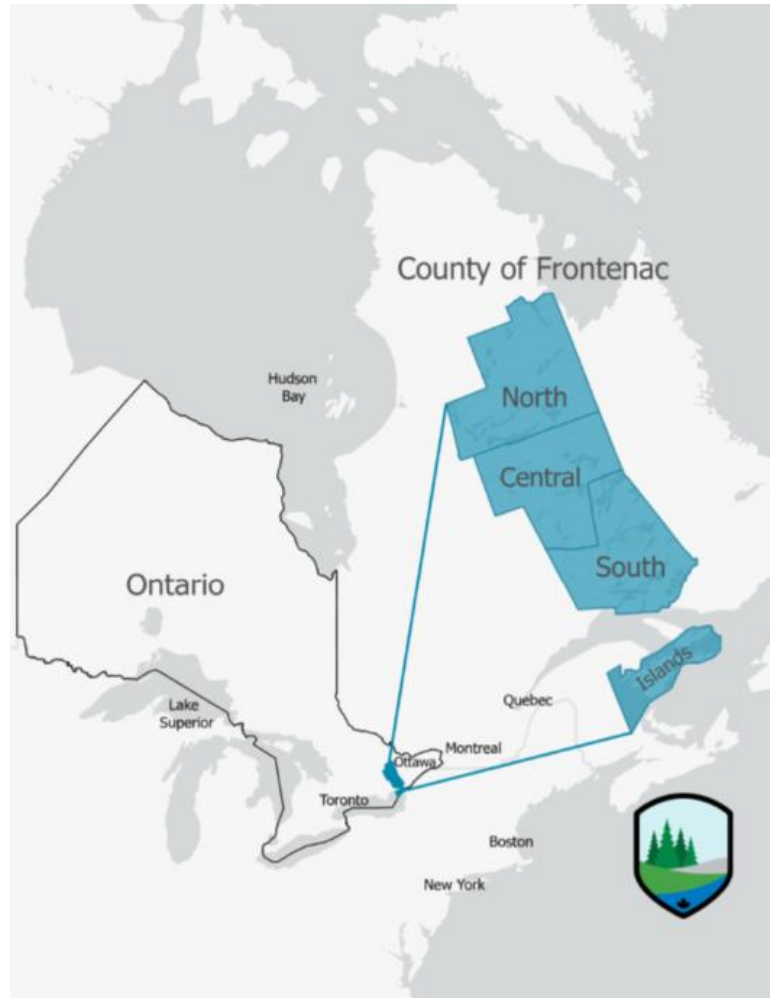


County of Frontenac  
Core Assets - K&P Trail  
Asset Management Plan 2022



Prepared by the County of Frontenac Staff



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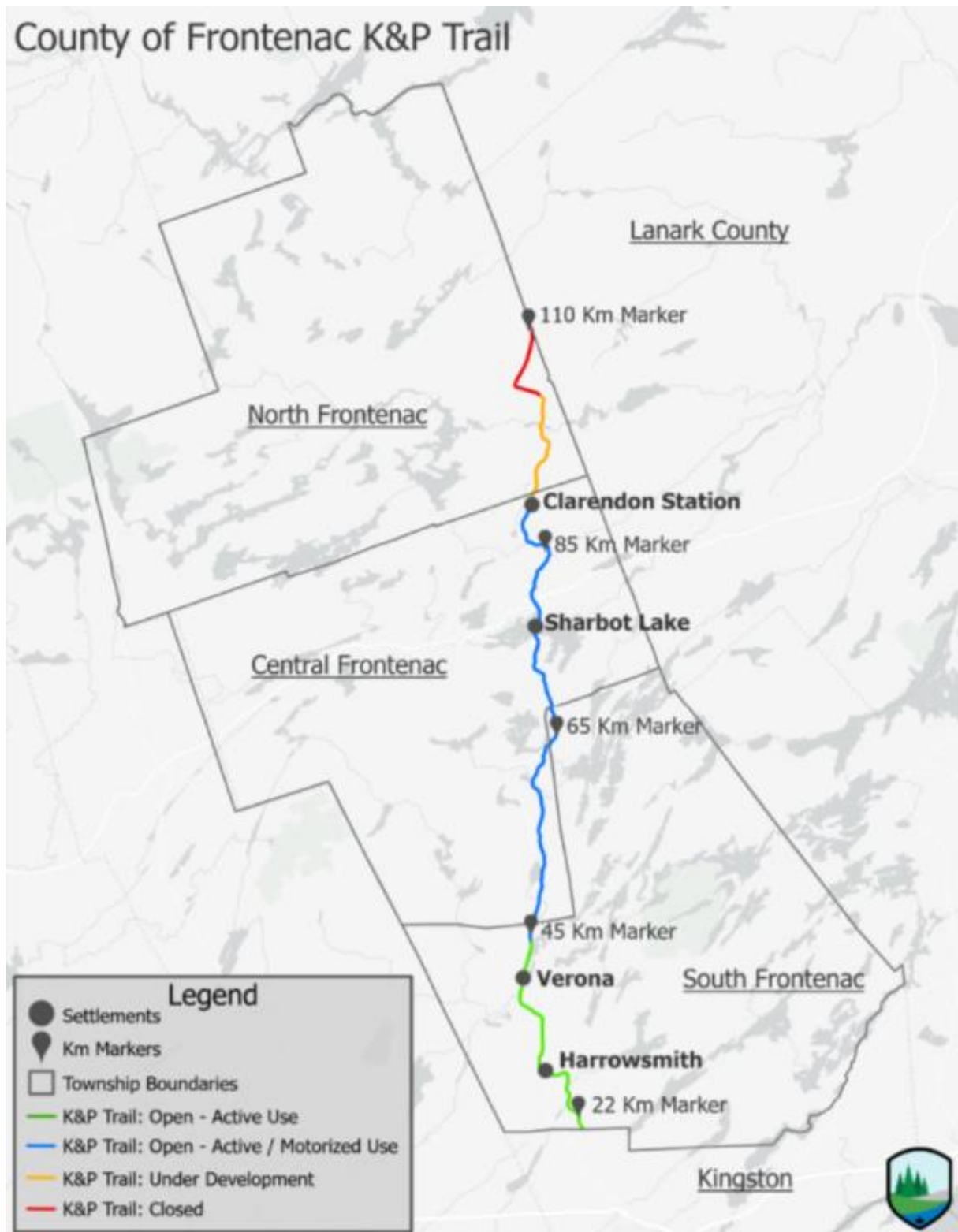


Figure 1 Map of K&P Trail

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# Executive Summary

## Context

Core assets are considered roads, bridges, culverts, water, wastewater, and stormwater management systems. The County of Frontenac does not maintain any roads but we do have bridges and culverts as part of the K&P Trail; this asset management plan will consider the K&P Trail as a whole for infrastructure asset purposes.

The County of Frontenac Council is the custodian of the K&P Trail which is held on behalf of the community. The trail runs from the County's south boundary with the City of Kingston, through South, Central, and North Frontenac Townships. While still under development, it will eventually reach 90 kilometres in length to meet the boundary with the County of Lanark to the north. Council holds these assets to support the delivery of recreation, transportation, and economic benefits to the community, as well as to visitors of Frontenac County.

The K&P Trail is an integral part of the County of Frontenac's Mission and Vision Statements:

### County of Frontenac Mission Statement

The effective, efficient, and sustainable delivery of service to citizens.

### County of Frontenac Vision Statement

The County of Frontenac is committed to sustaining diverse, strong, and resilient rural communities known for their unique natural environment and lifestyle choices.

This document serves as the asset management plan for the core assets of the County of Frontenac and the K&P Trail. The asset management plan for non-core assets will continue to refer to the 2013 Asset Management Plan prepared by Public Sector Digest and can be accessed here:

<https://www.frontenacounty.ca/en/resourcesGeneral/Planning-documents-/County-of-Frontenac-Asset-Management-Plan-2013.pdf>.

An updated plan for non-core assets will be available by July 1, 2024, in line with the deadlines proposed in Ontario Regulation 588/17 requirements.

## What is an Asset Management Plan?

An Asset Management Plan (AMP) is a process whereby all the information on infrastructure assets is assessed to ensure that delivery of services from the assets is done in a financially sustainable manner while meeting the customer expectations.

On December 27, 2017, the Ontario government released Ontario Regulation 588/17 Bill 6. This legislation sets out timelines and guidance for municipalities to approve an

Asset Policy and then subsequent Asset Management Plans for different categories of infrastructure assets.<sup>1</sup>

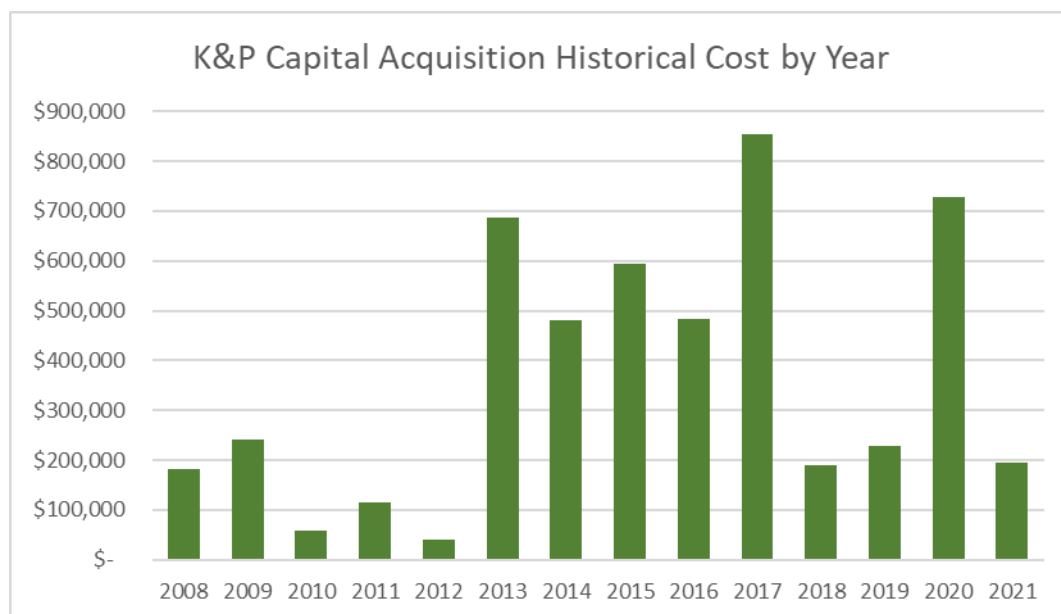
The County of Frontenac approved the Strategic Asset Management Policy at the June 19, 2019, Council meeting as presented in Report 2019-068 for By-Law 2019-0024<sup>2</sup>.

