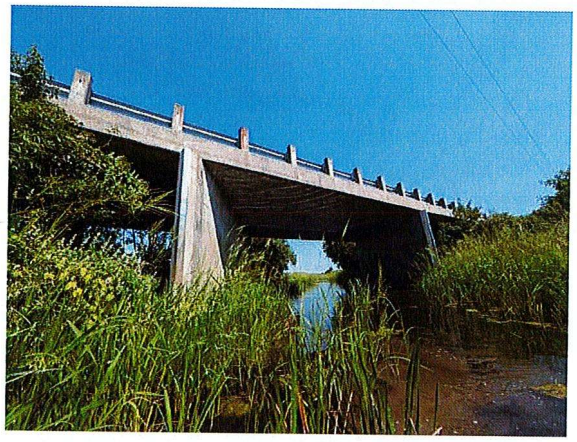
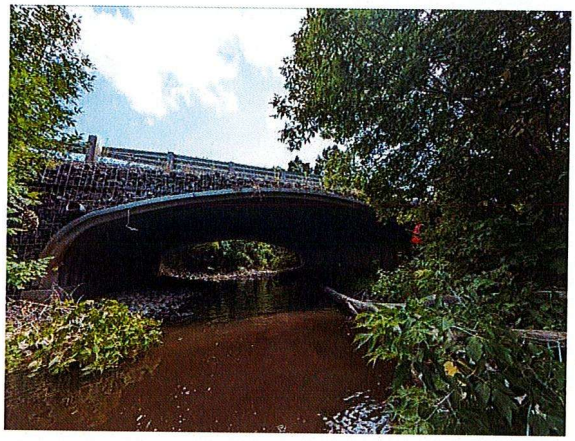
TOWNSHIP OF
North Dundas

THE TOWNSHIP OF NORTH DUNDAS





BRIDGE MANAGEMENT STUDY
FINAL REPORT
17 BRIDGES / 28 CULVERTS

DECEMBER 2025

Report Submitted By:

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Appendices

Appendix A Asset Management Summary

Attachments

Attachment 1 2025 OSIM Inspection Reports

1.0 INTRODUCTION

The Township of North Dundas (The Township) has retained HP Engineering to perform inspections and develop a bridge management study for 45 structures (17 bridges and 28 culverts) owned and maintained by the Township.

Each structure in the Township's inventory was visually inspected using the Ministry of Transportation of Ontario's (MTO) Structure Inspection Manual. The inspection data was then utilized to generate updated inspection forms for each structure. The inspection forms generally present the results of the visual observations (including site photographs), condition ratings of each element, recommended further investigations, recommended rehabilitation and maintenance needs, and provide budget cost information. Refer to the ***Appendix A*** for a summary table of all structures and ***Attachment 1*** for individual inspection reports for all structures.

2.0 STRUCTURE INSPECTIONS

A total of 45 structures (17 bridges and 28 culverts) owned and maintained by the Township were visually inspected in accordance with the MTO Structure Inspection Manual. The inspections were performed during the Summer of 2025.

For each structure, components were screened for visual signs of deterioration. The components were then given a rating (on the inspection forms) using the MTO extent and severity method, whereby the components are proportioned (in units of m^2, %, m, etc.) based on their observed conditions (excellent, good, fair, poor). This provides quantitative data as to the extent of the observed deterioration for each component. Explanatory statements accompany each of the components' ratings where deemed applicable by the inspector.

The inspection forms also provide information regarding suggested engineering investigation and repairs and associated budgetary estimates of expected costs. Suggested engineering investigations are subdivided based on time of need. Repairs and associated budgetary estimates are subdivided based on time of need. The basis of selection for budget costs is further discussed in Section 3.0 of this report.

Photographs of each inspected structure are included with the inspection sheets including a minimum of 2 photographs for each structure (approach and elevation). Additional photographs depicting the details of the structure, observed defects or deterioration have also been included.

Individual inspection forms for the structures are included as an attachment where the structures are separated into sequential order.

3.0 DETERMINATION OF BUDGET COSTS

3.1 Structure Repair, Rehabilitation and Replacement Construction Costs

Given the cursory information obtained during the visual inspections and without the benefit of supplemental investigations and preliminary / detailed design, it is impractical to develop detailed cost estimates for each structures' rehabilitation needs. For these reasons, benchmark budget costs were developed for categories of element repair, major / minor structure rehabilitation and full structure replacement. Traditionally, benchmark costs do not necessarily provide accurate costs for individual structure repairs or replacement but have proven to provide sufficient accuracy for global budgeting purposes when dealing with a large number of structures.

For the purpose of this study, benchmark costs for the rehabilitation and replacement of bridge structures are based on maintaining the existing width, length and alignment of each structure. More accurate costs for each structure would be provided upon the completion of further engineering studies and design based on exact renewal needs (including potential changes in geometry). The following sections present the benchmark costs that have been established for this study.

Bridge Replacement Costs

Budget costs for the replacement of bridges are usually based on the deck surface area of individual structures (m^2). Therefore, benchmark replacement costs for this study were determined using the following unit costs including approaches (e.g., asphalt works and guiderail), traffic management (e.g., road closures or staging), and other auxiliary costs (e.g., sitework costs, utility protection, etc.). In addition, the varying widths of bridges were also considered to provide more realistic unit costs and to avoid large discrepancies in the replacement cost between bridges of different lengths, but similar surface areas.

Structure Replacement Benchmark Unit Costs		
Bridge Length (m)	**Width (m)**	**Unit Replacement Cost ($/m^2)**
3-10	<10 m	$14,000.00
	≥10 m	$13,000.00
10-20	<10 m	$12,000.00
	≥10 m	$11,000.00
20-30	<10 m	$10,000.00
	≥10 m	$9,500.00
>30	<10 m	$9,000.00
	≥10 m	$8,500.00

For culverts, the above unit cost table was also utilized; however, the 'bridge length' was taken as the overall length of the barrel, and the 'width' was taken as the span of the barrel. In the case of a multi-

barrel culvert, only the span of a single barrel was utilized. The above methodology for the estimation of culvert replacement costs was generally found to provide a more realistic value for the replacement costs of culverts.

Structure Repair / Rehabilitation Costs

For budgeting purposes, costs for the rehabilitation of structures (bridges and culverts) are typically expressed as a percentage of the total replacement costs. Rehabilitation costs for this study are separated into three main categories as presented in the table below.

Structure Rehabilitation Benchmark Costs		
Category		% of Replacement Cost
1.	Major Structure Rehabilitation	60
2.	Minor Structure Rehabilitation	25
3.	Individual Element Rehabilitation	5

It should be noted that unit repair costs for individual elements are not used in the budget calculations, rather, when an element has reached a condition state where rehabilitation becomes warranted, an element rehabilitation cost of 5% of the structure replacement cost is utilized. This value is considered more accurate since, often with more minor rehabilitation, auxiliary costs (e.g., traffic control, sitework, access, etc.) can be a significant portion of the overall cost of the work. For structures where multiple elements have reached a condition state where rehabilitation becomes warranted, either the 'minor structure rehabilitation' or 'major structure rehabilitation' categories are then used.

