

WEST HANTS REGIONAL MUNICIPALITY

Committee of the Whole - Meeting Agenda - **AMENDED**

December 7, 2021 - 6:00 p.m.

(also held via virtual via Zoom and Facebook livestreamed)

Agenda is subject to change due to additions that may not be able to be reflected until after the meeting.



1. Call to Order
2. Attendance
3. Approval of the Agenda, including additions or deletions
 - a) Dashboard Action Items – Information Log
 - b) Dashboard Action Items – Dangerous/Unsightly

Moved up on the agenda: Item 11 New Business b) MCCAP 2022 Work Plan Recommendation Report is now item 7 a)
4. Declaration(s) of Conflict of Interest
5. Announcements
6. Approval of Previous Meeting Minutes
 - a) 2021-11-09 Committee of the Whole minutes
7. **MCCAP 2022 Work Plan – Recommendation Report – Planner Poirier**
8. Unfinished Business/Postponed Motions
 - a) Bulk Water Rate Study – Recommendation Report – Councillor M. McLean
 - b) Opening of Edward and Underwood – Informational Report – Manager Burgess
9. Reports
 - a) CAO Activity Update – Information Report
 - b) Financial Updates – Information Report - Dir. Rochon
10. Correspondence
 - a) Information
 - i. Avon Causeway Activity Log
 1. Current Correspondence as of December 1, 2021
 2. 2021-11-25 Letter received for the Hants County Legion Branch No. 9
 3. 2021-11-30 Letter received for Hon. John Lohr - Municipalities Villages - Code of Conduct

4. 2021-11-30 Letter received from Hon. Melissa Sheehy-Richard, MLA re: letter sent to Hon. Kim Masland – Trails
5. 2021-10-28 Acknowledgement of receipt of notification re Combined Sewer Overflows

b) Requests (for discussion)

c) Out-going (related to motions of Council to other Provincial agencies/depts)

1. 2021-11-23 Letter of response to Robyn Homans, Public Works Area Manager
2. 2021-10-27, Letter sent re Combined Storm Overflows - Action Plan Oct2021 NSE

11. New Business

- a) Audit Committee Appointment Report – Recommendation Report – Dir. Rochon
- b) Panuke Road Booster Station Construction Award – Recommendation Report – Dir. Richard
- c) Riverview Road Hantsport Infrastructure Renewal Design – Recommendation Report – Dir Richard
- d) Wastewater Discharge and Transitional Authorizations – Councillor Ivey
- e) Summerville Fire Rescue Truck Tender Award WHRMAD20-07A – Recommendation Report – Supervisor Thornton

12. Public Participation Period

13. In-Camera – None

14. Next Meeting Date / Adjournment

M - Motion
D - Direction/Discussion

**West Hants Regional Municipality
Dashboard (Action List)**

July 23, 2021

Green - Complete
Yellow - In-progress
Red - Not started

<u>Matter</u>	<u>Meeting</u>	<u>M/D</u>	<u>Start Date</u>	<u>Deadline / Update</u>	<u>Status</u>	<u>Resp.</u>
Sewer Billing Review - Staff explore what the sewer rates would be if sewer util. fees were put back on the taxes. (Tabled until after budget) (Also at 2020-04-14 COTW mtg)	COTW	M	2020-05-12			CAO/Fin
Asset Mgmt (Strategic Sustainability) - Strategic Sustainability Plan is needed	COTW	D	2020-05-12	On-going until approx. Oct. 2022		PW
Pedestrian Signage and Barriers - Have consistent and align with Branding outcomes. Staff prepare report for 2021/22 Capital & Operating budgets. (These items should be incorporated into our growth centres). Staff report back.	Council	M	2020-09-22	Align with Branding outcomes 2021-07, On-going		PW/Comm. Dev
Diversity & Inclusion Committee (from Meeting & Committee Procedural Policy Amendments) - Advertise for Committee members and mobilize the committee	COTW	M	2020-10-13	2021-05 (also with Rad Consulting Engagement Sessions)		Comm Dev
Management Tender Award - Defer award until staff obtain additional operational costing information of the other municipal buildings	Council	M	2020-10-27	2021-02		CAO
Panuke Rd Event - Event to be arranged by Mayor	COTW	D	2021-03-09	2021-06		Mayor
Noise By-law - Staff revise by-law (Peace and Good Order)	Council	M	2021-03-23	2022-01		Planning/ CAO
Cheverie Land Exchange - Agree	Council	M	2021-03-23	2021-12		CAO
WHRM Land Dispute Policy - CAO Office to establish a practice to keep council informed	Council	M	2021-04-27	2022-01		CAO
Newport Station Food Hub Paving Driveway & Lease - Staff review if existing lease pertains to Newport Station Food Hub or previous owners. Establish new lease if needed.	COTW	D	2021-05-11	2021-12, in progress		CAO
Dog Park - Staff review historical information related to dog park feasibility	COTW	D	2021-06-08	2022-01		Comm. Dev

