

# AUDITOR GENERAL

Halifax Regional Municipality



## Road and Sidewalk Asset Management Audit

June 2019

**June 20, 2019**

The following audit of **Road and Sidewalk Asset Management**, completed under section 50(2) of the Halifax Regional Municipality Charter, is hereby submitted to the Audit and Finance Standing Committee of Regional Council.

Respectfully,

*Original signed by*

Evangeline Colman-Sadd, CPA, CA  
Auditor General  
Halifax Regional Municipality

## Table of Contents

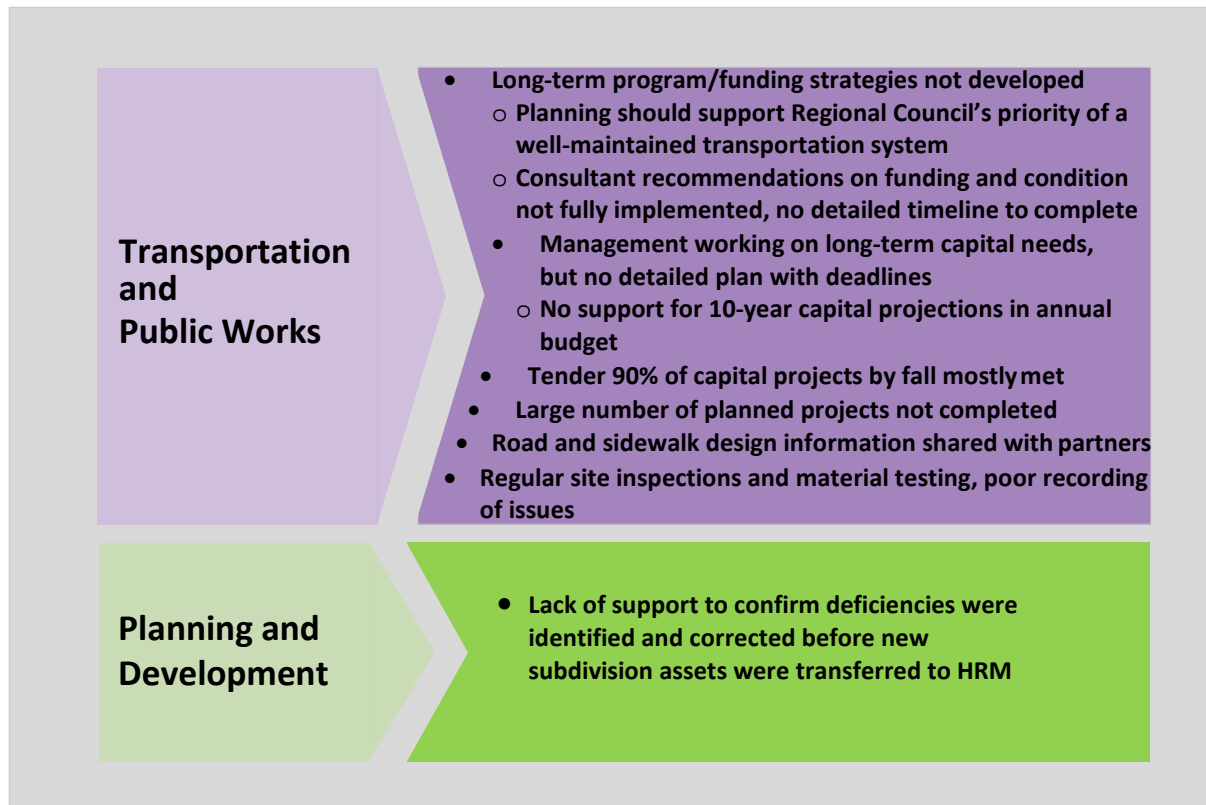
Summary.....	3
Conclusion .....	3
Key Take-aways .....	3
Audit Results.....	4
Strategic Road and Sidewalk Asset Planning.....	4
Long-term capital program and funding strategies not developed .....	4
No formal long-term goals and objectives to achieve a well-maintained system .....	5
No detailed plan to support implementing new pavement management system.....	6
Spending not consistent with the selected funding option .....	7
No performance targets established for road and sidewalk asset condition .....	11
Significant number of planned projects not completed yearly.....	12
Design and Construction of Road and Sidewalk Capital Assets .....	13
Some aspects of design review well-documented, others need improvement .....	13
Lack of documentation and inadequate monitoring processes.....	13
Improvements needed to new subdivision inspections before HRM takeover.....	14
Warranty Inspection of Capital Assets .....	16
Poor monitoring of warranty inspection processes.....	16
Background.....	17
About the Audit.....	18
Appendix 1 – Recommendations and Management Responses.....	19
Contact Information .....	23