The core asset AMP, as mandated by the Ontario government and due July 1, 2022, requires identifying your assets, the current levels of service and the cost of maintaining those current levels of service<sup>3</sup>.

## What is it worth?

The K&P Trail has a current replacement value of \$5,670,221. This is based on capital costs expended on the trail since 2008, at current value for trail upgrades, bridges and culverts, and including the land purchased at historical value.

There are currently 8 bridges and 84 culverts on the developed portion of the trail. Bridges and culverts account for 26% of the replacement value, or \$1,488,859. The trail continues to grow as it is extended north to the boundary with Lanark County,



*Chart 1: Graph of Historical Capital Cost by Year*

## What will it cost?

The forecast financial outlays needed to provide the services covered by the Asset Management Plan, which includes operations, maintenance, renewal, and upgrade costs of existing and new assets over the next 20 years is an average of \$661,970 per

<sup>1</sup> O.Reg 588/17: <https://www.ontario.ca/laws/regulation/170588>

<sup>2</sup> Bylaw: <https://frontenac.civicweb.net/filepro/documents/169957/?preview=189058>; Policy available upon request

<sup>3</sup> O.Reg 588/17 deadlines: <https://www.ontariocanada.com/registry/view.do?postingId=37568>



year. The biggest investment in this trail will come in 2022 and 2023 as the trail is expanded the final 20 km to the north, with forecasted total costs of \$2,475,890 for those 2 years.

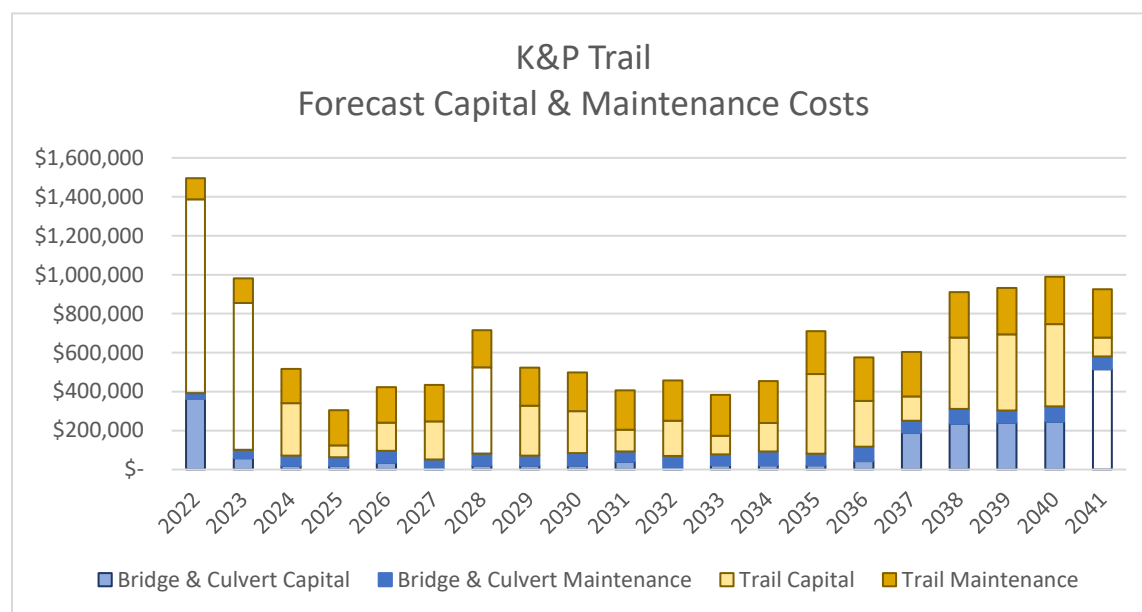


Chart 2: Graph of Forecast 20-Year Capital & Maintenance Costs

## What is the condition of the asset?

The condition of the K&P Trail is made up of component parts consisting of bridges, culverts and the trail surface.

- The bridges have been assessed every other year as required by Ontario Regulation 104/97 through the Ontario Structure Inspection Manual (OSIM) inspection.<sup>4</sup> This is a third-party review, as performed under the direction of a professional engineer and was last done in 2019 for 5 bridges and in 2020 for newly acquired bridges.
- The culverts were inventoried, and the condition assessed by internal County staff in 2020.
- The surface itself does not have a formalized condition assessment at this point but is maintained yearly and reviewed on a monthly basis. The trail has accounting data to determine the estimated useful life remaining.

<sup>4</sup> OSIM Manual:

<https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?component=AAAAIY&record=2cc7e50c-3d41-4468-90f1-0788368ce945>



Asset	Estimated Useful Life	Number of Assets	Average Rating	Estimated Useful Life Remaining	Average Life Remaining
Bridges	30 years	8	Fair	40-59%	12-18 years
Culverts	60 years	84	Good	60-79%	35-47 years
Trail Surface	15 years	70 km	Excellent	67%	10 years

*Chart 3: Table of Calculated Average Condition Rating*

## What are the risks?

- Lack of funding to pursue our goals and maintain the trail to the level of service indicated in the asset management plan
- Inability to acquire the land needed to extend the trail north.
- Climate extremes which can cause damage to the trail through floods, or lack of snow for the snowmobile clubs to monitor the trail in winter.
- Beaver activity which can block bridges and culverts to cause flooding.
- Deterioration of bridge structures at a faster rate than expected causing closures.
- Changing expectations from the public who may want more features than planned.
- Changing demographics of the public requiring more accessible features to the trail.
- Changes to legislation which may make structures in the trail network non-compliant.
- Liability for accidents on the trail if it is not maintained to a minimum standard with proper signage.

## How do we manage the risk?

- Regular inspections of the trail network, including the biennial OSIM bridge inspections.
- Monitoring customer satisfaction through regular surveys.
- Monitoring use of the trail by user type through counting devices and maintaining the trail accordingly.
- Prioritizing renewal and replacement programs for trail structures such as bridges and culverts.
- Proactive planned annual maintenance for the entire length of the trail.
- Timely action on reported trail issues.
- Regular updates to Council on the state of the trail and funding needs.
- Actively searching and applying for available grants and funding.

## How confident are we?

This is the first Asset Management Plan we have done for the K&P Trail and was prepared by internal County staff with the best available information. We have a medium level of confidence in the information presented. The trail is not complete and is quickly becoming an important asset to the County of Frontenac. The K&P Trail is

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relatively early in its lifecycle with construction starting in 2009; our experience with major maintenance is limited and we expect our estimates to improve over time.

- By legislation, the bridges are inspected every other year by a third-party consultant overseen by an engineer. This gives us confidence in the bridge conditions as presented but the majority of the data is from 2019. We have acquired additional bridges since that time. OSIM inspections are planned for 2022 for all bridges.
- We have only done one culvert inventory and condition rating at this time, completed by internal staff on the 70 km of trail that were completed at that time. We plan a further inventory in 2022.
- We are implementing regular trail reviews and currently rely on outside groups such as the local ATV and snowmobile clubs for this data.
- We have issued only one customer survey but plan to make it a regular feature.
- As we build upon these reports year over year, the data will become more complete, and we can build more confidence in the plans presented.
- There is great interest in seeing this trail succeed from the Council, the staff, the residents, and the visitors to our area.

## What will we do?

We plan to expand and maintain the K&P Trail.

- Acquire properties to expand the trail northward
- Third party review, performed under the direction of a professional engineer, of all bridges through an Ontario Structure Inspection Manual (OSIM) inspection, required every other calendar year per Ontario Regulation 104/97.
- Upgrade the remaining 20 km area north of Clarendon Station as the sections are acquired.
- Review and update the K&P Trail Management Plan every 5 years or as required.
- Review and update the Core Asset K&P Trail Asset Management Plan every 5 years or as required.
- Continuous improvement on the trail as funding permits, such as parking areas and edge protection.
- Explore grant and other funding opportunities as they are offered.
- Work in partnership with trail organizations, neighbouring municipalities, and local trail interest groups, for the benefit of the trail.
- Maintain a presence on social media with frequent updates for trail conditions.
- Use a trail maintenance application for quick and easy tracking of trail conditions and repair needs.
- Monitor staff availability and skill set to ensure that the right resources are working on maintenance and development.
- Standardize all the condition ratings of the bridges, culverts, and trail surface so that they are assessed on the same scale.

- Investigate expansion of the trail to Wolfe Island.
- Keep Council informed of any trail developments or requirements.
- Conduct regular culvert inventory and condition reviews.
- Plan on regular customer feedback surveys.
- Implement “Pay for Use” to motorized recreational traffic through a permit system.
- Develop a K&P Trail By-Law to provide enforcement measures to the Ontario Provincial Police and municipal bylaw officers when responding to safety and property issues on and along the K&P Trail.

## What can you do?

We will be pleased to consider your thoughts on this K&P Trail Asset Management Plan. Better understanding of community needs can help us improve user experience, attract more users, and provide services more efficiently. We want to ensure that the appropriate level of service can be provided to the community within the funding limits we have.

## Background

The K&P Trail is an inherited asset to the County of Frontenac which is based on the rail bed of the old Kingston & Pembroke (K&P) Railway. Constructing a trail from a former rail line is commonly known as a “rail-trail”. The total rail bed was part of a 177 km line from downtown Kingston north to Renfrew.

