



District of Hudson's Hope - Asset Management Plan



Version 1.1

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SUMMARY

This Asset Management Plan intends to outline how the District of Hudson's Hope proposes to achieve its municipal objectives through asset management.

The methodology of this plan is based on best practices available to the municipality, from sources such as MuniSight Ltd., The Federation of Canadian Municipalities (FCM), and interviews with select municipal staff. Infrastructure was sorted into various asset classes and evaluated against asset registry, condition, level of service, and risk considerations. Inventory lists were generated based on the data from the District of Hudson's Hope's MuniSight Webmap software and through interviews of municipal staff.

Although this plan was developed to be as robust as possible, it was limited by a series of assumptions. With historical figures being used to predict future behavior, any major changes to economic, social, political, or environmental considerations will impact the validity of this report.

This report concludes that the District of Hudson's Hope is taking the preliminary steps to develop an effective Asset Management Program. Hudson's Hope has developed a basic asset inventory but needs to collect information such as updated condition, level of service, replacement cost, and risk. Currently, there is insufficient information to make conclusions about the overall state of all infrastructure assets. Developing a robust asset management process can take place in stages, over many years, and the municipality has taken a significant first step in the development of this asset management plan. It is recommended the municipality continue to develop asset management capabilities in their people, processes, and data systems. Several key recommendations are highlighted in this report to help the municipality focus on the actions with the highest positive potential impact.

INTRODUCTION

INTENT

The Asset Management Plan intends to provide a 10,000 ft view of the life cycle activities that a municipality must execute to achieve the desired level of service goals as detailed in their Asset Management Strategy. The Asset Management Plan should provide information on what assets the municipality possesses, their condition, current-day replacement cost, and impact if failed.

An Asset Management Plan plays a specific role in a municipality's practice of asset management, and is therefore organized in a fashion that answers five questions:

1. Asset Inventory - What are the assets, and where are they?
2. State of Infrastructure - What condition are the assets in?
3. Level of Service - What level of service do the assets deliver? Is there any level of service deficiencies?
4. Risk - What is the impact of these assets failing?
5. Financial – How much would the assets cost to replace?



STRATEGIC ALIGNMENT

This Asset Management Plan utilizes information from the following documents:

- Asset Management Policy
- Asset Management Strategy
- District of Hudson's Hope Strategic Objectives 2019-2022

METHODOLOGY

INTRODUCTION TO ASSET CLASSES

To simplify and summarize the results of the AMP, asset classes are used to group and aggregate asset information. In this report, the following asset classes are presented:

Road Network	-	Paved roads, gravel roads, street signs, sidewalks, etc.
Water Network	-	Valves, waterlines, hydrants, etc.
Sanitary Sewer Network	-	Valves, sanitary lines, manholes, etc.
Storm Sewer Network	-	Valves, meters, wastewater lines, stormwater lines, etc.
Buildings & Facilities	-	Municipal Buildings, Arenas, etc.

ASSET INVENTORY

A first step in gaining perspective on a municipality's asset management information is to understand what assets it owns and where those assets are located. A list of assets that a municipality maintains is typically referred to as an Asset Inventory (or Asset Register/Registry). Once the Asset Inventory is completed, the common practice is to locate them in the field using surveyors and then to reference the location of the listed assets in a GIS system.

Aside from identifying and locating assets, it is important to collect specific attribute information such as defining characteristics (material of construction, date of construction, etc.) which can be used to infer remaining useful life and replacement costs.

STATE OF INFRASTRUCTURE

As assets are utilized and exposed to the environmental elements, they deteriorate over time and need to be replaced. If an asset's condition deteriorates enough, it will eventually be unable to provide its intended service (i.e. a washed-out road). For this reason, it is important to identify assets that are progressing towards failure, so they can be proactively replaced or maintained. Monitoring asset condition in a pro-active manner can lead to lower overall lifecycle costs as asset repairs can take place before further deterioration increases the overall cost. Asset repairs are often less disruptive to ratepayers and are less costly to undertake, than a total replacement of a failed asset. Figure 1 is an example of a typical asset deterioration curve and associated incremental maintenance/replacement costs. Maintaining a database with current asset conditions contributes to lower overall capital costs and asset downtime.

