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**Item No. 15.1.5**  
**Halifax Regional Council**  
**January 23, 2023**

**TO:** Mayor Savage and Members of Halifax Regional Council

**SUBMITTED BY:** Original Signed  
\_\_\_\_\_  
Cathie O'Toole, Chief Administrative Officer

**DATE:** January 10, 2024

**SUBJECT:** **Gravel Road Paving Program – Halifax Regional Municipality Roads**

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**ORIGIN**

July 12, 2022, Halifax Regional Council passed the following motion (item 18.1):

MOVED by Councillor Deagle Gammon, seconded by Deputy Mayor Lovelace

THAT Halifax Regional Council direct the Chief Administrative Officer to:

1. Provide a staff report evaluating a potential Gravel Road Paving Program for HRM-owned roads that considers an annual funding allocation and the following prioritization criteria:
  - a. Cost-benefit of paving
  - b. Existing road condition and level of maintenance
  - c. Road classification
  - d. Traffic volume
  - e. Storm water management
  - f. Winter maintenance
  - g. Surrounding public amenities such as parks, schools, lake access, etc.; and further
2. Undertake pre-engineering work on HRM gravel roads, in accordance with Regional Council's current approved prioritization criteria, to ensure that Regional Council can consider paving up to \$500K of HRM gravel roads as part of the 2023/24 budget process.

MOTION PUT AND PASSED UNANIMOUSLY.

**LEGISLATIVE AUTHORITY**

***Halifax Regional Municipality Charter, SNS 2008, c 39***

79A (1) Subject to subsections (2) to (4), the Municipality may only spend money for municipal purposes if

- (a) the expenditure is included in the Municipality's operating budget or capital budget or is otherwise authorized by the Municipality;
- (b) the expenditure is in respect of an emergency under the Emergency Management Act; or
- (c) the expenditure is legally required to be paid.

317 In this Part, "street" means a public street, highway, road, lane, sidewalk, thoroughfare, bridge, square and the curbs, gutters, culverts and retaining walls in connection therewith, but does not include bridges vested in the Halifax Dartmouth Bridge Commission and streets vested in His Majesty in right of the Province.

318 (1) All streets in the Municipality are vested absolutely in the Municipality.

318 (2): In so far as is consistent with their use by the public, the Council has full control over the streets in the Municipality.

318 (3) No road, or allowance for a road, becomes a street until the Council formally accepts the road or allowance, or the road or allowance is vested in the Municipality according to law.

322 (1): The Council may design, layout, open, expand, construct, maintain, improve, alter, repair, light, water, clean, and clear streets in the Municipality.

***Public Highways Act, RSNS 1989, c 371***

11(3) The Minister may vest any local highway in a municipality.

11(4) The approval of the Governor in Council is not required for a conveyance pursuant to subsection (3).

**RECOMMENDATION**

It is recommended that Halifax Regional Council:

1. Direct the Chief Administrative Officer to implement the HRM Gravel Road Asset Management & Paving Program as set out in Attachment A, with annual funding provided in future capital plans over a period of approximately ten (10) years as outlined in the Financial Implications section of this report.
2. Adopt Amending By-law S-453, amending By-law S-400, the *Street Improvements By-law*, as set out in Attachment B to this report.

**EXECUTIVE SUMMARY**

Pre-engineering work completed on HRM owned gravel roads showed it is generally more cost effective to pave and maintain these roads as opposed to maintaining them as gravel roads, where there are no significant drainage and stormwater improvements required.

The pre-engineering work facilitated the creation of the HRM Gravel Road Asset Management & Paving Program. The HRM Gravel Road Asset Management & Paving Program is a potential gravel road paving program for sixty-two (62) HRM owned gravel roads, which considers an annual funding allocation in accordance with the prioritization criteria, in line with proposed 10-year Capital Budget.

**BACKGROUND**

Since 2000, private developers have been required to pave all new subdivision streets to HRM standards prior to being transferred to the municipality. Prior to 2000 however, it was not mandatory to pave all streets and as a result, several municipally owned gravel roads remain within HRM.

At the June 21, 2016, Regional Council meeting, a report on paving HRM owned gravel roads was tabled

with various options on how to deal with these roads. Regional Council approved Option 1 of this report which included upgrading all remaining HRM owned gravel roads to current HRM standards with pavement or chip sealing.

The HRM owned gravel road paving program is cost-shared between the residents and the Municipality. Prior to 2017, it was a requirement to survey property owners to determine their level of commitment to upgrade these gravel roads. If the survey was successful, the gravel road would be considered for paving under the capital budget process, in which HRM and property owners would be responsible to pay 50% of the total construction costs. In 2017, Regional Council approved a modification to this program through amendments to Bylaw S-400, the Street Improvement By-law, whereby all remaining HRM owned gravel roads were to be paved without the requirement of a survey, and the cost sharing apportionment was to be split 33.33% to the residents and 66.67% to the Municipality.