The City of Kingston acquired the K&P corridor within its boundaries and opened it to the public by December 2007. Subsequently, Frontenac County acquired sections of the rail line right of way within its boundary and conversion to an active trail began in 2012 from the boundary with Kingston at Orser Road north to Harrowsmith at Highway 38.<sup>5</sup>

The Frontenac County section of the K&P Trail is supported through effective management by Frontenac County Council and is intended to be a signature rail-trail experience in Eastern Ontario. The K&P Trail connects an artery of Frontenac’s communities: Harrowsmith, Hartington, Verona, Godfrey, Tichborne, Sharbot Lake, and Clarendon Station, with Mississippi Station and Snow Road Station to follow.

The K&P Trail intersects with two other regional rail trails; the Cataraqui Trail and the Tay-Havelock Trail, with portions of all three rail-trails serving as the Trans Canada Trail route through Frontenac County, and thus it is affiliated with the longest trail network in Canada.<sup>6</sup>

The K&P Trail is part of the strategic priority for the County as defined in the County’s Strategic Plan to “refine and invest in efforts to accelerate economic development –

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<sup>5</sup> K&P Trail Management Plan Page 10 with footnote re Frontenac Official Plan 4.1.4.2.

<sup>6</sup> Ibid Page 8 with footnote re K&P Implementation Plan 2009 pg. 3.

grow business attract more visitors and (ultimately) expand the tax base”.<sup>7</sup> The Frontenac K&P Trail provides low cost, sustainable activity that reduces health costs and attracts people to settle in the community providing sustainable growth.

Trails may generate regional and out-of-province tourism spending at retail and accommodation businesses. Per the 2019 K&P Trail customer survey, store owners along the trail at Godfrey estimate 25% to 35% of snowmobiles stopped in for supplies and/or gas when they parked their trailers in the store parking lot.<sup>8</sup> These benefits represent a large economic return on the money invested into trail projects. The costs of land acquisition, construction and maintenance for trails is outweighed by the economic benefits generated.

## Current State of Local Infrastructure

*Figure 2 Millhaven Creek Bridge*



As of 2021, the County of Frontenac owned and maintained 70 km of trail which had 8 bridges and 84 culverts within it. This asset is recorded on the financial statements of the County at the historical cost of the land and asset acquisitions, along with the remediation work, and bridge replacement costs that has occurred on the trail network starting in 2008 with the first land purchase.

These costs are calculated and recorded according to the thresholds set in the County of Frontenac Tangible Capital Asset Policy FIN-09-10-3. In general, the threshold to record an asset as capital is \$5000 and it is expected to be in service longer than a year; if the work is replacing a previous asset, it should improve upon the original (a “betterment”).

A portion of these costs are then expensed on the financial statements year over year through depreciation (or amortization) which divides up the costs based on the expected life of the work that was done. The Net Book Value is the original value of the asset

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<sup>7</sup> Ibid Page 10 re the County of Frontenac Strategic Plan Page 2

<sup>8</sup> K&P Trail Management Plan Page 11 Footnote.

less any depreciation that has taken place to date. The Net Book Value can give a snapshot estimate of the age of the infrastructure if considered as a percentage of the original cost. Note that this does not necessarily reflect the condition of the asset but can be used in conjunction with it.

If the work does not meet the threshold of a Tangible Capital Asset, or the work occurs every year, it is expensed all in one year in the financial statements. Maintenance-type work would be expensed in the same year it occurs.

The following is a snapshot of the K&P Trail capital assets at the end of 2021. A detailed listing of the component parts is available upon request.

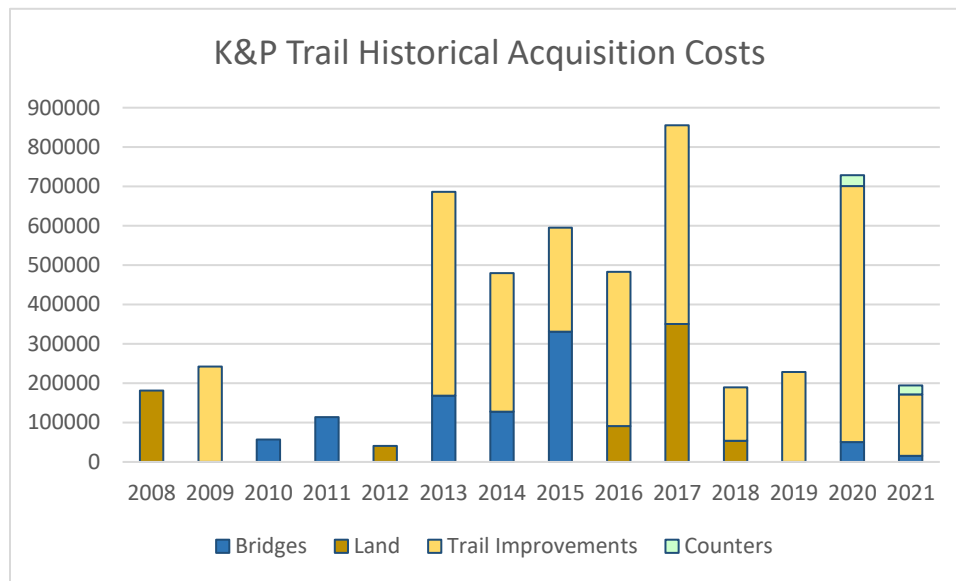


Chart 4: Graph of Historical Acquisition Costs

Asset	Acquisition Cost	Depreciation	Net Book Value	% of Acquisition Cost Remaining	Replacement Value
<b>Bridges</b>	863,368	108,301	755,067	87%	\$ 1,287,259
<b>Culverts</b>	-	-	-	0%	\$ 201,600
<b>Land</b>	717,309	-	717,309	100%	\$ 717,309
<b>Trail Improvements</b>	3,443,344	1,107,529	2,335,815	68%	\$ 3,412,530
<b>Counters</b>	49,959	4,114	45,845	92%	\$ 51,523
<b>Total</b>	<b>\$ 5,073,980</b>	<b>\$ 1,219,944</b>	<b>\$ 3,854,036</b>	<b>76%</b>	<b>\$ 5,670,221</b>

Chart 5: Table of Acquisition Costs and Replacement Value

The replacement value is estimated as the cost to purchase the assets that have been acquired in today's currency value. What if we had to start over? How much would we need to spend? This is a conservative estimate but also includes the cost of culverts, should they be replaced. Culverts would have been part of the original land purchases. Land is shown at historical value since a current value cannot be reasonably estimated within the limitations of this asset management plan and considering the real estate climate of 2022.

## Asset Condition

*Figure 3 Hardwood Creek Bridge*



Often the age of an asset is used as a quick point of reference to determine its remaining useful life and translate this into a condition index. As an inherited asset, it is not always easy to determine the age of the structures within the K&P trail system. And since age is not always a good placeholder for condition, it is important to assess the condition of the bridges, the culverts, and the trail surface on a regular basis.

As of 2021, the County of Frontenac was responsible for 8 bridges and 84 culverts, along with 70 kilometres of trail. As the trail continues to grow, a further 5 bridges and 20 kilometres of trail will be added, along with an unknown number of culverts.

A formalized bridge inspection process is mandated by Public Transportation and Highway Improvement Act (2010) Ontario Regulation 104/97 and 472/10 Section 2(3) Standards for Bridges<sup>9</sup>:

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<sup>9</sup> Legislation O.Reg 472/10 amending O.Reg 104/97:  
[https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fdu0tsrdospf80.cloudfront.net%2Fdocs%2FR10472\\_e.doc&wdOrigin=BROWSELINK](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fdu0tsrdospf80.cloudfront.net%2Fdocs%2FR10472_e.doc&wdOrigin=BROWSELINK):



The structural integrity, safety and condition of every bridge shall be determined through the performance of at least one inspection in every second calendar year under the direction of a professional engineer and in accordance with the Ontario Structure Inspection Manual.

The Ontario Structure Inspection Manual (OSIM) has been used for bridge inspections in Ontario since 1985 and underwent significant modifications in the year 2000.

The objectives and goals of an OSIM inspection are<sup>10</sup>:

- to maintain structures in a safe condition;
- to protect and prolong the useful life of structures;
- to identify maintenance, repair and rehabilitation needs of structures; and,
- to provide a basis for a structure management system for the planning and funding of the maintenance and rehabilitation of structures.

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<sup>10</sup> OSIM Section 1.2.2 Objectives, Page 1-1-2 [OSIM PDF Pg 18]  
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The OSIM manual defines a bridge as<sup>11</sup>:

A structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility and is greater than or equal to 3 m in span.



An OSIM inspection must be carried out by a certified engineer or engineering firm. The County of Frontenac uses the results of these inspections in the preventative maintenance work schedule, or if extensive, in the capital replacement plan. Repairs and refurbishment plans can be made and then implemented against the review to bring the bridges up to provincial standards as a priority for capital construction on the trail.

*Figure 4 White Creek Bridge*

Per the OSIM manual four Condition States have been defined for bridge elements<sup>12</sup>:

Excellent, Good, Fair and Poor.

A list of the bridges on the K&P Trail as of November 2020 with their condition rating follows.