M - Motion
D - Direction/Discussion

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Glooscap First Nation & WHRM Council Meeting - Send formal invite for a meeting to discuss many topics including reconciliation	Council	M	2021-06-22			Mayor
Request to Meet with Avon Causeway Gate Stakeholders - Send letter to Kwilmu'kw Maw-Klusuaqn (KMK) requesting immediate in-person meeting to discuss Avon River Causeway/Aboiteau Gate System and Ministerial Order	Council	M	2021-06-22	2021-08		CAO/Mayor
Request to Meet with Avon Causeway Gate Stakeholders - Send letter to Glooscap First Nation requesting immediate joint council mtg. to discuss Avon River Causeway/Aboiteau Gate System and Ministerial Order	Council	M	2021-06-22			Mayor/CAO
Opening of Edward and Underwood - staff return with a report detailing the broader road network overview, along with time frames for when the new road structure will be open and to include pedestrian concerns, infrastructure upgrades.	Council	M	2021-09-28	2021-12		PW
Review former By-Laws RV-001 - Review former By-Laws and create a new all encompassing By-Law with public input.	Council	M	2021-09-28	2022-01		CAO
Outdoor Fires By-Law - Staff review existing Fire-related by-laws and have an all encompassing Regional By-Law	Council	M	2021-09-28	2022-01		CAO
Traffic Calming - Staff develop a WHRM Traffic Calming Policy and Program that includes public participation to address traffic concerns relating to speed and noise complaints on residential streets.	Council	M	2021-09-28	2021-12		PW

M - Motion
D - Direction/Discussion

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Capped Assessment - Staff provide a new aggregated report that will coincide with PVSC's presentation in January.	Council	M	2021-09-28	2022-01		Finance
Accessibility Plan Consultant Services - award the request for proposal #WHRMAD20-08 Consultant Sevices Accessibility plan to CBCL.	Council	M	2021-11-23	2021-11-23		Comm. Dev.
Avon Street - Award tender WWHPW21-02 for engineering and design work for Avon Street infrastructure renewal to DesignPoint,for the price of \$27, 854, plus additional geotechnical testing services, for a toatl of \$49,043, plus applicable taxes.	Council	M	2021-11-23	2021-11-23		PW
College Road - Award tender WWHPW 21-17 for engineering and design work for College Road Infrastructure renewal to EXP, for \$53,636, plus additional geotechnical testing during construction for a toatl cost of \$62,412 before taxes.	Council	M	2021-11-23	2021-11-23		PW
Commercial Development Distrcit Improvement By-Law - gives first reading and hold a public hearing to amend the Commercial Development District Improvemnet By-Law RC-002	Council	M	2021-11-23	2021-11-23		Planning
Designated Bicycling Route - Council send a letter to Nova Scotia Department of Public Works, Robyn Homans to begin the process to designate the Bog Road as a bicycling route.	Council	M	2021-11-23	2021-11-23		Comm. Dev.
Investment and Development Ready Plan - CAO to hire additional resources to expidite the planning process to take advantage of the housing boom and staff prioritize development agreements/amendments to efficiently support existing and new developers.	Council	M	2021-11-23	2021-11-23		CAO/Plan