As of 2017, there were sixty-three (63) HRM owned and maintained gravel roads which are currently listed in Schedule 1 of Bylaw S-400. As part of the 2017 Council Report, Regional Council approved to exclude paving of the following streets for an indefinite period: Esso Road (District 11), Deerwood Lane (District 13), Memory Lane (District 15), Station Road (District 14), Tallahassee Avenue (District 3) and Sawlers Road & Old Scott Road (District 1). These seven segments have unique characteristics (i.e., configuration, very narrow, very short, no residential properties fronting the street, split ownership, etc.), and staff continues to recommend that it would not be a prudent decision to pave.

Since 2017, fifteen (15) of the sixty-three (63) HRM owned gravel roads have been paved. However, funding has not been available for HRM owned gravel road paving since 2021. As noted in the March 23, 2022, Briefing Note to Regional Council, the municipally owned gravel road paving program continues to rate “low” relative to other asset classes when incorporating the Capital Project Evaluation Framework. As a result, staff had recommended no funding for this program until 2027. The municipally owned gravel road paving program considers several criteria that aid in prioritizing the overall list of roads. To date, the list of criteria includes level of maintenance, classification of the road, and geographical proximity. As a result of Regional Council’s continued interest in advancing the pavement of gravel roads, staff indicated that they would undertake a review of the program with a focus on re-examining the project selection process/criteria, conducting a cost benefit analysis comparing pavement roads vs. gravel roads, and determining a sustainable approach to address the remaining municipally owned gravel roads.

HRM staff commenced pre-engineering work on HRM owned gravel roads in accordance with the prioritization criteria summarized below:

- a. Cost-benefit of paving;
- b. Existing road condition and level of maintenance;
- c. Road classification;
- d. Traffic volume;
- e. Storm water management;
- f. Winter maintenance; and,
- g. Surrounding public amenities such as parks, schools, lake access, etc.

The objective of the pre-engineering work was to evaluate a potential gravel road paving program for HRM owned gravel roads, that considers annual funding allocation in accordance with above referenced prioritization criteria.

The motion also included consideration by Regional Council to provide up to \$500,000 for paving of HRM owned gravel roads as part of the 2023/24 budget process. However, as part of the 2023/24 Budget debate, Regional Council decided to not proceed with the \$500,000 for paving of HRM owned gravel roads.

On June 1<sup>st</sup>, 2022, Nova Scotia Public Works (NSPW) transferred forty (40) gravel roads as part of the Road Transfer Agreement (the Agreement). Since the Agreement, eight (8) of these streets were paved before or during the transfer by NSPW. Additionally, two (2) of the road transfer streets were classified as private and are excluded from paving; four (4) road transfer streets were classified as unmaintained and

are excluded from paving for an indefinite period of time.

Prior to the NSPW Road Transfer Agreement, HRM owned and maintained forty-eight (48) gravel roads, of which forty-one (41) could be considered for paving.

The total number of HRM owned gravel roads is currently seventy-eight (78).

## **DISCUSSION**

### **1 PRE-ENGINEERING STRATEGY**

To evaluate a potential paving program for HRM owned gravel roads (HRM gravel roads) that considers an annual funding allocation, staff created an approach to accomplish the pre-engineering work. This included, but was not limited to, reviewing the prioritization criteria recommended by Regional Council.

Following review of the seven (7) prioritization criteria recommended by Regional Council, staff determined two (2) additional prioritization criteria were required to complete a holistic assessment of HRM gravel roads, including accessibility and connectivity within the transportation network.

The prioritization criteria used when evaluating a potential gravel road paving program for HRM gravel roads, included:

- a. Cost-benefit of paving;
- b. Existing road condition and level of maintenance;
- c. Road classification;
- d. Traffic volume;
- e. Storm water management;
- f. Winter maintenance and Level of Maintenance;
- g. Surrounding public amenities such as parks, schools, lake access, etc.
- h. Accessibility; and,
- i. Connectivity within the transportation network.

The pre-engineering work informed paving prioritization for HRM gravel roads, and included engagement and communication with internal stakeholders, data collection, and an analysis of HRM gravel roads using the above referenced prioritization criteria. General considerations and the data collection methods are summarized below:

### **2 PRIORITIZATION CRITERIA**

#### **Cost-Benefit**

In summer 2023, staff completed a cost-benefit analysis to compare the paving of HRM gravel roads, to solely maintaining them as gravel roads. The cost-benefit analysis considered estimated costs associated with spring and fall grading, washouts, number of work orders, and overall maintenance required over a 20-year life cycle for gravel roads. The analysis also considered the cost to pave a gravel road and conduct ongoing maintenance of the paved road, including typical pavement rehabilitation strategies used over a 20-year life cycle. 2023-unit rates, contingency and inflation were applied to these 20-year life cycles.

The cost-benefit analysis showed that in some cases, it is more cost effective to pave and maintain HRM gravel roads as opposed to maintaining them as gravel roads over this lifecycle. Additionally, maintenance requirements on gravel roads are expected to increase as climate change impacts become more frequent and extreme over time.