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<sup>11</sup> OSIM General Definitions, Page v [OSIM PDF Pg 9]

<sup>12</sup> OSIM Preface, Page ii [OSIM PDF Pg 6]

County of Frontenac Bridge Inventory & Condition, OSIM 2019, 2020						
Bridge Name	Year	Trail Kilometre Mark	Bridge Condition Index (BCI)	Rating	Upgrades Since OSIM	Material
Millhaven Creek	2010	South of km 26	70	Fair		Modular Pre-Engineered Steel
Hardwood Creek	-	South of km 39	61	Fair	Upgraded 2021	Steel Truss
White Creek	2014	Between km 47 and 48	68	Fair		Steel Girder
Elbow Creek	2015	Between km 57 and 58	68	Fair	To be Upgraded	Solid Slab
Fish Creek	2015	Between km 59 and 60	70	Fair		Longitudinal Timber Deck
Bolton Creek S 85-200	Unknown	Between km 85 and 86	N/A	N/A		Concrete; was thought to be a culvert. No OSIM
Bolton Creek 85-435, Mill Pond	Unknown	Between km 85 and 86	48	Poor	Upgraded 2020	Wood Beams, Girders, Piers
Bolton Creek N 86-015	Unknown	North of km 86	65	Fair		Wood Beams, Steel Girders, Concrete Abutments

*Chart 6: Table of Bridge Inventory and Condition*



Figure 5 Map of K&P Trail Bridges



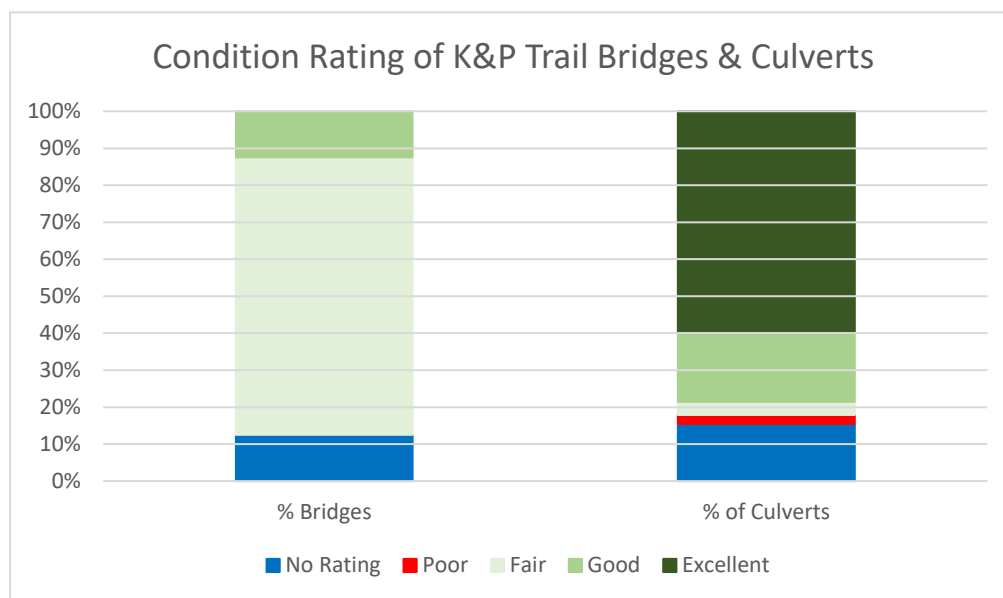
Figure 6 Bolton Creek 85-435 Mill Pond Bridge before remediation

Culverts are also an important part of the trail network. A structural culvert is defined as<sup>13</sup>:

A Structure that forms an opening through soil and has a span of 3 metres or more, or a sum of individual spans of 3 metres or more for adjacent multiple cell culverts...

The 84 culverts on the K&P Trail are not structural in nature and, as such, do not fall under the O.Reg104/97 and 472/10 inspection mandate, nor the O.Reg 588/17 regarding the Asset Management Plan. However, Frontenac County recognizes that culverts are an important component of the K&P Trail and has carried out its own culvert inventory and inspection. A detailed list of culverts and their condition as of November 2020 can be found in Appendix 1. An updated inventory of culverts will be completed in 2022.

A summary of the state of the condition of bridges and culverts is represented below.



*Chart 7: Graph of Condition Rating of Bridges and Culverts by Percentage*

Note that the 2021 replacement of the decking on the Hardwood Creek bridge is considered to have elevated its condition from Fair to Good and is reflected in the above graph.

The culverts were rated by internal staff on a 5-level scale of Excellent, Good, Fair, Poor, and Very Poor, as were the bridges in the 2019 OSIM. These ratings have been adjusted to align with the 4-level scale of the 2020 OSIM where the ratings were Excellent, Good, Fair, and Poor. Future condition assessments will standardize the rating system for all assets on the trail.

<sup>13</sup> OSIM General Definitions, Page v [OSIM PDF Pg 9]

The surface of the trail is assessed monthly and any problems are reported to the trail manager. There is currently no formal condition assessment recorded by trail section with an assessed rating. Ongoing remediation work on the trail in recent years has yielded a current condition assessed as Excellent by the volunteer inspectors and the trail manager. A more formalized trail assessment will be a future part of trail management and the asset management plan.

Figure 7 Bolton Creek Bridge North 86-015



The table below shows the rating system that was used to assess the culvert conditions. This type of table can also be used to rate the components of the trail system. The 2019 Bridge OSIM used a 5-level system and a calculated value to result in a Bridge Condition Index (BCI) on a scale of 1-100. In future the County rating system for culverts and trail surface will be standardized to better reflect the 4-level approach of the current OSIM inspections which uses the levels of Excellent, Good, Fair, and Poor.

Rating	Quality	Condition	% of Useful Life Remaining	2019 Calculated BCI
5	Excellent	Well maintained, good condition, new or recently rehabilitated asset	80-100%	90 – 100
4	Good	Good condition, few elements exhibit existing deficiencies.	60-79%	75 – 89
3	Fair	Some elements exhibit significant deficiencies. Asset requires attention.	40-59%	55 – 74
2	Poor	A large portion of the system exhibits significant deficiencies. Asset mostly below standard and approaching end of service life.	20-39%	40 – 54
1	Very Poor	Widespread signs of deterioration, some assets may be unusable. Service is affected.	0-19%	<40



*Chart 8: Table of Condition Gradings*

Based on an average of the condition rating of the bridges, culverts and trail surface, the table below shows the average condition rating of the components of the K&P Trail.

Asset	Estimated Useful Life	Number of Assets	Average Rating	Estimated Useful Life Remaining	Average Life Remaining
Bridges	30 years	8	Fair	40-59%	12-18 years
Culverts	60 years	84	Good	60-79%	35-47 years
Trail Surface	15 years	70 km	Excellent	67%	10 years

*Chart 9: Table of Average Condition Rating*

## Levels of Service

*Figure 8 Fish Creek Bridge*



Levels of Service (LOS) can be a difficult concept to understand but is an important part of the asset management plan. Levels of service are based on the customer's expectations of what an asset will provide. In this case, the customers are the users of the K&P trail. Maintaining the asset to their specifications will dictate the operating, maintenance, and renewal activities that will need to occur moving forward.

Items to consider when setting levels of service are<sup>14</sup>:

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<sup>14</sup> AssetWorks website: <https://www.assetworks.com/eam-5-steps-building-asset-management-plan/>  
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- What you currently provide
- If service is expected to change
- The cost of the current service
- If there is funding to support the current and future levels of service
- If the current levels of service meet the expectations of the users.

Ontario Regulation 588/17 for the asset management plan requires a current qualitative and technical level of service based on data no more than 2 years old.

- A qualitative level of service would be considered from the customer's point of view, how they receive the service and whether value is provided to them.
- The technical level of service provides a measurement of operational or technical performance to achieve the customer's desired service levels. This can indicate whether resources have been allocated effectively and provides a balance to the customer perception which may be more subjective.

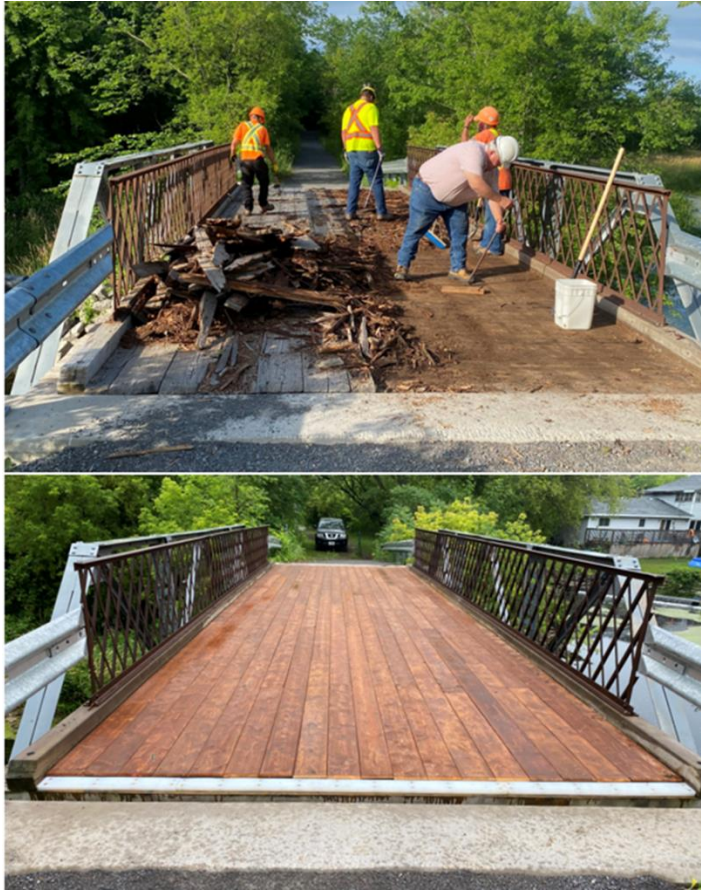
It is important to monitor the service levels regularly as these will change, along with customer priorities. The agreed result achieves the best balance between service, risk, and cost.