## Summary

### Conclusion

Transportation and Public Works	Planning and Development
<ul style="list-style-type: none"> <li>• Short-term plans for road and sidewalk capital assets but lacks complete long-term plans and measurable targets</li> <li>• Some evidence staff review design and construction projects, limited support of project reviews and inspections</li> <li>• Improved management monitoring is needed to confirm work was completed</li> <li>• Annual capital planning is based on allocation across HRM, as well as road and sidewalk condition</li> </ul>	<ul style="list-style-type: none"> <li>• Needs to improve monitoring of the construction of new subdivision roads and sidewalks transferred from developers to HRM</li> <li>• Responsible to ensure new subdivision road and sidewalk assets meet standards. Staff did not always document construction deficiencies, and whether issues addressed before assets were transferred to HRM.</li> </ul>

### Key Take-aways



## Audit Results

### Strategic Road and Sidewalk Asset Planning

#### **Long-term capital program and funding strategies not developed**

In fall 2018, Transportation and Public Works began to develop a long-term capital program for sidewalk renewals and street recapitalization but the Business Unit does not have a detailed plan with deadlines to guide completion.

During the audit, we saw evidence of HRM working with partners to coordinate when projects were completed. Sharing project plans allows partners to work together to complete projects and avoid digging up the same area twice for each partner to complete its work. The Project Planning and Design division is developing a five-year list of capital projects which it will share with relevant partners (such as Halifax Water, NS Power, and other HRM business units). Transportation and Public Works does not have a timeline for a complete capital plan, including estimated project costs.

**Sidewalk renewals** – replace sidewalk

**State of good repair** – road and sidewalk small capital projects

**Street recapitalization** – more significant capital work on streets

A long-term capital plan would further help HRM in working with its partners to complete projects at the same time. It would also improve planning road and sidewalk asset condition to help ensure these assets are maintained at an acceptable level. Additionally, time spent developing the annual capital program could potentially be reduced. A long-term capital plan would also document expected future financial requirements, provide an opportunity to consider those in light of HRM's other operating and capital needs, and help identify competing priorities for future funding.

#### **Recommendation 1**

Transportation and Public Works should develop a long-term capital program. In doing so, the Business Unit should continue to work with relevant partners to maximize opportunities to work together on projects.

#### **Management Response**

*Agreed. HRM is in the process of creating a ten-year capital plan for Regional Council's consideration in the Fall of 2019. Further, Transportation and Public Works is leading the development of a five-year transportation capital plan that will be integrated with external utility stakeholders.*

### **No formal long-term goals and objectives to achieve a well-maintained system**

We expected Project Planning and Design to develop formal strategic short-term and long-term goals that support Regional Council's priority outcome of having a well-maintained transportation network. While there are short-term goals and objectives for the division, it has not established formal long-term goals and objectives.

**2017-18 Regional Council  
Multi-year Priority Outcomes**

*"an asset and service plan that ensures long term sustainability of the transportation system."*

Management told us they had an objective to maintain HRM roads at an average condition rating of 7.3 to 7.5 (0 – worst condition to 10 – best condition) over a ten-year period. They believed this would result in a well-maintained road network. However, this objective was not documented, did not include sidewalks, and is no longer current because the division implemented a new road condition rating system in 2016.

Targets have not been established for the new road condition system. Measurable goals and objectives, with adequate supporting information, are important. They provide a way for management to assess how the business unit is doing as well as allowing management to determine if they are achieving Regional Council priorities.

#### **Recommendation 2**

Transportation and Public Works should establish documented long-term and short-term goals for its Project Planning and Design division that support Regional Council's priority of a well-maintained transportation system.

#### **Management Response**

*Agreed. Road condition targets had been reported up to 2016/17 under the former pavement management system however, Project Planning and Design staff recognized that a new system would offer greater reporting and analytical capabilities and began the process of transitioning to a new condition data collection methodology and pavement management software. The initial implementation of the new pavement management software requires data to operate which was subsequently collected in 2016 and 2018. Deterioration and performance index models had to be created, and are currently undergoing refinement. It is anticipated this transition period will take three years (projected completion 20/21), and once completed, Project Planning and Design staff will develop scenarios and work with senior management to select appropriate Level of Service (LOS) targets (for pavements and sidewalks) that align with other competing corporate priorities.*

**No detailed plan to support implementing new pavement management system**

Transportation and Public Works had two consulting firms review its paving program practices and assess long-term road maintenance strategies. Both consultants made recommendations.

Management accepted 15 of the 17 recommendations from a 2017 review of HRM’s pavement program. They told us the status of those recommendations, as of April 2019:

- Six of 15 recommendations implemented
- Remaining nine in progress, to be implemented by 2021

Management also accepted 18 of 23 consultant recommendations made in 2014 regarding the surface condition of the pavement network. They told us thirteen recommendations were implemented and five are in progress as of June 2019. Management said these will be implemented in one to two years, once the new pavement management system is fully operational. Management also said they are reviewing three recommendations to determine whether to accept and implement. They do not intend to implement the remaining two recommendations.