Staff established which HRM gravel roads were cost effective to pave over the 20-year life cycle and applied the remaining prioritization criteria to inform a paving order and create a potential gravel road paving program over a ten (10) year period.

Note, the cost-benefit analysis assumes that once paved, an HRM gravel road will be maintained in fair to good condition. Accordingly, assumptions made regarding the typical pavement rehabilitation strategies as part of ongoing maintenance over a 20-year life cycle for these roads, include paving in year 1, crack sealing in year 5, planer patching in year 9, overlay in year 14, and crack sealing in year 18.

Some HRM gravel roads have additional costs associated with street widening and stormwater infrastructure. These estimated costs are reflected in Table 2. HRM Gravel Road Asset Management & Paving Program – Expected Annual Funding Requirements. However, specific requirements will be confirmed during the detailed design phase of a project, if the HRM Gravel Road Asset Management & Paving Program is accepted by Regional Council and implemented by staff.

Note, during the detailed design phase of a project, where staff deems appropriate, a project level analysis will be completed to determine if chip seal is a more suitable solution when paving an HRM gravel road.

Additional costs associated with paving HRM gravel roads are referenced in the Risk Consideration section of this report.

#### Existing Road Condition, Stormwater Management & Surrounding Public Amenities

In fall and winter 2022, staff conducted site inspections of all HRM gravel roads to examine existing conditions including road grades, approximate dimensions, geometry, condition of gravel shoulders and storm water infrastructure including culverts and ditching (if any), sight lines, driveway tie-ins, potential stormwater issues, and surrounding public amenities including parks, residential density, schools, lake access, etc. During site inspections, staff also assessed the construction feasibility for each HRM gravel road, including the potential requirement of road widening, stormwater infrastructure and grading.

In addition to visually assessing existing stormwater infrastructure and management on HRM gravel roads, staff reviewed historical data to identify icing and/or ponding issues. Staff also engaged with HRM's Infrastructure Maintenance and Operations (IMO) Division to obtain information on which HRM gravel roads had historical, continuing and/or significant stormwater issues. Additional details on stormwater management are provided in the Winter Maintenance & Level of Maintenance section below.

Note there is some uncertainty regarding stormwater management on the gravel roads transferred to HRM as part of the 2022 transfer, as NSPW was not able to provide historical data or information related to ongoing stormwater issues.

A consultant was hired to collect geotechnical data (boreholes) for HRM gravel roads. During the data collection process, visual observations were noted including gravel road length, width, drainage, ditching, grades, and tree encroachments (if any). Staff used this data to better understand the geotechnical conditions and potential construction issues related to paving, as well as to verify recorded data observed during site inspections.

A desktop study was also completed to confirm surrounding public amenities observed during the site inspections.

#### Road Classification, Traffic Volumes & Connectivity within the Transportation Network

The majority of HRM gravel roads are classified as Local roads, considered by the municipality as being located primarily in residential areas with the purpose of providing access to properties directly fronting the street. During the site inspections, it was observed that most HRM gravel roads met these conditions, with the majority located in rural areas. It was also observed that HRM gravel roads were generally two-way streets with little traffic.

Typically, local roads have an average daily traffic volume less than 3000 vehicles per day, low vehicular speeds, and are used by passenger and service vehicle types. In spring 2023, a consultant was hired to collect traffic data for all HRM gravel roads. Staff reviewed the traffic data which showed that HRM gravel

roads have traffic volumes ranging from 2 to 289 vehicles per day (annual average daily traffic) and were typically used by passenger and service vehicles. During site inspections, staff observed low vehicular operating speeds. Staff also reviewed corridor collision history from 2018 to 2023 for HRM gravel roads. The records showed an average of 0 collisions over this period.

The traffic data is representative of the residential density and function of nearly all HRM gravel roads.

Note, six (6) HRM gravel roads (originally transferred from NSPW) were removed from the pre-engineering work strategy and omitted when creating a potential gravel road paving program, as they are classified as private or unmaintained (not an HRM owned or maintained asset, respectively). These streets are excluded from paving for an indefinite period of time: Kitpu Road (District 2), Partridge River Lane (District 2), Lakefront Drive (District 2), Old Mineville Road (District 2), Trunk 3 Diversion (District 13), and Rhyno Road (District 13).

Staff engaged the Traffic Management Division to gain a comprehensive understanding of challenges related to driver behaviour and vehicular movement on HRM gravel roads. It was noted that gravel roads generate lower speeds than paved surfaces. Specifically, paved roads offer a smoother surface providing better traction and handling for vehicles, making higher speeds feel more comfortable to drivers. The information provided from the department was qualitative and reviewed as part of the analysis process. Traffic speeds associated with paving HRM gravel roads are referenced in the Risk Consideration section of this report.