	Service Level	Performance Metric	Current Performance	Target Performance
<b>Customer Levels of Service</b>				
Safety	Free from hazards; trail managed and maintained to industry best standards.	Metric: Customer complaints re hazards	2020: 7 complaints; 2021: 12 re hazards	Less than 20 complaints per year would indicate patrols are working
Quality	Walkable/Drivable Trail Surface	Customer Survey re Trail Experience	Survey done 2019, surface rated as Good	96% of Survey respondents rate trail surface as good or very good
Function	All Trail Sections Open	Customer Survey re Trail	Will ask in future survey	Goal 95%
	Recreational Snowmobile Access	% of bridges grooming equip is allowed	87.5% (7/8 bridges)	100%
Sustainability	Economical Recreational Facility	Permits required for Motorized Use	Partially	Yes
<b>Technical Levels of Service</b>				
Safety	Bridge Condition Index (OSIM)	Excellent, Good, Fair, Poor	Fair	Good
	Culvert Condition Rating	Excellent, Good, Fair, Poor, Very Poor	Good	Excellent; standardize to OSIM condition rating levels
Quality	Monthly Trail Inspections (TMP)	Inspect entire trail once a month	9/10 ms (not winter)	12/12 months - 100%
	Average Surface Condition of Trail	Condition Rating from Patrols (1-4, excellent, good, fair, poor, fair)	Excellent	Excellent
Function	Type of Use	Trail Counters - walking, biking, ATV, snowmobile/year	Good mix of users	1/3 of each type: cycling, pedestrian, motorized
	Trail Closure	# sections closed X # days /year	0 closures	0 closures
Sustainability	Remaining Service Life	% Estimated Useful Life (EUL) remaining based on condition rating	Bridges 40-59%; Culverts 60-79%; Trail Surface 67%	Average of 60-79%
	Operating and Maintenance Cost per km	Dollars spent/km/year	\$1500/km	\$1500/km
Capacity	Annual Use	# of Counts/Year	2021 Jun-Dec 155,204 in 10 trail counters in 70 km	Expectation of 500,000 counts per year for 90 km length, in 5-10 yrs
	Traffic Supported by Bridges & Culverts	Pedestrians, Cyclists, Equestrians, Snowmobiles, ATVs (most of trail), emergency & service vehicles; bridges/culverts with no load limit	5/8 bridges; 84/84 culverts	8/8 bridges; 84/84 culverts; load limits of 12 tonnes/bridge will be implemented in future.

Chart 10: Table of Levels of Service

# Lifecycle Costs

*Figure 9 Hardwood Creek Bridge – before and after remediation*



The lifecycle of an asset considers all the activities over the service life of an asset which includes construction, maintenance, renewal, operation, disposal, and all engineering and design work associated with those activities. The cost of an asset does not stop with the purchase. The costs over its life must be considered when assessing the sustainability of a project.

Past costs, expected life estimates, frequency of inspections, maintenance and customer expectations help guide future considerations and estimated costs.

The condition assessments help to determine the stage of an asset's life cycle and the anticipated costs to maintain or replace the structure. The K&P Trail Maintenance Plan is a useful tool in planning for the lifecycle costs year over year. It sets the standards of the trail infrastructure and the activities needed to maintain those standards.

The Occupiers' Liability Act must also be considered to ensure the trail is maintained in a reasonable condition. This act enforces a duty of care on the property's owner/occupier. In the case the County of Frontenac, the duty of care applies to the K&P Trail to ensure that all visitors are reasonably safe when visiting their premises.

The trail must be properly defined, constructed, posted, inspected, maintained, and managed to provide a quality recreational experience, while at the same time mitigating liability for the County.

The Trail Management standard adopted was a corridor of four meters in width and three meters in height, topped with packed stone dust. At each public entry point to the trail a sign reading “Recreational Trail” must be posted. The trail must be inspected at monthly intervals, at the least, and more often immediately after foul weather.<sup>15</sup>

### Typical K&P Trail Detail

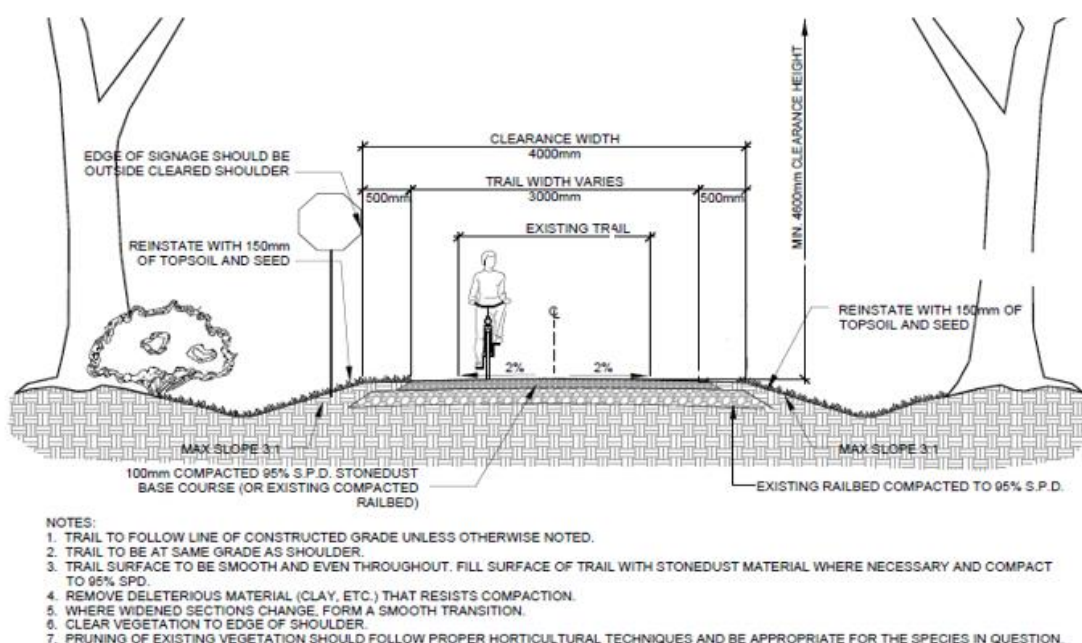


Figure 10 K&P Trail Structure Diagram

The Frontenac K&P Trail is considered a four-season multi-use recreational trail fully open to walkers, hikers, runners & joggers, equestrian riders and cyclists. When there is sufficient snow, the full trail is also accessible for snowshoeing, cross country skiers and snowmobilers. There is currently All-Terrain Vehicle (ATV) access beginning at the Verona Trailhead and north.<sup>16</sup>

Trail maintenance takes into consideration the user groups permitted on that section of the trail and adjust their best practice specifications accordingly. The recommended trail surface is a compacted stone dust to provide an accessible and desirable trail

<sup>15</sup> K&P Trail Management Plan Page 2.

<sup>16</sup> K&P Trail Management Plan Page 19.

experience for both active and motorized users with a nominal width of three meters. The brush is cut to an additional half-meter or more on each side to approximately four meters width and three meters clearance overhead to become the standard to accommodate all identified recreational users.

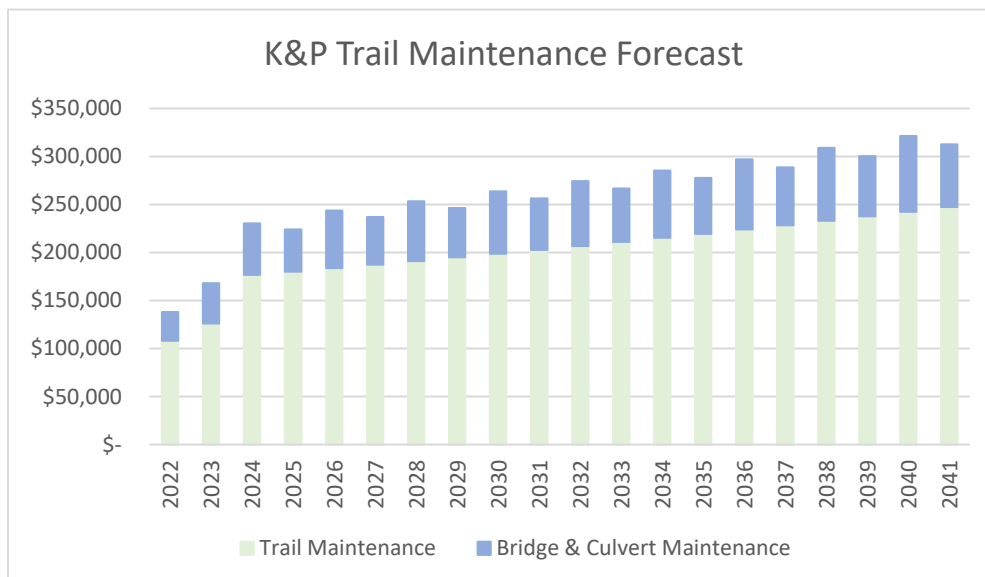
## Trail Maintenance

Trail maintenance includes the following activities and costs approximately \$1500 per kilometre in 2021. Further details for specifications can be found in the K&P Trail Management Plan.

- Grade, shape, and pack the surface
- Dust control through an application of Calcium or Magnesium Chloride
- Brush and mow
- Granular replacement
- Trail inspection, which includes ditches and culverts
- Spot repair

The bridges have their own mandated OSIM inspections every other year performed by a professional engineer. The inspections may result in a list of maintenance and capital work with a timeline for planning purposes to maintain the bridges according to County needs based on provincial standards. Looking ahead, the bridges will be maintained to a load-bearing weight of 12 tonnes. This will accommodate a fully loaded dump truck which may be needed for rehabilitation work on the trail and will support emergency vehicles should they be required.

The following is a depiction of the maintenance costs expected for the trail for the next 20 years.



#### *Chart 11: Graph of Trail Maintenance 20-Year Cost Forecast*

The rise in costs from 2022 to 2024 reflects the additional kilometres of trail and bridges that will be added over the next couple of years until the trail reaches the border with Lanark County to the north. As long as the trail is well maintained in a consistent manner, the maintenance costs will follow a predictable pattern. Notice the slight increase in costs in every other year which indicates the years the OSIM bridge inspections are required. This cost plan takes into consideration a conservative inflation factor and the use of current technology and products for maintaining the trail and bridges. It includes plans for minor unexpected repairs such as small washouts after a storm.