After getting the consultant’s report in 2014, HRM selected a vendor for its new pavement management system in 2016. The new system is now in place but is not fully operational. HRM is not yet using the system to select capital projects. Management told us they expect the new system to be fully operational in 2020-21. However, there are no detailed timelines for implementation. Without detailed plans, there is a risk the new pavement management system will not be fully implemented by 2020-21.

*Consultant reports:*

In 2014, a consultant was engaged to conduct an:

- analysis of the surface condition of the pavement network; and
- assessment of long-term rehabilitation investment strategies for different budget scenarios.

The consultant made several recommendations and provided six funding options for street recapitalization.

HRM selected one of the proposed funding options covering a ten-year period from 2015 to 2024. The option selected defines levels of service targets by road class with steady annual funding.

In 2017, HRM engaged a consultant to review and evaluate the state of HRM’s asphalt concrete operations and identify potential issues.

### **Recommendation 3**

Transportation and Public Works should develop detailed plans, with deadlines, to implement the remaining accepted recommendations from its two consultant reports on paving program practices and surface condition.

#### ***Management Response***

*Agreed. With respect to the 2014 consultant report, the outstanding Project Planning and Design recommendations are tied directly to the completion of the new pavement system, and once the system becomes fully operational (projected completion 20/21), staff will develop a plan with timelines for completion of those outstanding accepted recommendations. As with the 2014 report, many of the outstanding recommendations in the 2017 report are linked to the new pavement management system and will be addressed as noted above.*

### ***Spending not consistent with the selected funding option***

HRM has no long-term funding strategy for road and sidewalk capital work. Management could not provide support for the 10-year capital projections in the annual budget book for sidewalk renewals and road and sidewalk small capital projects. An external consultant proposed ten-year funding options and treatment strategies for street recapitalization. Management selected a funding option but the annual capital budget does not reflect this.

### **Recommendation 4**

Transportation and Public Works should develop long-term funding requirements for road and sidewalk capital work and sidewalk renewals to assist it in managing these capital assets.

#### ***Management Response***

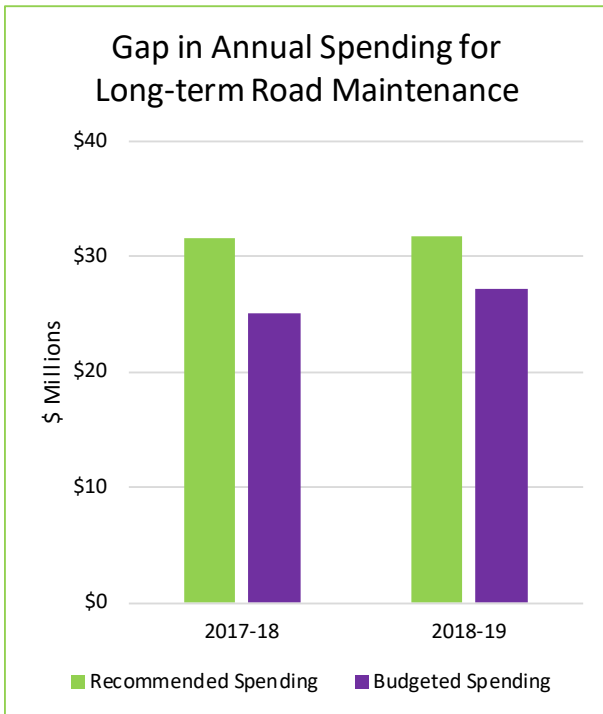
*Agreed. It was acknowledged by the external consultant in 2014 that their analysis and funding recommendations should be revisited once a new pavement management system is in place. Project Planning and Design staff intend to conduct a new analysis once the system is fully operational (anticipated for 20/21). In the meantime, staff continue to use the long-term funding strategy identified in the 2014 consultant's report as a general guideline.*



Management told us they selected one of the consultant’s proposed funding requirements for long-term road maintenance. However, budgeted spending on each road treatment has not been consistent with the consultant’s recommendation. The consultant recommended HRM spend \$31.6 million in 2017-18, and \$31.7 million in 2018-19, to achieve a specific road condition. However, HRM budgeted \$6.6 million less in 2017-18 and \$4.5 million less in 2018-19 than recommended. Additionally, the consultant recommended the amount of funding to spend on each type of treatment strategy. HRM divided its spending differently; senior HRM management told us this was due to competing priorities for available funding.

- Major Rehabilitation
  - 2017-18 – spent 30% more than recommended
  - 2018-19 – spent 53% more than recommended
- Reconstruction: Spent 44% less than the recommended amounts in both years.

The following graphs illustrate budgeted versus recommended funding.