Connectivity within the existing transportation network was also examined by staff. Local roads typically connect to other Local and Collector roads. During the site inspections, it was noted that the majority of HRM gravel roads connected to other local roads. Staff observed and noted if an HRM gravel road was a connecting road or loop, dead end, and/or an unpaved section of a majority paved road.

A desktop study was also completed to confirm HRM gravel roads' connectivity within the existing transportation network.

#### Winter Maintenance & Level of Maintenance

Staff engaged the IMO Division to gain a comprehensive understanding of historical challenges regarding level of maintenance, as well as operating challenges regarding snow removal on HRM gravel roads.

Data was collected from IMO including, but not limited to, the quantity of work orders and service requests, spring and fall grading information, and washout records. IMO also provided estimated costs associated with the labour and material for these maintenance tasks. Additionally, this department communicated several maintenance related challenges on as summarized below.

Staff noted that the majority of HRM gravel roads have a Priority 2 (P2) snow removal service level. This is representative of the HRM gravel roads' classification, traffic volumes and location within the municipality (rural communities). IMO confirmed that snow removal on both gravel and paved roads is feasible and occur at the same frequency; however, there are several challenges related to snow removal on gravel roads.

Additionally, IMO provided information on routine operational challenges and historical details related to maintaining HRM gravel roads including, but not limited to, standard Nova Scotia weather conditions and topography. Specifically, the general landscape, fluctuating temperatures (frequent freeze-thaw cycles), moisture, and combinations of precipitation cause the following maintenance challenges:

- In winter, it is not best practice to place salt on gravel roads, rather crusher dust/sand is applied to provide traction. This results in some gravel roads remaining ice covered until a shift in weather patterns allow the ice to melt naturally. The frozen surface does require extra caution for residents during this period;
- In spring, as subgrade thawing begins to occur, the surface may become subject to deflection,

difficult to traverse and maintain with a normal-sized motor grader (due to the weight of the grader). The soft surface makes it challenging to remove snow, potentially causing accessibility issues;

- Maintenance on gravel roads with a hilly terrain are generally susceptible to storm water management issues near the bottom of the road;
- Snow removal on gravel roads with a hilly terrain is generally more difficult for operators than on paved roads;
- In summer, fines start to unbind and loosen generating dust which reduces visibility, potentially making driving conditions unsafe; and,
- Paving HRM gravel roads will seal the surface from rainfall, therefore protecting the base and subgrade, potentially alleviating maintenance issues related to the roadbed (if there is existing adequate drainage).

Climate change will increase the frequency and intensity of precipitation events, which will increase these challenges over time. The continuing and historical challenges related to level of maintenance, as well as operational challenges related to snow removal on HRM gravel roads, have associated cost implications (more service requests and work orders).

#### Accessibility

Accessibility was considered a necessary prioritization criterion by staff, as HRM strives to provide multiple modes of transportation within the municipality (Integrated Mobility Plan). HRM gravel roads' sidewalk prioritization, proximity to existing active transportation infrastructure and transit stops was considered as part of the Accessibility prioritization criterion.

During the site inspections, staff observed nearby active transportation infrastructure and transit stops to understand existing modes of transportation and the level of service of these modes.

Staff also utilized HRM's Sidewalk Assessment Tool to rate each HRM gravel road for sidewalk prioritization. The Sidewalk Assessment Tool considers several factors including proximity to existing amenities, road classification, dwelling density, equity (measured through the Canadian Index of Multiple Deprivation) and road conditions (traffic calming requirements, sidewalk connectivity, short cutting, safety, etc.).

Note that although staff reviewed sidewalk prioritization for HRM gravel roads, it is uncertain whether new sidewalk would be installed on HRM gravel roads. Feasibility and the requirement of new sidewalk will be confirmed during the detailed design phase of a project.

A desktop study was also completed to confirm the proximity of existing active transportation infrastructure and transit stops, observed during the site inspections.

#### Solid Waste

Solid waste operations were not considered a prioritization criterion. However, staff corresponded with HRM's Solid Waste department to identify operational challenges, if any, on HRM gravel roads.

The Solid Waste Division confirmed that both gravel and paved roads are considered acceptable regarding solid waste removal within the municipality. Specifically, HRM gravel roads do not pose a threat to the collection program so long as the roads are an appropriate width and an effective vegetation trimming program has been implemented. Also, solid waste vehicle operating speeds are below the posted limit on both paved and gravel roads within the municipality.

### 3 INTERNAL STAKEHOLDER ENGAGEMENT

Staff engaged internal stakeholders as part of the pre-engineering work strategy. Internal stakeholders included Design and Construction, IMO, Transportation Infrastructure Management, Traffic Management, Solid Waste and Active Transportation.

HRM's IMO department was regularly consulted and considered a key internal stakeholder, due to their familiarity, historical knowledge, and understanding of operational challenges and maintenance issues on HRM gravel roads.

Staff reviewed potential design challenges and construction feasibility for each HRM gravel road. These constraints were noted during site inspections and reviewed as part of the analysis process.