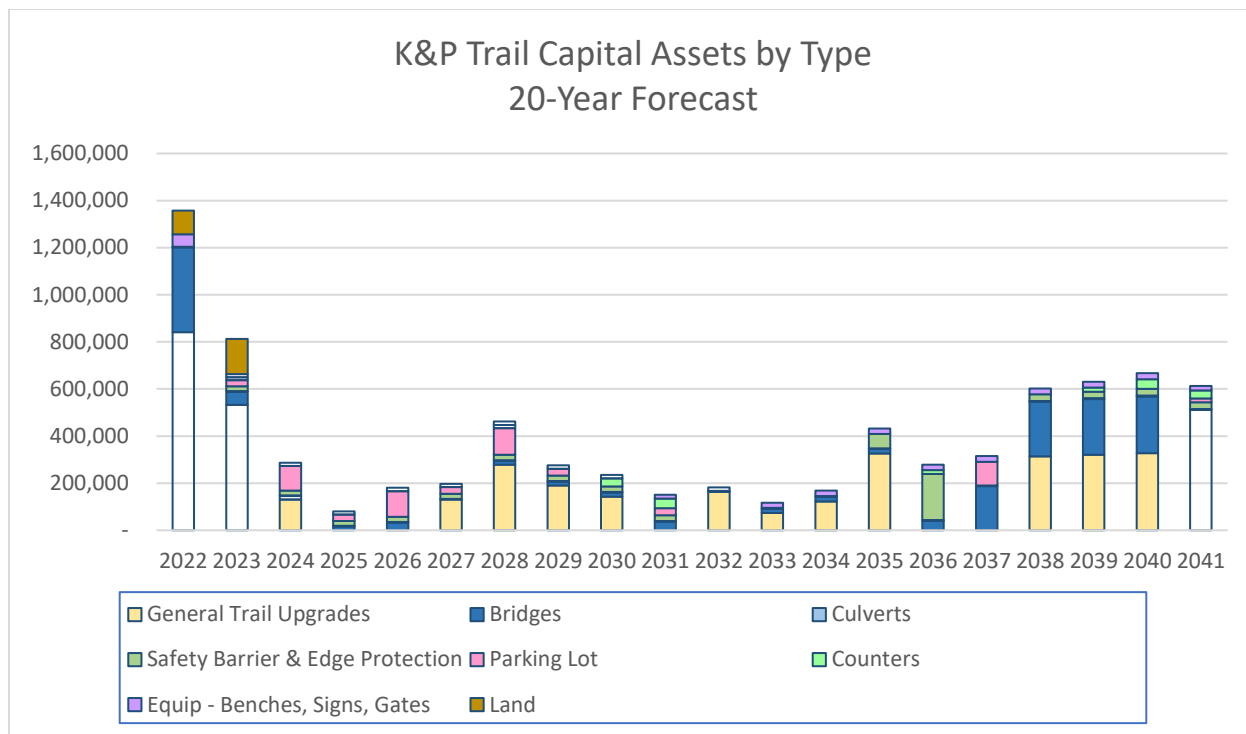
## Capital Costs

Capital costs are generally considered to be any costs that are greater than \$5000, will last longer than a year, and is new or replacing an asset that has come to the end of its life, or offers a betterment to the asset considered. Capital projects include the following

- Trail – remediation work to the surface and base
- Bridges – replacement or rehabilitation
- Safety barriers and edge protection
- Parking lots and parking areas
- Counters – to monitor the use of the trail
- Equipment such as benches, signs and gates
- Land purchases to reach the border with Lanark County

The following is a depiction of the capital costs expected for the trail for the next 20 years.





*Chart 12: Graph of Capital Asset 20-Year Cost Forecast by Type*

As shown in the graph above, the trail has major projects to carry out in 2022 and 2023 as the trail is extended north to the boundary with Lanark County. This includes the final land purchases for the County to have ownership of the entire length of the trail. The Elbow Creek bridge will be replaced in 2022.

*Figure 11 Elbow Creek Bridge*



Work also continues on the trail to improve its accessibility features under the joint provincial and federal Community, Culture and Recreation (CCR) Investing in Canada Infrastructure Program (ICIP). This is an \$828,000 project that started in 2021. The federal government contributes 40.0% County of Frontenac  
Core Assets - K&P Trail  
Asset Management Plan 2022



and the province contributes 33.3% while the County of Frontenac finances the remaining 26.7% of this project. This is a multi-year project that continues into 2024.

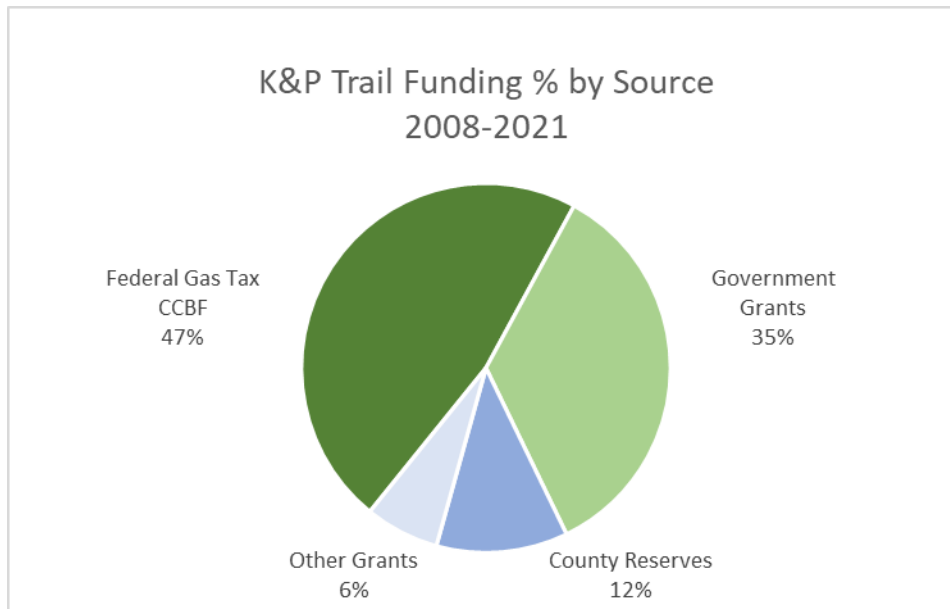
After 2024, the major capital expenditures from the growth of the trail will wind down. The cost consideration will shift to the renewal of assets as they come to the end of their expected life, such as the trail base, the bridges and culverts. New purchases considered will be the construction of Trailhead parking in the Frontenac townships, along with additional edge protection and accessibility features along the trail where warranted and funding is available. The graph depicts a conservative plan with the minimum capital expenditures required to maintain it as a safe, quality trail in Frontenac County and excludes any contingency for a catastrophic event that could wash out sections of the trail or bridges entirely.

## Funding

Once Council committed to supporting the K&P Trail starting in 2008, there was also a need to support funding this major asset in the County of Frontenac. For the most part, the Manager of Economic Development has been responsible for sourcing the funding and making requests of Council for development of the trail. This is not always an easy task and the amount of work done on the trail has varied from year to year as needs and priorities shifted in this growing venture.

From the beginning in 2008 to 2021, the K&P Trail has received funding from the following sources, in order of magnitude, largest to smallest:

- Federal Gas Tax, now CCBF (Canada Community Building Fund)
- County of Frontenac Reserves
- Investing in Ontario
- Trans Canada Trail
- Rural Infrastructure
- EODP CFDC (Eastern Ontario Development Program & Community Futures Development Corporation)
- Canada Infrastructure 150
- RED Program (Rural Economic Development - Ontario)
- ICIP (Investing in Canada Infrastructure Program – Federal and Provincial)
- EOTA (Eastern Ontario Trails Alliance)
- OMCCP (Ontario Municipal Commuter Cycling Program)
- Local Community Group Donations



*Chart 13: Graph of Historical Trail Funding by Source*

The funding, as depicted in the graph, shows that the Federal Gas Tax (now the CCBF, Canada Community Building Fund), has been a very valuable resource, along with other government grants. In comparison, the County reserves have been used sparingly, although double the funding received from non-government organizations.

The future source of funding is always uncertain. With the help of the asset management plan and planning out for future needs, the costs to maintain the trail at its present levels of service can be estimated. These should only be considered as an estimate since unforeseen circumstances can arise. World events can cause supply chain issues and a dramatic rise in prices, a pandemic can create a shortage in workers to carry out the plans, storms can cause damage to the bridges and trail that were not planned, and materials may fail unexpectedly.

The planned capital and maintenance needs for the next 20 years of the Frontenac K&P Trail are depicted in the graph below.

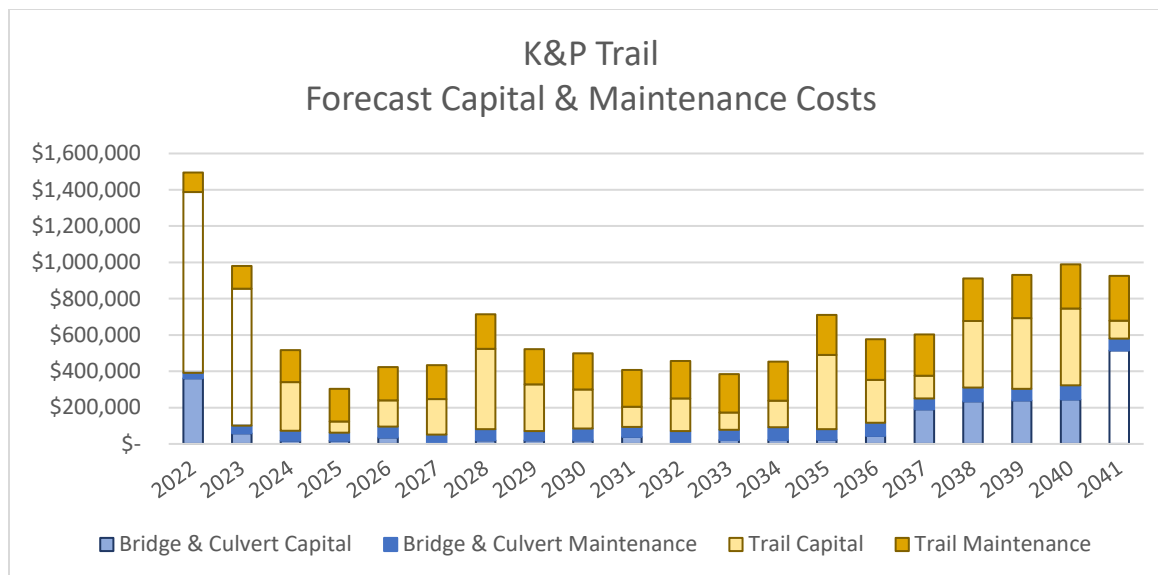


Chart 14: Graph of Capital and Maintenance Costs 20-Year Forecast

There has not been a set amount of funding committed to the K&P Trail from the Council of Frontenac County year over year. Replacement of existing assets can be funded through the County's Capital Replacement Reserve for which the County allocates an annual amount for future capital expenses. There is no reserve set aside for new development.