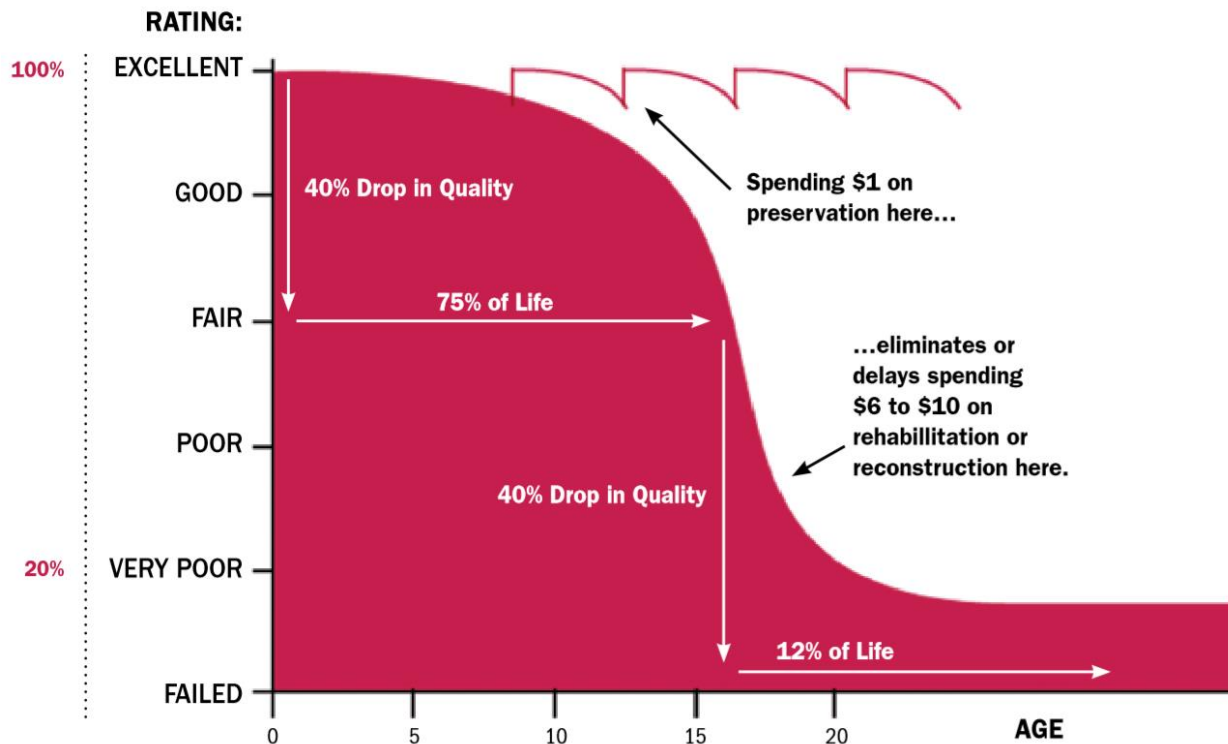


Figure 1: Example of Deterioration Curve From 2019 Canadian Infrastructure Report Card (ACEC, CCA, CPRA, CPWA, CSCE, CUTA, CNAM, FCM, 2019)

An asset Risk Assessment should be completed for any critical assets, assets that have failed or are close to failure. These Risk Assessments aim to measure the impact of asset failure, relative to the likelihood of the asset failing.

LEVEL OF SERVICE

Assessing an asset's Level of Service (LOS) is a critical component of a sound Asset Management Plan, and is one of the three cornerstones of an Asset Management Plan, along with relative Condition Assessments, and asset Risk Assessments.

The goal of the LOS Assessment should be for a municipality to identify if an asset is delivering on its intended benefit. A good assessment of an asset's Level of Service lets a municipality know if an asset needs to be upgraded or modified, based on what the asset's users are expecting from the asset.

Understanding service means having a clear and consistent understanding of:

1. The types of services you provide;
2. The groups of residents, businesses, and institutions that you provide services to;
3. The level of service being delivered currently (your performance); and
4. The level of service you're aiming to provide (your target).

An asset's LOS is a measurement of its ability to deliver the desired benefits to the users of the asset. For example, a properly designed road must be able to transport enough vehicles to prevent traffic and inconvenience to stakeholders, while also being in good enough condition to provide a comfortable ride. Broadly speaking, there are three different types of Level of Service:



- Technical - requirements dictated by the technical design requirements of the asset
- Legislated - requirements dictated by various levels of government (i.e. Federal/ State/ Provincial/ Municipal)
- Customer - requirements dictated by the stakeholder utilizing the asset

A proper LOS assessment will incorporate criteria from each of the three categories to ensure that an asset is meeting service performance.