#### **4 HRM GRAVEL ROAD ASSET MANAGEMENT & PAVING PROGRAM**

As part of pre-engineering work, a quantitative risk-based matrix was created for HRM gravel roads, which analysed risk by assigning points to each prioritization criteria. Specifically, the quantitative risk-based matrix was used to assess the level of risk (critical, somewhat critical, and noncritical) to the organization if an HRM gravel road was not paved, and to assist the decision-making process when creating paving prioritization for HRM gravel roads.

To complete a holistic analysis and create paving prioritization for HRM gravel roads, data collected on these roads was applied together with qualitative information provided from internal stakeholders regarding maintenance, traffic operations, design, and construction feasibility. Specifically, the pre-engineering work informed paving prioritization for HRM gravel roads by applying objective (data collection and analysis through the risk-matrix) and subjective (internal stakeholder engagement) information, which facilitated the creation of the HRM Gravel Road Asset Management & Paving Program.

The program considers an annual funding allocation in accordance with the prioritization criteria and in line with the proposed 10-year Capital Budget. The proposed paving program recommends paving selected HRM gravel roads over a 10-year period beginning in 2027/28 and includes arranging these roads based on paving priority and/or interconnection with other HRM gravel roads.

Internal stakeholders were given an opportunity to provide comments on the paving prioritization included in the HRM Gravel Road Asset Management & Paving Program; adjustments were made accordingly.

Of the seventy-eight (78) HRM gravel roads, a total of sixty-two (62) HRM gravel roads are included in this potential paving program. Seven (7) were excluded as part of the 2017 Council Report, eight (8) were omitted as a result of this analysis, and one (1) was omitted as data collection is pending. A summary of these streets, complete with rationale, is provided in Table 1.

The proposed HRM Gravel Road Asset Management & Paving Program is attached as Attachment A.

Table 1. HRM Gravel Road Asset Management & Paving Program – Omitted HRM Gravel Roads

Street Name	District	Omission Rationale	Total Quantity
Sawlers Road	1	As part of the 2017 Council Report, Regional Council approved to exclude paving of the following streets for an indefinite period	7
Old Scott Road	1		
Tallahassee Avenue	3		
Esso Road	11		
Deerwood Lane	13		
Station Road	14		
Memory Lane	15		
Kitpu Road	2	Classified unmaintained (not an HRM maintained asset)	4
Partridge River Lane	2		
Old Mineville Road	2		
Trunk 3 Diversion	13		
Upper Governer Street	2	The results of this assessment show that these HRM gravel roads are not cost effective to pave and maintain (as opposed to maintaining them as gravel roads), and/or are excluded from the potential paving program as these segments have unique characteristics (i.e., configuration, very narrow, very short, no residential properties fronting the street, split ownership, etc.), and staff believes it would not be a prudent decision to pave.	4
Partridge River Lane	2		
Todds Island Road	13		
Doyle Park Road	13		
Linden Lea	5	Staff is in the process of collecting data for Linden Lea. Once data is collected, this HRM gravel road will be assessed using the approach described in the pre-engineering section of this report and may be added to the HRM Gravel Road Asset Management & Paving Program, contingent on results of the assessment.	1
<b>Total</b>			<b><u>16</u></b>

**FINANCIAL IMPLICATIONS**

If Regional Council chooses to accept the HRM Gravel Road Asset Management & Paving Program with funding aligned with the proposed 2024/25 Capital Plan for Account CR180006 - New Paving Streets - HRM Roads, annual capital funding over approximately ten (10) years beginning in 2027/28 will be required to achieve the program.

Note that some HRM gravel roads include additional costs associated with street widening and stormwater infrastructure. These estimated costs are reflected in Table 2; however, project specific requirements will be confirmed during the detailed design phase of a project, if the HRM Gravel Road Asset Management & Paving Program is accepted by Regional Council and implemented by staff. Expected annual funding required to achieve the HRM Gravel Road Asset Management & Paving Program in line with the proposed 10-year Capital Budget, is summarized in Table 2.

Table 2. HRM Gravel Road Asset Management & Paving Program – Expected Annual Capital Funding Requirements