**Road Treatment Strategies:**

**Minor Rehabilitation** – New surface layer applied to partially removed asphalt or on top of existing asphalt.

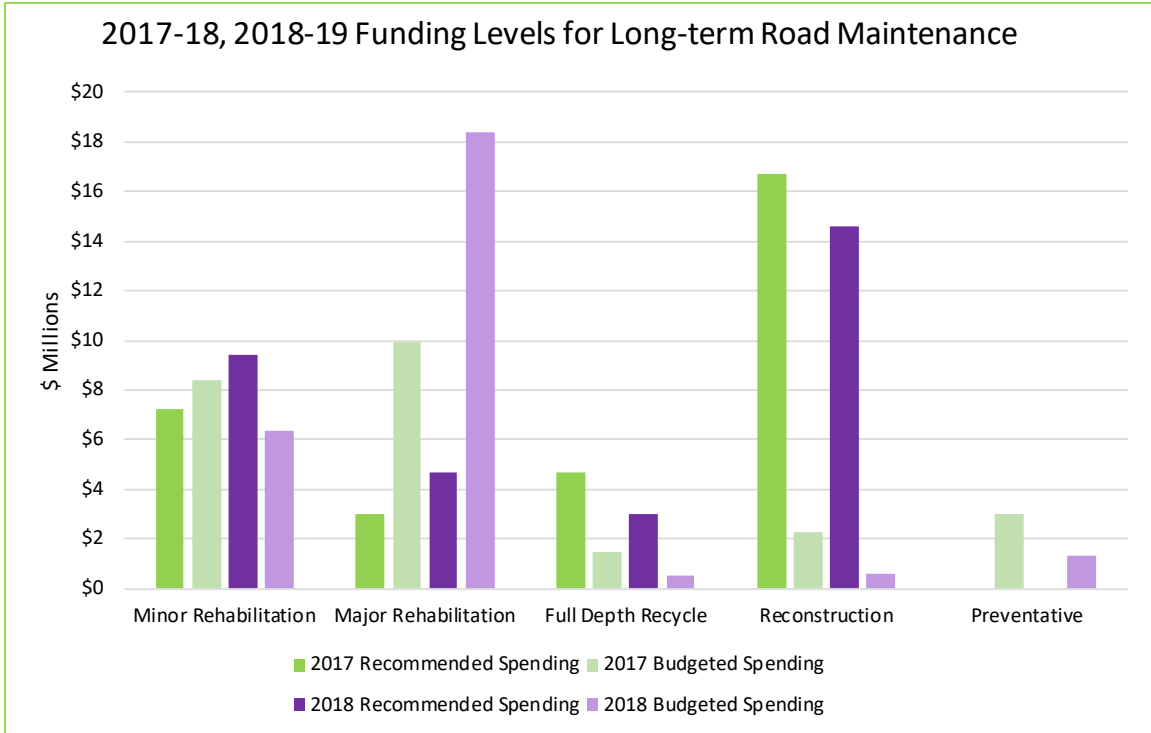
**Major Rehabilitation** – Partial depth removal of existing asphalt and replaced with new materials or the existing asphalt is re-used, stabilized and placed back on the road.

**Full Depth Recycle** – Full depth removal of existing asphalt which is re-used, stabilized and placed back on the road.

**Reconstruction** – Removal of the asphalt and base layer to a specified depth and replaced with all new materials.

**Preventative** – Thin surface treatments on structurally adequate roads with surface deficiencies.

*(source: Halifax Regional Municipality Pavement Design Manual)*



Management said its funding distribution for each treatment strategy is not consistent with the consultant’s recommendation due to cost sharing benefits from working on projects with partners, and increased rehabilitation versus reconstructing capital assets. However, Transportation and Public Works accepted the consultant’s recommendations on long-term funding and has no detailed analysis to support how changing the allocation will impact value-for-money or long-term asset condition. Changing the proposed strategy without analysing the impact means road conditions may differ from expectations with either too much or too little spent in particular areas.

Project Planning and Design followed documented processes when developing its annual capital program for road and sidewalk renewals. However, these processes should be updated to reflect current practices, including the external consultants’ recommendations. For instance, the percentage defective rate used to select sidewalk renewal projects has not been updated to reflect when a sidewalk should be repaired or replaced. Similarly, processes have not been updated to reflect the new method of assessing road condition.

### **Recommendation 5**

Transportation and Public Works should update its documented annual capital planning processes to reflect current practices.

#### ***Management Response***

*Agreed. Elements such as the sidewalk percent defective rating and asphalt condition index outlined in the capital program development procedure will be revised once the new pavement management system becomes fully operational.*

*HRM has established an Enterprise Asset Management Office (AMO) in 2017 to establish asset management best practice processes. Over a multi-year iterative approach, EAM will be linking service standards with assets standards supported by investment strategies. The longer term plan for EAM is to develop funding methodologies to reflect the full cost of asset ownership. Currently underway HRM is redeveloping the 10 year capital budget process, the capital planning process will be developed based on council priority outcomes, projects will be evaluated on the capacity to deliver (financially and from a human resource and industry capacity) and against a risk matrix to ensure long term project funding alignment with fiscal sustainability and asset management principles.*

As part of developing the annual capital program, Project Planning and Design considers road condition, treatment strategies, integration opportunities, and other factors. The Business Unit also allocates funding across HRM districts.