3.2 Engineering Investigation / Detailed Design Costs

Further engineering investigations and evaluations are recommended for some of the bridges and culverts as indicated on individual inspection forms and in the summary table in ***Appendix A***. Similar to the structure replacement costs, benchmark budget costs for engineering investigation and evaluations that have been derived do not necessarily provide accurate costs for individual structures but have proven to provide sufficient accuracy for global budgeting purposes when dealing with a large number of structures. The benchmark costs derived are presented in the table below:

Engineering Investigations and Evaluations Benchmark Costs			
Category		Type of Structure / Type of Investigation	Cost
1.	Detailed Inspection / Rehabilitation Study - Full Bridge	Truss	$25,000.00
		Other Bridges	$22,000.00
		Culverts	$20,000.00
2.	Roadside Safety Review	Traffic Barrier Only *	$5,000.00
3.	Detailed Deck Condition Survey	Exposed Deck	$15,000.00
		Asphalt Paved Deck	$20,000.00

		Concrete Culvert with Height of Fill Less than 500 mm **	$8,000.00
4.	Structure Evaluation	Truss	$17,500.00
		Others	$15,000.00
5.	Supplemental Inspections	Underwater Investigation	$13,000.00
		Boat Inspection	$5,000.00
		Bridgemaster Inspection	$10,000.00
	Structure Monitoring	All Structures	$5,000.00

* Recommendations for Roadside Safety Reviews were developed individually for each structure. This assessment was based on a preliminary review of existing traffic barrier and approach guiderail configurations (or their absence), drawing upon our experience with such installations, knowledge of current standards, and sound engineering practice. For structures where only a Roadside Safety Review was recommended (without an accompanying Rehabilitation / Replacement Study), a specific year of completion was not assigned in the ***Appendix A*** Summary Table. In these instances, we recommend that the Township conduct an internal review and risk assessment to determine the necessity and timing of such a study.

** Deck condition survey on concrete culvert includes cores with no corrosion potential survey. Deck condition surveys on concrete culverts with a height of fill greater than 500 mm are not practical.

In addition to the engineering investigations and evaluations benchmark costs as presented in the table above, the summary table presented in ***Appendix A*** also provides an estimate of benchmark costs for the preliminary and detailed costs for element rehabilitation, minor / major structure rehabilitation and full structure replacement. These benchmark costs are meant to include common tasks that are typically required for the rehabilitation or replacement of these types of structures including environmental studies, subsurface investigations, and contractor administration. For the purpose of budgeting, these costs are set at 10% of the overall rehabilitation or replacement cost. There could be reasons why this percentage cost model may be inaccurate for some structure rehabilitations or replacements including work within sensitive waterways, extremely poor subsurface conditions, requirements to widen structure (e.g., increase overall structure width to accommodate additional traffic lanes, wider side clearances, cycling facilities, etc.); however, these costs cannot be predicted with more accuracy until further engineering investigations and evaluations and as least some type of preliminary design has been completed.

4.0 BRIDGE CONDITION INDICES (BCI)

Bridge Condition Index (BCI) values were derived using MTO's standard methods as outlined in their document entitled 'Bridge Condition Index, an Overall Measure of Bridge Condition' (July 2009). Based on this document, we utilize an excel spreadsheet (developed based on the parameters outlined in the document) that, after inputting the inspection data for each element (condition ratings), automatically calculates the BCI value.

With the calculated BCI values for each structure, an overall picture of the general condition of the Township's structures inventory as a whole can then be presented by summarizing BCI ranges (good, fair, poor) and counting the overall percentage of structures in each category. This is the methodology that the MTO currently utilizes and it is generally an effective tool to determine where the Township stands in terms of the overall condition and maintenance needs for their structure inventory. This information can be used to compare the overall condition of various structures, to assist in prioritizing structures for future rehabilitation and assist in the funding application process.

The BCI ranges that are normally included in this summary table are as follows:

- Excellent (BCI Range of 80-100); for this range, maintenance / rehabilitation work is not usually required within the next fifteen years.
- Good (BCI Range 70-80); for this range, maintenance / rehabilitation work is not usually required within the next 10 years.
- Fair (BCI Range 60-70); for this range, maintenance / rehabilitation work is usually required / scheduled within the next five to ten years. Carrying out work within this timeframe is typically considered the ideal time to get the most out of bridge spending.
- Poor (BCI Less than 60); for this range, maintenance / rehabilitation work is usually required / scheduled within the next one to five years.

For the Township's inventory (45 structures total [17 bridges and 28 culverts]), the current summary of BCI ranges is presented as follows (individual structure BCI values are presented in the tables in ***Appendix A***):

BCI Range	***Number of Structures in Range***	***% of Structures in Range***
80-100	3 structure (2 bridges / 1 culvert)	7
70-80	23 structures (12 bridges / 11 culverts)	51
60-70	12 structures (2 bridges / 10 culverts)	27
Less than 60	7 structures (1 bridge / 6 culverts)	15

5.0 ROUTINE MAINTENANCE

As part of the Township's overall bridge management program, a program of routine maintenance should be implemented and up kept for all structures. Maintaining this program will assist in minimizing the potential for premature deterioration of structural elements; and, when combined with a program of bridge rehabilitation, will assist in maximizing the useful service life of the Township's structure inventory.

Overall routine maintenance needs will vary depending on the type of structure, location, traffic volumes, winter maintenance procedures (sanding vs. salting, etc.), size of the structure, vintage and previous maintenance / rehabilitation carried out on the structure in the past. The following presents a general summary of routine maintenance operations that are considered applicable for the structures present within the Township's inventory:

- Periodic bridge cleaning: this would include power-washing of all components exposed to roadway traffic and areas where debris accumulation is prevalent. This would include asphalt wearing surfaces, expansion joint gaps, edges of roadway, bearing seats, truss bottom chords, etc. Typically, this operation would be carried out on an annual basis, most likely each spring after winter sanding / salting operations have ceased; however, in some cases (i.e., gravel approach roadways, etc.), an increase in the number of cleanings per year may be required.

- Concrete spot repairs: this would generally include localized patching of small concrete spalls and delaminations located in areas within the roadway splash zones (top of deck, curbs, expansion joint block-outs, etc.). Completing these repairs will assist in preventing accelerated deterioration of concrete in these areas by reducing the ingress of chlorides, etc. There is no specific timing for these types of repairs and they are generally performed on an as-needed basis.

- Steel spot repairs / spot coating; this would generally include localized touch-ups to steel coatings located in areas within the roadway splash zones (truss bottom chords, exterior floor beams / stringers, etc.) as well as localized spot repairs in areas of appreciable section loss / corrosion. There is no specific timing for these types of repairs and they are generally performed on an as-needed basis.

- Clearing of debris in waterway; this would include clearing of trapped debris in the vicinity of the structure (upstream / downstream). This operation would typically be carried out on an annual basis, after the spring run-off period.

- Asphalt surface repairs / rout and seal; this would include cold patch asphalt repairs, routing and sealing of wide cracks in asphalt. This operation would typically be carried out an annual basis, after winter clearing operations have ceased.

