were noted throughout.
- Exposed deteriorated membrane was noted on the southeast corner of the roof. IRC recommends that gravel be added to cover the exposed area.
- Hardened and cracked sealants were noted on the parapet flashing joints.
- Based on the provided information the roof was replaced in 2007 (i.e., ~ 13 years old).

General Comments

- Annual walk around review is recommended by a qualified consultant to ensure the integrity of the roof system and to extend the service life.
- Before undertaking any repairs to the roofing membrane always check the installers warranty statement so as to avoid invalidating any warranty.

Photographs

General view of the BUR system atop Building A.

Modified bitumen roof membrane on the control joint of Building A

Exposed deteriorated membrane was noted on the southwest corner of the roof.

Hardened and deteriorated sealants were noted on the joints of parapet flashing.

End of Low Slope Roofing - BUR (Building A) Section

4.2.4 Low Slope Roofing - PVC (Building B)						
General Condition						
Installed / Replaced	2007		**Typical Service Life**	- 15 – **20** – 25 +		
Priority	☐ Safety	☐ Structural	☐ Code	☑ Function	☐ General	☐ None
Condition	☐ Good	☐ Good / Fair	☐ Fair	☐ Fair / Poor	☑ Poor	

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$22,480	1249 sq. ft.	0 – 2 Years	Recommended	Replace PVC roof membrane
n/a	Item	As required	Operating	Clean the debris atop the roof to allow drainage.
Design & Specification Recommended: ☑			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations				
Tenting	☑ Severe	☐ Moderate	☐ Minor	☐ None
Seam Problems	☐ Severe	☑ Moderate	☐ Minor	☐ None
Ponding	☑ Severe	☐ Moderate	☐ Minor	☐ None
Reported Roof Leaks	☐ Yes		☑ No	

- The low slope roof atop the Building B consists of a single ply PVC roof membrane system.
- As per information provided the roof was likely replaced in 2007 (i.e., 13 years old).
- The roof membrane was noted in poor condition with deficiencies in the form of tenting along base of the parapets and surface deterioration.
- Debris accumulation and organic growth were noted on the roof.
- The roof membrane is nearing the end of its useful life and will require replacement within the 0 to 2 years.

General Comments

- Annual walk around review is recommended by a qualified consultant to ensure the integrity of the roof system and to extend the service life.
- Before undertaking any repairs to the roofing membrane always check the installers warranty statement so as to avoid invalidating any warranty.

Photographs

General view of the PVC membrane atop Building B.

Deteriorated surface of the PVC membrane.

Debris accumulation and growth on the roof.

Wrinkled and tented membrane noted along the roof edge.

Ponding water and deteriorated membrane atop the roof.

Tenting was noted to be severe along the west edge.

End of Low Slope Roofing - PVC (Building B) Section

4.2.5 Low Slope Roofing - Exposed Concrete (Building C)						
General Condition						
Installed / Replaced	1989		**Typical Service Life**	- 25 – **35** – 45 +		
Priority	☐ Safety	☐ Structural	☐ Code	☑ Function	☑ General	☐ None
Condition	☐ Good	☑ Good / Fair	☐ Fair	☐ Fair / Poor	☐ Poor	

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$8,800	550 sq. ft.	2 - 5 Years	Recommended	Install a waterproofing membrane on the concrete decking of the roof.
n/a	Item	As required	Operating	Fix minor leaks, small repairs under $500
Design & Specification Recommended: ☑			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations

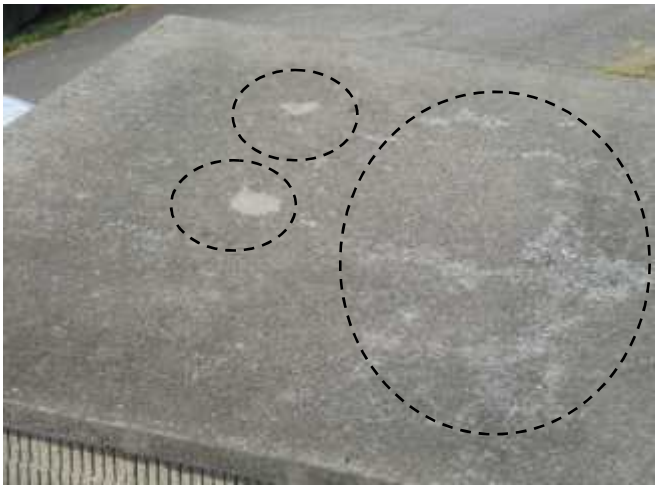
- The roof of Building C consists of exposed concrete surface of a composite (i.e., concrete laid within steel pan) decking. Urethane based Sprayed Foam Insulation has been installed on the underside of the underside of the decking.
- This particular type of decking is not designed for exterior usage without waterproofing on top of it. Concrete is porous by nature and being exposed to all weather elements will cause the water to infiltrate the decking cause delamination and corrosion, as such IRC recommends that a roofing membrane is installed atop the decking.
- Areas of cracking, delamination, pitting and previous repair patches were noted on the roof of Building C.
- Due to presence of spray foam insulation on the underside of decking the condition of steel portion of the decking could not be determined. However, some areas of staining were noted on the underside of the decking.
- Corrosion was noted on the open web steel joists supporting the composite decking.

General Comments

- Annual walk around review is recommended by a qualified consultant to ensure the integrity of the roof system and to extend the service life.
- Before undertaking any future repairs to the roofing membrane always check the installers warranty statement so as to avoid invalidating any warranty.

Photographs

General view of exposed concrete decking atop Building C.



Evidence of previous repairs and damaged concrete decking was noted on the roof.

Surface pitting noted on the exposed roof concrete.

Heavy corrosion noted on the open web steel joist systems supporting the roof decking.

End of Low Slope Roofing - Exposed Concrete (Building C) Section

4.2.8 Concrete Block Masonry												
General Condition												
Installed / Last Major Repairs	varies			**Typical Restoration Period**	- 15 – **20** – 25 +							
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☑	Fair / Poor	☐	Poor	☐	Very Poor

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$10,500	Item	2 - 5 Years	Recommended	Allowance for general block masonry repairs
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations							
Cracks	☐	Severe	☑	Moderate	☐	Minor	☐ None
Spalling	☐	Severe	☐	Moderate	☑	Minor	☐ None
Efflorescence	☐	Severe	☑	Moderate	☐	Minor	☐ None
Mortar Joint Problems	☑	Severe	☑	Moderate	☐	Minor	☐ None

Building A:

- In Building A, the concrete block masonry is mostly protected behind metal cladding.
- In Building A, the south wall was constructed in 2007 while masonry in other walls are likely to be original (i.e., more than 30 years old).
- Areas of efflorescence and masonry deterioration were noted on the interior face of the walls in Building A.

Building B:

- In Building B, the block masonry is a decorative split-face block.
- Areas of mortar joint deterioration were noted on the exterior walls of Building B.
- Moisture staining was noted on all elevations of Building B. Moisture damage and missing mortar were noted at the corner of the window on the south wall.
- Efflorescence was noted on the lower layer of concrete block masonry on the south wall of Building B.
- Missing section of a downpipe appears to have caused water damage on the north elevation of Building B.
- An unsealed pipe penetration was noted on the north elevation of Building B.

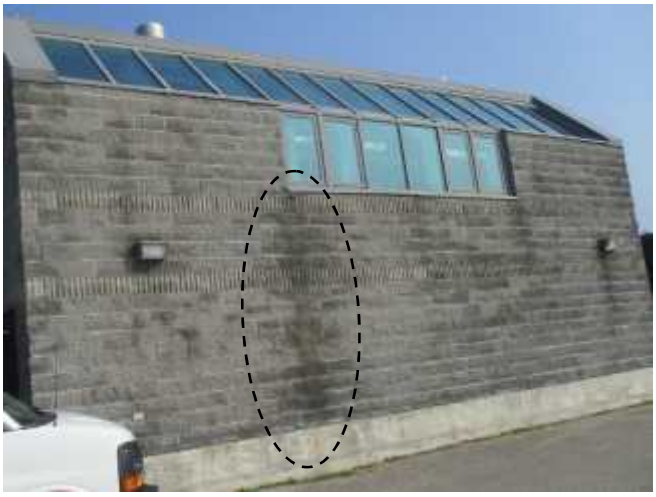
Building C:

- In Building C, the exterior walls consist of vertical split faced concrete block masonry.
- Spalled masonry units were noted on all elevations of Building C.
- IRC recommends that a phased allowance be carried regular general repairs of the exterior walls every 10-years beginning in 2 – 5 years.

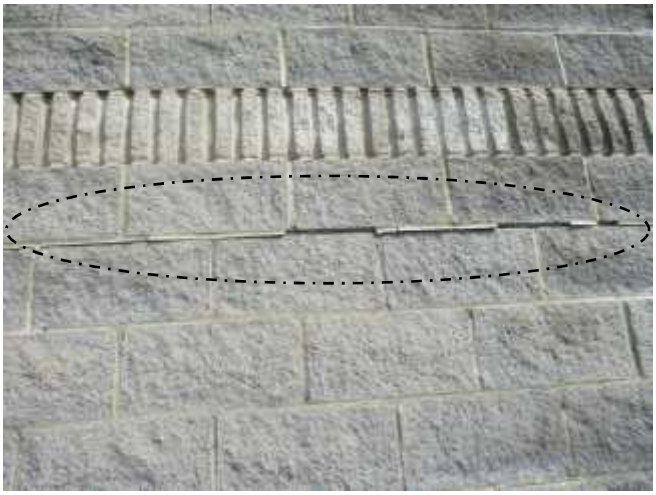
General Comments

- The typical life of concrete block masonry is equal to the life of the property, i.e., 80+ years; however, it may be expected that masonry repairs will be required approximately every 10- year period.
- Budgetary costs include for general masonry repairs such as repointing of failed mortar joints, rebuild of cracked or spalled areas, foundation parging repairs etc. The cost do not account for major structural repair or reconstruction of the

General Comments
concrete block masonry as a whole.

Photographs	
 Moisture staining and efflorescence were noted on the interior walls of Building A.	 The east and south walls appeared in better condition than the west wall.
 Moisture stained walls on the south elevation of Building B.	 Missing mortar was noted below corner of the window.