A level of service deficiency is identified when the desired level of service does not match the actual level of service being produced by the asset. Part of Asset Management Planning is identifying these deficient assets so that they can be considered for an upgrade, repair, or replacement.

To ensure proper LOS assessments, it is important to consider the following:

- Be consistent within asset type - make sure that each asset, within a specific type, is judged against the same LOS criteria
- Keep it simple - Make a LOS assessment fit for purpose, and do not over complicate it with a vague, or large, set of criteria
- Keep your customer in mind - Understanding the end customer who receives service from an asset is important when deciding which criteria to use when evaluating the Level of Service.

RISK

An asset Risk Assessment helps municipal administrators understand if a failed asset possesses the potential to impact the municipality negatively. Once the risks are known, a municipality can decide whether to invest in mitigating them.

Risk assessments are an assessment of potential events that could result in consequences associated with an asset. The risk score is a function of a consequence's impact and likelihood:

- Impact - what is the magnitude of a consequence's influence?
- Likelihood - what is the probability that this consequence will occur?

An assessment of asset risk depends on:

- Properly evaluating the potential events associated with an asset - what events could create unintended consequences? (e.g. an improperly maintained gravel road)
- Properly evaluating the potential consequences associated with an event - what consequences could arise as a result of events? (e.g. vehicle damage due to improperly maintained gravel roads)
- Properly assessing the impact and likelihood of a potential consequence.

A commonly used model to evaluate the different considerations of risk consequences is in the form of the PEARS model:

- People - what is the potential for a consequence to harm people?
- Environment - could this negatively impact the environment?
- Assets - what is the potential for municipal assets to be damaged?
- Reputation - what effect could this consequence have on our municipality's reputation at the local, provincial/state, and national level?
- Service - could this consequence negatively affect an assets' ability to deliver on the designed service?



When evaluating a potential consequence, it is important to consider whether the consequence could affect people, the environment, other assets, the municipality's reputation, or the asset's ability to deliver service.

FINANCIAL

Replacement cost is used to represent the current-day value of a particular asset and is a representation of the full costs to replace the asset. This includes engineering, planning, materials, labour, administration costs, etc. Although it is a rough estimate of the true cost of replacing the asset, it is a good proxy to utilize when considering financial implications between asset investment options.

For asset management planning, actual cost figures can be used, or costing algorithms can be developed and applied to an asset class to represent replacement value. Note that financial figures in an Asset Management Plan should not be used for operational budgeting purposes, as they are often too abstract.

USING MUNISIGHT AMP

The District of Hudson's Hope uses MuniSight's asset management software (AMP) to store much of its asset management planning information. Asset conditions, level of service assessments, and risk assessments can be captured and stored within this software.

Within MuniSight's Webmap software, there is an attribute called "Is AMP Asset" that can be toggled to indicate whether this asset should be included within the AMP software. Examples of assets that should not be included are privately owned roads, utilities owned and managed by third parties, and provincially owned and managed highways. If the attribute is set to "True" the asset will be included in AMP, if the attribute is set to "False" then the asset will not be included in AMP.

LIMITATIONS AND ASSUMPTIONS

Although comprehensive, this Asset Management Plan does have limitations that must be highlighted, namely:

FUTURE PREDICTIONS ARE BASED ON HISTORICAL INFORMATION

A fundamental assumption in this report is that the past is the best predictor of the future. The report uses historical information, such as replacement costs, to predict the future costs considering inflationary effects. Major economic, social, political, or environmental changes will degrade the relevance of historical information in predicting the future, thus rendering the findings of this report less accurate.

A VIEW OF A POINT IN TIME

This report represents a snapshot in time. It is representative of the current state-of-affairs at the time of writing and will become dated with changes to municipal priorities and asset characteristics.

CAPITAL EXPENDITURES

The Asset Management Plan only considers capital expenditures (CAPEX) when evaluating financial implications and does not consider operational expenses.



DATA COMPLETENESS AND QUALITY

The District of Hudson's Hope maintains a GIS software system to house most of its municipal asset information. The completeness and quality of the data were evaluated as part of this Asset Management Plan, where:

- Complete dataset: a dataset that includes 100% of the physical assets in the municipality's jurisdiction.
- Quality dataset: a dataset that is error-free and contains all the necessary information.