- Re-grading of approach roadways (gravel roadway surfaces); this would include placing and grading fresh granular material on roadway surfaces. The timing of this work would depend on the overall volume and type of traffic typically traversing the roadway (truck haul route, summer cottage traffic route, etc.). Typically, this work would be carried out on an annual or bi-annual basis.

- Bridge deck drainage: this would include maintaining existing deck drains free of debris and maintaining them in an un-plugged condition. This operation would typically be carried out an annual basis, after winter clearing operations have ceased.

- Clearing of debris / vegetation from approach guiderail; this would involve removing debris and vegetation from in front of approach guiderail. Although this is mainly a safety measure (to ensure proper performance of the guiderail), it also assists in prolonging the lifespan of the guiderail (accumulation of debris can accelerate rot on wooden posts, corrosion on steel guiderail, etc.).

- Surface sealing of exposed concrete surfaces; this would include cleaning and applying a concrete sealer on concrete surfaces exposed within the splash zone (exposed concrete decks, curbs, sidewalks, and barrier walls); this operation is not typically required on an annual basis and would typically be completed in 3-5 year intervals. Sealing concrete surfaces periodically assists in minimizing the migration of chlorides into the concrete.

6.0 ASSET MANAGEMENT INFORMATION

As previously mentioned, all structures were visited and inspected in conformance with the requirements of the Ontario Structure Inspection Manual (2018 Revision). Based on the results of the inspections, additional engineering investigations and evaluations were recommended and repair / rehabilitation needs were also identified, with budgetary costs provided for each.

Although OSIM inspections (generally performed every 2 years) are a useful screening tool to identify upcoming structure needs and costs, these inspections solely rely on visual evidence of deterioration and do not take into account the age (life cycles) of individual structures, nor do they take into account the potential for hidden deterioration (which could be revealed with further investigations such as detailed bridge condition surveys, rehabilitation studies, etc.).

To provide the Township with a more useful planning tool for the management of their structure inventory, all the information gathered from the OSIM inspections was summarized in an asset information summary table (refer to ***Appendix A***). This table presents basic asset information for the structures such as structure name, structure location, type of structure, basic geometry, year constructed / year last rehabilitated, and replacement value in 2025 dollars (based on current geometry). The table also presents updated BCI values for each structure as calculated by HP Engineering, based on the individual updated element condition ratings for each structure.

The table also provides a proposed year-by-year 10-year asset management plan for the structures. The year-by-year plan takes into consideration the age of the structures and their known (major) rehabilitation history. The plan assumes a distribution of the structure replacements and major / minor rehabilitation works per year over the next 10 years. A breakdown of the 10-year asset management plan presenting year anticipated costs based on the recommendations provided is presented in Appendix B.

It is noted that the asset management information as discussed above (and presented in ***Appendix A***) was developed based on the current information available for the structures, the results of the current OSIM inspections and based on the overall assumptions presented above.

7.0 DISCUSSION

HP Engineering has completed the biennial inspections of a total of 45 structures (17 bridges and 28 culverts) owned and maintained by the Township of North Dundas. The field inspections were conducted in the summer of 2025.

After the completion of the inspections, inspection forms were prepared for each individual structure and are appended in Attachment 1. A Summary Table (presented in ***Appendix A***) was also developed to provide the Township of North Dundas with the necessary information to develop preliminary budgets and set priorities for future further structure investigations / evaluations and structure rehabilitation / replacement programs. This Table should get updated yearly as work is undertaken. The costs for individual structures (as presented in the Summary Table) are based on benchmark costs developed for this study and should be used for budgeting purposes only. It should be noted that, in most cases, more accurate cost estimates for each structure's needs could only be developed upon completion of the additional engineering investigation / evaluations and upon completion of at least a preliminary level of design. Caution should be exercised in utilizing these numbers at face value for future budget planning.

We trust this report and attachments satisfies the Township's requirements. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Respectfully Submitted,
December 24, 2025

HP ENGINEERING
HP ENGINEERINC INC.