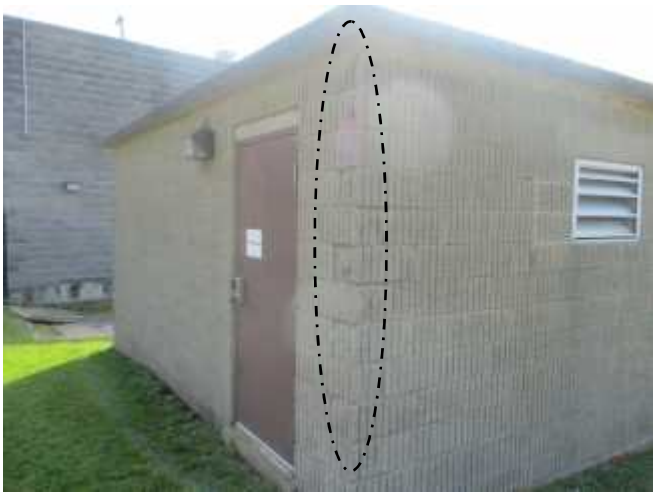
Photographs



Areas of damaged mortar joints were noted on all elevations of Building B.

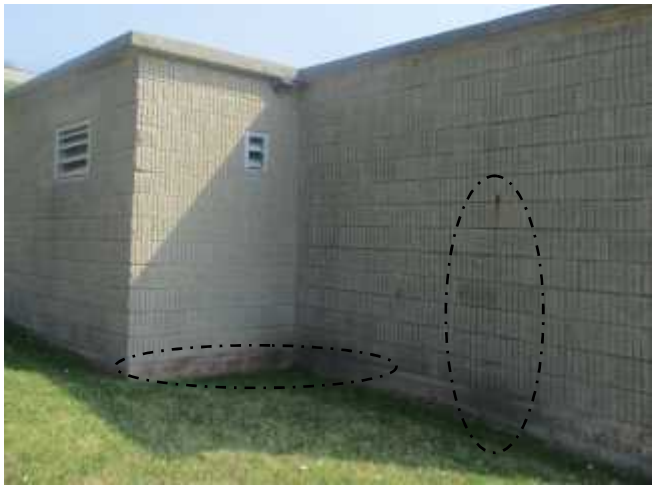
Missing piece of a downpipe on the north elevation of Building B.

Unsealed pipe-penetration on the north wall of Building B.



Spalled concrete blocks on the northwest corner of Building C.

Spalled concrete blocks on the southeast corner of Building C.



Moisture staining and damaged on the north elevation of Building C.

End of Concrete Block Masonry Section

4.2.10 Siding - Building A												
General Condition												
Installed / Replaced	varies			**Typical Service Life**	- 25 – **35** – 45 +							
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☑	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☑	Varies

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$16,270	2541 sq. ft.	5 - 10 Years	Allowance	Replace all original siding.
n/a	Item	As required	Operating	Fix minor damaged sections, loose siding etc.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations							
Siding Type	☐	Vinyl	☑	Aluminum	☐	Metal	☐ Wood

- The exterior walls of Building A are cladded with prefinished metal siding on all elevations.
- Based on the observations and provided documentation, the siding on the south elevation appears to have been installed in 2007 while the remaining appeared to be older.
- Impact damaged areas were noted on the north and west elevations of Building A.
- The siding on the west and north elevations was noted to be fading with some areas of staining and damaged noted throughout.
- Replacement of siding may be considered by the client as an aesthetic preference as the current siding despite the dated look is considered to be functional.

General Comments

- The eventual replacement of the siding may be coordinated with replacement of similar components such as soffits and Fascias for cost efficiency and improved detailing at any joint/interfaces.
- Consideration may be given to cleaning the siding every few years to maintain the finish and for appearances. Routine reviews and maintenance is required to prevent more costly future repair. Cleaning of the siding should be done with a soft broom and garden hose with medium pressure nozzle. Do not use high pressure or a power washer that may penetrate water behind the siding.
- The typical service life of siding is 30+ years and is often replaced for aesthetic reasons rather than failure of the siding.

Photographs

View of prefinished metal siding on north (right) and west (left) elevations of Building A.

Impact damage on the cladding on the west elevation of Building A.

Damaged siding on the north elevation of Building A.

Prefinished metal siding on the south elevation was noted to be in good condition.

End of Siding - Building A Section

4.2.14 Windows												
General Condition												
Installed / Replaced	2007			**Typical Service Life**	- 25 – **30** – 35 +							
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☑	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☑	Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$18,650	278 sq. ft.	20 – 25 Years	Allowance	Future allowance for replacement of windows of Building B.
$3,520	44 Sq. Ft.	0 - 2 Years	Recommeded	Replace the windows of Building A.
n/a	Item	As required	Maintenance	Replace weather-stripping and latches, lubrication, cleaning, repairs of insect screens etc.

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

General window construction	The windows of Building A are located with the second level, office area consisting of aluminum frames with Insulated Glass (IG) units. The window on the north elevation is a fixed IG panel set atop operable (horizontally sliding units). The window on the east elevation consists of horizontally sliding panels. The windows were dated 1989 on their spacers. In Building B: Windows are located on the south elevation. The windows consist of fixed, sloped IG units in metal frames in a horizontal strip configuration along the roof line. Additionally, there are six panels, two fixed and four operable (i.e., casement) IGUs located on the top portion of the south wall. Based on the date stamp on the window spacers they are installed in 1992.

- Evidence of heavy leakage and mould growth was noted on the interior window sill of Building A. The windows of Building A appeared in poor condition.
- IRC recommends and has carried an allowance to replace the windows of Building A within the 0 to 2 years. IRC also recommends that the interior frames of the windows and the wall assembly within the vicinity of the window openings, be investigated for presence of mould.
- The windows of Building B were noted to be in fair to good condition. Assuming regular general maintenance is completed, no major expenditures are anticipated within the early portion of the term of analysis.
- Windows of Building B are south facing and some are sloped at an angle to allow maximum influx of sunlight. This reportedly results in overheating of the Building in summer months. IRC recommends that consideration be given to installing mechanical sun-shades on the windows. Since installing shades will be considered an upgrade and outside the scope of this assessment, no costs have been carried.

General Comments

- Replacement of weather-stripping, repairs to damaged screens and lubrication and adjustment of windows are considered to be operating expenditure.
- The construction of the windows may have a bearing on the degree of condensation noted on the windows, i.e. single or double glazed, thermally broken, window material etc.; however, the humidity and building use also have a large impact on the degree of condensation.
- The window perimeter sealant has been addressed under the Sealants/Caulking component.
- Budgetary costs for window replacement may be highly variable depending upon the style and construction of window selected by the Client.
- Government grants may be available for new window installation.

Photographs

Exterior view of the window on the north elevation of Building A.

Evidence of heavy leak and mould growth on the window frame was noted on the north face of Building A.

View of windows on the south elevation of Building B.

Interior view of the sloped window panels on the south elevation of Building B.

End of Windows Section

4.2.15 Skylights - Building B												
General Condition												
Installed / Replaced	2007			**Typical Service Life**			- 25 – **30** – 35 +					
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☑	Varies

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$7,000	2 No.	0 - 2 Years	Allowance	Replace the failed and leaking skylights
$3,500	25%	5 – 10 Years	Contingency	Contingency allowance for replacement of skylights as they fail.
n/a	Item	As required	Maintenance	Replace weather-stripping and latches, lubrication, cleaning.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations

General window construction	The skylights are essentially dome-shaped transparent acrylic roof hatches located on the north portion of the roof of Building B.

- The hermetic seal between the acrylic panels of one of the skylights was noted to have failed. This was evident through the presence of condensation between the acrylic panels.
- Moisture/corrosion staining was noted on the inner side of a skylight frame opening. This is more likely due to failure of the perimeter sealants. Other skylights were noted to be in fair to good condition.
- The perimeter sealants are anticipated to be replaced in conjunction with roof replacement cycles.
- The skylights were likely replaced in 2007 as shown on the repair design drawings.
- IRC has carried a contingency allowance to replace the skylights every 10 years being in year 0 with the replacement of the failed an leaking ones.
- It is recommended to install vinyl framed units incorporating thermal break, gas filled IGUs with low-e coatings at the time of replacement.

General Comments

- The construction of the skylights may have a bearing on the degree of condensation noted on the windows, i.e. single or double glazed, thermally broken, material etc.; however, the humidity and building usage also have a large impact on the degree of condensation.
- Budgetary costs for skylight replacement may be highly variable depending upon the style and construction of units selected.
- Government grants may be available for new energy efficient system installation. .

Photographs

Presence of condensation between the panels of the skylight indicates failure of the hermetic seal.

Moisture staining on the inner side of the skylight opening indicates leakage, likely caused by failure of perimeter sealant.

Apart from the two, all other skylights were noted to be in fair to good condition.

End of Skylights - Building B Section

4.2.21 Exterior Doors - Entrance Doors												
General Condition												
Installed / Replaced	1989			**Typical Service Life**	- 30 – **35** – 40 +							
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☑	Fair / Poor	☐	Poor	☐	Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$12,500	5 No.	2 - 5 Years	Recommended	Replace all exterior doors
n/a	Item	As required	Maintenance	Replace weather-stripping & hardware, lubrication and adjustment etc.

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

- The entrance doors consist of painted hollow metal service doors consisting of single and one double door located on the east elevation of Building B.
- The doors despite being functional were noted to be in poor condition with faded finish and corrosion of the frames and hardware.
- The entrance doors were noted to be difficult to operate.
- Unsealed holes were noted on the double doors of Building B.

General Comments

- Replacement of weather-stripping, replacement hardware, lubrication and adjustment of the doors are all considered to be maintenance.
- Painting of the exterior doors has been accounted for in the Exterior Painting component of this report.
- The door perimeter sealant has been addressed under the Sealants/Caulking component.
- The service life of exterior doors may be highly variable due to the treatment and care by users.
- Government grants may be available for new exterior door installation.

Photographs

View of the secondary entrance door to Building A.

View of main entrance to the main entrance.

Unsealed holes on the secondary entrance door of Building B.

Fading and deteriorated finish on entrance of Building B.

Secondary entrance door to the basement of Building C was noted to be difficult to operate.

Corrosion was noted on the main entrance door and door hardware of Building C.

End of Exterior Doors - Entrance Doors Section

4.2.22 Exterior Doors - Metal Roll-up						
General Condition						
Installed / Replaced	1989		**Typical Service Life**	- 30 – **35** – 40 +		
Priority	☐ Safety	☐ Structural	☐ Code	☐ Function	☐ General	☑ None
Condition	☐ Good	☐ Good / Fair	☐ Fair	☑ Fair / Poor	☐ Poor	

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$7,000	2 No.	10 - 20 Years	Projected	Replace the metal roll-up doors at the end of their useful life.
n/a	Item	As required	Maintenance	Replace weather-stripping & hardware, lubrication and adjustment etc.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations

- There are two metal roll-up doors in Building A; one on the west elevation and one on the north elevation.
- The west door serves a loading dock. The doors appeared to be old however, intact, during the site visit.
- It is not clear whether these doors are used at present or will be used in the near future.
- Being capital items, a replacement allowance has been carried in 10 years as the doors will reach the end of their useful life.