Certain road capital projects were not included in the 2018-19 street recapitalization program because districts met their allocated funding levels. This may not best support the goal of a well-maintained transportation network across HRM and may not represent value-for-money for HRM taxpayers.

### **Recommendation 6**

Transportation and Public Works should select and plan road and sidewalk capital projects to maximize value-for-money. This should include documented support for the funding option chosen to demonstrate effective use of taxpayer funds.

### **Management Response**

*Agreed. Project Planning and Design staff develops the capital program based on a number of factors including integration opportunities, condition rating, classification of the road, funding availability, traffic disruption, engineering judgement, type of rehabilitation required, backlog of each district, etc. Project Planning and Design's former pavement management software did not have the capability of running optimization reporting and "what if" scenarios. The new software will provide that capability and should be used in conjunction with the other factors as noted above. The number of "what if" scenarios can be significant, and the most optimal computer-generated scenario based solely on condition may in fact not be the most practical. Once the system becomes fully operational staff will be in a better position to advise on the best value for money based on the criteria noted above.*

### **No performance targets established for road and sidewalk asset condition**

Prior to 2016-17, Project Planning and Design reported annual targets for road and sidewalk capital assets. However, the division did not compare actual results to targets which reduces the usefulness of targets for management decisions.

More recently, none of this information has been reported. Management told us they expect to establish road condition targets once the new pavement system is fully operational in 2020-21.

While we agree targets are needed, it is important to develop these at a more detailed level so that management can use the targets to measure progress in various areas of road and sidewalk capital work. This would help evaluate whether the road and sidewalk capital program meets expectations and contributes to Regional Council's priority of a well-maintained transportation system.

#### ***New pavement management system***

In 2017, HRM implemented a new Pavement Management System.

#### ***Changes in road condition rating system***

Project Planning and Design division switched from the manual data collection process to the high-speed data process in 2016.

#### ***Surface Distress Index***

Until 2015, road network conditions were evaluated using the SDI rating system. Involved manual collection of data and one third of the road network in HRM was collected annually.

#### ***Pavement Condition Index***

In 2016, road condition data collected for the whole network in HRM. Data collected every two years using a high-speed process.

**Recommendation 7**

Transportation and Public Works should develop measurable performance targets and regularly report performance results. Targets should be detailed enough to provide good management information for program planning.

**Management Response**

*Agreed. Project Planning and Design is in a transition period by moving to a new data collection methodology and new pavement management system. As part of the implementation and refinement process of the new pavement management system new performance targets and LOS will be created and presented to senior management for consideration (anticipated in 20/21).*

**Significant number of planned projects not completed yearly**

We compared the list of street recapitalization and sidewalk renewal capital projects planned against projects completed and found over 25% of capital projects planned in 2017-18, and over 20% in 2018-19, were not completed when intended.

<b>Description</b>	<b>2017-18</b>	<b>2018-19</b>
Number of planned projects	110	108
Less: Number of completed projects	78	84
<b>Planned projects not completed</b>	<b>32</b>	<b>24</b>
<b>% of planned projects not completed</b>	<b>29%</b>	<b>22%</b>

Staff told us projects were carried over because HRM wanted to work with partners, such as Halifax Water and others, to complete projects at the same time. They also said the Business Unit had staff vacancies in those years which contributed to the number of planned projects not completed.

Management has a goal to tender 90% of capital projects by fall each year. However, they do not publicly report whether the goal is met. We used the Nova Scotia tender website and determined the target to tender 90% of capital projects annually by fall was mostly met for the audit period. Recommendation 7 earlier in this report deals with measuring and reporting on targets. Implementing this should include reporting on this goal annually.

## Design and Construction of Road and Sidewalk Capital Assets

### ***Some aspects of design review well-documented, others need improvement***

Transportation and Public Works staff have a checklist that covers items to be considered before a street recapitalization or sidewalk renewal project is tendered. We tested 20 tenders to determine if this pre-tender process was followed.

- The checklist was not completed for 12 of 20 tenders.
- For all 20 tenders, design information was shared with appropriate partners.
  - Staff did not track changes suggested by partners and whether the changes were implemented. Some partner suggestions were noted in files. For those instances, there was evidence staff considered the potential change.

Additionally, management did not monitor to ensure the pre-tender checklist was completed and recommended changes to project design were considered.

### ***Lack of documentation and inadequate monitoring processes***

We tested 20 project files; 19 projects were complete and one was mostly completed at the time of our audit. Based on project files, we could tell HRM staff visited construction sites and completed some monitoring of external contractors. We found HRM construction inspectors did not regularly document the issues they identified during final inspections.

- Thirteen of 19 project files did not have construction deficiency forms completed. We did not expect a form for the remaining project as it was not complete at the time we finished our audit.
  - Twelve of the 13 files without construction deficiency forms were also missing support to confirm the deficiencies identified were addressed by the contractor. Staff told us four of the 12 had no issues but they could not provide proof of this.
  - One of the 13 files without a completed construction deficiency form had support to confirm the inspector identified deficiencies and verified the contractor corrected the deficiencies.
- Five of the six project files with completed construction deficiency forms had support to confirm the inspector verified the contractor corrected the deficiencies. One of six files was missing this information.