LICENSED PROFESSIONAL ENGINEER
24/12/2025
V.K.T. DWIVEDI
100073709
PROVINCE OF ONTARIO

Tashi Dwivedi, P.Eng.
President

APPENDIX A

ASSET INFORMATION SUMMARY

Appendix A : Asset Information Summary

Township of North Dundas

2023 BIENNIAL INSPECTIONS

Structure No.	Structure Name	Inspected By	Inspection Year	Northing	Easting	Location	Bridge/ Culvert	Structure Type	Year Built (Est.)	Year of Last Rehabilitation	ADT	Bridge Length (m)	Number of Barrels (Culvert, Spans Bridge)	Total Span Length (m) (Culvert, Total Barrel Length of Arch) (m)	Total Width (Bridge) / Individual Barrel Span Diameter (Culvert) (m)	Roadway Width (m)	Legal Speed Limit (km/h)	Existing Surface Area (m²)	Replacement Cost / Existing Geometry ($000s)	BCI	Estimated Remaining Service Life (Years)	Overall Condition Rating	Immediate Intervention Required				Additional Investigations Required & Costs							Recommended Work				Timing & Costs for Recommended Work (within)			Principal Maintenance Needs					Common Deficiencies Warranting Short Term Intervention					Approach / Bridge Barriers			Year of Study / Detailed Design	Estimated Cost of Study / Detailed Design ($000)	Year of Rehabilitation	Estimated Cost of Rehabilitation ($000)
																							Closure	Temporary Support	Urgent Inspection	Other	Rehab. / Replac. Study	Detailed Condition Survey	Structural Calculation	Monitoring	Supplemental Inspection	Detailed Safety Review	Other	Replace Structure	Major Rehabilitation	Minor Rehabilitation	Rehabilitation Deemed	Urgent	1-5 Years	6-10 Years	Bridge Painting	Vegetation Clearing	Concrete Repairs	Scenic Restoration	Roadway Surface Repairs	Other	Joint Deterioration / Leakage	Severe Rutting / Pothole(s)	Channel Debris Build Up	Severe Erosion	Other	No Barrier Present	Existing Barrier Needs Upgrading	Combination Barriers Present					
CUS018	Webb Rd & Whittaker MD Culvert	HP Engineering Inc.	2023	45.05671	-75.2979	1.3 km North of Neuburg Rd	Culvert	4-Cell CSP Round Culvert	-	-	49		4	7.00	3.70	5.50	60	22	314	44	-	P																																	
BR1006	Cameron Rd & Near Boundary Rd Bridge	HP Engineering Inc.	2023	44.995	-75.51611	50m East of Boundary Rd	Bridge	Slab on Steel I-Girders	-	2013	205		1	11.50	6.00	10.40	60	69	828	54	18	P																																	
CUS010	Development Rd CPR Railway Culvert	HP Engineering Inc.	2025	45.0447765	-75.452506	1.0km South of County Rd 43, South of CPR Rail tracks	Culvert	3-Cell CSP Round Culvert	-	-	88		3	29.40	3.00	6.40	80	61	612	41	-	P																																	
CUS005	Kerrs Ridge Rd Allowance & Castor Extension MD Culvert	HP Engineering Inc.	2023	45.09437	-75.42706	0.6km West of Jennings Road	Culvert	SPCSP Arch Culvert	-	-	49		1	15.00	4.00	5.00	60	60	720	51	-	P																																	
CUS016	Pemberton & Mullin Rd MD Culvert	HP Engineering Inc.	2023	45.04404	-75.3422	0.45km South of Hogsboarn road	Culvert	SPCSP Arch Culvert	-	-	49		1	13.70	3.00	4.00	50	41	493	54	-	P																																	
CUS022	Neilson Rd & Barkley Creek MD Culvert	HP Engineering Inc.	2025	45.051331	-75.26076	0.3 km West of Shay Rd	Culvert	SPCSP Arch Culvert	-	-	115		1	17.50	4.60	5.80	60	84	1,008	80	-	F																																	
CUS014	River Rd & Kittle Creek MD Culvert	HP Engineering Inc.	2023	45.100713	-75.250927	0.2km South of County Rd 43	Culvert	CSP Horizontal Ellipse Culvert	-	-	150		1	21.00	5.50	7.00	60	116	1,155	65	-	F																																	
CUC006	Winchester Main St & Henderson Creek MD Culvert	HP Engineering Inc.	2025	45.0953684	-75.2471575	0.5km East of Ottawa St	Culvert	Concrete Rigid Frame (Open Footing)	-	-	150		1	25.30	3.90	6.00	80	99	987	67	-	F																																	
CUC008	Nation Valley Rd & Servage MD Culvert	HP Engineering Inc.	2025	45.07386	-75.26137	60m West of Forward Rd	Culvert	Concrete Rigid Frame (Open Footing)	-	-	1819		3	15.30	3.10	9.80	50	47	569	59	-	P																																	
CUS012	Finch Winchester Boundary Rd & Stoney Creek MD Culvert	HP Engineering Inc.	2025	45.16392	-75.19492	0.4 km South of County Rd 9	Culvert	CSP Round Culvert	-	-	117		1	7.50	3.50	4.60	60	26	368	43	-	P																																	
CUS013	Van Camp Rd & North Branch South Nation River MD Culvert	HP Engineering Inc.	2025	45.01981	-75.46735	0.25km West of Cnaille Road 1	Culvert	2-Cell SPCSP Culvert	-	-	49		2	23.50	5.40	6.40	60	127	1,269	63	-	F																																	
BR1005	Uncumb Rd & Annable MD Bridge	HP Engineering Inc.	2025	45.10424	-75.3622	0.35km West of County Rd 3	Bridge	Concrete Rigid Frame	-	2001	434		1	5.50	6.40	6.60	50	34	475	65	1	F																																	
CUS015	Guy Rd & Mullin MD Culvert	HP Engineering Inc.	2023	45.0436194	-75.3733288	0.5km East of Browne Lane	Culvert	SPCSP Arch Culvert	-	-	152		1	16.80	3.30	5.80	60	55	665	70	-	G																																	
BR1004	Development Rd & North Branch of South Nation River MD Bridge	HP Engineering Inc.	2025	45.044685	-75.449811	1.25m North of Van Camp Road	Bridge	Slab on Steel I-Girders	-	2003	399		1	25.90	8.90	8.00	40	249	2,486	71	3	G																																	
BR1014	Bridge St & South Nation River Bridge	HP Engineering Inc.	2025	44.99324	-75.45054	0.3km North of Sandy Road Road	Bridge	Slab on Concrete Box Girders	-	2021	-		1	14.70	8.30	7.00	60	125	1,490	73	21	G																																	
BR1001	Brimacde Rd & South Castor Creek Bridge	HP Engineering Inc.	2025	45.1253948	-75.4590661	5.0km West of County Rd 31	Bridge	Slab on Concrete Box Girders	1977	N/A	-		1	30.20	7.00	4.90	50	211	1,901	73	27	G																																	
BR1002	Brimacde Rd & South Castor Creek Bridge	HP Engineering Inc.	2025	45.1369002	-75.4657242	2.1km West of County Rd 31	Bridge	Slab on Concrete Box Girders	1981	N/A	360		1	12.20	10.50	7.00	80	128	1,409	70	31	G																																	
BR1003	Ormsud Bridge	HP Engineering Inc.	2025	45.1653584	-75.3556303	0.2km West of Bisson Road	Bridge	Reinforced Concrete Solid Slab	1941	2018	360		1	17.40	10.50	7.70	80	183	2,010	73	31	G																																	