General Comments

- Replacement of weather-stripping, replacement hardware, lubrication and adjustment of the doors are all considered to be maintenance.
- A contingency for replacement of failed door hardware has been accounted for in the Small Capital Costs component of this report.
- The door perimeter sealant has been addressed under the Sealants/Caulking component.
- The service life of exterior doors may be highly variable due to the treatment and care by building users.

Photographs

Prefinished metal roll-up door on the north elevation of Building A.

Metal roll-up door serving a loading dock on the west elevation of Building A.

End of Exterior Doors - Metal Roll-up Section

4.2.39 Sealants/Caulking												
General Condition												
Installed / Replaced	1989			**Typical Service Life**	- 8 – **12** – 16 +							
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☑	Poor		

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$3,200	800 ft.	0 - 2 Years	Recommended	Replace all sealants at the perimeter of windows, doors and louvers as well as the control joints
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations							
Dry / Cracked	☑	Severe	☐	Moderate	☐	Minor	☐ None
Split / De-bonded	☑	Severe	☐	Moderate	☐	Minor	☐ None

- Sealants are at the perimeter of windows, doors, louvers, the control joints and at the flashing joints on the parapet walls of the roof.
- The sealants at the roof flashings are expected to be replaced in conjunction with roof replacement cycles.
- The allowance carried here are for replacement of the sealants at the perimeter of the windows, doors, ventilation louvre openings and the control joints.
- Sealant was missing at a wall penetration on the north elevation of Building B. IRC recommends that all penetrations (wire, ducts, and plumbing) be sealed to avoid water infiltration within the wall cavity.
- All of the sealants observed were very poor with cracks, splitting and de-lamination noted. Poor sealants will result in air leakage and poor weather seals.

General Comments

- The purpose of the perimeter and control joint caulking is to prevent moisture entry and air filtration to ensure the integrity of the building envelope and internal climate.
- The service life of sealants/caulking is highly variable depending upon the type of sealant used (silicone or polyurethane), exposure to weather elements, cleanliness of preparation and the standard of installation by the contractor.
- Careful selection of sealants is required to ensure compatibility and correct adhesion with the adjacent materials.

Photographs

Window perimeter sealants were noted to be in poor condition in Building A.

Deteriorated sealants at perimeter of a garage door of Building A.

Split sealants around the windows of Building B.

Deteriorated sealants at the door perimeter of Building C.

Photographs

An unsealed pipe penetration on the exterior wall of Building B.

End of Sealants/Caulking Section

4.3 Building Interior Components

4.3.3 Washroom - Building A

General Condition

Installed / Replaced	1989			**Typical Upgrade Period**	- 15 – **20** – 25 +						
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☑	General	☐ None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☑	Poor	

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$5,200	Item	0 - 2 Years	Recommended	Allowance for upgrades to bathrooms

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☐

Observations & Recommendations

- The washroom located on the second level of Building A, appeared to be in poor condition.
- It appears that the washroom has not been used for a long time.
- In order to bring it to a functional state a full renovation will be required. Alternatively, the washroom along with piping and other plumbing fixtures must be removed to avoid structural deterioration caused by leaking fixtures and plumbing (see section 4.3.10).

General Comments

- The service life of the bathroom components is highly variable depending upon the treatment and care from users.
- Bathroom upgrades include for replacement of vanity and wash basins.
- Basin faucets, shut-off valves etc., should be reviewed during annual reviews to extend the service life of the components. This is considered to be an operating expenditure.
- Replacement of bathroom exhaust fan is also included in the budget.

Photographs

The bathroom fixtures and finishes appeared in poor condition.

End of Washroom - Building A Section

4.3.10 Interior Finishes - Building A												
General Condition												
Installed / Replaced	1989			**Typical Service Life**	- 15 – **25** – 35 +							
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☑	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☑	Poor		

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$6,500	Item	0 - 2 Years	Allowance	Allowance for flooring replacement within the second level of Building A.
$4,000	Item	0 – 1 Years	Optional	Allowance for a feasibility/decommissioning assessment of Building A.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations

- The interior finishes within the second floor office of Building A appeared to be in poor condition throughout.
- The second floor of Building A appeared derelict and in poor condition.
- Water damage was noted on the window sills, mould growth is also suspected within the wall assembly.
- The allowance carried here is to make the space suitable for use as offices and must be considered preliminary, as the actual cost will depend on the level of finishes chosen and future intended use of the second floor of the building.
- If the client does not intend to use the second floor office space of Building A, then IRC recommends it to be decommissioned properly. At the time of the site visit the office portion of Building A was noted have acquired a derelict look and appeared to be in a state of disrepair. Any items that are not used (furniture/plumbing/electrical/mechanical) must be removed and disposed-off rather than leaving them in-situ to further deteriorate.
- IRC has carried an optional allowance to conduct a feasibility assessment to explore renovation vs downsizing/removal/decommissioning options of certain features of Building A. The assessment will help the client see the long-term cost benefits or renovating or downsizing/decommissioning certain features of Building A and help them make an informed decision regarding the future of this Building. .

General Comments

- Timely repairs to damaged or loose edges and seams of sheet vinyl are recommended to extend the service life of the flooring.
- The typical service life of sheet vinyl is 15 – 20 years, vinyl composite tile (VCT) 20 – 25 years and ceramic tiling 30 – 40 years.

Photographs

General view of interior finishes within the second floor of Building A.

Interior finishes within an office space on the second floor of Building A.

Flooring within the corridor of the second floor of Building A.

Moisture damage on the window sill on the north portion.

End of Interior Finishes - Building A Section

4.4 Mechanical & Plumbing Systems

4.4.1 Ventilation Units

General Condition

Installed / Replaced / Refurbished	2007			**Typical Service Life**			- 20 – **25** – 30 +				
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐ None
Condition	☐	Good	☑	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☐ Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$15,000	6 No.	0 - 2 Years	Projected	Phased allowance for replacement of ventilation units.
$3,500	1 item	0 – 1 Year	Option	Optional cost to complete a specialist assessment of the ventilation system of Building B.

Design & Specification Recommended: ☑ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

- The buildings are equipped with wall and roof mounted hooded exhausts and ventilation fans.
- In addition to the fan units the buildings are equipped with ventilation louvres, air intake systems and dampeners.
- The ventilation systems exhibited some surface corrosion on the dampeners.
- IRC has carried a phased allowance to replace these ventilation units on an as needed basis or as they fail.
- It was reported to IRC that some of the ventilation units of Building B do not work properly and Building B overheats in summer. IRC recommends that an in-depth assessment of the mechanical units of Building B be completed by a qualified mechanical consultant and an option to install a de-humidification unit be considered. As Building currently does not have an air conditioning/de-humidification unit, installation will be considered an upgrade and outside the scope of work for BCA, as such, no costs have been added.

General Comments

- Regular maintenance of the ventilation system is required to achieve or extend the expected design life of the component, i.e. replace filters, clean unit and fan blades, preventative maintenance (PM). This is considered to be operating expenditure.

Photographs

Hooded ventilation fan on the east elevation of Building A.

Ventilation louvre on the west elevation of Building A.

Rooftop hooded ventilation units atop Building B.

Air intake units on the roof of Building B

Wall-mounted hooded ventilation units serving Building C.

Interior view of emergency air intake unit in Building C.

End of Ventilation Units Section

4.4.3 Electric Space Heaters												
General Condition												
Installed / Replaced	varies			**Typical Service Life**	- 18 – **23** – 28 +							
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☑	Varies

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$10,000	10 No.	0 - 2 Years	Recommended	Phased allowance to replace the heaters.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations

- The Buildings are heated by suspended electric space heater units.
- The heaters were noted to consist of various sizes and conditions.
- Some of the units were noted to be in poor condition.
- Given their varying condition and age, IRC has carried a phased allowance to cover their replacement over a period of 10-years.

General Comments

- Regular maintenance of the heaters is required to achieve or extend the expected design life of the component, i.e., clean appliance, annual preventative maintenance (PM). This is considered to be operating expenditure.

Photographs

An older space heater in Building A.

Typical heater unit within Building B.

Photographs

An heater unit in Building C.

End of Electric Space Heaters Section

4.4.16 Domestic Hot Water (DHW) Heater

General Condition

Installed / Replaced	varies			**Typical Service Life**		- 10 – **13** – 16 +					
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐ None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☑	Poor	☐ Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$3,500	1 Item	0 – 2 Years	Recommended	Allowance for replacement of the DHW tank in Building A.

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☐

Equipment Data

Hot Water Heaters	One (1), 3,000 Watt, 'Cascade 40'.electrical DHW heater unit

Observations & Recommendations

- The DHW heater is located on the second floor of building A.
- The DHW appeared to be non-functioning at the time of site visit.
- IRC has carried an allowance to replace the heater with a similar sized functioning unit within the early portion of the term of analysis.

Photographs

DHW heater on the second floor of Building A.

End of Domestic Hot Water (DHW) Heater Section

4.5 Electrical Systems

4.5.1 Power & Distribution

General Condition

Installed / Replaced	1989			**Typical Service Life**			- 40 – **50** – 60 +				
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☐	General	☑ None
Condition	☑	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☐ Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$50,000	Item	10 - 20 Years	Allowance	Allowance for replacement/re-build of electrical switchgear & common electrical panels

Design & Specification Recommended: ☑ Project Management & Quality Control Recommended: ☑

Equipment Data

Main Distribution Building A	600A, 600V 3 Phase, 4 wire Square D Disconnect Switch
Main Distribution Building B	600A, 600V 3 Phase, 4 wire Square D Disconnect Switch

Observations & Recommendations

- The main distribution is located on the main floor of Building A and is supplied from a pad-mounted transformer located outside adjacent to the west elevation.
- There is sub-panel located on the mezzanine level in Building B.
- The vicinities of the electrical panels were noted to be clear of obstructions.
- All electrical components observed appear to be in good condition with no apparent signs of sub-standard work.
- The electrical circuits are identified and labelled on the electrical panel doors. The circuits are not verified for accuracy of identification label.
- It is considered that under normal conditions the main distribution switchgear should last the life of the building; however, replacement or a major re-build may be required due to parts becoming obsolete. An allowance has been accounted for in the Table of Expenditures for potential major repairs during the life of the equipment; however, this can be re-assessed in later years to determine the requirement, if any, for replacement/re-build.

General Comments

- This report does not include a review of the adequacy of the original design or a review of the safety aspects of the installation as this falls under the jurisdiction of Electrical Safety Authority (ESA).
- This item accounts for potential replacement or major upgrade to the electrical distribution equipment. Wiring is assumed to last the life of the building.
- Electrical devices such as switches, receptacles, light fixtures etc., should be replaced on an as needed basis as part of operating budget.
- Under normal operating conditions, common area panels will not be changed during the life of the building. Replacement may be required due to spares and parts being obsolete rather than failure of the components.
- Preventative maintenance of the electrical service and distribution is recommended. The scope of the work would include verifying the torque on the main terminal lugs and branch breakers, checking loading on circuits to identify hot spots, identifying and correcting evidence of arcing, test breaker trips. This is considered to be operating expenditure.