		Road Network	Water Network	Sanitary Network	Storm Network	Buildings
Asset Inventory	Complete	B	B	B	B	A
	Quality	C	C	C	C	B
Asset Condition	Complete	B	C	C	C	A
	Quality	C	D	C	C	C
Level of Service	Complete	E	E	E	E	E
	Quality	E	E	E	E	E
Asset Risk	Complete	E	E	E	E	E
	Quality	E	E	E	E	E
Replacement Cost	Complete	C	C	C	C	A
	Quality	C	C	C	D	A

Figure 2: Overall Data Quality and Completeness Chart

Striving for an A-grade in each category is a very long-term goal. Collecting asset information is a continuous process that involves time, money, and planning. A municipality will never have a fully complete inventory of its assets, due to the practical complexity of reaching such a goal. It is reasonable to expect that municipalities should focus on building accurate and complete inventories for their most valuable and critical assets first, followed by less important asset categories. In practice, this means prioritizing different classes of assets. For example, a municipality may decide that understanding road asset information is more important than traffic sign asset information, which would prompt them to focus on building a complete road network asset inventory before even beginning to build an inventory of traffic sign information.

The District of Hudson's Hope currently has a proficient asset inventory of most of their important assets, although some crucial information is missing to perform an in-depth analysis. This report recommends that the District of Hudson's Hope should focus on centralizing asset management information and collecting asset information on the condition, level of service, risk, and replacement cost. A breakdown of the data collected can be found in the Asset Class Summary section below.



ASSET CLASS SUMMARY

ROADS

District of Hudson's Hope owns and manages a road network for the transportation of people and goods throughout the municipality. Figure 3 is a summary of the road network inventory that is stored within the AMP software, some values have been rounded for simplicity. The replacement costs in Figure 3 are only based on assets with sufficient data in the database:

Asset Name	(Units)	Count	Replacement Cost	Replacement Cost Complete
Dirt	(km)	0.4	-	55%
Gravel	(km)	167	\$3,873,559	
Paved	(km)	65	\$5,041,632	
Curb/Gutter	(km)	4.7	-	0%
Sidewalk	(km)	2.1	\$361,135	100%
Signs	(#)	238	\$36,183	100%
Streetlight	(#)	32	\$172,971	100%
Support Structures	(#)	171	-	0%
Total	-	-	\$9,485,481	-

Figure 3: Road Network Inventory

The district has condition assessment data for around 65% of all road network assets. Of the assessed assets, 76% are in fair or better condition and 24% are poor or critical. Figure 4 below is a summary of road asset conditions.

Relative Asset Condition

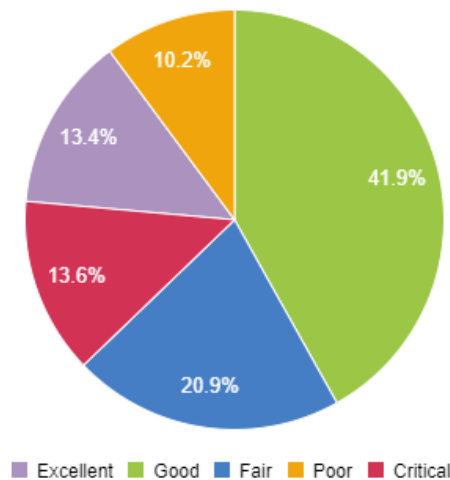


Figure 4: Road Network Conditions



Figure 5 below is a breakdown of the estimated replacement cost of the road network with the associated condition rating. Road assets in Poor or Critical condition are estimated to have a total replacement cost of \$2,309,323. It should be noted that these replacement costs exclude roughly 45% of the roadway's, 100% of curb and gutters, and 100% of support structures due to a lack of available data.

Condition Rating	Sum of Replacement Cost
Excellent	\$574,300
Good	\$2,940,867
Fair	\$2,601,724
Poor	\$1,411,930
Critical	\$897,393
Unknown	\$1,059,267
Total	\$9,485,481

Figure 5: Road Network Conditions and Associated Replacement Costs

The municipality has more than half of its road network assets accounted for by road class and road width, which is significant in estimating the replacement costs of these roads. Many other road network assets are recorded with condition assessments in place. Install dates and estimated useful life are required to create an asset replacement forecast. It is recommended that the municipality defines the level of service required for their road network and starts to collect the remaining conditions and metrics for all assets.