BR1004	Cayer Rd & Armable Creek MD Bridge	HP Engineering Inc.	2025	45.11122	-75.35926	0.5km North of County Road 3	Bridge	Precast Concrete Box Culvert	1979	N/A	46		3	32.30	9.10	7.50	80	294	2,645	72	29	G																																	
BR1008	Van Camp Rd & North Branch South Nation River Bridge	HP Engineering Inc.	2023	45.03646	-75.4361	0.5km east of Development Road	Culvert	Precast Concrete Box Culvert	2022	N/A	668		1	17.10	6.30	4.00	60	108	1,293	75	72	G																																	
BR1010	Cameron Rd & North Branch South Nation River MD Bridge	HP Engineering Inc.	2025	45.03032	-75.41273	1.5km West of County Road 3	Bridge	Slab on Concrete Box Girders	1979	1998	250		1	14.70	9.00	8.00	80	132	1,586	69	5	F																																	
BR1011	Nation Valley Rd & South Nation River Bridge	HP Engineering Inc.	2025	45.0681762	-75.2506069	70m South of River Rd	Bridge	Slab on CPCI Girders	-	N/A	205		1	18.30	9.00	7.30	80	165	1,976	75	-	G																																	
BR1012	Nation Valley Rd & Barkley Creek Bridge	HP Engineering Inc.	2025	45.0663325	-75.2830706	5.0 km West of County Rd 43	Bridge	Slab on CPCI Girders	1980	N/A	111		5	60.10	9.20	7.30	50	636	5,721	72	30	G																																	
BR1013	Timmon Rd & North Branch South Nation river Bridge	HP Engineering Inc.	2025	45.02092	-75.36608	0.8km South of County Rd 3	Culvert	Concrete Rigid Frame CIP T-Beam	2023	N/A	-		2	9.15	4.20	5.30	50	38	534	75	73	G																																	
BR1015	Limerick Rd & McMillan Rd Bridge	HP Engineering Inc.	2025	45.0798703	-75.2027987	0.5km East of County Rd 5	Bridge	Slab on Concrete Box Girders	1987	2006	75		1	20.80	10.10	9.00	60	210	1,996	73	6	G																																	
BR1017	Bigford Bridge	HP Engineering Inc.	2025	45.00415	-75.38276	0.2km North of County Road 5	Bridge	Concrete Rigid Frame - Arch	-	N/A	76		1	14.00	8.50	7.00	60	119	1,428	71	-	G																																	
BRT001	Chesterville Dam Structure Pedestrian Bridge	HP Engineering Inc.	2025	45.1012649	-75.2259991	90m South of Water St.	Bridge	Solid Slab	1943	N/A	50		1	12.20	10.50	7.00	80	129	1,409	74	33	G																																	
CUC001	Cayer Rd & McLean MD Culvert	HP Engineering Inc.	2025	45.137014	-75.378067	0.5Km South of County Rd 13	Bridge	Pedestrian bridge (Solid Concrete Slab)	-	N/A	-		6	42.00	4.00	4.00	-	168	1,512	75	-	G																																	
CUC002	Cayer Rd & Cinnamon MD Culvert	HP Engineering Inc.	2025	45.12935	-75.37231	1.3Km South of County Rd 13	Culvert	Precast Concrete Box Culvert	-	-	669		1	11.70	3.00	6.40	60	35	421	69	-	F																																	
CUC003	Timmons Rd & Black Creek MD Culvert	HP Engineering Inc.	2025	45.15021	-75.31702	Intersection of Timmmon Rd and Stiles Rd	Culvert	Concrete Rigid Frame (Open Footing)	-	-	668		1	19.50	8.10	8.00	60	119	1,427	75	-	G																																	
CUC004	Cayer Rd & Castor Extension MD Culvert	HP Engineering Inc.	2025	45.1211	-75.36599	2.4Km South of County Rd 13	Culvert	Precast Concrete Box Culvert	-	-	232		1	15.90	3.90	6.00	60	57	867	74	-	G																																	
CUC005	Kerrs Ridge Rd & Castor Extension MD Culvert	HP Engineering Inc.	2025	45.0820032	-75.42939	0.6km North of Spratt Rd	Culvert	2-Cell Precast Concrete Box Culvert	-	-	668		2	18.00	4.25	6.00	60	77	918	74	-	G																																	
CUC007	Guy Rd & East Junior MD Culvert	HP Engineering Inc.	2025	45.0502986	-75.358644	2.5km West of County Rd 31	Culvert	Precast Concrete Box Culvert	-	-	67		1	14.50	3.40	4.50	60	49	592	71	-	G																																	
CUC009	Nation River Rd & Yager MD Culvert	HP Engineering Inc.	2025	44.98921	-75.42351	1.0 km East of Wallace Road	Culvert	Cast-in-place Concrete box, culvert	-	-	152		1	12.80	4.20	6.00	60	54	845	74	-	G																																	
CUS011	Marionville Rd & Lough MD Culvert	HP Engineering Inc.	2025	45.1638561	-75.3196042	0.4Km East of Rodney Ln	Culvert	Precast Concrete Box Culvert	-	-	316		1	17.40	3.00	5.80	60	52	826	74	-	G																																	
CUS002	Carruthers Rd & Moffat Creek MD Culvert	HP Engineering Inc.	2025	45.1917335	-75.2836433	0.85km East of County Rd 7	Culvert	CSP Arch Culvert	-	-	260		1	28.70	3.20	6.00	60	92	918	75	-	G																																	
CUS003	Allen Rd & Allen Creek MD Culvert	HP Engineering Inc.	2025	45.08615	-75.355913	0.5km South of French Settlement Road	Culvert	SPCSP Arch Culvert	-	-	100		1	16.80	3.70	5.80	60	62	766	67	-	F																																	
CUS006	Jennings Rd & Castris Extension MD Culvert	HP Engineering Inc.	2023	45.10904	-75.42241	2.2Km North of Spratt Rd	Culvert	Corrugated Steel Pipe Arch Culvert	-	-	85		1	18.30	3.10	5.50	60	57	681	67	-	F																																	
CUS007	Spratt Rd						Culvert	SPCSP Arch Culvert	2024	-	49		1	15.40	2.20	5.70	50	34	407	99	49	B																																	
CUS008	Lincumb Rd & Tighe MD Culvert	HP Engineering Inc.	2025	45.1035524	-75.3634268	0.6km West of County Rd 3	Culvert												0	0																																	
CUS009	Boyne Rd & Kittle Creek MD Culvert	HP Engineering Inc.	2025	45.1266729	-75.261989	1.2km East of Kittle Rd	Culvert	SPCSP Arch Culvert	-	-	-		1	15.30	4.30	10.60	80	66	826	69	-	F																																	
CUS011	Kittle Rd & Kittle Creek MD Culvert	HP Engineering Inc.	2025	45.11776	-75.25508	1.7km West of County Rd 7	Culvert	2-Cell CSP Round Culvert	-	-	160		2	18.30	1.50	8.60	60	27	329	75	-	G																																	
CUS017	Nation Valley Rd & Dillabough Creek MD Culvert	HP Engineering Inc.	2025	45.0818681	-75.2464547	2.4Km West of County Rd 43	Culvert	2-Cell CSP Round Culvert	-	-	68		2	12.20	1.50	6.00	60	18	220	89	-	F																																	
CUS021	Nesbitt Rd & Whittaker MD Culvert	HP Engineering Inc.	2023	45.04451	-75.2937	0.6 km East of Country Rd 31	Culvert	SPCSP Arch Culvert	-	-	117		1	17.40	3.30	6.40	60	57	689	75	-	G																																	
							Culvert	Super Cur Culvert	-	-	153		1	13.80	10.90	8.50	60	126	1,560	72	-	G																																	
TOTALS																				50,898							438	70	15	30	0	125						314	11,896	3,041											2,203		15,250	