Photographs

Main electrical distribution and disconnect switch serving all buildings.

Sub- panels within building B.

End of Power & Distribution Section

4.5.11 Interior Lighting Fixtures						
General Condition						
Installed / Replaced / Upgraded	2007		**Typical Service Life**	- 15 – **20** – 25 +		
Priority	☐ Safety	☐ Structural	☐ Code	☐ Function	☐ General	☑ None
Condition	☐ Good	☑ Good / Fair	☐ Fair	☐ Fair / Poor	☐ Poor	

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$6,300	Item	5 - 10 Years	Allowance	Upgrade all interior lighting to energy efficient lighting.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations

- All rooms are controlled by manual light switches. Consider installing occupancy motion sensor switches in all storage and utility rooms, or rooms that are infrequently used.
- Lighting fixtures predominantly consisted of T8 fluorescent tubes installed in diffusers.
- Over all the lighting components were noted to be functional for the current building use.
- Energy efficient LED lights will reduce operating and maintenance costs in the long run.
- The allowance carried here is to cover the cost of future replacements and functional upgrades to the lighting systems.

General Comments

- The lighting was not examined to determine adequate levels of lighting other than areas where it is inherently apparent that the lighting levels are below that what would be expected to be the norm.
- Replacement of individual failed lighting fixtures is considered to be an operating expenditure.
- Lighting fixtures may be replaced for energy efficiency reasons rather than failure of the component.

Photographs

Light fixtures suspended at the ceiling.

Typical light fixtures and diffusers in Building B.

Photographs

Typical light panels in Building C.

End of Interior Lighting Fixtures Section

4.5.17 Emergency Generator & Transfer Switch												
General Condition												
Installed / Replaced / Re-built	1989			**Typical Service Life**			- 25 – **30** – 35 +					
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☑	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	☐	Very Poor

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$45,000	Item	5 - 10 Years	Projected	Replace generator and transfer switch
Design & Specification Recommended: ☑			Project Management & Quality Control Recommended: ☑	

Equipment Data	
Generator	Kohler Power Systems – Unknown size
Diesel Storage Tank	CF Industrial Products Inc.

Observations & Recommendations

- In the event of an emergency, this generator provides power to emergency exit lights, emergency lighting, and pumps that serve the operations within the service buildings. .
- Generator and diesel storage tank are located on the east portion of the site.
- Age and correct size of the generator is unknown.
- The records for the running of the generator were not viewed by IRC.

General Comments

- CSA C282-15 - Emergency Electrical Power Supply for Buildings standard requires that emergency generators are tested monthly at full load for 60 minutes. Records are required to be kept of the test results for the running of the generator.
- The service life of this component is highly variable depending on the amount of run-time the generators operates in a life-time; but more importantly depending upon regular and routine review and preventative maintenance.
- Single wall storage tanks must be located within dyke walls to contain any leaks that may development during the life of the storage tank. Double wall storage tanks may be installed without dyke walls. All storage tanks must be vented directly to the exterior and must bear a ULC label. Underground storage tanks are required to be replaced every 20 years.
- Emergency generators provide backup power to building services such as emergency lighting, exit signs, elevators, sprinkler pumps and fire alarm controllers such that the occupants may safely evacuate the building in the event of an emergency. Other building components may also be powered by the generator including make-up air units, sump pumps, domestic water pumps, and exhaust fans – the inclusion of these components is discretionary.
- The Ontario Building Code requires the runtime of an emergency system to be at least 30 minutes if 6 storeys or less and at least 2 hours if greater that 6 storeys.

Photographs

Generator set on the east portion of the site.

Generator storage tank.

End of Emergency Generator & Transfer Switch Section

4.6 Fire & Life Safety Systems

4.6.1 Fire & Life Safety Components -All Buildings

General Condition

Installed / Replaced	2007			**Typical Service Life**	- 20 – **25** – 30 +						
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☐	General	☑ None
Condition	☐	Good	☐	Good / Fair	☑	Fair	☐	Fair / Poor	☐	Poor	☐ Very Poor

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$6,300	Item	5 - 10 Years	Allowance	Allowance for general upgrades to fire safety systems.

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☐

Observations & Recommendations

- This item accounts for upgrades to fire safety components in the Common Unit such as Exit signs, fire extinguishers, emergency lighting and smoke detectors.
- The service life of these components varies greatly.
- The fire extinguisher in Building B was noted on the floor. IRC recommends that it be secured to a wall.
- Emergency lighting located in throughout the buildings.
- Exit sign were located above all required exit doors, and appear to be adequately positioned to direct occupants to the nearest exit. Some exit signs with burnt-out bulbs were noted.
- There were no reports of concerns or problems with the current fire safety components. Any issues that may arise should be addressed immediately with the servicing contractor.

General Comments

- The review of the fire alarm and life safety components is a visual review only for the purpose of this building condition assessment. The review did not include for any physical testing of the components to verify correct operation.
- It is mandatory that the fire alarm system components are to be reviewed and tested annually. This is considered to be operating expenditure.
- It is not mandatory to install carbon monoxide detectors in existing buildings to meet current code requirements; however, it is highly recommended as a Life Safety concern.
- It is recommended that battery or hard wired smoke alarms be installed.
- Portable fire extinguisher replacement is legislated by the Ontario Fire Code. The fire extinguishers should be reviewed annually.

Photographs

Typical portable fire extinguisher in Building A.

Portable fire extinguisher located on the floor near the entrance of Building B.

Fire extinguisher on the mezzanine level of Building B.

Typical emergency light and battery pack located within Building A.

Typical emergency light and battery pack located within Building B.

An exit sign with burnt-out light bulb in Building B.

End of Fire & Life Safety Components -All Buildings Section

4.8 Site Components

4.8.1 Asphalt Pavement

General Condition

Installed / Replaced	1989			**Typical Service Life**	- 20 – **25** – 30 +						
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☑	General	☐ None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☑	Fair / Poor	☐	Poor	

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$165,000	27500 sq. ft.	2 - 5 Years	Recommended	An allowance for repaving of the site asphalt.

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☑

Observations & Recommendations

Settled	☐	Severe	☑	Moderate	☐	Minor	☐ None
Cracked	☑	Severe	☐	Moderate	☐	Minor	☐ None
Rutting	☐	Severe	☐	Moderate	☑	Minor	☐ None

- Asphalt paving includes general access road around site that starts at the gate northeast of Building A and provides vehicular access to Buildings B and C. Also included in this allowance are the areas adjacent to north and west elevations of Building A
- On the north portion near the entrance severe alligator cracking was noted. Areas of moderate to severe cracking were also noted in the central and south portions.
- At some areas vegetation growth was noted on the asphalt pavement.
- Areas of longitudinal cracks and surface degranulation were also noted throughout.
- IRC has carried a phased allowance for the resurfacing of asphalt pavement within the 2 – 5 years. This will allow the client to prioritize the work based on the condition of asphalt pavement.

General Comments

- Petroleum products such as gasoline and oil will increase the deterioration of asphalt paving, breaking down the bond between asphalt and aggregate. This will shorten the service life of the paving; hence cleaning of oil stains is recommended as part of the regular maintenance.
- Settlement and rutting of asphalt paving may shorten the service life of the paving as moisture can seep into the paving and base course, causing soft spots and erosion, and also spalling of the asphalt during freeze/thaw cycles. Cut and patch repairs will extend the service life of the paving as a whole.
- Thermal expansion and contraction may cause longitudinal cracks in the paving, allowing moisture to seep in causing spalling of the asphalt during freeze/thaw cycles and shortening the service life. Routing and sealing of the asphalt will extend the service life of the paving as a whole.
- The service life of asphalt paving is highly variable depending upon the quality of installation, amount of vehicle usage and weight of vehicles and correct design for such vehicles.
- Budgetary costs include for milling and overlay of the existing asphalt paving. Increased cost may be expected for repairs to any soft spots in the base course.

Photographs

Asphalt pavement deterioration manifested in the form of severe alligator cracking on the north portion of the site.

General view of asphalt pavement roadway at the central portion of the site. Areas of longitudinal cracks noted.

Cracking and growth within the cracks of the asphalt pavement.

Cracking and growth within the cracks of the asphalt pavement.

End of Asphalt Pavement Section

4.8.4 Concrete Components												
General Condition												
Installed / Last Major Repairs	2007			**Typical Restoration Period**	- 10 – **15** – 20 +							
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☐	General	☑	None
Condition	☑	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor		

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$2,500	Item	5 - 10 Years	Allowance	Replace/repair of damaged concrete components
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations

- The concrete components at the site include concrete pads and walls around the transformer.
- Concrete components were noted to be in generally good condition.
- Typically an allowance of 10% of the total concrete costs will be accounted for every 15 years based upon the degree of concrete damage noted during the site review. As the concrete was noted to be in good condition the allowance has been deferred to 7 years.

General Comments

- The typical life of concrete components is 50+ years, and complete replacement of concrete components would not be expected in any one period.
- The degree of concrete damage is highly variable and factors such as concrete strength, correct design of concrete mix and quality of sub-base preparation will affect the potential for concrete failures.
- Budgetary costs account for a replacement of a portion of the total concrete replacement costs. The cost allocated is a contingency and is not actual calculated costs based upon the deficiencies noted on site.

Photographs

Concrete screen walls near the transformer were noted to be in good condition.

Concrete pad at the entrance to Building B.

Photographs

Concrete pad adjacent to the south elevation of Building B, likely atop an underground storage tank was noted in good condition.

End of Concrete Components Section

4.8.14 Chain Link Fencing						
General Condition						
Installed / Replaced	1989	**Typical Service Life**	- 25 – **30** – 35 +			
Priority	☐ Safety	☐ Structural	☐ Code	☐ Function	☐ General	☑ None
Condition	☐ Good	☐ Good / Fair	☑ Fair	☐ Fair / Poor	☐ Poor	

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$13,750	550 ft.	5 - 10 Years	Projected	Replace all chain link fencing
n/a	Item	As required	Operating	Fix minor sections of damaged fence, small repairs under $500
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations								
Leaning	☐	Severe	☐	Moderate	☑	Minor	☐	None
Damaged / Broken	☐	Severe	☐	Moderate	☐	Minor	☑	None
Corroding	☐	Severe	☑	Moderate	☐	Minor	☐	None

- There is galvanized chain link fencing and gate located northeast of Building A. Chain link fencing also exists on east and south of Building A.
- The fencing appeared to be intact for the most part with some areas of surface corrosion on the posts.
- On the south portion minor leaning was also noted.
- Given that regular general maintenance is completed, no major expenditures are anticipated within the next 3 to 5 years.