Asset Name	Attribute	Data Completeness
Roads	Road Class	100%
	Road Width	55%
	Install Date	0%
	Expected Useful life	0%
Curb Gutter	Install Date	0%
	Expected Useful Life	0%
Sidewalk	Width	100%
	Install Date	0%
	Expected Useful Life	0%
Signs	Condition	100%
	Install Date	0%
	Expected Useful Life	0%
Streetlight	Install Date	0%
	Expected Useful Life	0%
Support Structure	Replacement Cost	0%
	Install Date	0%
	Expected Useful Life	0%



Figure 6: Road Network Data Completeness

Refer to the “Asset Management for Sustainable Service Delivery” (Asset Management BC, 2019) for templates and suggestions for completing these assessments. If the municipality has engineering firms periodically complete inspections on their road infrastructure, it is recommended that this data be standardized and stored within a centralized database for future asset management planning purposes.

WATER NETWORK

The District of Hudson's Hope owns and maintains a water network to provide potable water to stakeholders. This network includes a water reservoir and distribution infrastructure. Replacement costs reflect only the assets with sufficient data to perform a calculation with. The figure below is a summary of Hudson's Hope's water network.

Asset Name	(Units)	Count	Replacement Cost	Replacement Cost Complete
Water Main	(km)	17.5	\$12,741,978	100%
Water Hydrant	(#)	73	\$539,480	100%
Water Valve	(#)	213	\$440,199	74%
Water Reservoir	(#)	2	-	0%
Total	-	-	\$13,721,658	-

Figure 7: Water Network Inventory

The District collects condition assessments for their water infrastructure. Roughly 23% of water network assets have condition assessments within the last 3 years. The figure below is a breakdown of these condition assessments for the water network, with 71% of assessed assets being fair or above and 29% are poor or below.

Relative Asset Condition

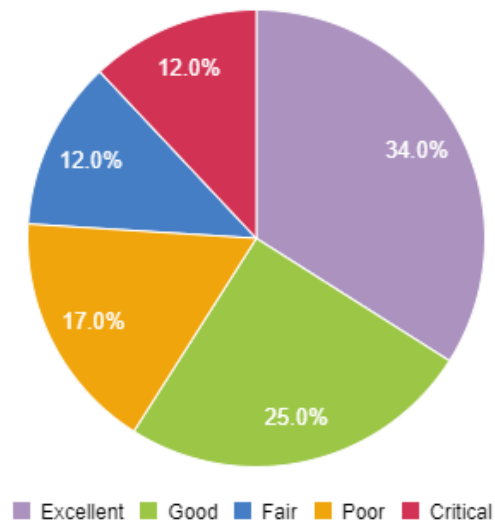


Figure 8: Water Network Conditions



Figure 9 below is a breakdown of the estimated replacement cost of the water network with the associated condition rating. Water Network assets in Poor or Critical condition are estimated to have a total replacement cost of \$150,591. As mentioned in the paragraph above, these condition assessments make up only roughly 23% of the total water asset network. Roughly \$13,240,691 worth of water network infrastructure has not yet had a condition rating assessed.

Condition Rating	Sum of Replacement Cost
Excellent	\$128,350
Good	\$131,967
Fair	\$70,059
Poor	\$84,839
Critical	\$65,752
Unknown	\$13,240,691
Total	\$13,721,658

Figure 9: Water Network Replacement cost and Condition Rating

It is suggested that the municipality determines the expected useful life for these assets to develop an asset replacement forecast. This information, along with assessing the condition, levels of service, and asset risk of these assets are the next steps of their asset management journey. Figure 10 below is a summary of the data quality metrics of the District's current water network infrastructure.

Asset Name	Attribute	Data Completeness
Water Main	Material	15%
	Diameter	100%
	Install Date	4%
	Expected Useful Life	0%
Water Hydrant	Install Date	3%
	Expected Useful Life	0%
Water Valve	Diameter	74%
	Install Date	7%
	Expected Useful Life	0%
Water Reservoir	Install Date	0%
	Expected Useful Life	0%

Figure 10: Water Network Data Completeness

The municipality does not have enough data on levels of service, asset risk, or asset replacement cost to proceed forward with meaningful analysis of this information. If the municipality has engineering firms periodically complete inspections on their water network infrastructure, it is recommended that this data be standardized and stored within a centralized database for future asset management planning purposes.