Year	Proposed Funding in 2024/25 Capital Plan CR180006	Estimated Gross Cost for Paving Program*	LIC Portion (33.33%)	Cost to HRM (66.67%)	Estimated Tax Impact Based on 23/24 Avg. Bill	Estimated Cost to HRM if Debt Funded
2024/25	\$0	0	\$ -	\$ -	\$ -	\$ -
2025/26	\$0	0	\$ -	\$ -	\$ -	\$ -
2026/27	\$0	0	\$ -	\$ -	\$ -	\$ -
2027/28	\$1.5M	\$0.9M	\$ 304,062	\$ 608,125	\$ 2.47	\$0.9M
2028/29	\$1.5M	\$0.8M	\$ 275,907	\$ 551,814	\$ 2.11	\$0.8M
2029/30	\$2.0M	\$2.0M	\$ 667,346	\$ 1,334,693	\$ 4.93	\$1.9M
2030/31	\$2.0M	\$1.9M	\$ 630,619	\$ 1,261,239	\$ 4.58	\$1.8M
2031/32	\$2.0M	\$1.7M	\$ 552,449	\$ 1,104,898	\$ 3.88	\$1.5M
2032/33	\$2.0M	\$1.7M	\$ 552,449	\$ 1,104,898	\$ 3.88	\$1.5M
2033/34	\$2.0M	\$1.4M	\$ 459,058	\$ 918,117	\$ 3.17	\$1.3M
2034/35		\$1.4M	\$ 452,753	\$ 905,507	\$ 3.17	\$1.3M
2035/36		\$1.8M	\$ 596,207	\$ 1,192,414	\$ 4.58	\$1.7M
2036/37		\$1.9M	\$ 643,457	\$ 1,286,914	\$ 4.58	\$1.8M
<b>Total</b>	<b>\$13.0M</b>	<b>\$15.4M</b>	<b>\$ 5,134,307</b>	<b>\$ 10,268,619</b>	<b>N/A</b>	<b>\$14.5M</b>

\*Gross cost includes construction cost to pave and install stormwater infrastructure (if applicable), inflation (3.09%/year) and contingency. Costs include net HST and are rounded to nearest \$100,000.

The proposed HRM Gravel Road Asset Management & Paving Program is attached as Attachment A – HRM Gravel Road Asset Management & Paving Program.

There are no expected increases or decreases in operating costs for maintenance associated with the proposed paving of these roads. There are operating costs associated with the planning, design, and construction administration of the gravel road paving program. These costs are expected to be between \$25,000 and \$100,000 depending on the yearly size and complexity of the program. They will be reflected beginning in the 2025/26 operating budget request through 2036/37, should Council approve the Gravel Road Asset Management and Paving Program.

In accordance with Bylaw S-400, the intent is to continue the cost sharing of HRM owned gravel road paving between the residents and the Municipality. Per the Bylaw, all remaining HRM owned gravel roads that are to be paved will not require a survey, and the cost sharing apportionment is to be split 33.33% to the residents and 66.67% to the Municipality. The residents’ portion is recovered by levying a Local Improvement Charge (LIC) to the abutting properties on the relevant streets.

**RISK CONSIDERATION**

There are no significant risks associated with the recommendations in this Report. The risks considered rate low to moderate and are described below. To reach this conclusion, considerations were given to financial, legal and compliance, and service delivery risks.

There is minimal risk to HRM’s reputation. Community engagement is not a legal requirement when paving HRM gravel roads. However, by abstaining from community engagement prior to paving HRM gravel roads, there is a risk that HRM did not consider potential resident concerns.

The risk to HRM’s reputation is considered acceptable and manageable.

There is minimal financial risk regarding (potential) additional costs associated with paving HRM gravel roads, including street widening (clearing and grubbing, embankment, etc.), new stormwater infrastructure such as ditches and culverts, new or repair of existing guide rail, traffic calming infrastructure, etc. This work is generally identified during the detailed design phase of a project; however, it is not anticipated that additional costs (if any) will severely impact the HRM Gravel Road Asset Management & Paving Program.

The risk of (potential) additional costs impacting the HRM Gravel Road Asset Management & Paving Program is considered acceptable and manageable.

There is moderate financial risk to the organization if the HRM Gravel Road Asset Management & Paving Program is not accepted by Regional Council and implemented by staff. The cost-benefit analysis showed that generally, it is more cost effective to pave and maintain HRM gravel roads as opposed to maintaining them as gravel roads over a 20-year lifecycle.

The risk of not implementing the HRM Gravel Road Asset Management & Paving Program is considered acceptable and manageable.

There is moderate risk that traffic speeds will increase when HRM gravel roads are paved. Paved roads offer a smoother surface providing better traction and handling for vehicles, making higher speeds feel more comfortable to drivers. Consistent with HRM's Traffic Calming Administrative Order, HRM's Traffic Management division will assess the need for traffic calming measures for HRM gravel roads prior to the detailed design phase of a project, if the HRM Gravel Road Asset Management & Paving Program is accepted by Regional Council and implemented by staff.

The risk of traffic speeds increasing and the potential costs associated with traffic calming infrastructure on HRM gravel roads, is considered acceptable and manageable, if the HRM Gravel Road Asset Management & Paving Program is accepted and implemented.

### **COMMUNITY ENGAGEMENT**

No community engagement was required.