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D - Direction/Discussion

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Windsor Flood Risk Assessment Study - award tender WWHPW21-18 for flood risk assessment study to CBCL, for the price of \$79,550, plus taxes with \$43,854 coming from Canada Community Building Reserve.	Council	M	2021-11-23	2021-11-23		PW
Bulk Water Rate Study - to hire an independent consultant to perform a rate study to better understand the rational behind the increased rates and ensure they are accurate and will accomodate the future water needs. Postponed until Dec. 7/21 COTW.	Council	D	2021-11-23	2021-12-16		PW/Fin
Engineering and Design Services Standing Contract- Reconfirm standing offer contracts for pre-qualified engineering and design services CBCL Limited, Dillon/DesignPoint, EXP,WSP.	Council	M	2021-11-23	2021-11-23		PW
MCCAP -GHG Reductions Coordinator - Submit an application for funding to Eco Canada to hire a greenhouse gas emissions reduction coordinator for a 1 year contract utilizing the remaining 2021-22 MCCAP budget.	Council	M	2021-11-23	2021-11-23		Planning

M - Motion
D - Direction/Discussion

West Hants Regional Municipality Dashboard (Action List)

December, 2021

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[illegible]



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Mayor Zebian and Members of West Hants Regional Municipality Council

Submitted by: _____
Sara Poirier, Senior Planner

Date: 2021-12-07

Subject: MCCAP 2022 Work Plan

LEGISLATIVE AUTHORITY

Municipal Climate Change Action Plan (MCCAP) Committee Terms of Reference, Section 4.

RECOMMENDATION

...that Committee of the Whole place on file the MCCAP 2022 Work Plan in a manner substantively the same as revised by the MCCAP Committee at the meeting on November 10, 2021.

BACKGROUND

Property ☐	Public Opinion ☐	Environment ☒	Social ☐	Economic ☐	Councillor Activity ☐
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Based on the MCCAP Committee Terms of Reference, a work plan needs to be submitted to Committee of the Whole for review on an annual basis.

DISCUSSION

Staff presented a draft MCCAP 2022 work plan to the MCCAP Committee on November 10, 2021 (Appendix B).

The MCCAP Committee discussed the work plan items in length and decided to add a few additional projects that, when implemented, would have direct impact on reducing the

Municipalities greenhouse gas emissions. The following actions were added to the “tasks to complete” list:

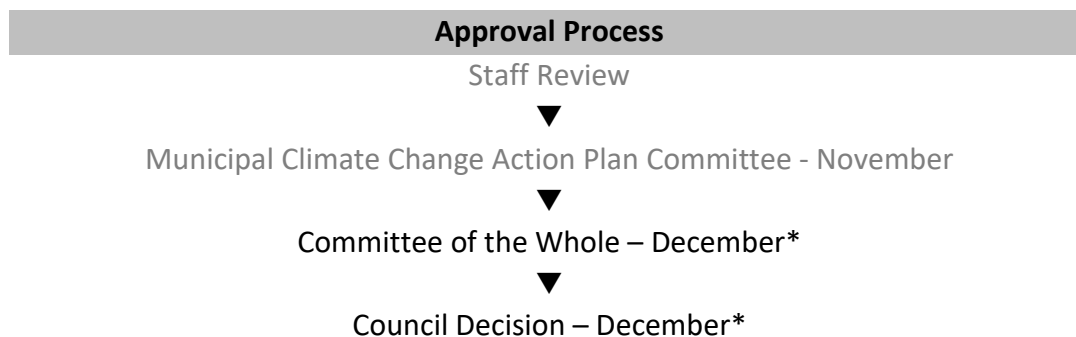
- Explore the potential for a small to medium scale solar energy project;
- Implement an electric vehicle charging station;
- Conduct a feasibility study for electric vehicle fleet conversion; and
- Hire a dedicated GHG emissions reduction employee.

As part of these work plan items, the MCCAP Committee will be requesting mapping of the 3-phase power within WHRM and inviting speakers to discuss the siting requirements and costs of solar panels, electric vehicle chargers and electric vehicles. The 3-phase power mapping will help determine feasible locations to implement a solar project and level 3 electric vehicle chargers. The information provided by guest speakers will inform MCCAP Committee members on items to include in a potential Request for Proposals (RFP) for these items, should the MCCAP Committee recommend, and Council approve, funding for these items in the 2022-23 budget. External funding and partnerships will also be sought for many of these projects.