SANITARY SEWER NETWORK

District of Hudson's Hope owns, operates, and maintains a sanitary sewer collection system to provide wastewater removal for stakeholders of the municipality. The table below is a high-level summary of the District of Hudson's Hope's sanitary network within MuniSight's AMP software. Replacement costs reflect only the assets with sufficient data to perform a calculation with.

Asset Name	(Units)	Count	Replacement Cost	Replacement Costs Complete
Sanitary Sewer Main	(km)	12.6	\$6,131,852	98%
Sanitary Manhole	(#)	122	\$824,317	100%
Sanitary Sewer Pump	(#)	6	-	0%
Sanitary Detention	(#)	8	-	0%
Total	-	-	\$6,956,169	-

Figure 11: Sanitary Network Inventory

Relevant data quality metrics for this asset category have been broken down in the table below.

Asset Name	Attribute	Data Completeness
Sanitary Main	Material	86%
	Diameter	98%
	Install Date	0%
	Expected Useful Life	0%
Sanitary Manhole	Install Date	100%
	Expected Useful Life	0%
Sanitary Sewer Pump	Replacement Cost	0%
	Install Date	0%
	Expected Useful Life	0%
Sanitary Detention	Replacement Cost	0%
	Install Date	0%
	Expected Useful Life	0%

Figure 12: Sanitary Network Data Completeness

It is recommended for the municipality to determine the expected useful life for all the sanitary sewer network assets to develop an asset replacement forecast. The municipality does not have enough data on levels of service, asset condition, asset risk, or asset replacement cost to proceed forward with meaningful analysis of this information. It is recommended that the municipality begin to collect additional information on their sanitary network. If the municipality has engineering firms periodically complete inspections on their sanitary sewer network infrastructure, it is recommended that this data be standardized and stored within a centralized database for future asset management planning purposes.



Figure 13 below is a breakdown of the District's entire Sewer Network condition assessments, which include sanitary and storm assets. Condition assessments have been conducted for roughly 41% of the entire sewer network. Roughly 13% of these assets are in poor to critical condition.

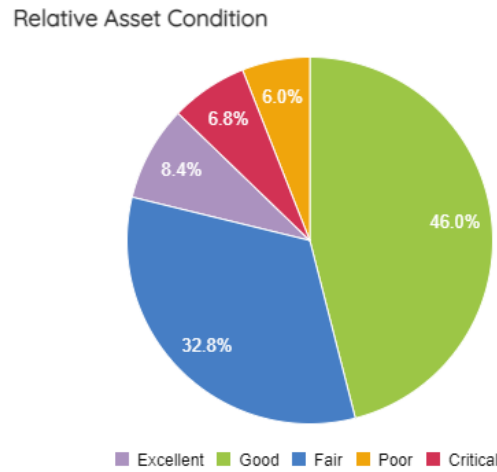


Figure 13: Sewer Network Conditions

Figure 14 below is a breakdown of the condition and estimated replacement cost of the Sanitary Sewer portion of the Sewer Network. Roughly 45% of sanitary sewer network assets have condition assessments within the centralized database. Sanitary Sewer Network assets in Poor or Critical condition are estimated to have a total replacement cost of \$102,524. Roughly \$5,982,833 worth of sanitary sewer network infrastructure that has an associated replacement cost has not yet had a condition rating assessed.

Condition Rating	Sum of Replacement Cost
Excellent	\$24,193
Good	\$484,743
Fair	\$361,876
Poor	\$65,810
Critical	\$36,714
Unknown	\$5,982,833
Total	\$6,856,170

Figure 14: Sanitary Sewer Network Replacement Costs and Condition Rating

STORM SEWER NETWORK

District of Hudson's Hope owns and manages a storm drainage system to drain surface-water and prevent flooding. Figure 15 below is a summary of the District of Hudson's Hope's storm sewer network.



Asset Name	(Units)	Count	Replacement Cost	Replacement Cost Complete
Storm Sewer Main	(km)	2.7	\$413,624	17%
Storm Sewer Inlet	(#)	72	\$283,376	100%
Storm Sewer Culvert	(#)	179	\$339,271	58%
Storm Sewer Manhole	(#)	109	\$736,480	100%
Total	-	-	\$1,772,752	-

Figure 15: Storm Sewer Inventory

Figure 16 below is a breakdown of the condition and estimated replacement cost of the Storm Sewer portion of the Sewer Network. Roughly 35% of storm sewer network assets have condition assessments within the centralized database. Roughly \$410,935 worth of storm sewer network infrastructure that has an associated replacement cost has not yet had a condition rating assessed.

