



Subject: East Hants Roads Assets - State of the Infrastructure Update
To: Corporate and Residential Services Committee
Date Prepared: September 11, 2024
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Summary

This information report follows up the May 2024 Corporate Asset Management (AM) Program update, to provide an overview of the current state of East Hants' roads infrastructure.

Financial Impact Statement

The information shared in this report will inform upcoming budget recommendations.

Recommended Motions

That the Corporate and Residential Services Committee recommends to Council that they receive and file the East Hants Roads Assets - State of the Infrastructure Update report dated September 11, 2024.

Background

Council approved a Corporate Asset Management Policy in November 2022, which kicked-off the Municipality's first formal Corporate Asset Management Program. In May 2024, staff gave Council an informational report on the program's progress since the approval of the Policy, which included updates on the AM Program's governance structure, development of an AM Strategy and Roadmap, and the Roads Pilot Project - where staff worked to introduce industry-recognized AM concepts to our existing Roads Service Area. This service area includes assets managed by East Hants Roads Operations staff; Roads, Sidewalks, Streetlights, Catch Basins, and Culverts.

As a continuation of the Roads Pilot Project, staff have taken steps to examine, verify, and collect data on those roads that are owned and maintained by the Municipality to better support and inform planning and decision-making for these assets. This report focuses on the data and information collected about the roads that are owned and maintained by the Municipality.

Staff have compiled a current State of the Infrastructure Report for Municipally-owned roads that addresses the following essential questions of Asset Management:

- What do we have?
- Where is it located?
- What is its condition and expected remaining useful life?

As part of the Corporate Asset Management Program, asset inventory data is 'living' and continuously updated as new assets are taken on or disposed of by the Municipality. For ongoing developments where East Hants will be taking over newly constructed roads, a road is considered part of our inventory once the final registration of the subdivision of which the road is part of occurs. Additionally, there are a few road segments where ownership discrepancies exist between municipal and provincial records. Staff are actively working with NSPW Real Property Team to confirm ownership of these segments. For the purpose of this point-in-time report, the data includes confirmed municipally-owned assets in the East Hants roads inventory as of August 1, 2024.

Discussion

Within the boundaries of the Municipality of East Hants there is over one thousand (1000) kilometers of roadway, the majority of which is owned by the Province of Nova Scotia, and with smaller minorities owned by the Municipality or private landowners. The Municipality of East Hants owns 36.05 km of road; 28.34 km are asphalt roads, and 7.71 km are gravel roads. The roads in East Hants' inventory vary between 6.1 and 10 meters in width, depending on material, location, and municipal engineering standard requirements at the time of construction. Asphalt and gravel roads have different maintenance and lifecycle considerations, and for this report they will be examined separately.

The municipality owns roads within the boundaries of nine (9) communities within East Hants, and across eight (8) polling districts. Table 1 shows the distribution of asphalt and gravel roads among East Hants communities, and Table 2 shows the distribution among East Hants polling districts.

Table 1. Municipal Road Lengths by East Hants Community

Community	Asphalt Road Length (km)	Gravel Road Length (km)	Total Road Length (km)
Belnan	2.97	2.68	5.65
East Uniacke	3.78	0.87	4.65
Elmsdale	5.52	0.0	5.52
Enfield	5.29	2.36	7.65
Hardwood Lands	0.29	0.0	0.29
Lantz	5.64	0.0	5.64
Milford	0.51	0.0	0.51
Mount Uniacke	4.34	0.0	4.34
Nine Mile River	0.0	1.80	1.80

Table 2. Municipal Road Lengths by East Hants Polling District

Polling District	Asphalt Road Length (km)	Gravel Road Length (km)	Total Road Length (km)
District 1	4.39	0.0	4.39
District 2	5.52	0.0	5.52
District 3	3.32	4.42	7.74
District 6	2.11	0.0	2.11
District 7	4.04	0.0	4.04
District 8	3.31	0.0	3.31
District 9	4.81	0.87	5.68
District 10	0.90	2.36	3.26

The communities with the greatest total length of Municipal roads are Enfield, Lantz and Belnan and the polling districts with the greatest length of Municipal roads are Districts 2, 3 and 9. There are currently no Municipally-owned roads in Districts 4, 5 and 11, and therefore they contain only provincial and privately owned roads.