The MCCAP Committee also decided to move the Windsor Flood Risk Assessment to the list of on-going actions since Council had recently approved the study to move forward.

The MCCAP Committee made the following motion “...that the MCCAP 2022 Work Plan be submitted to the Committee of the Whole to be placed on file in a manner substantively the same as revised by the MCCAP Committee at the meeting on November 10, 2021”.

NEXT STEPS



*anticipated dates; final dates set by Council

FINANCIAL IMPLICATIONS

There are budget requests associated with the 2022 Work Plan. These requests would be submitted to Council for consideration with the MCCAP Committee 2022-23 budget. External funding and partnerships will also be sought for many of these projects.

ALTERNATIVES

In response to the report, COTW may:

- request staff revise the MCCAP 2022 Work Plan based on direction from the COTW;
- provide alternative direction such as requesting further information on a specific topic.

APPENDICIES

Appendix A MCCAP 2022 Revised Work Plan

Appendix B 2021-11-10 Staff Report - MCCAP 2022 Work Plan

CHIEF ADMINISTRATIVE OFFICER REVIEW

I support the recommendation.

Report Prepared by: _____
Sara Poirier, Senior Planner

Report Reviewed by: _____
Madelyn LeMay, Director of Planning and Development

Report Approved by:  _____
Mark Phillips, Chief Administrative Officer

Appendix A
MCCAP 2022 Work Plan

Tasks to Complete		Cost of Action	Funding	Partners	Timing
Goal: Reduce Greenhouse Gas Emissions	Explore the potential for a small to medium scale solar energy project	Staff time and project costs (dependent on location, site conditions, number of solar panels, how much electricity the Municipality wants to offset, etc.)	Staff time; Applications for funding will be submitted when required	Planning / Public Works / Community Development / Office of the CAO	Solar installation by 2023
	Implement an electric vehicle charging station	Staff time and project costs (approx. \$6,000 for a level 2 charger; approx. \$50,000 for a level 3 charger)	Staff time; Applications for funding will be submitted when required	Planning / Public Works / Community Development / Office of the CAO	2022
	Participate in a feasibility study for electric vehicle fleet conversion	Staff time and project costs (approx. \$1,500 in-kind for study)	Staff time; Applications for funding will be submitted when required	Planning / Clean Foundation	2022
	Hire a dedicated GHG emissions reduction employee	Approx. \$30,000	Potential Eco Canada funding opportunities to cover up to 80% of the position for the first 12 months	Planning / Eco Canada	2022

	Work on Milestone 4 of the PCP program by implementing actions from the local action plan developed in Milestone 3	Staff time and project costs	Staff time; Applications for funding will be submitted when required	Planning / Public Works / Community Development / Office of the CAO	Annual
Goal: Increase awareness of local best practices	Continue the recognition program for businesses and community groups	Staff Time	Staff Time	Planning / Community Development	Began Summer 2021; Annual
Ongoing Tasks		Cost of Action	Funding	Partners	Timing
Goal: Update Windsor's storm drainage infrastructure to ensure it meets the future needs of the Town	Windsor Flood Risk Assessment	Staff Time and Consultant Costs	FRIIP 50% Funding (up to \$39,109)	Public Works	Currently reviewing RFP's and recommendation to Council to proceed
Goal: Reduce the impact of anticipated climate change on infrastructure and development	Consider options to restrict zoning in flood-prone areas	Staff Time	Staff Time	Planning	Plan Review
Goal: Develop sustainable solutions to address	Work collaboratively with community groups, government	Staff Time	Staff Time	Public Works, Planning, Department of Agriculture	Fall 2021

sea-level risk in Avondale	organizations, and non-profits to assess sustainable solutions.				
Goal: Implement MCCAP	Annual action items review and update	Staff Time	Staff Time	Planning	Annual
	Annual review and update Terms of Reference	Staff Time	Staff Time	Planning	Annual
Goal: Heighten resident's awareness of flood risk and emergency preparedness	Public education	Staff Time	Staff Time	EMO	On-going
	Develop planning processes, policy and ordinances	Staff Time	Staff Time	EMO	On-going
Goal: Build mapping (GIS) capabilities	Update software as needed	Staff Time	Staff Time	Planning	On-going
Goal: Climate-informed Emergency Preparedness Plans	Annual review and update of All-Hazards Plan	Staff Time	Staff Time	EMO	On-going
Goal: Record storm surge impacts	Record storm surge impact details as means of improving emergency preparedness and response planning	Staff Time	Staff Time	EMO	On-going
Goal: Secure local source of aggregate	Identify possible sources of local aggregate in inventory of municipal land	Staff Time	Staff Time	EMO	On-going