Given the limited evidence that construction deficiencies were addressed, there is a risk substandard projects may be accepted by HRM. Additionally, contractors who do not follow construction requirements may not be identified as a potential concern for future projects.

### **Recommendation 8**

Transportation and Public Works management should monitor road and sidewalk capital projects to confirm pre-tender checklists and construction deficiency forms are completed, and deficiencies are followed up and addressed.

#### ***Management Response***

*Agreed. Management will confirm pre-tender review checklists are completed.*

*Road Operations and Construction has revised the Construction Services Contract Administration Manual in February 2019. Management has reinforced with the team the need to document deficiencies and any/all actions taken in the appropriate form and save it to the file. A construction project checklist has been created and has been added to each construction file.*

We found all 20 project files received regular site inspections. The 19 completed projects we reviewed included a letter to the contractor to indicate substantial completion. All but one file had a report which is used to plan future work.

All 20 construction projects we assessed received appropriate material testing. Bonuses and penalties were generally applied to the contractor's bill prior to payment as appropriate.

Each inspector maintains all project inspection information rather than having it accessible to the division. If a staff member is sick or leaves HRM, files needed for someone else to pick up the inspector's work may not be available.

### **PLANNING AND DEVELOPMENT BUSINESS UNIT – NEW SUBDIVISIONS**

#### ***Improvements needed to new subdivision inspections before HRM takeover***

Planning and Development needs to do a better job monitoring the construction of roads and sidewalks for new subdivisions prior to taking over the assets from developers.

The Planning and Development business unit has documented processes for monitoring and acceptance of newly-developed road and sidewalk infrastructure. However, we found that important documentation was not consistently maintained in a central file, but in individual HRM staff files and HRM emails.

We tested HRM's process to accept municipal services for 10 subdivisions and found the following:

- Limited evidence staff performed site visits for the ten subdivision projects.
- For nine of ten subdivision project files, we found no support to confirm whether deficiencies were identified and addressed.
- For one of ten subdivision projects, there were no material testing results.
- For one of ten subdivision projects, some material testing results were missing.
- For two of ten subdivision projects, materials testing was on file but the approved design drawings needed to verify the testing was acceptable were missing.

**Material Testing**

*Used to verify the quality of the materials used to construct roads and sidewalks. Without this information, subdivision projects may not be of acceptable quality.*

**Recommendation 9**

Planning and Development management should monitor construction and inspection of subdivisions to confirm required work has been completed. The Business Unit should also maintain adequate support for the construction and inspections processes in central files.

**Management Response**

*Agreed. A procedural manual exists for subdivision reviews and inspections and was in the process of being updated prior to the start of the audit. Both the existing and draft versions of the revised manuals were provided to the audit team as part of the review documentation. The revised procedures were implemented during the audit process and include clarification on inspection requirements and consistent documentation in both the electronic permitting system and in the central subdivision files. This revised process is currently in use, is being monitored, and is being integrated into the new electronic permitting and licensing system that is under development.*

The subdivision by-law requires developers to provide record drawings certified by a professional engineer to confirm projects were constructed to relevant designs and specifications and confirmation from surveyors that municipal services are installed within the street boundaries. In the ten subdivision files we tested, we found:

- All had record drawings certified by a professional engineer
- Nine of ten had confirmation from the surveyor stating that all primary and secondary services were installed within the street boundaries.



## Warranty Inspection of Capital Assets

### **Poor monitoring of warranty inspection processes**

Planning and Development could not prove warranty inspections were completed. Transportation and Public Works did not adequately document inspections performed and verify whether deficiencies were addressed. This poses a risk to HRM that capital asset deficiencies which should have been corrected by developers and contractors are instead paid for with taxpayer funds.

We assessed 16 new subdivision projects in Planning and Development, and 15 completed capital projects in Transportation and Public Works.

Planning and Development could not prove they performed warranty inspections for 15 of the 16 samples tested.

Transportation and Public Works staff had limited documentation to prove they completed warranty inspections.

- For six of 15 completed projects examined, construction inspectors filled out a formal warranty deficiency report. For the remaining nine samples, warranty inspections included very brief and informal notes, with limited information on the sites visited.
- Eight of 15 project files identified deficiencies during the warranty period.
  - Three of eight had no evidence deficiencies were communicated to the contractor
  - Deficiencies were communicated to the contractor for five of eight files but there was no evidence of follow-up with the contractor to confirm these were corrected.

### **Recommendation 10**

Planning and Development, and Transportation and Public Works, should follow established processes for warranty inspections and document that these processes are adequately monitored prior to the warranty period expiring.