For road assets, age and condition data are important pieces of information to know in a decision-making process. In collaboration with Dillon Consulting as part of the Roads Pilot Project, staff compiled and verified data on age and installation and construction year of all municipally-owned roads. Road ages were calculated by subtracting the known year of installation from the current year, 2024. It should be noted that when building an asset inventory, installation year and construction year are two distinct attributes, and a segment of road can sometimes have an installation year that differs from its original construction year. For example, Acorn Avenue in Lantz was constructed in 1996 as a gravel road, however since it was paved as part of the

Road Gap Project in 2023, it has new physical properties and lifecycle considerations as an asphalt road and therefore its installation year is 2023 (1 year old).

In total, the current average age of all Municipally-owned roads in East Hants is 13 years. Asphalt Roads have an average age of 13 years, and Gravel Roads have an average age of 14 years. Figure 3 shows the distribution of age of asphalt roads by road length across the Municipality, and Figure 4 shows the distribution of age of gravel roads by road length across the Municipality.

Figure 1. Age distribution of Municipal Asphalt Roads

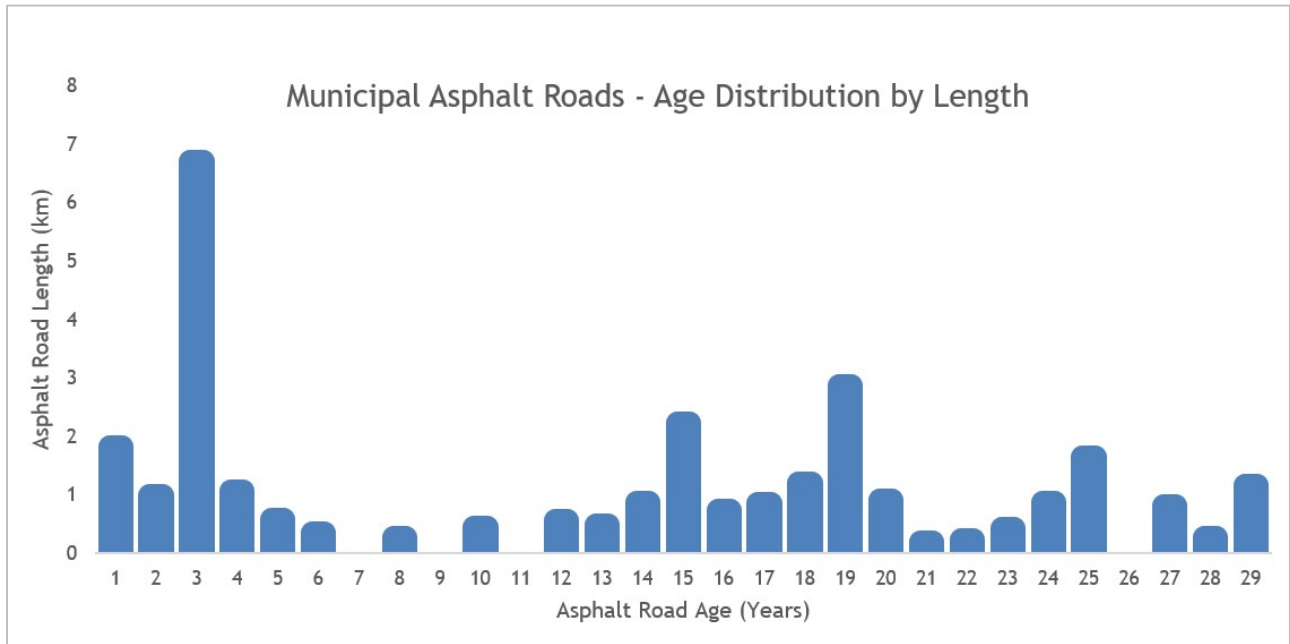
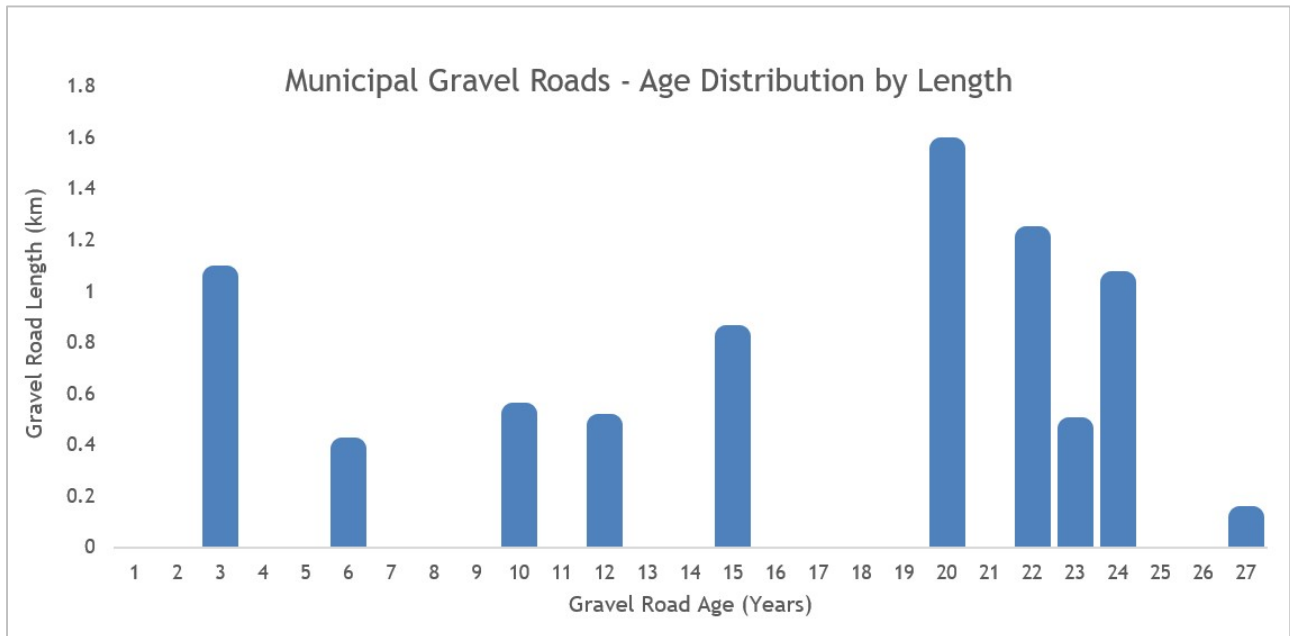


Figure 2. Age Distribution of Municipal Gravel Roads



It is AM best practice is to determine Expected Useful Life (“EUL”) estimates for assets. EUL estimates refer to the number of years that a type of asset is estimated to function, assuming that routine maintenance is practiced. Staff are aware of the fact that there are a number of factors that can shorten or lengthen the lifespan of an individual road, and acknowledge that EUL figures are simply industry-recommended guidelines. As part of the Roads Pilot Project, East Hants Roads & Engineering staff and the consulting team developed the following expected useful life estimates based on industry standards and staff knowledge.

Table 3. Industry Standard Expected Useful Lifespans for Asphalt and Gravel Roads

Asset Element Type	Expected Useful Life (Years)
Asphalt (Paved) Road	25
Gravel (Unpaved) Road	10

With the knowledge about each road asset’s expected useful life and installation year, inferences can be made about the age-based ‘Remaining Useful Life’ of those assets by subtracting their ages from their expected useful life. This was done as part of the Roads Pilot Project, however, there are other factors aside from age that can and do impact the lifespan of a road asset. Age-based estimates are a good start, but supporting that with current road condition information can provide an even clearer picture of the expected remaining life of a road segment. Because of this, a recommendation from the consultant team in the roads asset management plan was to perform updated field verified condition assessments on all municipal roads.