Goal: Stormwater management planning	Implement findings from the Hantsport Storm Water Management Study	Staff Time	Staff Time	Public Works and Planning	On-going
	Implement findings from the Three Mile Plains Storm Water Management Study	Staff Time	Staff Time	Public Works, Planning, Department of Infrastructure and Renewal	On-going
Completed		Cost of Action	Funding	Partners	Completed
Goal: Reduce Greenhouse Gas Emissions	Complete Milestone 2 in the PCP program by providing the necessary information for Council to set an emissions reduction target for corporate and community emissions	Staff Time	Staff Time	Planning/ Public Works	August 2021
	Complete Milestone 3 in the PCP program by developing a local action plan	\$5,222.64 for summer student	MCCAP budget (Clean Foundation grant paid 50% of the position)	Planning/ Public Works, Clean Foundation	Submitted September 2021
Goal: Reduce Greenhouse Gas Emissions	Complete an updated GHG emissions inventory for corporate emissions	\$9,000	MCCAP Budget, Co-op Education Incentive	Clean Foundation	Fall 2019

	Complete a GHG emissions inventory for community emissions	\$25,000	MCCAP Budget, Co-op Education Incentive	Clean Foundation	Fall 2019
	Complete a GHG emissions forecasting model	\$36,000	MCCAP Budget	Clean Foundation	Winter 2020
Goal: Reduce the impact of anticipated climate change on municipal infrastructure along the Minas Shore	Complete the National Disaster Mitigation Program Risk Assessment Study	\$80,000	MCCAP Budget and National Disaster Mitigation funding	CBCL Limited Consulting and Government of Canada	Spring 2019
Goal: Stormwater management planning	Complete plan for Falmouth	\$50,000	PW Budget	Public Works	2016
	Complete plan for Hantsport	\$50,000	PW Budget	Public Works	2018
	Complete plan for Three Mile Plains	\$50,000	PW Budget	Public Works	2019
Goal: Build mapping (GIS) capabilities	Hire a GIS Technician	N/A	Planning	Planning	2015



Appendix B

WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Members of Municipal Climate Change Action Plan Committee

Submitted by: _____
Sara Poirier, Senior Planner

Date: 2021-11-10

Subject: MCCAP 2022 Work Plan

LEGISLATIVE AUTHORITY

Municipal Climate Change Action Plan (MCCAP) Committee Terms of Reference, Section 4.

RECOMMENDATION or DECISION REQUEST

Should the MCCAP Committee wish to forward the 2022 Work Plan to Committee of the Whole, the following motion would be in order:

...that the MCCAP 2022 Work Plan be submitted to the Committee of the Whole to be placed on file in a manner substantively the same as Appendix A attached to the planning staff report dated November 10, 2021.

BACKGROUND

Property ☐	Public Opinion ☐	Environment ☒	Social ☐	Economic ☐	Councillor Activity ☐
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Based on the MCCAP Committee Terms of Reference, a work plan needs to be submitted to Committee of the Whole for review on an annual basis.

DISCUSSION

Staff have outlined three tasks to complete on the 2022 MCCAP Workplan.

The first task is to reduce greenhouse gas (GHG) emissions by implementing action items from the local action plan developed in Milestone 3 of the Partners for Climate Protection (PCP) program. Completing these actions will take time since there are numerous items listed in the local action plan, however the MCCAP Committee can prioritize which actions they would like to work on each year. Prioritizing this task will ensure West Hants Regional Municipality (WHRM) is actively working towards the goal of a 45% reduction of both corporate and community emissions by 2030. Most actions can be completed using staff time; funding will be applied for to complete action items that require outside resources.