NOTES:

HP Engineering Inc.
2019 Robertson Road, Suite 221, Ottawa, Ontario, K2H 5B2
Telephone: 613-695-3748

Appendix A : Asset Information Summary- Sorted by Year

Structure No.	Structure Name	Inspected By	Inspection Year	Northing	Easting	Location	Bridge / Culvert	Structure Type
CUS018	Webb Rd & Whittaker MD Culvert	HP Engineering Inc	2025	45.05621	-75.2979	1.1 km North of Nesbitt Rd	Culvert	4-Cell CSP Round Culvert
BRH009	Cameron Rd & Near Boundary Rd Bridge	HP Engineering Inc	2025	44.995	-75.51611	50m East of Boundary Rd	Bridge	Slab on Steel I-Girders
CUS010	Development Rd CPR Railway Culvert	HP Engineering Inc	2025	45.047765	-75.45206	1.0km South of County Rd 43, South of CPR Rail tracks	Culvert	3-Cell CSP Round Culvert
CUS005	Kerrs Ridge Rd Allowance & Castor Extension MD Culvert	HP Engineering Inc	2025	45.09437	-75.42706	0.6km Wset of Jennings Road	Culvert	SPCSP Arch Culvert
CUS006	Spruit Rd & Castor Extension MD Culvert	HP Engineering Inc	2025	45.0795168	-75.4313356	0.45km West of Riddell Rd	Culvert	SPCSP Arch Culvert
CUS016	Pemberton & Mulin Rd MD Culvert	HP Engineering Inc	2025	45.04404	-75.3422	0.45km South of Hogaboam road	Culvert	SPCSP Arch Culvert
CUS022	Nesbitt Rd & Barkley Creek MD Culvert	HP Engineering Inc	2025	45.05131	-75.28076	0.3 km West of Shay Rd	Culvert	SPCSP Arch Culvert
CUS014	River Rd & Kittle Creek MD Culvert	HP Engineering Inc	2025	45.100715	-75.250827	0.2km South of County Rd 43	Culvert	CSP Horizontal Ellipse Culvert
CUC006	Winchester Main St & Henderson Creek MD Culvert	HP Engineering Inc	2025	45.0953686	-75.3471575	0.3km East of Ottawa St.	Culvert	Concrete Rigid Frame (Open Footing)
CUC008	Nation Valley Rd & Servage MD Culvert	HP Engineering Inc	2025	45.07586	-75.26137	60m West of Forward Rd	Culvert	Concrete Rigid Frame (Open Footing)
CUS012	Finch Winchester Boundary Rd & Stoney Creek MD Culvert	HP Engineering Inc	2025	45.16392	-75.19492	0.4 km South of County Rd 9	Culvert	CSP Round Culvert
CUS013	Van Camp Rd & North Branch South Nation River MD Culvert	HP Engineering Inc	2025	45.01981	-75.48735	0.25km West of County Road 1	Culvert	2-Cell SPCSP Culvert
BRH005	Liscumb Rd & Annable MD Bridge	HP Engineering Inc	2025	45.10424	-75.3622	0.35km West of County Rd 3	Bridge	Concrete Rigid Frame
CUS015	Guy Rd & Mullin MD Culvert	HP Engineering Inc	2025	45.0436194	-75.3733288	0.5km East of Browns Lane	Culvert	SPCSP Arch Culvert
BRH006	Development Rd & North Branch of South Nation River MD Bridge	HP Engineering Inc	2025	45.044685	-75.449811	1.2km North of Van Camp Road	Bridge	Slab on Steel I-Girders
BRH007	Levere Rd & North Branch South Nation River Bridge	HP Engineering Inc	2025	45.0456626	-75.4447956	0.4 km East of Development Road	Bridge	Slab on Concrete Box Girders
BRH014	Bridge St & South Nation River Bridge	HP Engineering Inc	2025	44.98924	-75.45054	0.3km North of Sandt Road Road	Bridge	Slab on Concrete Box Girders
BRH001	Belmeade Rd & South Castor Creek Bridge	HP Engineering Inc	2025	45.1253948	-75.4990661	5.0km West of County Rd 31	Bridge	Slab on Concrete Box Girders
BRH002	Belmeade Rd & South Castor Creek Bridge	HP Engineering Inc	2025	45.1366902	-75.4657242	2.1km West of County Rd 31	Bridge	Slab on Concrete Box Girders
BRH003	Ormond Bridge	HP Engineering Inc	2025	45.1653584	-75.3556303	0.2km West of Bisson Road	Bridge	Reinforced Concrete Solid Slab
BRH004	Cayer Rd & Annable Creek MD Bridge	HP Engineering Inc	2025	45.11122	-75.35826	0.5km North of County Road 3	Culvert	Precast Concrete Box Culvert
BRH008	Van Camp Rd & North Branch South Nation River Bridge	HP Engineering Inc	2025	45.03686	-75.4361	0.5km east of Development Road	Bridge	Slab on Concrete Box Girders
BRH010	Cameron Rd & North Branch South Nation River MD Bridge	HP Engineering Inc	2025	45.03032	-75.41273	1.5km West of County Road 3	Bridge	Slab on CPCI Girders
BRH011	Nation Valley Rd & South Nation River Bridge	HP Engineering Inc	2025	45.0681762	-75.2806069	70m South of River Rd	Bridge	Slab on CPCI Girders
BRH012	Nation Valley Rd & Barkley Creek Bridge	HP Engineering Inc	2025	45.0666325	-75.2830706	5.0 km West of County Rd 43	Culvert	Concrete Rigid Frame CIP T-Beam
BRH013	Timmins Rd & North Branch South Nation river Bridge	HP Engineering Inc	2025	45.02092	-75.38608	0.8km South of County Rd 3	Bridge	Slab on Concrete Box Girders
BRH015	Limerick Rd & McMillan Rd Bridge	HP Engineering Inc	2025	45.0798707	-75.2027987	0.8km East of County Rd 8	Bridge	Concrete Rigid Frame - Arch
BRH017	Bigford Bridge	HP Engineering Inc	2025	45.00415	-75.36276	0.2km North of County Road 5	Bridge	Solid Slab
BRT001	Chesterville Dam Structure Pedestrian Bridge	HP Engineering Inc	2025	45.1012649	-75.2259991	30m South of Water St.	Bridge	Pedestrian bridge (Solid Concrete Slab)
CUC001	Cayer Rd & McLean MD Culvert	HP Engineering Inc	2025	45.137014	-75.378067	0.5km South of County Rd 13	Culvert	Precast Concrete Box Culvert
CUC002	Cayer Rd & Cinnamon MD Culvert	HP Engineering Inc	2025	45.12935	-75.37231	1.3km South of County Rd 13	Culvert	Concrete Rigid Frame (Open Footing)
CUC003	Thompson Rd & Black Creek MD Culvert	HP Engineering Inc	2025	45.15021	-75.31702	Intersection of Thompson Rd and Steen Rd	Culvert	Precast Concrete Box Culvert
CUC004	Cayer Rd & Castor Extension MD Culvert	HP Engineering Inc	2025	45.1211	-75.36599	2.4km South of County Rd 13	Culvert	2-Cell Precast Concrete Box Culvert
CUC005	Kerrs Ridge Rd & Castor Extension MD Culvert	HP Engineering Inc	2025	45.0872072	-75.4293937	0.6km North of Spruit Rd	Culvert	Precast Concrete Box Culvert
CUC007	Guy Rd & East Justus MD Culvert	HP Engineering Inc	2025	45.0502886	-75.35644	2.5km West of County Rd 31	Culvert	Cast-in-place Concrete box culvert
CUC009	Nation River Rd & Hager MD Culvert	HP Engineering Inc	2025	44.96921	-75.47351	1.0 km East of Wallace Road	Culvert	Precast Concrete Box Culvert
CUS001	Marionville Rd & Lough MD Culvert	HP Engineering Inc	2025	45.1638561	-75.396942	0.4km East of Rodney Ln	Culvert	CSP Arch Culvert
CUS002	Carruthers Rd & Muffat Creek MD Culvert	HP Engineering Inc	2025	45.1917335	-75.2836435	0.85km East of County Rd 7	Culvert	SPCSP Arch Culvert
CUS003	Allen Rd & Allen Creek MD Culvert	HP Engineering Inc	2025	45.08615	-75.55013	0.5km South of French Settlement Road	Culvert	Corrugated Steel Pipe Arch Culvert
CUS004	Jennings Rd & Castor Extension MD Culvert	HP Engineering Inc	2025	45.1004	-75.42241	2.2km North of Spruit Rd	Culvert	SPCSP Arch Culvert
CUS007	Spruit Rd					0.43lm East of Riddell Rd.	Culvert	
CUS008	Liscumb Rd & Tighe MD Culvert	HP Engineering Inc	2025	45.1035524	-75.3634268	0.6km West of County Rd 3	Culvert	SPCSP Arch Culvert
CUS009	Boyne Rd & Kittle Creek MD Culvert	HP Engineering Inc	2025	45.1266729	-75.261989	1.2km East of Kittle Rd	Culvert	2-Cell CSP Round Culvert
CUS011	Kittle Rd & Kittle Creek MD Culvert	HP Engineering Inc	2025	45.11716	-75.25508	1.3km West of County Rd 7	Culvert	2-Cell CSP Round Culvert
CUS017	Nation Valley Rd & Dillabough Creek MD Culvert	HP Engineering Inc	2025	45.0818683	-75.2464547	2.4km West of County Rd 43	Culvert	SPCSP Arch Culvert
CUS021	Nesbitt Rd & Whittaker MD Culvert	HP Engineering Inc	2025	45.04451	-75.2987	0.6 km East of County Rd 31	Culvert	Super Cor Culvert
TOTALS								