Condition Rating	Sum of Replacement Cost
Excellent	\$83,282
Good	\$346,048
Fair	\$220,570
Poor	\$71,307
Critical	\$46,017
Unknown	\$1,005,525
Total	\$1,772,751

Figure 16: Sanitary Sewer Network Replacement cost and Condition Rating

Data quality metrics for this asset category have been broken down in Figure 7 below.



Asset Name	Attribute	Data Completeness
Storm Sewer Main	Material	39%
	Diameter	17%
	Install Date	0%
	Expected Useful Life	0%
Storm Sewer Inlet	Install Date	0%
	Expected Useful Life	0%
Storm Sewer Culvert	Diameter	94%
	Material	97%
	Length	100%
	Install Date	0%
	Expected Useful Life	0%
Storm Manhole	Install Date	0%
	Expected Useful Life	0%

Figure 17: Storm Sewer Data Completeness

It is recommended for the municipality to determine the expected useful life for all the storm sewer network assets to develop an asset replacement forecast. The municipality does not have enough data on levels of service, asset condition, asset risk, or asset replacement cost to proceed forward with meaningful analysis of this information. If the municipality has engineering firms periodically complete inspections on their storm sewer network infrastructure, it is recommended that this data be standardized and stored within a centralized database for future asset management planning purposes.

BUILDINGS & FACILITIES

The District of Hudson's Hope owns and maintains municipal buildings to deliver services to stakeholders. The figure below is a summary of buildings data within MuniSight's AMP software:

Asset Name	Install Year	Expected Useful Life	Condition	Replacement Cost
Community Hall	1967	10	Poor	\$3,000,000
New Horizons	-	10	Poor	\$500,000
Swimming Pool	2004	5	Poor	\$1,200,000
Old Public Works Shop	1967	5	Poor	\$1,000,000
Storage 1	1967	5	Poor	\$300,000
Arena	1980	10	Fair	\$12,000,000
Storage 2	1967	5	Poor	\$300,000
Water Treatment Plant Building	2000	40	Good	\$5,000,000
Beryl Prairie Fire Hall	1990	20	Fair	\$800,000



Bullhead Mountain Curling Club	2006	20	Fair	\$4,000,000
District Office	2002	20	Fair	\$3,000,000
Downtown Fire Hall	2002	20	Fair	\$2,000,000
Library	1976	20	Fair	\$1,000,000
Museum	-	5	Poor	\$400,000
Public Works Shop	2016	40	Good	\$3,000,000
Beattie Lift Station Building	2020	40	Good	\$700,000
Adams Lift Station Building	1995	40	Fair	\$500,000
Kendrick Lift Station Building	-	5	Poor	\$500,000
Transfer Site	-	30	Good	\$1,000,000
Visitor Information Centre	1989	10	Poor	\$400,000

Figure 18: Building Inventory

The following Asset Replacement Forecast serves to represent estimated expenses of future building replacement costs in future years. Past years, and years that do not have a forecasted asset replacement are omitted from this visual