General Comments

- The service life of chain link fencing can be highly variable, and is generally more dependent upon damage from vandalism or mistreatment rather than failure of the fencing.
- Minor repairs to damaged sections of chain fencing and re-setting of posts is considered to be operating expenditure.
- Timely repair and maintenance is recommended for overall curb-appeal of the property.

Photographs

General view of the fencing south of Building A.

Areas of corrosion noted on the posts.

End of Chain Link Fencing Section

4.8.19 Site Lighting

General Condition

Installed / Replaced	2007			**Typical Service Life**	- 25 – **35** – 45 +						
Priority	☐	Safety	☐	Structural	☐	Code	☐	Function	☐	General	☑ None
Condition	☑	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☐	Poor	

Summary Budgetary Costs

Budgetary Cost (2020)	Quantity	Expenditure Recommended	Expenditure Type	Summary Recommendation
$10,500	3 No.	10 - 20 Years	Projected	Replace the site lighting.

Design & Specification Recommended: ☐ Project Management & Quality Control Recommended: ☐

Observations & Recommendations

- Site lighting is provided by light fixtures mounted on 20' high painted steel posts installed on concrete footings.
- The posts and footing appeared in good condition. Site visit was conducted during day light hours and the lights were not tested for functionality and light levels.
- There are no further recommendations other than as outlined under General Comments.

General Comments

- The typical service life for light posts varies between 20 to 30 years.
- The lighting was not examined to determine adequate levels of lighting.
- Replacement of individual failed lighting fixtures is considered to be an operating expenditure.
- Lighting fixtures may be replaced for energy efficiency reasons rather than failure of the component.

Photographs

Exterior light posts on the central portion of the site.

Concrete base of the light posts were noted in good condition.

End of Site Lighting Section

4.8.20 Retaining Walls												
General Condition												
Installed / Last Major Repairs	1989			**Typical Restoration Period**	- 20 – **25** – 30 +							
Priority	☐	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☑	Fair	☐	Fair / Poor	☐	Poor	☐	Very Poor

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$58,730	940 sq. ft.	2 - 5 Years	Recommended	Repair the damaged retaining wall on the south.
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations

- There are stone retaining walls at the upper middle portion (south of Building A) and on the south boundary of the site near the lake.
- The upper middle retaining wall is Gabion style (stone protected by chain-link boxes) and is topped by chain-link fence.
- The south boundary retaining wall consists of loosely laid, free standing stone masonry.
- The upper wall was noted to be in good condition.
- The south wall exhibited some dislocated and shifting units. Evidence of erosion was also noted.
- IRC has carried a repair allowance for the south wall as it is a line of defence against flooding and potential high waves from Lake Erie.
- Actual age of the retaining walls are unknown.

General Comments

- The typical service life of wooden retaining walls is 25-years.
- The typical service life of interlocking-block and/or brick masonry retaining walls is 25+years before rebuilding is generally required. It is expected that the wall can be rebuilt using the existing retaining wall sections.
- The typical life of stone retaining walls is 50+ years, and complete replacement of stone components would not be expected in any one period; however, it may be expected that major repairs and re-setting of masonry units will be required at some period.

Photographs

General view of the south retaining wall.

Shifted and leaning units were noted on the south wall.

Evidence of minor erosion and shifted units observed at the south wall.

General view of the Gabion style retaining wall in the middle portion of the site.

End of Retaining Walls Section

4.9 Organizational Elements

4.9.10 Mould Assessment												
General Condition												
Previous Assessment	1989			**Survey Period**	n/a							
Priority	☑	Safety	☐	Structural	☐	Code	☑	Function	☐	General	☐	None
Condition	☐	Good	☐	Good / Fair	☐	Fair	☐	Fair / Poor	☑	Poor	☐	Very Poor

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$2,500	Item	0 - 2 Years	Allowance	Conduct mould assessment survey
Design & Specification Recommended: ☑			Project Management & Quality Control Recommended: ☑	

Observations & Recommendations

- During the site review, there were instances where possible mould growth is evident. This is mainly within the second floor office of Building A.
- Second level of Building A is currently unoccupied, and the future use is not known.
- IRC recommends that a mould investigation of the wall assembly is completed prior to any renovation work in the second floor of Building A, should it be decided to be used again as an office space.
- A full mould assessment survey should be conducted by an Environmental consultant to determine the type, extent and air quality of the affected areas, if any.
- The cost accounted for in the table is for the Mould Assessment Survey **only**. This cost does not account for any mould abatement work that may be required as part of the survey recommendations.

General Comments

- Mould assessment surveys should be conducted by a qualified Environmental Engineer.

Photographs

Damaged window sill of Building A where mould growth is suspected.

Mould growth is evident on the exterior face of window frame.

End of Mould Assessment Section

4.9.11 BCA & CRF						
General Condition						
Previous Assessment	2020		**Survey Period**	3 – **5** – 7 +		
Priority	☐ Safety	☐ Structural	☐ Code	☐ Function	☐ General	☑ None
Condition	☑ Good	☐ Good / Fair	☐ Fair	☐ Fair / Poor	☐ Poor	

Summary Budgetary Costs				
Budgetary Cost (2020)	**Quantity**	**Expenditure Recommended**	**Expenditure Type**	**Summary Recommendation**
$6,500	Item	2 – 5 Years	Allowance	Complete BCA & CRF
Design & Specification Recommended: ☐			Project Management & Quality Control Recommended: ☐	

Observations & Recommendations		
Existing report provided to IRC	☐ Yes	☑ No

- The Building Condition Assessment & Capital Reserve Fund was completed by:

IRC Building Sciences Group
4026 Meadowbrook Drive, Suite 131
London, Ontario, N6L 1C7
Tel: (519) 652-5985
Fax: (519) 652-9926
Email: aazeez@ircgroup.com Contact: Aimal Azeez, B.Tech

- The BCA & CRF were completed in accordance with the Request for Proposal as issued by the Ontario Clean Water Agency.
- The Building Condition Assessment & Capital Reserve Fund was completed in accordance with IRC Proposal LO11237P dated June 16, 2020.
- A brief scope of work for the project included
  - Review of all drawings and documentation made available to IRC for review.
  - Performance of a site review of the buildings' primary components to evaluate the physical condition and standard of components.
  - Preparation of Building Condition Assessment report noting general observations and component conditions, together with recommendations for future repair options and associated budgetary costing.
  - Develop a 30-year cash flow projection, listing each of the identified components that will require repair, retrofit or replacement.
  - Identify all financial factors and assumptions used in the cash flow projections.

End of BCA & CRF Update Section

5 Capital Reserve Fund Study

5.1 Reserve Fund Calculations

Based on the site review, various repairs are required at the building. Budget costs have been prepared to a Class 3 Estimate as outlined by Association for the Advancement of Cost Engineering and ASTM E2516-11 Standard Classification for Cost Estimate Classification System. Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored.

Typically the preparation methodology includes:

(i) Prepared from measured and priced quantities, all obtained from the project information that is available.

(ii) A significant portion of the estimate may be in the form of allowances

For an inclusive budget estimate a +30/-15% variance should be allocated to costs provided in the Table of Expenditures of the Reserve Fund Study for the recommended replacements and upgrades. It must be noted that in preparing the budgets for individual items, it has been assumed that a group of repairs will be completed at the same time. If individual repairs are completed increases should be expected.

The cost of repairs is based upon the deterioration present at the time of the investigation and average unit prices obtained from our experience on similar projects and from estimates using RS Means CostWorks data. It is important to realize that the prices are not based on tendered specifications, but instead on general approaches and assumed quantities. The actual repair costs will depend on the prices received at the time of tendering and/or the actual quantities removed during the repair contract.

The following assumptions have been made with regard to capital replacement project costs:

HST Rate:

HST has been included on capital expenditures and shown as a separate line item in the Tables.

HST Rebates may be applicable for the Client for capital replacement projects. The HST rebate has been calculated at of the total HST costs for this property, and shown as a separate line item in the Tables.

Inflation Rate: 2.00% for the study period.

The inflation rate used for the 30-year study period is 2.00%. This number has been assumed from Bank of Canada – Consumer Price Index. The future level of inflation is unpredictable and may be highly variable. Further assessment of the level of inflation can be completed when updates to the Building Condition Assessment and Reserve Fund Study are completed every 5-year period as recommended.

Interest Rate: 1.25% for the study period.

The interest rate used for the 30-year study period is 1.25%. This average interest rate was taken from the past 10-year as posted by Bank of Canada - Canadian interest rates and monetary policy variables: 10-year lookup.

Minimum Balance:

The minimum balance recommended to be kept in the reserve fund is calculated at $1,000 per unit; $0 for this property inflated at 2.00% per annum.

5.1.1 Annual Contribution

The future cost method was used to estimate the annual contribution to the reserve fund. The building components included in the Reserve Fund Study are outlined in Table 1 of the Reserve Fund Study.

Within the study period all components requiring some form of remedial work have been accounted for by determining both the years in which repair/replacement is expected to occur and the future value of the remedial work.

Replacement costs, interest/ inflation rates, are estimated based on current data and assumed future trends. As such, these values cannot be expected to be completely accurate over the life of the study. It is recommended that this study be reviewed every year, and updated every five (5) years to ensure cost data, building deterioration and repair/replacement records are kept current and relevant.

5.1.2 Future Cost Method

The future cost method was also used to illustrate the significance of interest rates and inflation on the sufficiency of funds. In this method, the future cost of each element is estimated using the future value formula and estimated interest and inflation rates. It has been assumed that an average construction cost rate of inflation will be in effect over the remaining life of the building. The value used for inflation rates and interest rates has been outlined in section *5.1 – Reserve Fund Calculations*

above. The assumption is that the inflation and interest rates used are conservative figures that will not result in underfunding of reserves.

Once the costs are determined and totalled for each year of the life span of the building, the required annual contribution to offset these costs is found through iteration. This means that an annual contribution is first assumed and then lowered, or increased, depending on the cash flow, until the minimum annual contribution that will result in a positive cash flow is determined, i.e., no deficit, is maintained for the life of the project. The iterative process takes into account the existing Reserve Fund balance. However, reserves are not maintained at or near a "zero" balance to account for unforeseen repairs requiring emergency expenditures.

5.1.3 Professional Fees

Professional fees for the recommended capital replacement and repairs have been accounted for in the Tables on the components where engineering and/or third party review is recommended. The degree of engineering and project management that may be involved make it difficult to determine a standard rate for each component. Engineering fees typically range between 3% - 20% depending upon the project and complexity of engineering and also the professional discipline.