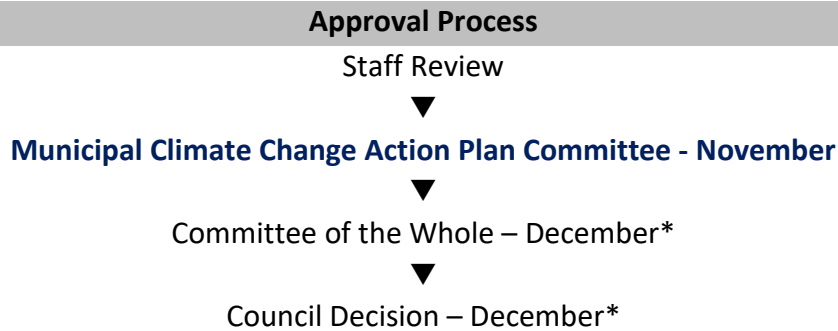
The second task on the workplan is to complete a Windsor Flood Risk Assessment study to provide information to update the community of Windsor's storm drainage infrastructure to ensure it meets the future needs of the community. In the past the MCCAP Committee has completed stormwater management plans for Falmouth, Hantsport and Three Mile Plains. The Public Works Department uses these plans to include storm water management and improvements within capital projects involving street projects that have a stormwater component. For example, Willow Street in Hantsport now has storm water separated with new infrastructure as part of a capital project. A flood risk assessment study for the community of Windsor will identify priorities in upgrades to the system to ensure flooding risk is mitigated. Public Works staff have applied for funding through the Flood Risk Infrastructure Improvement Program to assist with this project.

The third task is to create a recognition program for businesses and community groups. This task has been kept on the workplan from last year. Staff believe one of the best ways to inform the community on how to reduce emissions is to learn about examples of what other community members are doing within their area. Summer intern Jessica Pitman started a Green Business Initiative in the summer of 2021 which highlighted five (5) local businesses. Staff plan on continuing the Green Business Initiative next summer to get more businesses involved. The Green Business Initiative could also be extended to highlight local individuals that are tackling sustainable projects in their home or community. Staff will continue to add information to the community newsletters about the MCCAP Committee and projects the Committee has been doing. These initiatives will increase awareness of local best practices and help community members stay informed about ways to reduce their individual emissions.

One project that was moved to the "On-going Tasks" list was to consider options to restrict zoning in flood-prone areas. The Planning and Development staff are looking at completing this during the Plan Review with input from the MCCAP and Planning and Heritage Advisory (PAC/HAC) Committee's.

The Director of Public Works added a few comments regarding projects they have been working on to reduce Municipal GHG emissions. They commented that *"the anti-idling program for Municipal vehicles is still working and the fleet supervisor checks the vehicles regularly for excessive idling. The Public Works Department also have been installing LED lights regularly, and added heat pumps this year in the Public Works Depot's and Hantsport Water Treatment Plant which will reduce oil consumption."*

NEXT STEPS



*anticipated dates; final dates set by Council

FINANCIAL IMPLICATIONS

There are budget requests associated with the 2022 Work Plan. These requests would be submitted to Council for consideration with the MCCAP Committee 2022 budget. External funding will also be sought for many of these projects.

ALTERNATIVES

In response to the report, the MCCAP Committee may:

- request staff revise the MCCAP 2022 Work Plan based on direction from the MCCAP Committee;
- provide alternative direction such as requesting further information on a specific topic.

ATTACHMENTS

Appendix A MCCAP 2022 Work Plan

Report Prepared by: _____

Sara Poirier, Senior Planner

Report Reviewed by: _____

Madelyn LeMay, Director of Planning and Development

Appendix A
MCCAP 2022 Work Plan

Tasks to Complete		Cost of Action	Funding	Partners	Timing
Goal: Reduce Greenhouse Gas Emissions	Work on Milestone 4 of the PCP program by implementing actions from the local action plan developed in Milestone 3	Staff time and project costs	Staff time; Applications for funding will be submitted when required	Planning / Public Works / Community Development / Office of the CAO	Annual
Goal: Update Windsor's storm drainage infrastructure to ensure it meets the future needs of the Town	Windsor Flood Risk Assessment	Staff Time and Consultant Costs	FRIP 50% Funding (up to \$39,109)	Public Works	Currently reviewing RFP's and recommendation to Council to proceed Fall 2021 – Spring 2022
Goal: Increase awareness of local best practices	Create a recognition program for businesses and community groups	Staff Time	Staff Time	Planning / Community Development	Began Summer 2021; Annual
Ongoing Tasks		Cost of Action	Funding	Partners	Timing
Goal: Reduce the impact of anticipated climate change on infrastructure and development	Consider options to restrict zoning in flood-prone areas	Staff Time	Staff Time	Planning	Plan Review