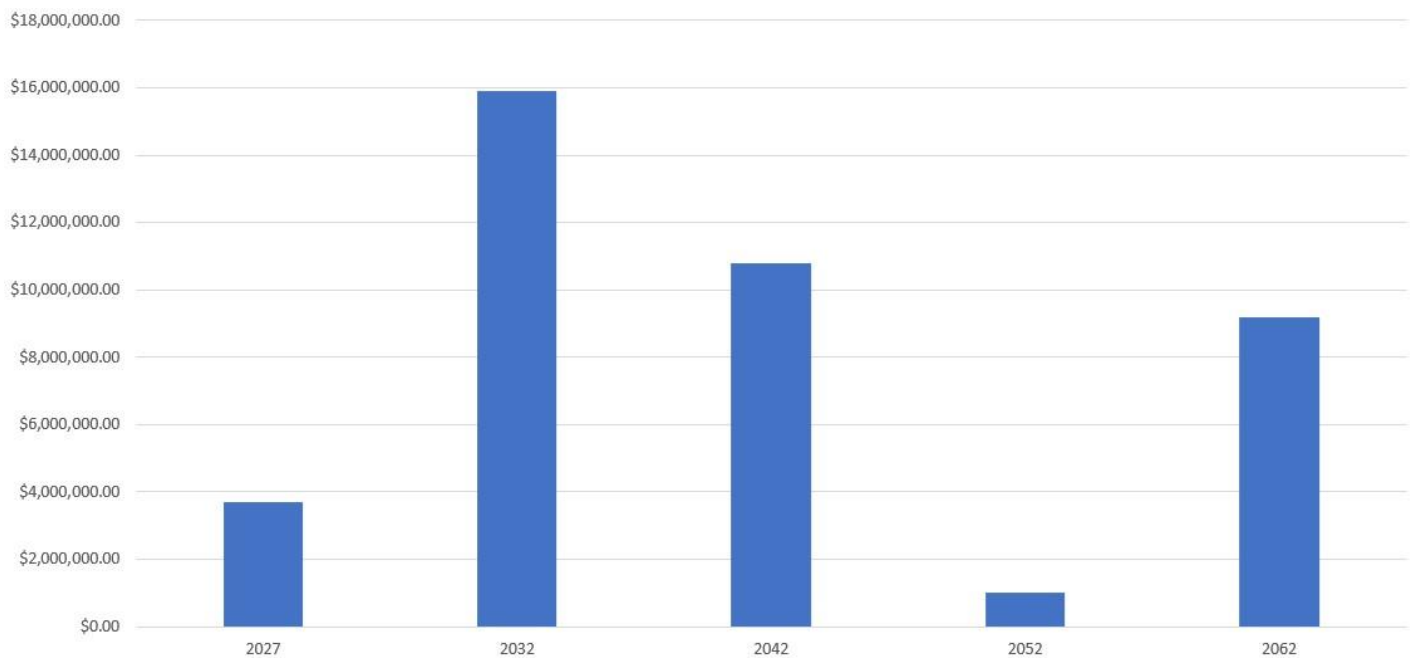


Figure 19: Buildings and Facilities Asset Replacement Forecast

The District of Hudson's Hope has collected condition, replacement cost, and estimated useful life information for all their building and facility assets. This data is centralized to forecast potential future asset investment as seen in



the above graphic. Additional useful information on these structures moving forward would include level of service, and risk.

CONCLUSION

The District of Hudson's Hope is taking the necessary steps towards developing and implementing a robust Asset Management Program. Adopting the Asset Management Plan, along with the Strategy and Policy, is a significant first step towards a successful Asset Management Program.

Through MuniSight's Webmap and AMP, the municipality maintains a standard list of asset information for select asset classes. This list includes locations of roads, water network, storm sewer network, and sanitary sewer network. These asset classes typically make up a significant portion of the municipality's capital asset expenditures and must be considered while making infrastructure asset decisions. Moving forward with asset management should include collecting additional asset information, defining levels of service, building additional asset management procedures, and increasing knowledge within the municipal staff. It is advised to take a gradual approach and begin with the most critical issues, rather than trying to solve everything at once. Asset management planning is an evolving process which scales with the municipality's growth.

RECOMMENDATIONS

#	Priority	Recommendation	Accountable
1		Formalize Asset Management Documentation – adopt Asset Management Policy, Strategy, & Plan.	Council
2		Data Management - Continue to update and sort asset information into a centralized database. <ol style="list-style-type: none"> 1. Determine remaining replacement costs 2. Determine remaining install dates and expected useful life 3. Develop Asset Replacement Forecast 	
3		Asset Data – Develop a schedule for completing the asset inventory then begin condition assessment collection. Start with a specific asset type that the municipality deems most critical. For example, <ol style="list-style-type: none"> 1. Collect road network condition (potentially bringing engineering data into the centralized database) 2. Collect water network condition (potentially bringing engineering data into the centralized database) 3. Collect sewer network condition 4. Etc. 	
4		Levels of Service - Define Levels of Service for each asset type. This will benefit from input from Council and Stakeholders throughout the municipality.	
5		Training – Investigate Training options for municipal staff on Asset Management fundamental principles.	
6		Determine installation date, expected useful life, and replacement costs for infrastructure assets to develop an asset replacement forecast.	
7		Asset Data – Conduct Levels of Service assessment and Risk assessment, beginning with higher priority assets.	



Figure 20: Report Recommendations

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