Professional fees for components noted with (*) (**) in the Tables have been included in the total expenditures at 8% for design and specification, and 7% for review and contract administration – a total addition of 15% on the budget costs..

Professional fees for components noted **only** with (**) in the Tables have been included in the total expenditures at 7% for review and contract administration only. It is considered that these components are of a less technical nature where design and specification is not essential; however, third party review to ensure an adequate standard of installation/replacement is recommended.

Review and contract administration for general projects for licensed trades such as electricians and plumbers has not been included as this type of work is generally subject to review by other parties such as local authorities.

5.1.4 Predicted Future Costs

The replacement cost for each component identified has been estimated with respect to current day replacement prices, and inflation rates. Variances may be expected in periods of high workload by contractors.

The costs allowed in the reserve fund tables can be highly variable depending upon factors such as:

- Market costs at the time of replacement
- Materials shortages
- Standard of replacement components
- ‘Volume’ discounts offered by contractors
- Seasonal prices on projects
- Warranties offered, and
- Contractors’ workloads

5.1.5 Capital v. Operating/Maintenance Costs

The following items are NOT considered to be capital expenditure items. Costs associated with these items are considered to be an operating expenditure.

- Minor expenditures under a specified reasonable dollar limit established from similar project undertakings (e.g., $500).
- Cost of replacing building components or mechanical services that are still operating and performing satisfactorily and meet all regulatory requirements, even if they are now obsolete and would not meet building regulations and codes for new construction.
- Normal cyclical repairs and maintenance such as bathtub caulking, rectifying deficiencies from annual reviews or move-outs, replacements of drapes and blinds, replacement of plumbing fittings and controls during regular routine maintenance, repairing fences and re-sod parts of the grounds and other general grounds maintenance.
- Regular preventative maintenance (for example, replacement of equipment parts, furnace filters, torqing of electrical panel connections, replacement of faucet cartridges etc.) to restore the component to an efficient operating condition.
- Costs of replacing capital items that have been damaged or destroyed as a result of deliberate abuse of vandalism. In these cases the Client should try to recover the cost of replacement from the occupant(s) or from other persons who caused the damage, or through the Client’s insurance policy. Where recovery is not possible, these types of replacement expenditures may be charged to the reserve.

- Typical items not included as capital expenditure include lawn care, door hardware, unit mail boxes, galvanized window wells, unit door bells, laundry tubs, replacement floor registers, weather-stripping, screen repairs, handrail securement, blocked drains, termite control, furnace thermocouples, stove elements, interior painting, carpet cleaning etc.

5.1.6 Description of Reserve Fund Table Columns

Date of Installation

The year at which the building components are known or estimated to have been installed, received substantial repair, overhaul or partial replacement, or were commissioned for use. It is assumed that the item is as new at the time of acquisition.

Percent Total Cost

For some items it is not expected that full replacement will be required, only a partial repair or replacement. In such situations a percentage factor has been used to estimate the value of replacement costs to be included in the reserve.

Estimated Life Span

This column provides the estimated normal expected life span of the building component in years. The life expectancies are based on recorded past performance of similar items and may vary based on the severity and type of use and the maintenance measures implemented to keep items in good serviceable condition.

Present Age

The present age of the item is generally the chronological age from the date of installation.

Basic Remaining Life

This column provides the useful life, in years, of the building component remaining from the date of visual condition assessment and assuming a normal level of maintenance. Due to extenuating circumstances such as routine maintenance or misuse by users, the remaining life is sometimes adjusted to reflect an anticipated extended or reduced life.

5.2 Capital Reserve Fund Summary

The current capital reserve fund balance has been set to $0 as of December 31, 2019, and the current annual contribution is set to $0. The averaged calculated annual expenditure for the 20-year period is $39,831.

The estimates in the tables, based on an engineered approach, provide a conservative plan for accumulating a reserve for future repairs and replacement. It relies on costs based on the work performed to date, the current state of knowledge of performance of building systems, present technology and on commonly used economic factors.

The actual economic conditions experienced during the cash flow period will vary. Therefore the cash flow tables should only be used for planning purposes. It is also possible that some work may be postponed due to extended service life of the system component. Postponing replacement will tend to lower the required annual contribution. An attempt should be made to postpone replacements (without incurring significant deterioration, which could result in building damage).

The annual contributions formulated in this report were based on information required to keep the components of the building in a good state of repair. It is recommended that the reserve fund study be reviewed each year and updated every five (5) years to ensure that the current contribution is sufficient and meets the planning needs of Service Buildings in West Lorne Ontario.

5.2.1 Table 1

This table shows the date of install of components, typical service life ranges, projected annual contribution to the reserve and basic remaining life of each component.

From the Reserve Fund to Date column (G) total, it has been estimated that the balance of the reserve fund should be approximately $453,720 and that from the Yearly Contribution column (F) total, an annual contribution to the reserve fund account should be approximately $22,420.

5.2.2 Table 2

Table 2 indicates the itemized projected expenditures for the 30-year study period in a calendar format. This table shows Future Cost Value of the anticipated capital repair/replacement projects, to assist the client with their planning and budgeting process. In this table the cost of capital expenditures are increased by inflation of 2.00% per year., and the averaged calculated annual expenditure for the 30-year study period is $39,831.

Service Buildings in West Lorne Ontario

8662 Graham Road, West Lone, Ontario

TABLE 1: Component List

CRF No.	Component	Date of Installation / Last major upgrade	Current Replacement Costs	Percent of Total Cost	Corrected Cost	Typical Life Span Range	Yearly Contribution	Required Reserve Fund to Date	Present Age	IRC Estimated Basic Remaining Life
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(J)
4.1	**Structural Components**									
4.1.1	Foundations & Structure - Building A (*) (**)	1989	$4,500	100%	$4,500	- 10 - 40 - 70 +	$120	$3,720	31	9
4.1.2	Foundations & Structure - Building B (**)	1992	$4,500	100%	$4,500	- 10 - 40 - 70 +	$120	$3,360	28	12
4.1.3	Foundation & Structure - Building C (*) (**)	1989	$8,500	100%	$8,500	- 47 - 50 - 53 +	$170	$5,270	31	0
4.2	**Building Exterior Components**									
4.2.3	Low Slope Roofing - BUR (Building A) (*) (**)	2007	$15,480	100%	$15,480	- 16 - 20 - 24 +	$780	$10,140	13	7
4.2.4	Low Slope Roofing - PVC (Building B) (*) (**)	2007	$22,480	100%	$22,480	- 11 - 15 - 19 +	$1,500	$19,500	13	2
4.2.5	Low Slope Roofing - Exposed Concrete (Building C) (*) (**)	1989	$8,800	100%	$8,800	- 30 - 35 - 40 +	$260	$8,060	31	4
4.2.8	Concrete Block Masonry (**)	varies	$21,000	50%	$10,500	- 7 - 10 - 13 +	$1,050	$8,400	varies	2
4.2.10	Siding - Building A	varies	$20,330	80%	$16,270	- 38 - 38 - 38 +	$430	$13,330	varies	7
4.2.14	Windows (**)	2007	$22,200	84%	$18,650	- 30 - 34 - 38 +	$550	$7,150	13	21
4.2.15	Skylights - Building B (**)	2007	$14,000	25%	$3,500	- 6 - 10 - 14 +	$350	$3,500	13	5
4.2.21	Exterior Doors - Entrance Doors (**)	1989	$12,500	100%	$12,500	- 30 - 35 - 40 +	$360	$11,160	31	4
4.2.22	Exterior Doors - Metal Roll-up (**)	1989	$7,000	100%	$7,000	- 27 - 32 - 37 +	$220	$6,820	31	10
4.2.39	Sealants/Caulking (**)	1989	$3,200	100%	$3,200	- 13 - 16 - 19 +	$200	$3,200	31	1
4.3	**Building Interior Components**									
4.3.3	Washroom - Building A	1989	$5,200	100%	$5,200	- 20 - 25 - 30 +	$210	$5,200	31	1
4.3.10	Interior Finishes - Building A (*) (**)	1989	$6,500	100%	$6,500	- 20 - 24 - 28 +	$280	$6,500	31	2
4.4	**Mechanical & Plumbing Systems**									
4.4.1	Ventilation Units (*) (**)	2007	$15,000	100%	$15,000	- 21 - 25 - 29 +	$600	$7,800	13	12
4.4.3	Electric Space Heaters (**)	varies	$10,000	100%	$10,000	- 12 - 15 - 18 +	$670	$9,380	varies	1
4.4.16	Domestic Hot Water (DHW) Heater	varies	$3,500	100%	$3,500	Annually	$240	$3,120	varies	2
4.5	**Electrical Systems**									
4.5.1	Power & Distribution (*)	1989	$50,000	100%	$50,000	- 40 - 45 - 50 +	$1,120	$34,720	31	14
4.5.11	Interior Lighting Fixtures	2007	$6,300	100%	$6,300	- 15 - 20 - 25 +	$320	$4,160	13	7
4.5.17	Emergency Generator & Transfer Switch (*) (**)	Unknown	$45,000	100%	$45,000	- 28 - 28 - 28 +	$1,610	$35,420	unknown	6
4.6	**Fire & Life Safety Systems**									
4.6.1	Fire & Life Safety Components -All Buildings	2007	$6,300	100%	$6,300	- 20 - 20 - 20 +	$320	$4,160	13	7
4.8	**Site Components**									
4.8.1	Asphalt Pavement (**)	1989	$165,000	100%	$165,000	- 20 - 24 - 28 +	$6,880	$165,000	31	2
4.8.4	Concrete Components	2007	$25,000	10%	$2,500	- 15 - 30 - 45 +	$170	$2,210	13	7
4.8.14	Chain Link Fencing	1989	$13,750	100%	$13,750	- 30 - 35 - 40 +	$400	$12,400	31	6
4.8.19	Site Lighting	2007	$10,500	100%	$10,500	- 20 - 25 - 30 +	$420	$5,460	13	12
4.8.20	Retaining Walls (*) (**)	1989	$234,900	25%	$58,730	- 35 - 35 - 35 +	$1,680	$52,080	31	4
4.9	**Organizational Elements**									
4.9.10	Mould Assessment	1989	$2,500	100%	$2,500	- 30 - 30 - 30 +	$90	$2,500	31	0
4.9.11	BCA & CRF	2020	$6,500	100%	$6,500	- 5 - 5 - 5 +	$1,300	$0	0	5
	TOTALS		**$770,440**		**$543,160**		**$22,420**	**$453,720**		