#### **Management Response - Planning and Development**

*Agreed. As noted in the response for Recommendation 9, the procedure manual was in process of being updated prior to the start of the audit. The update includes warranty inspections and appropriate documentation. Staff will proceed with further review of the procedural manual immediately following the audit to ensure recommendation comments are adequately addressed and monitored.*

#### **Management Response - Transportation and Public Works**

*Agreed. See response to Recommendation 8.*

## Background

Transportation and Public Works is responsible for managing 3,845 lane kilometres of roadway and 944 kilometres of sidewalk assets. The Project Planning and Design division is responsible for developing the annual capital program, designing and tendering the road and sidewalk projects. When the projects have been awarded to a contractor, the Road Operations and Construction division is responsible for managing the project to ensure it is constructed in accordance with HRM design standards.

Transportation and Public Works has three capital accounts for road and sidewalk repair work. In 2017-18 and 2018-19, the capital repair costs accounted for 20% and 25% respectively, of total approved capital funding.

<b>Capital Account</b>	<b>2017/18 Approved Net Funding (\$ Millions)</b>	<b>2018/19 Approved Net Funding (\$ Millions)</b>
Street Recapitalization (long-term road maintenance)	\$23.9	\$26.4
Sidewalk Renewals	\$3.0	\$2.8
State of Good Repair (road and sidewalk only)	\$2.4	\$2.8
<b>Total</b>	<b>\$29.3</b>	<b>\$32.0</b>

Planning and Development is responsible for accepting new subdivision infrastructure. Within Planning and Development, the Infrastructure Planning division is responsible for ensuring developers construct new road and sidewalk infrastructure in accordance with HRM design standards. Once the infrastructure is accepted by Planning and Development, the assets are managed by Transportation and Public Works.

## About the Audit

We completed a performance audit of the management of road and sidewalk capital assets in HRM, including the acceptance of new roads and sidewalks built by developers. Road and sidewalk maintenance (i.e. pothole filling, street cleaning and snow removal) was not included in the audit scope.

The purpose of the audit was to determine whether HRM policies and processes are designed to ensure a well-maintained road and sidewalk network and achieve value-for-money.

The objectives of the audit were to determine whether HRM:

- effectively manages and improves the condition of road and sidewalk assets; and
- manages road and sidewalk capital construction projects to achieve value-for-money.

We developed the criteria for this audit. These were discussed with, and accepted as appropriate by, management of Transportation and Public Works, and Planning and Development.

1. Goals and objectives have been established and documented for road and sidewalk asset management program
2. Long-term plans should be developed to maximize the lifespan of the road and sidewalk network
3. Road and sidewalk capital projects should be identified, prioritized, selected, and planned in accordance with appropriate policies and procedures.
4. Road and sidewalk construction projects should be adequately monitored to ensure they are constructed according to project plans.
5. Performance measures should be established, monitored and reported for the road and sidewalk network.

Our audit period covered fiscal years 2017-18 and 2018-19.

Our audit approach included reviewing internal policies, procedures and programs; interviews with management; and examination of capital projects and other documentation on a sample basis.

This audit was conducted in accordance with the Canadian Standard for Assurance Engagements CSAE 3001 – direct engagements published by the Chartered Professional Accountants of Canada.

We apply the Canadian Standard on Quality Control 1, and our staff comply with the independence and ethical requirements of the Chartered Professional Accountants of Nova Scotia Code of Conduct.

## Appendix 1 – Recommendations and Management Responses

### Recommendation 1

Transportation and Public Works should develop a long-term capital program. In doing so, the Business Unit should continue to work with relevant partners to maximize opportunities to work together on projects.

#### **Management Response**

*Agreed. HRM is in the process of creating a ten-year capital plan for Regional Council's consideration in the Fall of 2019. Further, Transportation and Public Works is leading the development of a five-year transportation capital plan that will be integrated with external utility stakeholders.*

### Recommendation 2

Transportation and Public Works should establish documented long-term and short-term goals for its Project Planning and Design division that support Regional Council's priority of a well-maintained transportation system.

#### **Management Response**

*Agreed. Road condition targets had been reported up to 2016/17 under the former pavement management system however, Project Planning and Design staff recognized that a new system would offer greater reporting and analytical capabilities and began the process of transitioning to a new condition data collection methodology and pavement management software. The initial implementation of the new pavement management software requires data to operate which was subsequently collected in 2016 and 2018. Deterioration and performance index models had to be created, and are currently undergoing refinement. It is anticipated this transition period will take three years (projected completion 20/21), and once completed, Project Planning and Design staff will develop scenarios and work with senior management to select appropriate Level of Service (LOS) targets (for pavements and sidewalks) that align with other competing corporate priorities.*

### **Recommendation 3**

Transportation and Public Works should develop detailed plans, with deadlines, to implement the remaining accepted recommendations from its two consultant reports on paving program practices and surface condition.