In early summer 2024, these visual condition assessments were conducted by staff. All road segments in the inventory were given a condition rating ranging from ‘5 - Very Good’ to ‘1 - Very Poor’. The condition assessment rating scale was developed using industry-standard condition descriptions for each of asphalt and gravel roads. These descriptions were confirmed by East Hants Roads & Engineering staff. The full condition rating scales for asphalt and gravel roads can be found in the attachments of this report.

Figures 3 and 4 show the distribution of condition ratings per segment of road in East Hants’ inventory for asphalt and gravel from the summer 2024 condition assessments. Close to 90% of Municipally-owned asphalt roads fell into the ‘Good’ or ‘Very Good’ rating, whereas close to 75% of Municipally-owned gravel roads fell into the ‘Poor’ or ‘Very Poor’ rating.

Figure 3. Asphalt Road Lengths by Summer 2024 Condition Rating

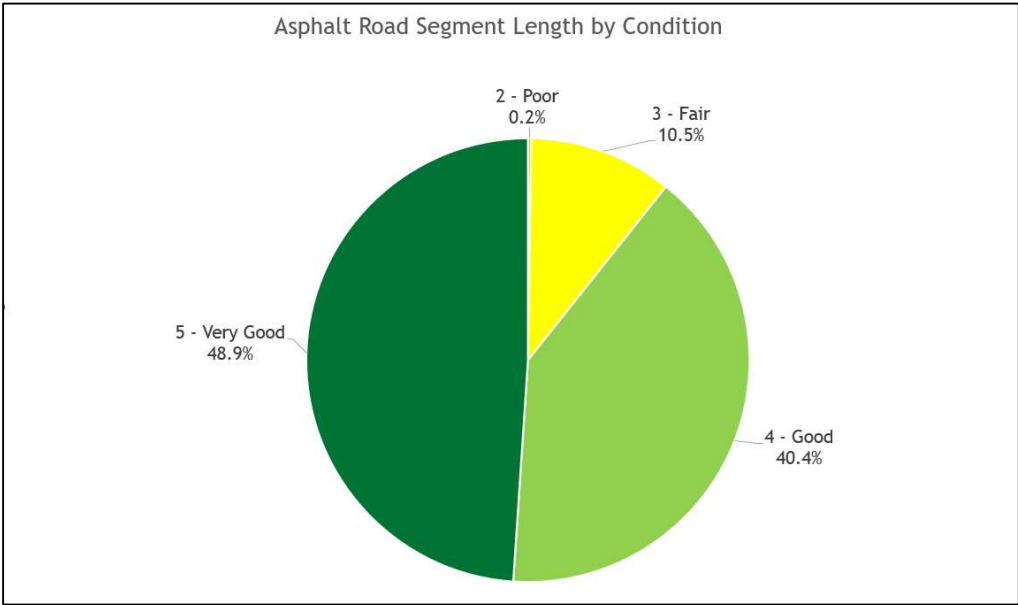


Figure 4. Gravel Road Lengths by Summer 2024 Condition Rating

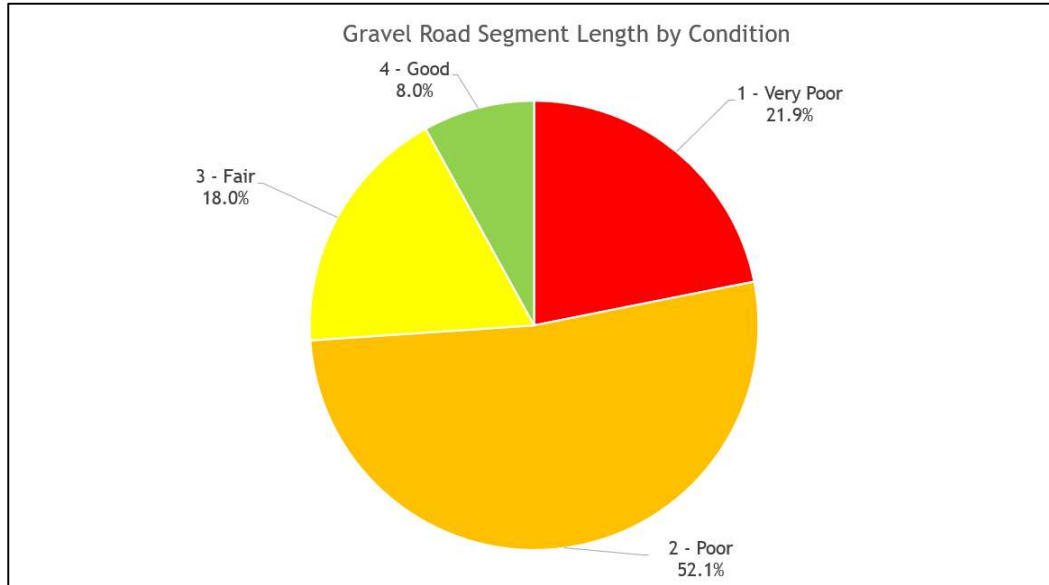


Table 4 shows the average visual condition rating for roads by polling district. The average condition rating for asphalt roads did not fall below a 4.13 (in the upper level of the ‘Good’ rating) for any polling district in East Hants that contains Municipal roads. Only 3 districts contain gravel roads, and their average ratings were ‘Poor’ and ‘Fair’.

Table 4. Average Visual Condition Ratings of Municipal Roads by Polling District

Polling District	Average VCA (Asphalt)	Average VCA (Gravel)
District 1	4.34 (Good)	N/A
District 2	4.19 (Good)	N/A
District 3	4.13 (Good)	2.88 (Fair)
District 6	4.70 (Very Good)	N/A
District 7	4.76 (Very Good)	N/A
District 8	4.20 (Good)	N/A
District 9	4.13 (Good)	2.00 (Poor)
District 10	4.33 (Good)	2.00 (Poor)

Pairing visual condition data with the known age of the road assets allows for an even more detailed picture to be painted of the overall state of the Roads portfolio. Since EUL figures are just generalized industry-recommended estimates, and we know that there are a multitude of other external factors that might affect a road’s lifespan such as location, climate vulnerability, and amount of travel; visual condition assessment data is invaluable for capital and lifecycle planning.