Service Buildings in West Lorne Ontario

8662 Graham Road, West Lone, Ontario

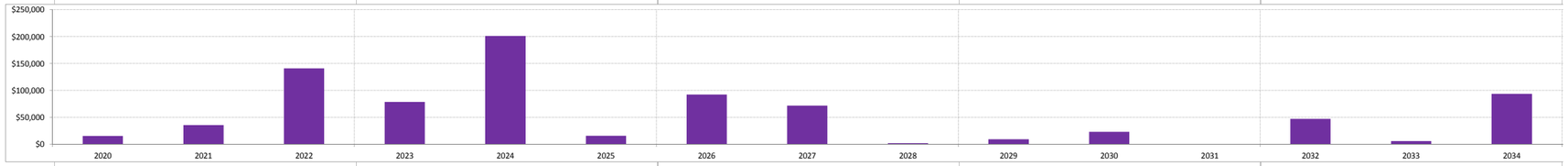
Table 2: 30-Year Cash Flow and Projected Expenditures

Note: 2020 refers to the Corporations' Fiscal Year starting January 1, 2020 and ending December 31, 2020

CRF No.	Component	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
4.1	**Structural Components**															
4.1.1	Foundations & Structure - Building A (*) (**)										$6,077					
4.1.2	Foundations & Structure - Building B (**)													$6,449		
4.1.3	Foundation & Structure - Building C (*) (**)	$9,605														
4.2	**Building Exterior Components**															
4.2.3	Low Slope Roofing - BUR (Building A) (*) (**)								$20,093							
4.2.4	Low Slope Roofing - PVC (Building B) (*) (**)			$26,429												
4.2.5	Low Slope Roofing - Exposed Concrete (Building C) (*) (**)					$10,764										
4.2.8	Concrete Block Masonry (**)			$12,344										$15,048		
4.2.10	Siding - Building A								$21,119							
4.2.14	Windows (**)		$4,057													
4.2.15	Skylights - Building B (**)		$8,068				$4,367									
4.2.21	Exterior Doors - Entrance Doors (**)					$15,289										
4.2.22	Exterior Doors - Metal Roll-up (**)											$9,642				
4.2.39	Sealants/Caulking (**)		$1,844	$1,881												
4.3	**Building Interior Components**															
4.3.3	Washroom - Building A		$5,994													
4.3.10	Interior Finishes - Building A (*) (**)		$4,610	$7,642												
4.4	**Mechanical & Plumbing Systems**															
4.4.1	Ventilation Units (*) (**)		$4,034											$4,299	$4,385	$4,473
4.4.3	Electric Space Heaters (**)		$1,153	$1,176	$1,199	$1,223	$1,248	$1,273	$1,298	$1,324	$1,350	$1,377				
4.4.16	Domestic Hot Water (DHW) Heater			$4,115												
4.5	**Electrical Systems**															
4.5.1	Power & Distribution (*)															$74,551
4.5.11	Interior Lighting Fixtures								$8,177							
4.5.17	Emergency Generator & Transfer Switch (*) (**)							$57,265								
4.6	**Fire & Life Safety Systems**															
4.6.1	Fire & Life Safety Components -All Buildings								$8,177							
4.8	**Site Components**															
4.8.1	Asphalt Pavement (**)			$64,661	$65,954	$67,273										
4.8.4	Concrete Components								$3,245							
4.8.14	Chain Link Fencing							$17,498								
4.8.19	Site Lighting													$15,048		
4.8.20	Retaining Walls (*) (**)					$71,836										
4.9	**Organizational Elements**															
4.9.10	Mould Assessment	$2,825														
4.9.11	BCA & CRF						$8,109					$8,954				

		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
LINE A	**EXPENDITURE - PRESENT DAY VALUE**	$12,430	$29,177	$113,655	$63,280	$153,714	$12,430	$67,518	$54,071	$1,130	$6,215	$16,385		$32,205	$3,390	$59,890
LINE B	**INFLATION RATE**	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
LINE C	**COMPOUND INFLATION RATE**	1.000000%	1.020000%	1.040400%	1.061208%	1.082432%	1.104081%	1.126162%	1.148686%	1.171659%	1.195093%	1.218994%	1.243374%	1.268242%	1.293607%	1.319479%
LINE D	**EXPENDITURE - FUTURE COST VALUE**	**$12,430**	**$29,760**	**$118,247**	**$67,153**	**$166,385**	**$13,724**	**$76,036**	**$62,110**	**$1,324**	**$7,428**	**$19,973**		**$40,844**	**$4,385**	**$79,024**
LINE E	**HST @ 13% (PST @ 8% + GST @ 5%)**	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.
LINE F	**PROFESSIONAL FEES incl. HST (*) & (**)**	$1,441	$2,355	$10,715	$4,701	$18,255	$393	$8,679	$3,105	$93	$1,006	$771		$2,150	$658	$6,635
LINE K	**CONSTRUCTION CONTINGENCY @ 10%**	$1,243	$2,976	$11,825	$6,715	$16,638	$1,372	$7,604	$6,211	$132	$743	$1,997		$4,084	$439	$7,902
LINE L	**TOTAL EXPENDITURE - FUTURE COST VALUE**	**$15,114**	**$35,091**	**$140,787**	**$78,569**	**$201,278**	**$15,489**	**$92,318**	**$71,426**	**$1,549**	**$9,176**	**$22,742**		**$47,078**	**$5,482**	**$93,561**

Chart 1
Table of Annual Expenditures



* Engineering Design Fees applied to this component @ 8%

** Project Management Fees applied to this component @ 7%

Chart 2
Reserve Fund Cash-Flow

Service Buildings in West Lorne Ontario

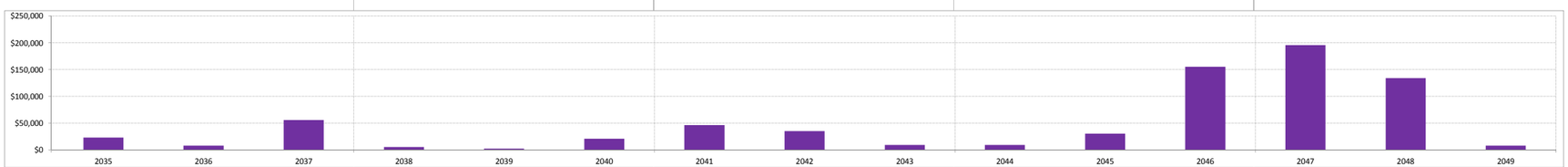
8662 Graham Road, West Lone, Ontario

Table 2: 30-Year Cash Flow and Projected Expenditures

CRF No.	Component	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
4.1	**Structural Components**															
4.1.1	Foundations & Structure - Building A (*) (**)															
4.1.2	Foundations & Structure - Building B (**)															
4.1.3	Foundation & Structure - Building C (*) (**)															
4.2	**Building Exterior Components**															
4.2.3	Low Slope Roofing - BUR (Building A) (*) (**)													$29,858		
4.2.4	Low Slope Roofing - PVC (Building B) (*) (**)			$35,569												
4.2.5	Low Slope Roofing - Exposed Concrete (Building C) (*) (**)															
4.2.8	Concrete Block Masonry (**)								$18,343							
4.2.10	Siding - Building A															
4.2.14	Windows (**)							$31,942								
4.2.15	Skylights - Building B (**)	$5,323										$6,489				
4.2.21	Exterior Doors - Entrance Doors (**)															
4.2.22	Exterior Doors - Metal Roll-up (**)															
4.2.39	Sealants/Caulking (**)			$2,532	$2,582											
4.3	**Building Interior Components**															
4.3.3	Washroom - Building A												$9,833			
4.3.10	Interior Finishes - Building A (*) (**)												$12,291			
4.4	**Mechanical & Plumbing Systems**															
4.4.1	Ventilation Units (*) (**)	$4,562	$4,654													
4.4.3	Electric Space Heaters (**)		$1,551	$1,582	$1,614	$1,646	$1,679	$1,713	$1,747	$1,782	$1,818	$1,854				
4.4.16	Domestic Hot Water (DHW) Heater			$5,538			$5,877	$5,994	$6,114	$6,237	$6,361	$6,489	$6,618	$6,751	$6,886	$7,023
4.5	**Electrical Systems**															
4.5.1	Power & Distribution (*)															
4.5.11	Interior Lighting Fixtures													$12,151		
4.5.17	Emergency Generator & Transfer Switch (*) (**)															
4.6	**Fire & Life Safety Systems**															
4.6.1	Fire & Life Safety Components -All Buildings													$12,151		
4.8	**Site Components**															
4.8.1	Asphalt Pavement (**)												$104,003	$106,083	$108,205	
4.8.4	Concrete Components								$4,367							
4.8.14	Chain Link Fencing															
4.8.19	Site Lighting															
4.8.20	Retaining Walls (*) (**)															
4.9	**Organizational Elements**															
4.9.10	Mould Assessment															
4.9.11	BCA & CRF	$9,885					$10,914					$12,050				

		2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
LINE A	**EXPENDITURE - PRESENT DAY VALUE**	$14,690	$4,520	$32,295	$2,938	$1,130	$12,430	$26,160	$19,775	$5,085	$5,085	$16,385	$79,326	$97,835	$66,105	$3,955
LINE B	**INFLATION RATE**	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
LINE C	**COMPOUND INFLATION RATE**	1.345868%	1.372786%	1.400241%	1.428246%	1.456811%	1.485947%	1.515666%	1.545980%	1.576899%	1.608437%	1.640606%	1.673418%	1.706886%	1.741024%	1.775845%
LINE D	**EXPENDITURE - FUTURE COST VALUE**	**$19,771**	**$6,205**	**$45,221**	**$4,196**	**$1,646**	**$18,470**	**$39,649**	**$30,572**	**$8,019**	**$8,179**	**$26,881**	**$132,746**	**$166,994**	**$115,090**	**$7,023**
LINE E	**HST @ 13% (PST @ 8% + GST @ 5%)**	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.
LINE F	**PROFESSIONAL FEES incl. HST (*) & (**)**	$1,057	$807	$5,623	$294	$115	$118	$2,356	$1,406	$125	$127	$584	$9,124	$11,904	$7,574	
LINE K	**CONSTRUCTION CONTINGENCY @ 10%**	$1,977	$620	$4,522	$420	$165	$1,847	$3,965	$3,057	$802	$818	$2,688	$13,275	$16,699	$11,509	$702
LINE L	**TOTAL EXPENDITURE - FUTURE COST VALUE**	**$22,805**	**$7,632**	**$55,367**	**$4,910**	**$1,926**	**$20,435**	**$45,970**	**$35,035**	**$8,945**	**$9,124**	**$30,153**	**$155,144**	**$195,598**	**$134,174**	**$7,726**

Chart 1
Table of Annual Expenditures



* Engineering Design Fees applied to this component @ 8%

** Project Management Fees applied to this component @ 7%

Chart 2
Reserve Fund Cash-Flow

6 Limitations

IRC prepared this report solely for the client named. The responsibilities of IRC are as described in the Terms of Reference and The Scope of Work. The material in this report reflects the opinion of IRC at the time of preparation and within the terms of reference as agreed. Any use, which a Third Party makes of this report, or any reliance on decisions based on it, are the responsibility of such Third Parties.