At budget time, the Manager of Economic Development shares the plans and needs of the trail for the upcoming year with an outline of future plans. There may be further presentations to Council through the year if an unplanned event or opportunity for more funding becomes available. The Economic Development manager and other County staff monitor the funding that is on offer, whether from government or other organizations, and apply should the trail meet the program criteria. Most applications have been successful but it is a time-consuming process. As the trail becomes more established, with more rehabilitation work completed, it will be easier to plan for the future.

Over the next two to three years, there is much work and activity around the trail as the final push north to complete the trail to the Lanark border takes place. In 2021, there were several reports to Council requesting funding to help these projects along. This includes the following reports:

- Report 2021-032, April 21, 2021, requesting \$88,331.04 from the Ontarians with Disabilities Reserve for the ICIP project.
- Report 2021-066, July 21, 2021, requesting \$250,000 from the Working Fund Reserve for land purchases. This will be returned to the Working Fund Reserve through debenture, levy, or other source upon completion of the project.
- Report 2021-078, September 14, 2021, requesting \$813,000 from the CCBF, Canada Community Building Fund (former Federal Gas Tax), for the additional

allocation the CCBF made to the County in 2021. This is to fund the upcoming 20 km of trail work to the north.

- Report 2021-105, November 17, 2021, requesting \$150,000-\$200,000 from the Capital Replacement Reserve for the replacement of the Elbow Creek Bridge.

The following table outlines these requests toward planned Capital projects from 2022 to 2024. Some of the funding requested in 2021 was used in 2021 and it is the balance of the requested funding below.

<b>K&amp;P Trail Funding Sources</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>3-Year Total</b>
CCR ICIP	(204,796)	(121,434)	(95,622)	<b>(421,853)</b>
Accessibility Reserve (ICIP)	(20,931)			<b>(20,931)</b>
CCBF (General Trail)	(773,479)	(24,125)		<b>(797,604)</b>
Capital Replacement Reserve (Elbow Creek)	(200,000)			<b>(200,000)</b>
Working Fund Reserve (Land)	(100,000)	(150,000)		<b>(250,000)</b>
<b>Total Known Funding</b>	<b>(\$1,299,206)</b>	<b>(\$295,559)</b>	<b>(\$95,622)</b>	<b>(\$1,690,388)</b>

<b>Planned Capital Expenditures</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>3-Year Total</b>
CCR ICIP Accessibility Project	283,581	165,600	130,200	<b>579,381</b>
Trail Construction North	597,819	367,141		<b>964,960</b>
Bridges & Culverts	362,400	58,548	18,103	<b>439,051</b>
Gates, Signs, Counters	13,200	25,704	13,733	<b>52,637</b>
Parking, Edge Protection		45,900	124,848	<b>170,748</b>
Land Purchases	100,000	150,000		<b>250,000</b>

<b>Total Expenditures</b>	<b>\$1,357,000</b>	<b>\$812,893</b>	<b>\$286,884</b>	<b>\$2,456,777</b>
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<b>Funding Shortfall</b>	<b>\$57,794</b>	<b>\$517,334</b>	<b>\$191,262</b>	<b>\$766,389</b>
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*Chart 15: Table of Forecast Capital Funding and Costs 2022-2024*

Even in this short 3-year period, there appears to be a funding shortfall of \$766,389. For 2022 the shortfall can be attributed to the ICIP project. Further funding from the County for the ICIP project has not been requested at this time but will be required to complete the project.

With regards to the Elbow Creek Bridge replacement, it is currently known that although up to \$200,000 was requested from the Capital Replacement Reserve, it will most certainly go over that amount. The CCBF can be used toward that project but it will reduce the amount of that reserve for the 2023 projects and is not what that funding was requested to be used for through Council.

This does not take into account the funding required for the maintenance costs on the trail.

## Future Demand

In February 2020, Frontenac County Planning and Economic Development presented Council the Population, Housing and Employment Projections Study prepared by Watson and Associates Economics Limited. The Watson report was an appendix to Council report 2020-019 and can be found here:

(<https://www.frontenacounty.ca/modules/news/index.aspx?newsId=92ac768e-cfd4-4c93-b286-cca98165013c>)

The purpose of this study was to revise the County's long-term growth forecasts based on recent demographic and economic trends using the 2016 Census (where available and appropriate) and other relevant data sources. The study, projecting out to 2046, assists with long-range planning for a variety of departments and organizations.

The report forecasts that Frontenac County's permanent population base will increase over the next 30 years, from approximately 27,300 in 2016 to 33,200 in 2046. This represents an annual growth rate of approximately 0.7% annually. Comparatively, this represents a slightly higher forecast annual population growth rate to the City of Kingston Base Scenario, but lower than the Province as a whole. Including the County's seasonal population base, the total permanent and seasonal population for Frontenac County is forecast to reach a total of 62,900 persons by 2046. This represents a total increase of approximately 8,200 people from 2016 to 2046.

That growth is matched by an aging of the population over that time. As the consultant stated in their presentation, Frontenac County is aging at a faster rate than the province as a whole but not because they are getting older any quicker but because more people

are moving to the County in that age category. In 2016, 21 per cent of the county's permanent residents were 65 or older. By 2046, 35 per cent of the population is expected to be in that age range.<sup>17</sup>

It is not just the increase in population but visitors to the region that will have an impact on the K&P Trail and the local economy. Trails provide low or no-cost recreation to families relative to other recreational services that could be provided by government and increase tax revenues in the communities in which they are located.<sup>18</sup>

There may be a little more wear and tear on the trail but with proper funding for regular maintenance and renewal, the trail will remain in very good shape. An increase in users could bring more user feedback and incident reports creating more spot repairs to the trail and the needed ability to respond to these reports promptly. Liability concerns may increase. As the population ages there may be a need for more accessible features to the trail, more parking, more benches, washrooms, more edge protection to the sides of the trail.

The trail has grown in popularity as sections of it have been remediated and opened up. It was observed that when the connection between the City of Kingston and Sharbot Lake was completed in 2019 there was a significant increase of trail use, creating the demand for increased amenities and policies to ensure a safe and enjoyable experience for users of all ages and abilities. The pandemic brought another increase in use to the trail as people tried to find a safe, uncrowded place to exercise and enjoy the outdoors. The first of the automated counters were installed along the trail during this period so complete statistics are not available. These counters will be a valuable source for collecting counts of users to the trail going forward.

As the trail gets busier, the County may need a dedicated employee to monitor the trail conditions, monthly inspections, respond to complaints, and complete minor repairs to the trail as they arise. This employee would also be an important resource for administration work, hiring contractors, and sourcing funding for the trail. Currently the trail is inspected by volunteers with the local ATV club and a project manager is contracted for trail projects.

## Risks

As a multi-use recreational trail used by many members of the public, the Frontenac K&P Trail can have many risks associated with it.

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<sup>17</sup> The Kingston Whig-Standard news story: <https://www.thewhig.com/news/local-news/frontenac-countys-population-to-steadily-grow-and-age-in-coming-years>

<sup>18</sup> K&P Trail Management Plan Page 11, Footnote: PricewaterhouseCoopers Economic Impact of the TransCanada Trail in Ontario – Americantrails.org page 49



<b>Risk</b>	<b>Consequence</b>	<b>Mitigation</b>
Lack of Funding	Causes a cascade of further problems mostly stemming from lack of upkeep on the trail which can create hazards the County is ultimately liable for.	Regular review of trail and asset conditions; budget for the trail needs; keep Council informed of the status; monitor funding and grants on offer and apply; investigate the sale of permits for recreational vehicle use.
Storm damage to the trail	A washout or flood could cause the trail to close for an uncertain period of time	Good communication lines, phone, email, social media so that the problem can be flagged, proper signage installed and repaired as quickly as possible.
Changes to legislation	Liability, fines to the County, inability to secure funding due to non-compliance	Open communication with County staff, Councillors, and the public to share information of legislation that could impact the trail
Maintenance not routinely performed	Trail condition deteriorates resulting in user complaints, injury	Regular review of contracts and inspection of the trail to confirm that the services were performed as required; ensure funding available for maintenance
Renewal or upgrades of assets such as bridges not done	Trail closures; injury; construction and emergency vehicles unable to access trail.	Regular review of asset remaining life; ensure the OSIM inspections are done every other year and the results are reviewed and placed in the maintenance and capital renewal plan, prioritize projects.
Customer complaints	Conflict between users of the trail; trail could become underused; vandalism of trail & equipment.	Regular survey of trail users to get feedback and action on that feedback; implementation of a By-Law for fines to be enforced if there is misuse or damage caused to the trail; review that funding for the trail is being used where it is needed.

Risk	Consequence	Mitigation
Environmental damage caused by the trail and its users	Destruction of property, plants, animals.	The environment is protected by localizing impacts within the trail corridor; fencing prevents access to private property.