Structure No.	Year Built (Age)	Year of Last Rehabilitation	AADT	Detour Length (km)	Number of Barrels (Culverts) / Spans (Bridge)	Total Span Length (Bridge) / Total Barrel Length (Culverts) (m)	Total Width (Bridge) / Individual Barrel Span (Culverts) (m)	Roadway Width (m)	Legal Speed (km/h)	Existing Surface Area (m²)	Replacement Cost - Existing Geometry ($000)	BCI	Estimated Remaining Service Life	Overall Condition Rating
CUS018	-	-	49		4	7.00	3.20	5.50	60	22	314	44	-	P
BRH009	-	2018	205		1	11.50	6.00	10.40	60	69	828	54	18	P
CUS010	-	-	88		3	20.40	3.00	6.40	80	61	612	41	-	P
CUS005	-	-	49		1	15.00	4.00	5.00	60	60	720	51	-	P
CUS006	-	-	49		1	13.70	3.00	4.00	50	41	493	54	-	P
CUS016	-	-	115		1	17.50	4.80	5.80	60	84	1,008	60	-	F
CUS022	-	-	150		1	21.00	5.50	7.00	60	116	1,155	65	-	F
CUS014	-	-	150		1	25.30	3.90	6.00	80	99	987	67	-	F
CUC006	-	-	1810		1	15.30	3.10	9.80	50	47	569	59	-	P
CUC008	-	-	117		1	7.50	3.50	4.60	60	26	368	43	-	P
CUS012	-	-	49		2	18.30	1.50	4.60	60	27	329	64	-	F
CUS013	-	-	49		2	23.50	5.40	6.40	60	127	1,269	63	-	F
BRH005	-	2001	438		1	5.30	6.40	4.60	50	34	475	65	1	F
CUS015	-	-	152		1	16.80	3.30	5.80	60	55	665	70	-	G
BRH006	-	2003	399		1	25.90	9.60	8.00	80	249	2,486	71	3	G
BRH007	-	2021	-		1	14.70	8.50	7.00	60	125	1,499	73	21	G
BRH014	1977	N/A	-		1	30.20	7.00	4.90	50	211	1,903	73	27	G
BRH001	1981	N/A	360		1	12.20	10.50	7.00	80	128	1,409	70	31	G
BRH002	1981	2018	360		1	17.40	10.50	7.30	80	183	2,010	73	31	G
BRH003	1979	N/A	40		3	32.30	9.10	7.50	80	294	2,645	72	29	G
BRH004	2022	N/A	668		1	17.10	6.30	8.00	60	108	1,293	75	72	G
BRH008	1979	1990	250		1	14.70	9.00	6.00	80	132	1,588	69	5	F
BRH010	-	N/A	205		1	18.30	9.00	7.30	80	165	1,976	75	-	G
BRH011	1980	N/A	117		3	69.10	9.20	7.30	50	636	5,721	72	30	G
BRH012	2023	N/A	-		2	9.15	4.20	5.50	50	38	538	75	73	G
BRH013	1987	2006	75		1	20.80	10.10	9.00	60	210	1,996	73	6	G
BRH015	-	N/A	76		1	14.00	8.50	7.00	60	119	1,428	71	-	G
BRH017	1983	N/A	50		1	12.20	10.50	7.00	80	128	1,409	74	33	G
BRT001	-	N/A	-		6	42.00	4.00	4.00	-	168	1,512	75	-	G
CUC001	-	-	669		1	11.70	3.00	6.40	60	35	421	69	-	F
CUC002	-	-	668		1	19.50	6.10	6.00	60	119	1,427	75	-	G
CUC003	-	-	232		1	15.90	3.60	6.00	60	57	687	74	-	G
CUC004	-	-	668		2	18.00	4.25	6.00	60	77	918	74	-	G
CUC005	-	-	67		1	14.50	3.40	4.50	60	49	592	71	-	G
CUC007	-	-	152		1	12.80	4.20	6.00	60	54	645	74	-	G
CUC009	-	-	316		1	17.40	3.00	5.80	60	52	626	74	-	G
CUS001	-	-	200		1	28.70	3.20	6.00	60	92	918	75	-	G
CUS002	-	-	100		1	16.80	3.70	5.80	60	62	746	67	-	F
CUS003	-	-	88		1	18.30	3.10	5.50	60	57	681	67	-	F
CUS004	2024	-	49		1	15.40	2.20	5.70	50	34	407	99	49	E
CUS007										0	0			
CUS008	-	-	-		1	15.30	4.50	10.00	80	69	826	69	-	F
CUS009	-	-	100		2	18.30	1.50	8.40	60	27	329	75	-	G
CUS011	-	-	68		2	12.20	1.50	6.00	60	18	220	69	-	F
CUS017	-	-	117		1	17.40	3.30	6.40	60	57	689	75	-	G
CUS021	-	-	153		1	13.00	10.00	8.50	60	130	1,560	72	-	G
TOTALS											50,898			

Structure No.	Immediate Intervention Required: Closure	Temporary Support	Urgent Investigation	Other	Additional Investigations Required & Costs: Rehab. Replace Study	Detailed Condition Survey	Structural Evaluation	Monitoring	Supplemental Inspections	Roadside Safety Review	Recommended Work: Replace Structure	Minor Rehabilitation	Major Rehabilitation	Rehabilitate Element	Timing & Costs for Recommended Work ($000): Urgent	1-5 Years	6-10 Years
CUS018					20		15	5		5	Y				314		
BRH009					22						Y					828	
CUS010					20			5		5	Y					612	
CUS005					20			5		5	Y					720	
CUS006					20					5	Y					493	
CUS016					20			5		5	Y					1,008	
CUS022					20			5		5	Y					1,155	
CUS014					20			5		5	Y					987	
CUC006					20					5		Y				142	
CUC008					20					5	Y					368	
CUS012					20					5			Y			198	
CUS013					20								Y			761	
BRH005					22					5		Y				119	
CUS015					20					5	Y						665
BRH006					22								Y				1,492
BRH007					22								Y			375	
BRH014					22								Y			476	
BRH001						20						Y				352	
BRH002						20						Y				502	
BRH003						15											
BRH004																	
BRH008																	
BRH010					22							Y					494
BRH011					22							Y				1,430	
BRH012																	
BRH013					22	15						Y				499	
BRH015					22					5		Y				357	
BRH017												Y				352	
BRT001																	
CUC001																	
CUC002																	
CUC003										5							
CUC004																	
CUC005										5							
CUC007										5		Y				161	
CUC009										5							
CUS001										5							
CUS002										5							
CUS003										5							
CUS004										5							
CUS007																	
CUS008										5							
CUS009										5							
CUS011										5							
CUS017										5							
CUS021												Y					390
TOTALS					438	70	15	30	0	125					314	11,896	3,041