IRC does warrant the accuracy of the identified information provided to IRC at the time of the report preparation. Unless provided in writing, but not limited to, mistakes, contacts, insufficient information or certification of such information is not the responsibility of IRC.

Only the specific information or locations noted in the report have been reviewed. Although every reasonable effort was taken to identify defects, latent and hidden defects may affect the accuracy of this report. No physical or destructive testing and no design calculations have been performed unless indicated elsewhere in this report.

We trust that the above is satisfactory for your purposes. If you have any questions or comments concerning the above please do not hesitate to contact our office.

Yours very truly,

IRC Building Sciences Group

Aimal Azeez, B.Tech
Project Manager

Brian DeFrias, C.E.T., BSSO
Manager of Building Sciences

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7 Reference Information

7.1 Project Team

IRC Building Sciences Group
4026 Meadowbrook Drive, Suite 131
London, Ontario
N6L 1C7
Tel: (519) 652-5985 Contact: **Aimal Azeez, B.Tech, Project Manager**

www.ircgroup.com

IRC was responsible for review of the entire building components and systems; as well as production and coordination of the report.

7.2 Abbreviations

A	Amps or Amperes
ABS	Acrylonitrile- butadiene-styrene plastic pipe, which is resistant to heat, impact, and chemicals.
A/C	Air Conditioning
ACM	Asbestos Containing Material
ACT	Acoustic Ceiling Tile (Suspended grid tile ceiling)
BCA	Building Condition Assessment
BUR	Built-up Roofing
CATV	Cable Television
CDP	Central Distribution Panel
CO	Carbon Monoxide
C/T's & P/T's	Current transducers and Potential Transformers
DCW	Domestic Cold Water
DHW	Domestic Hot Water
DHWR	Domestic Hot Water Return
DWV	Drain Waste and Vent
DVR	Digital Video Recorder
EPDM	Ethylene Propylene Diene Monomer (rubber roof membrane)
FHP	Fractional Horse Power
GFCI or GFI	Ground Fault Circuit Interrupt
HID	High intensity discharge
HVAC	Heating, Ventilation & Air Conditioning
HID	High Intensity Discharge
HP	Horsepower
HPS	High Pressure Sodium
HWH	Hot Water Heater
KVA	Kilo Volt Amperes
KW	Kilowatt
M&E	Mechanical and Electrical
MUA	Make-Up Air
OSB	Orientated Strand Board (A type of wood sheathing)
OWSJ	Open Web Steel Joist (A structural steel member)
P	Pole(s)
PH	Phase(s)
PM	Periodic / Preventative Maintenance
PSD	Private Sewage Disposal
PT	Pressure Treated
PVC	Polyvinyl Chloride
RFP	Request for Proposal

RFS	Reserve Fund Study
RWL	Rainwater Leader
TPS	Trap Seal Primer
TTW	Through-the-wall (load bearing brickwork)
VCT	Vinyl Composite Tile (12” x 12” floor tile)
V or VAC	Volts, Alternating Current
W	wire
w	watts

7.3 Client Notes:

These blank pages have been provided for your convenience for notes/comments etc…

Tri-County Water

Income Statement

As of September 30, 2020

		2020 Forecast	2020 Actuals	2020 Budget
02-7315-6110	BANK INTEREST	-$ 6,000.00	$ -	-$ 6,000.00
02-7315-6190	REBATES - **Note 1**	- 6,836.50	- 6,836.50	-
02-7315-6590	WATER REV - MUNICIPAL - **Note 2**	- 1,324,500.99	- 882,893.94	- 1,294,451.00
02-7315-7500	HYDRO - **Note 3**	$ 266,406.78	$ 170,406.78	$ 340,000.00
02-7315-7501	GAS - **Note 4**	20,799.95	16,799.95	19,000.00
02-7315-7510	INSURANCE	15,639.48	15,639.48	15,639.48
02-7315-7511	TAXES	66,036.41	66,036.41	67,475.62
02-7315-7529	ADMINISTRATION EXPENSE	6,000.00	-	6,000.00
02-7315-7601	TELEPHONE & INTERNET	8,547.80	7,123.20	8,500.00
02-7315-7676	AUDIT	3,765.12	-	3,765.12
02-7315-7680	CONTRACTED SERVICES	434,154.26	361,795.10	434,155.00
02-7315-7900	TRANSFER TO RESERVE	193,237.39	-	53,430.78
02-7315-7901	TRANSFER FROM RESERVES	-	-	-
02-7315-8000	CAPITAL OVER $10,0000 - **See Capital Schedule A**	322,750.30	182,497.67	352,485.00
		$ -	**-$ 69,431.85**	**$ -**

Notes:

Note 1 Rebates:

Compressor - Hydro One IESO Rebate	-$ 6,836.50

Note 2 Water Revenue:

All residents of West Elgin read on July 15, 2020

Meter chambers read on August 31, 2020

YTD Consumption as of August 31 2020	Forecast (m³)	Actual (m³)	Budget (m³)
SWM	369,218	252,432	
Newbury	43,772	33,038	474,967
Chatham-Kent	86,868	65,566	
Dutton-Dunwich	303,872	201,327	316,756
West Elgin	525,334	321,436	545,205
	1,329,064	**873,799**	**1,336,928**

Note 3 Hydro

Billed until September 26, 2020

Note 4 Gas

Billed until October 6, 2020

Reserves

Beginning Balance - Jan 1, 2020	$ 1,041,795
Transfer to Reserves	$ 193,237
Ending Balance - December 31, 2020	**$ 1,235,033**

Tri-County Water Treatment Plant

No.	Scope of Work	2020 Forecast	2020 Actual	2020 Budget	WO #	Notes
	Treatment Plant					
1	Main Hydro Transformer: undersized and requires upgrading	$ 11,836.44	$ 8,484.24	50,000.00	**1917050**	Work is for monitoring incoming hydro to determine needs for future.
3	Plant Critical Alarms: Inplementation of WIN911 system	$ 18,582.09	$ 16,761.39	15,000.00	**1707319**	Project is completed. There is additional cost on top of the work order of $1820.70 as a result of issues found during the upgrade.
5	pH Control System (Pilot project)	$ 4,528.55	$ 4,528.55	11,000.00		Project is completed.
6	PALL Inspection "Health check"	$ 12,840.46	$ 12,840.46	15,000.00	**1586157**	Project is completed.
8	Smart positioners	$ 4,762.85	$ 4,762.85	4,000.00	**1707960**	Project is completed.
9	Pneumatic actuators	$ 3,303.69	$ -	3,000.00		In process
11	Treatment Plant and Lowlift: Power Factor Correction (PFC)	$ 9,426.56	$ 9,384.06	10,000.00	**1622747**	Project is completed.
15	Chlorine Analyzer pH probes and cl2 probes	$ 7,602.58	$ 7,602.58	6,500.00	**1663835**	Project is completed.
16	Lowlift Turbidimeter: Replace and upgrade old surface turbidimeter	$ 10,591.61	$ 10,591.61	15,000.00	**1662570 1792205**	Project is completed.
17	Filter Racks 3 and 4: Controller and turbidimeter replacement and auto cleaners	$ 23,607.82	$ 23,607.82	20,000.00	**1795100**	Project is completed.
18	UV system Reactors	$ 2,013.98	$ 2,151.39	2,200.00	**1793032**	Project is completed
20	Air Manifold card replacement and air lines - 4 year cycle	$ 8,484.24	$ 8,484.24	5,000.00		Project is completed
23	Treatment Plant and Lowlift Settling Tanks: Sediment removal	$ 19,414.30	$ -	10,000.00	**1795089 1795086**	Project is completed
24	PALL membranes	$ -	$ -	5,000.00		Awaiting report from PALL before deciding on how to proceed.
	Highlift and Lowlift Pumps & Motors					
1	Lowlift motor rebuilds/replacement	$ 31,785.70	$ 31,785.70	10,000.00	**1622748**	This work grouped together with 1, 2 & 3 for a total of $25,000. Project is completed.
2	Lowlift pump inspection/refurbishment			10,000.00		
3	Lowlift motor number 1: detuning for proper balancing to prevent vibration			5,000.00		
4	Lowlift motors: replacement of soft starters With Variable Frequency Drive's	$ 19,680.04	$ 19,680.04	6,000.00	**1622780**	Project is completed

Tri-County Water Treatment Plant

No.	Scope of Work	2020 Forecast	2020 Actual	2020 Budget	WO #	Notes
5	Highlift pump 3 dismantle and inspect	$ 11,333.77	$ -	-	**1872923**	
	Structural includes: (piping/control or PRV valves/building/HVAC)					
1	Raw wetwell maintenance/repairs/upgrades	$ 6,705.48		10,000.00	**1795079**	Project is completed
2	Lowlift: Shore line valve repair	$ 33,517.36		20,000.00	**195610**	Scheduled to be completed early November.
3	Highlift Discharge Header: Replacement of Ross PRV	$ -	$ -	-		
4	Treatment Plant Heating/AC/dehumidification system	$ -	$ -	-		
5	Air Conditioning Unit: Replacement required	$ 16,295.59	$ 16,295.59	15,000.00	**1791025**	Project is completed
6	Lowlift and old treatment plant building: Condition Assessment	$ -		-		
7	Treatment Plant: Condition assesment	$ 9,775.73		10,000.00	**1792365**	Project is completed
8	Discharge Header: Repairing/ replacing stainless pipe			20,000.00		No quotes yet, as waiting for response from engineer on pipe supports.
	Standpipe and Transmission Main					
2	Transmission Main Discharge header: Replacement of three Pressure Regulating Valves	$ 14,296.17		15,000.00	**1917067**	Waiting on valves. Anticipated to have work completed by middle of November.
3	Chamber repairs	$ 24,120.07		5,000.00	**1664477**	Grouped together with items 3 & 4. Work approved and not completed as of October 16th. Anitcpated to be completed by Nov 1, 2020
4	PLC Controllers (Eagle West/Silverclay/Marsh/Pioneer)			15,000.00		
6	Standpipe inspection	$ 5,642.46		5,000.00	**1915565**	Inspection scheduled for end of October.
7	Standpipe overflow upgrades	$ 5,537.14	$ 5,537.14	6,000.00	**1915578**	Project is completed.
8	Eagle east (Wallacetown train) chamber flowmeter	$ 7,065.62		12,000.00	**1708866**	Approved but need to plan for isolation of transmission line. Work is planned for October 21, 2020.
	Total Capital	$ 322,750.30	$ 182,497.66	$ 335,700.00		
	Contingency			16,785.00		
				$ 352,485.00		