*Chart 16: Table of Risk, Consequence, and Mitigation*

## Further Reading

This County of Frontenac K&P Trail Asset Management Plan should be read in conjunction with the following documentation:

- The K&P Trail Management Plan
  - o <https://frontenac.civicweb.net/FileStorage/6C1FB5DCBF474F5EB470C21B473F87F9-2021-092%20Appendix%20A%20Trail%20Management%20Plan%20V2%20Octob.docx>
- County of Frontenac website, K&P Trail page
  - o <https://www.frontenacounty.ca/en/things-to-do/kp-trail.aspx>
- The County of Frontenac Strategic Asset Management Policy
  - o <https://www.frontenacounty.ca/en/government/resources/Documents/Strategic-Asset-Management-Policy.pdf>
- The County of Frontenac Strategic Policy
  - o <https://www.frontenacounty.ca/en/government/resources/Documents/2019-2022-County-of-Frontenac-Strategic-Plan.pdf>
- Asset Management Plan for the County of Frontenac 2013
  - o <https://www.frontenacounty.ca/en/resourcesGeneral/Planning-documents-/County-of-Frontenac-Asset-Management-Plan-2013.pdf>
- Frontenac County Trails Master Plan
  - o Available upon request
- Frontenac Economic Development Charter
  - o <https://www.frontenacounty.ca/en/government/resources/Documents/An-Economic-Development-Charter-for-the-Frontenacs-March-5-2015.pdf>
- Population, Housing and Employment Projections Study
  - o <https://www.frontenacounty.ca/en/government/resources/Documents/Frontenac-County---Council-Presentation-2020-Watson-Population-Growth.pdf>
- Frontenac County Official Plan 2014-2016
  - o <https://www.frontenacounty.ca/en/resourcesGeneral/Planning-documents-/County-of-Frontenac-Official-Plan---Consolidate-Copy.pdf>
- The Ontario Structure Inspection Manual (OSIM)
  - o <https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?component=AAAAY&record=2cc7e50c-3d41-4468-90f1-0788368ce945>
- Legislation, Asset Management Plan (AMP) Requirements per Ontario Regulation 588/17
  - o <https://www.ontario.ca/laws/regulation/170588>
- Legislation, Public Transportation and Highway Improvement Act (2010) Ontario Regulation 104/97 and 472/10 Section 2(3) Standards for Bridges
  - o [https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fdu0tsrdospf80.cloudfront.net%2Fdocs%2FR10472\\_e.doc&wdOrigin=BROWSSELINK:](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fdu0tsrdospf80.cloudfront.net%2Fdocs%2FR10472_e.doc&wdOrigin=BROWSSELINK:)

# Appendix 1: Culvert Inventory and Condition

In the table below Culvert ID refers to the culvert's location on the trail. The first 2 digits is the kilometre point on the trail, while the following 3 digits indicate how many metres north of that kilometre marker the culvert is located. As an example, Culvert 21-655 is 655 metres north of the 21 km mark on the trail. The kilometre markers measure the kilometres of the trail starting in Kingston to the south and increasing in value as you go north.

The culverts are made of the following materials:

CSP – corrugated steel pipe

CONCR - concrete

HDPE – high density polyethylene (plastic)

County of Frontenac Culvert Inventory & Condition as at November 2020								
Culvert ID	Township	Size	Material	Condition	Condition Value	Beaver Activity	Water Present	Fish Present
21-655	South Frontenac	400	CSP	Fair	3	No	No	No
21-750	South Frontenac	400	CSP	Good	4	No	No	No
22-800	South Frontenac	400	CSP	Very Good	5	No	No	No
23-980	South Frontenac	1320	CONCR	Good	4	Yes	Yes	No
24-320	South Frontenac	1200	CONCR	Good	4	No	No	No
24-730	South Frontenac	840	CONCR	Good	4	No	No	No
25-220	South Frontenac	400	CONCR	Good	4	No	No	No
25-255	South Frontenac	750	CONCR	Good	4	No	No	No
25-430	South Frontenac	900	CONCR	Good	4	No	No	No
26-180	South Frontenac	500	CONCR	Good	4	No	Yes	No
29-900	South Frontenac	0	CONCR	Very Good	5	No	Yes	No
31-350	South Frontenac	0	CONCR	Very Good	5	No	Yes	Yes
31-650	South Frontenac	500	CONCR	Very Good	5	No	No	No
32-450	South Frontenac	1200	CONCR	Very Good	5	No	No	No
32-825	South Frontenac	580	CONCR	Very Good	5	No	No	No
33-070	South Frontenac	300	HDPE	Very Good	5	No	No	No
33-925	South Frontenac	540	CONCR	Very Good	5	No	No	No
33-095	South Frontenac	300	CSP	Very Good	5	No	No	No
34-525	South Frontenac	600	HDPE	Very Good	5	No	No	No

County of Frontenac Culvert Inventory & Condition as at November 2020								
Culvert ID	Township	Size	Material	Condition	Condition Value	Beaver Activity	Water Present	Fish Present
35-225	South Frontenac	600	HDPE	Very Good	5	No	No	No
35-225	South Frontenac	600	HDPE	Very Good	5	No	No	No
35-225	South Frontenac	600	HDPE	Very Good	5	No	No	No
35-225	South Frontenac	600	HDPE	Very Good	5	No	No	No
35-660	South Frontenac	600	HDPE	Very Good	5	No	Yes	No
35-662	South Frontenac	600	HDPE	Very Good	5	No	Yes	No
35-940	South Frontenac	1500	CONCR	Very Good	5	No	No	No
37-190	South Frontenac	0	CONCR	Very Good	5	No	Yes	Yes
37-590	South Frontenac	0	CONCR	Very Good	5	No	Yes	No
37-950	South Frontenac	960	CONCR	Very Good	5	No	No	No
39-013	South Frontenac	600	CSP	Very Good	5	No	No	No
39-035	South Frontenac	400	CSP	Very Good	5	No	No	
39-975	South Frontenac	300	HDPE	Very Good	5	No	No	
40-065	South Frontenac	300	HDPE	N/A	#N/A	No	No	
41-045	South Frontenac	450		N/A	#N/A	No	No	
43-820	South Frontenac	1200	CONCR	Good	4	No	Yes	
45-550	Central Frontenac	900		Fair	3		No	
46-340	Central Frontenac	1800	CONCR	N/A	#N/A		Yes	Yes
47-285	Central Frontenac	1200	CONCR	N/A	#N/A		Yes	
50-610	Central Frontenac	2700	CONCR	N/A	#N/A	No	Yes	
51-800	Central Frontenac	600	HDPE	Very Good	5	No	Yes	
52-160	Central Frontenac	750		Very Good	5		Yes	
52-450	Central Frontenac	1500	CONCR	N/A	#N/A	No	Yes	
54-925	Central Frontenac	900	HDPE	N/A	#N/A	No	Yes	
54-928	Central Frontenac	1200	HDPE	Good	4			
56-385	Central Frontenac	900	CSP	Poor	2		Yes	
56-530	Central Frontenac	900	CSP	Poor	2	Yes	Yes	
61-135	Central Frontenac	600	HDPE	Very Good	5			
61-560	Central Frontenac	600	CONCR	Fair	3	No	Yes	

County of Frontenac Culvert Inventory & Condition as at November 2020								
Culvert ID	Township	Size	Material	Condition	Condition Value	Beaver Activity	Water Present	Fish Present
62-170	Central Frontenac	450	HDPE	Very Good	5	No	Yes	
63-275	South Frontenac	300	HDPE	N/A	#N/A		Yes	
63-980	South Frontenac	0		Good	4			
63-980	South Frontenac	600	CONCR	Good	4		Yes	
65-190	South Frontenac	300	HDPE	Very Good	5		Yes	
66-360	South Frontenac	600	HDPE	Very Good	5		Yes	
68-385	Central Frontenac	600	HDPE	N/A	#N/A		Yes	
68-540	Central Frontenac	450	HDPE	Very Good	5		Yes	
68-615	Central Frontenac	450	HDPE	Good	4		Yes	
68-800	Central Frontenac	600	HDPE	Very Good	5		Yes	
68-955	Central Frontenac	450	HDPE	Very Good	5		Yes	
69-225	Central Frontenac	600	HDPE	Very Good	5		Yes	
69-440	Central Frontenac	450	HDPE	N/A	#N/A		Yes	
69-715	Central Frontenac	600	HDPE	N/A	#N/A		Yes	
69-755	Central Frontenac	450	HDPE	N/A	#N/A		Yes	
70-125	Central Frontenac	525	HDPE	Very Good	5		Yes	
70-500	Central Frontenac	450	HDPE	N/A	#N/A		No	
70-580	Central Frontenac	750	CSP	Very Good	5			
70-600	Central Frontenac	525	HDPE	Very Good	5			
71-780	Central Frontenac	600	CSP	Very Good	5		Yes	
71-795	Central Frontenac	600	CSP	Very Good	5		Yes	
72-980	Central Frontenac	450	HDPE	Very Good	5	No		
73-295	Central Frontenac	450	HDPE	Very Good	5			
73-360	Central Frontenac	300	HDPE	Very Good	5			
73-460	Central Frontenac	900	CSP	Very Good	5			
73-525	Central Frontenac	600	CSP	Very Good	5			
73-940	Central Frontenac	600	CSP	Good	4			
76-170	Central Frontenac	900	CSP	Very Good	5			
76-170	Central Frontenac	975	CSP	Very Good	5		Yes	



County of Frontenac Culvert Inventory & Condition as at November 2020								
Culvert ID	Township	Size	Material	Condition	Condition Value	Beaver Activity	Water Present	Fish Present
77-640	Central Frontenac	0	CONCR	Good	4	Yes	Yes	Yes
79-315	Central Frontenac	450	CSP	Very Good	5	No	Yes	No
79-530	Central Frontenac	600	CSP	Very Good	5	No	Yes	No
82-055	Central Frontenac	0	CONCR	Good	4	Yes	Yes	Yes
83-145	Central Frontenac	450	CSP	Very Good	5	No	Yes	No
88-610	Central Frontenac	925	CSP	Very Good	5	Yes	Yes	No
88-640	Central Frontenac	925	CSP	Very Good	5	Yes	Yes	No