#### **Management Response**

*Agreed. With respect to the 2014 consultant report, the outstanding Project Planning and Design recommendations are tied directly to the completion of the new pavement system, and once the system becomes fully operational (projected completion 20/21), staff will develop a plan with timelines for completion of those outstanding accepted recommendations. As with the 2014 report, many of the outstanding recommendations in the 2017 report are linked to the new pavement management system and will be addressed as noted above.*

### **Recommendation 4**

Transportation and Public Works should develop long-term funding requirements for road and sidewalk capital work and sidewalk renewals to assist it in managing these capital assets.

#### **Management Response**

*Agreed. It was acknowledged by the external consultant in 2014 that their analysis and funding recommendations should be revisited once a new pavement management system is in place. Project Planning and Design staff intend to conduct a new analysis once the system is fully operational (anticipated for 20/21). In the meantime, staff continue to use the long-term funding strategy identified in the 2014 consultant's report as a general guideline.*

### **Recommendation 5**

Transportation and Public Works should update its documented annual capital planning processes to reflect current practices.

#### **Management Response**

*Agreed. Elements such as the sidewalk percent defective rating and asphalt condition index outlined in the capital program development procedure will be revised once the new pavement management system becomes fully operational.*

*HRM has established an Enterprise Asset Management Office (AMO) in 2017 to establish asset management best practice processes. Over a multi-year iterative approach, EAM will be linking service standards with assets standards supported by investment strategies. The longer term plan for EAM is to develop funding methodologies to reflect the full cost of asset ownership. Currently underway HRM is redeveloping the 10 year capital budget process, the capital*

planning process will be developed based on council priority outcomes, projects will be evaluated on the capacity to deliver (financially and from a human resource and industry capacity) and against a risk matrix to ensure long term project funding alignment with fiscal sustainability and asset management principles.

#### **Recommendation 6**

Transportation and Public Works should select and plan road and sidewalk capital projects to maximize value-for-money. This should include documented support for the funding option chosen to demonstrate effective use of taxpayer funds.

#### **Management Response**

*Agreed. Project Planning and Design staff develops the capital program based on a number of factors including integration opportunities, condition rating, classification of the road, funding availability, traffic disruption, engineering judgement, type of rehabilitation required, backlog of each district, etc. Project Planning and Design's former pavement management software did not have the capability of running optimization reporting and "what if" scenarios. The new software will provide that capability and should be used in conjunction with the other factors as noted above. The number of "what if" scenarios can be significant, and the most optimal computer-generated scenario based solely on condition may in fact not be the most practical. Once the system becomes fully operational staff will be in a better position to advise on the best value for money based on the criteria noted above.*

#### **Recommendation 7**

Transportation and Public Works should develop measurable performance targets and regularly report performance results. Targets should be detailed enough to provide good management information for program planning.

#### **Management Response**

*Agreed. Project Planning and Design is in a transition period by moving to a new data collection methodology and new pavement management system. As part of the implementation and refinement process of the new pavement management system new performance targets and LOS will be created and presented to senior management for consideration (anticipated in 20/21).*

#### **Recommendation 8**

Transportation and Public Works management should monitor road and sidewalk capital projects to confirm pre-tender checklists and construction deficiency forms are completed, and deficiencies are followed up and addressed.

**Management Response**

*Agreed. Management will confirm pre-tender review checklists are completed. Road Operations and Construction has revised the Construction Services Contract Administration Manual in February 2019. Management has reinforced with the team the need to document deficiencies and any/all actions taken in the appropriate form and save it to the file. A construction project checklist has been created and has been added to each construction file.*

**Recommendation 9**

Planning and Development management should monitor construction and inspection of subdivisions to confirm required work has been completed. The Business Unit should also maintain adequate support for the construction and inspections processes in central files.

**Management Response**

*Agreed. A procedural manual exists for subdivision reviews and inspections and was in the process of being updated prior to the start of the audit. Both the existing and draft versions of the revised manuals were provided to the audit team as part of the review documentation. The revised procedures were implemented during the audit process and include clarification on inspection requirements and consistent documentation in both the electronic permitting system and in the central subdivision files. This revised process is currently in use, is being monitored, and is being integrated into the new electronic permitting and licensing system that is under development.*

**Recommendation 10**

Planning and Development, and Transportation and Public Works, should follow established processes for warranty inspections and document that these processes are adequately monitored prior to the warranty period expiring.

**Management Response – Planning and Development**

*Agreed. As noted in the response for Recommendation 9, the procedure manual was in process of being updated prior to the start of the audit. The update includes warranty inspections and appropriate documentation. Staff will proceed with further review of the procedural manual immediately following the audit to ensure recommendation comments are adequately addressed and monitored.*

**Management Response – Transportation and Public Works**

*Agreed. See response to Recommendation 8.*

## Contact Information

Office of the Auditor General  
Halifax Regional Municipality  
PO Box 1749  
Halifax NS B3J 3A5

Phone: 902 490 8407

Email: [auditorgeneral@halifax.ca](mailto:auditorgeneral@halifax.ca)

Website: [www.hrmauditorgeneral.ca](http://www.hrmauditorgeneral.ca)

Twitter: [@Halifax AG](https://twitter.com/HalifaxAG)