Structure No.	Principal Maintenance Needs: Bridge Cleaning	Vegetation Clearing	Concrete Repairs	Signage Restoration	Roadway Surface Repairs	Other	Common Deficiencies Warranting Short Term Intervention: Joint Deterioration / Leakage	Severe Barrier Damage	Channel Debris Build-Up	Severe Erosion	Other	Approach / Bridge Barriers: No Barrier Present	Existing Barrier Non-Conforming	Conforming Barriers Present	Year of Study / Detailed Design	Estimated Cost of Study / Detailed Design ($000)	Year of Rehabilitation	Estimated Cost of Rehabilitation ($000)
CUS018									Y			Y			2025	76	2026	314
BRH009														Y	2026	105	2027	828
CUS010												Y			2026	91	2027	612
CUS005												Y			2027	102	2028	720
CUS006												Y			2027	74	2028	493
CUS016									Y			Y			2028	131	2029	1,008
CUS022												Y			2029	146	2030	1,155
CUS014												Y			2030	129	2031	987
CUC006												Y			2031	39	2032	142
CUC008										Y		Y			2031	62	2032	368
CUS012									Y			Y			2032	45	2033	198
CUS013														Y	2032	96	2033	761
BRH005					Y								Y		2033	39	2034	119
CUS015												Y			2034	92	2035	665
BRH006							Y	Y						Y	2035	171	2036	1,492
BRH007							Y							Y	2036	59	2037	375
BRH014							Y							Y	2036	70	2037	476
BRH001							Y							Y		55		352
BRH002				Y			Y							Y		70		502
BRH003	Y													Y		15		
BRH004									Y					Y				
BRH008							Y	Y						Y				
BRH010	Y													Y		71		494
BRH011														Y		165		1,430
BRH012								Y	Y					Y				
BRH013	Y						Y							Y		87		499
BRH015												Y				63		357
BRH017	Y													Y		35		352
BRT001														Y				
CUC001														Y				
CUC002														Y				
CUC003		Y										Y				5		
CUC004									Y					Y				
CUC005						Y							Y			5		
CUC007									Y			Y				21		161
CUC009												Y				5		
CUS001													Y			5		
CUS002												Y				5		
CUS003												Y				5		
CUS004												Y				5		
CUS007																		
CUS008						Y						Y				5		
CUS009												Y				5		
CUS011					Y	Y						Y				5		
CUS017									Y			Y				5		
CUS021									Y					Y		39		390
TOTALS																2,203		15,250

NOTES:

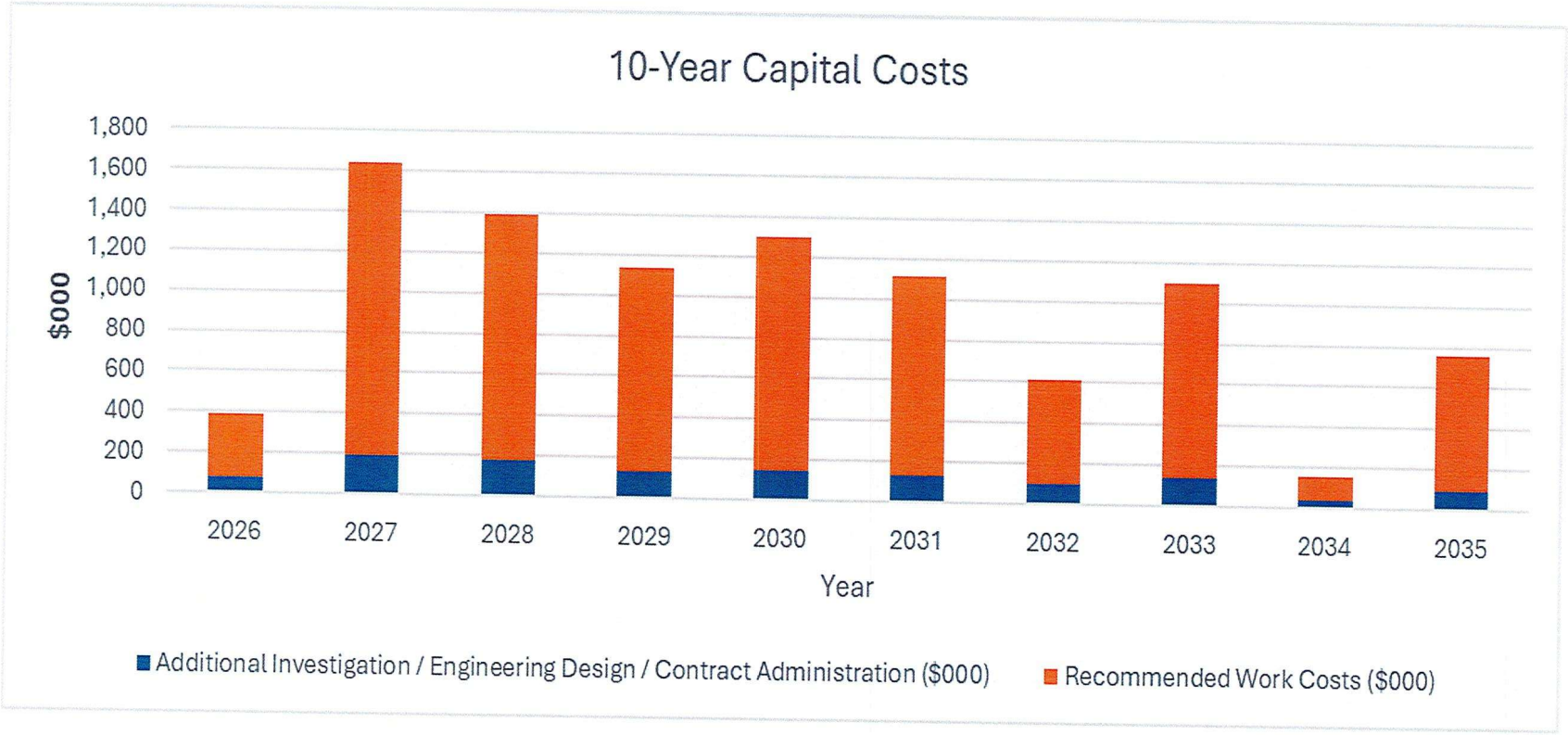
APPENDIX B

FORECAST CAPITAL EXPENDITURE

Appendix B : Forecast Capital Expenditure

North Dundas

Year	Additional Investigation / Engineering Design / Contract Administration ($000)	Recommended Work Costs ($000)
2026	76	314
2027	196	1,440
2028	176	1,213
2029	131	1,008
2030	146	1,155
2031	129	987
2032	101	510
2033	141	959
2034	39	119
2035	92	665
AVERAGE	**$122,593**	**$836,933**
SUB TOTAL	**$1,225,933**	**$8,369,330**
	COMBINED TOTAL COSTS	**$9,595,263**


10-Year Capital Costs
$000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
Year
Additional Investigation / Engineering Design / Contract Administration ($000)
Recommended Work Costs ($000)