### **ENVIRONMENTAL IMPLICATIONS**

The environmental implications associated with the recommendations in this Report are summarized below:

1. Implications with positive environmental impact:
  - Gravel roads result in more sedimentation in stormwater runoff, which may have negative impacts to water quality of downstream water bodies. Paving HRM gravel roads would minimize sedimentation in stormwater runoff;
  - It is beneficial to minimize impervious surface in HRM, as it allows stormwater to infiltrate into the ground. Gravel roads are compacted such that they act as impervious surfaces like asphalt. However, gravel shoulders are also required for gravel roads. Paving HRM gravel roads may result in narrower lanes, thereby decreasing impervious surface; and,
  - Lower maintenance requirements would result in a lower carbon footprint by HRM in the form of trucks, machines, etc.
2. Implications with negative environmental impact:
  - Binder in asphalt is an oil product. These materials have negative impacts with regards to carbon production when compared to gravel. This can be offset by the decreased maintenance, as discussed above;
  - HRM gravel roads typically include existing ditches. Ditches are a beneficial form of stormwater management, as vegetation in the ditches can act as a filter for contaminants in stormwater runoff. Paving the HRM gravel roads may result in requiring stormwater management through piping and culverts, removing a natural form of filtration. This can be offset by the decrease in sedimentation runoff, as discussed above; and,

- Asphalt increases the heat island effect compared to gravel surfaces. It is expected that this effect will be mitigated by existing trees in the area, as the majority of HRM gravel roads are located in rural areas.

In general, the positive environmental implications identified with the recommendations of this Report outweigh the negative.

### **ALTERNATIVES**

That Halifax Regional Council:

1. Not approve the recommendations as part of this Report. This would result in maintaining status quo.
2. Request staff to modify some or all the recommendations of this Report including, but not limited to, proposing a potential gravel road paving program for HRM gravel roads that considers an annual funding allocation over a longer duration than ten (10) years. Depending on the program change(s) requested, a supplementary staff report may be required.

### **ATTACHMENTS**

Attachment A: HRM Gravel Road Asset Management & Paving Program

Attachment B: Amending By-law S-453

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A copy of this report can be obtained online at [halifax.ca](http://halifax.ca) or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Rubi Ubhi, Program Engineer, Project Planning & Asset Management, 902.580.2015

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**Attachment A - HRM Gravel Road Asset Management & Paving Program**

Year 1	Project No.1	FERGUSONS COVE RD DEVILS HILL RD
	Project No.2	MAIN ST OAKRIDGE DR NIVENS AVE
Year 2	Project No.3	CONFEDERATION AVE
	Project No.4	OLD MILL RD LAKEVIEW TERR
	Project No.5	CHRISTIES RD AMELINDA CRES TONI AVE
Year 3	Project No.6	SETTLERS LANE SUCKER BROOK RD
	Project No.7	CHANDLER DR HEAD HARBOUR DR INDIAN RIVER RD
	Project No.8	SHARONS PLACE PROSPECTORS LOOP
Year 4	Project No.9	STILLWATER LAKE DR DOVER CRT GRANT LINE RD
Year 5	Project No.10	NORMANS LANE FAULKNER DR ARMENIA DR CLEARY DR ORION DR
	Project No.11	COX LAKE RD BRANDY CRT CREE ST
Year 6	Project No.12	ANDREA LORI DR BLAIN ERIC DR PAUL DAVID DR ELMWOOD CRT REINDEER AVE
	Project No.13	JAMIE DR DOUGLAS DR SILVER LEAF DR
Year 7	Project No.14	FREDERICK DR LAURA DR
	Project No.16	BLUEROCK RD CHURCHLAKE DR KINGS WAY
Year 8	Project No.17	COMMODORE RD RIVERS END RD OLD POST RD ASHVALE LN
	Project No.18	CRANE LN DIGGS DR LAKE EAGLE DR RYEDALE CRT
Year 9	Project No.19	SURFVIEW DR MACLEAN RD
	Project No.20	COVE CRES DOWNIE DR LEASIDE CRES
Year 10	Project No.21	ALPINE DR CASTLEWOOD DR SOMERSET CRT COPPERHEAD RD SUNNYLEA RD HOLLAND RD

**ATTACHMENT B  
(Amending By-law)**

**Halifax Regional Municipality  
By-Law Number S-453  
Respecting Charges for Street Improvements**

**BE IT ENACTED** by the Council of the Halifax Regional Municipality that By-law S-400, the *Street Improvements By-law*, is amended as follows:

1. Repealing and replacing the table in Schedule 1 as follows:

	<b>ROAD NAME</b>	<b>START</b>	<b>END</b>	<b>DISTRICT</b>
1	ALPINE DR	HIGH RD	END	1
2	CASTLEWOOD DR	ARTHUR JOSEPH DR	END	1
3	CONFEDERATION AVE	SANDSTONE AVE	GREENOCK DR	1
4	SOMERSET CRT	ARTHUR JOSEPH DR	END	1
5	COPPERHEAD RD	WILSON DR	END	1
6	HOLLAND RD	END OF PAVEMENT	END	1
7	SUNNYLEA RD	END OF PAVEMENT	END	1
8	PROSPECTORS LOOP	MONTAGUE RD	MONTAGUE RD	1
9	OLD SCOTT RD	ROCKY LAKE	ROCKY LAKE	1
10	SAWLEERS RD	OLD SCOTT RD	END	1
11	RYEDALE CRT	CHRIS EVAN DR	END	2
12	CRANE LN	UPPER GOVERNER ST	END	2
13	DIGGS DR	TRUNK 7	TRUNK 7	2
14	LAKE EAGLE DR	LAKEMIST CT	UPPER GOVERNER ST	2
15	PARTRIDGE RIVER LN	LOWER PARTRIDGE RIVER RD	END	2
16	UPPER GOVERNER ST	END OF PAVEMENT NORTH PRESTON	END OF PAVEMENT EAST PRESTON (CEMETERY)	2
17	BLUEROCK RD	TRUNK 7	PONDEROSA DR	2
18	CHURCHLAKE DR	TRUNK 7	END	2
19	KINGS WAY	TRUNK 7	END	2
20	KITPU RD	LAKE EAGLE DR	END	2
21	PATRIDGE RIVER LN	END OF LISITING	UPPER GOVERNER ST	2
22	OLD MINEVILLE RD	END OF CUL DE SAC	END	2
23	FREDERICK DR	DYKE RD	END	3
24	LAURA DR	FREDERICK DR	END	3
25	ARMENIA DR	ASTOUR DR	END	3
26	CLEARY DR	COW BAY RD	END	3

27	ORION DR	COW BAY RD	END	3
28	FAULKNER DR	COW BAY RD	END	3
29	NORMANS LANE	SHORE RD	END	3
30	TALAHASSEE AVE	CLARENCE AVE	END	3
31	SHARONS PLACE	BROOM RD	END	4
32	LINDEN LEA	FROM EXISTING PAVEMENT	END	5
33	NIVENS AVE	INDIA RD	END	6
34	DEVILS HILL RD	ROUTE 253	END	11
35	FERGUSONS COVE RD	END OF PAVEMENT (APPROX. C 66)	END OF LISTING (APPROX. C 197)	11
36	ESSO RD	HERRING COVE RD	END	11
37	LAKEVIEW TERR	OLD MILL RD	END	13
38	OLD MILL RD	KINGSWAY RD	START OF PAVEMENT	13
39	COX LAKE RD	YANKEETOWN RD	END	13
40	BRANDY CRT	HLAFWAY LAKE DR	END	13
41	CREE ST	BRANDY CT	END OF PAVEMENT	13
42	STILLWATER LAKE DR	HAMMONDS PLAINS RD	HAMMONDS PLAINS RD	13
43	DOVER CRT	NOTTINGHAM DR	END	13
44	GRANT LINE RD	HAMMONDS PLAINS RD	END	13
45	AMELINDA CRES	TONI AVE	END OF LISTING	13
46	CHRISTIES RD	TRUNK 3	END OF LISTING	13
47	STEVENS RD	BOUTILIERS POINT RD	END	13
48	SURFVIEW DR	STEVENS RD	END	13
49	TONI AVE	HILLSIDE DR	END OF LISTING	13
50	ASHVALE LN	TRUNK 3	END OF LISTING	13
51	COVE CRES	TRUNK 3	TRUNK 3	13
52	DOWNIE DR	MASONS POINT RD	BORDEN FADER RD	13
53	HEAD HARBOUR RD	TRUNK 3	TIDEWATER LN	13
54	INDIAN RIVER RD	TRUNK 3	END OF LISTING	13
55	LEASIDE CRES	TRUNK 3 (END OF PAVEMENT)	END OF LISTING	13
56	MACLEAN RD	TRUNK 3	TRUNK 3	13
57	OLD POST RD	TRUNK 3	TRUNK 3	13
58	TODDS ISLAND RD	TRUNK 3	END	13
59	DOYLE PARK RD	TRUNK 3	TAPAWINGO LN	13

60	RIVERS END RD	TRUNK 3	END OF LISTING	13
61	COMMODORE RD	TRUNK 3	END	13
62	CHANDLER RD	TRUNK 3	START OF PAVEMENT	13
63	DEERWOOD LN	GREBE	END	13
64	TRUNK 3 DIVERSION	TRUNK 3	TRUNK 3	13
65	ANDREA LORI DR	LAKEVIEW AVE	END	14
66	BLAIN ERIC DR	ANDREA LORI DR	END	14
67	PAUL DAVID DR	ANDREA LORI DR	END	14
68	ELMWOOD CRT	LAKECREST DR	END	14
69	REINDEER AVE	CARIBOU RD	END	14
70	JAMIE DR	KINSAC RD	END	14
71	DOUGLAS DR	BEAVER BANK RD	END	14
72	SILVER LEAF DR	KINSAC RD	END	14
73	STATION RD	KINSAC RD	CNR PROPERTY	14
74	SETTLERS LANE	COBEQUID RD	COBEQUID RD	15
75	SUCKER BROOK RD	COBEQUID RD	END	15
76	MEMORY LANE	END OF PAVEMENT	END	15
77	MAIN ST	NORTH ST	DARTMOUTH RD	16
78	OAKRIDGE DR	LINCOLN DR	MADISON DR	16