For Municipally-owned asphalt roads, although the average remaining useful life estimate is 12 years which is about half of the EUL, we know from visual condition assessments that our municipal-wide average condition is still in the upper ‘Good’ category. However, for Municipally-owned gravel roads the average age has exceeded the expected useful life by 4 years, and our average condition rating in the Poor range is reflective of that.

Table 5. Expected Useful Life and Remaining Useful Life Estimates for Asphalt and Gravel Roads

Asset Element Type	Expected Useful Life (Years)	Average Aged-Based Remaining Useful Life (Years)	Average Overall Summer 2024 Condition Rating
Asphalt (Paved) Road	25	12	4.41 (Good)
Gravel (Unpaved) Road	10	-4	2.29 (Poor)

The field verified and up-to-date information about the ages and conditions of East Hants owned roads will be considered by staff when making capital project and budget recommendations, and will help to deliver a higher level of confidence for Council to make data-driven decisions. It should also be noted that there are existing capital projects in the 5-year capital plan have been further affirmed by the asset condition and lifecycle data developed in the Asset Management Program.

As previously mentioned, although this report addresses only the segments of road owned by the Municipality, the same field data collection was performed in summer 2024 for Municipally-owned sidewalks and will help to inform the capital budget moving forward. At the direction of council, staff can provide a similar report for those assets. Through the Corporate Asset Management Program, staff aim to collect, compile, and maintain age and condition data for other municipal assets in the future, with the next service area of focus being Water and Wastewater.

Attachments

Appendix A - Detailed Visual Condition Rating scales for Asphalt and Gravel Roads

Appendix B - Map of East Hants-owned roads location

Appendix C - Map of East Hants-owned roads by current visual condition grade