Goal: Develop sustainable solutions to address sea-level risk in Avondale	Work collaboratively with community groups, government organizations, and non-profits to assess sustainable solutions.	Staff Time	Staff Time	Public Works, Planning, Department of Agriculture	Fall 2021
Goal: Implement MCCAP	Annual action items review and update	Staff Time	Staff Time	Planning	Annual
	Annual review and update Terms of Reference	Staff Time	Staff Time	Planning	Annual
Goal: Heighten resident's awareness of flood risk and emergency preparedness	Public education	Staff Time	Staff Time	REMO	On-going
	Develop planning processes, policy and ordinances	Staff Time	Staff Time	REMO	On-going
Goal: Build mapping (GIS) capabilities	Update software as needed	Staff Time	Staff Time	Planning	On-going
Goal: Climate-informed Emergency Preparedness Plans	Annual review and update of All-Hazards Plan	Staff Time	Staff Time	REMO	On-going
Goal: Record storm surge impacts	Record storm surge impact details as means of improving emergency preparedness and response planning	Staff Time	Staff Time	REMO	On-going

Goal: Secure local source of aggregate	Identify possible sources of local aggregate in inventory of municipal land	Staff Time	Staff Time	REMO	On-going
Goal: Stormwater management planning	Implement findings from the Hantsport Storm Water Management Study	Staff Time	Staff Time	Public Works and Planning	On-going
	Implement findings from the Three Mile Plains Storm Water Management Study	Staff Time	Staff Time	Public Works, Planning, Department of Infrastructure and Renewal	On-going
Completed		Cost of Action	Funding	Partners	Completed
Goal: Reduce Greenhouse Gas Emissions	Complete Milestone 2 in the PCP program by providing the necessary information for Council to set an emissions reduction target for corporate and community emissions	Staff Time	Staff Time	Planning/ Public Works	August 2021
	Complete Milestone 3 in the PCP program by developing a local action plan	\$5,222.64 for summer student	MCCAP budget (Clean Foundation grant paid 50% of the position)	Planning/ Public Works, Clean Foundation	Submitted September 2021

Goal: Reduce Greenhouse Gas Emissions	Complete an updated GHG emissions inventory for corporate emissions	\$9,000	MCCAP Budget, Co-op Education Incentive	Clean Foundation	Fall 2019
	Complete a GHG emissions inventory for community emissions	\$25,000	MCCAP Budget, Co-op Education Incentive	Clean Foundation	Fall 2019
	Complete a GHG emissions forecasting model	\$36,000	MCCAP Budget	Clean Foundation	Winter 2020
Goal: Reduce the impact of anticipated climate change on municipal infrastructure along the Minas Shore	Complete the National Disaster Mitigation Program Risk Assessment Study	\$80,000	MCCAP Budget and National Disaster Mitigation funding	CBCL Limited Consulting and Government of Canada	Spring 2019
Goal: Stormwater management planning	Complete plan for Falmouth	\$50,000	PW Budget	Public Works	2016
	Complete plan for Hantsport	\$50,000	PW Budget	Public Works	2018
	Complete plan for Three Mile Plains	\$50,000	PW Budget	Public Works	2019
Goal: Build mapping (GIS) capabilities	Hire a GIS Technician	N/A	Planning	Planning	2015



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information	Recommendation ☐	Decision Request ☒	Councillor Activity ☐
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To: Council

Submitted by: _____
Mark McLean, Councillor

Date: November 23, 2021

Subject: Bulk Water Filling Station

LEGISLATIVE AUTHORITY

Nova Scotia Utility and Review Board
Public Utilities Act, Section 64
Municipal Government Act, Section 64 A

RECOMMENDATION or DECISION REQUEST

that Council hire an independent engineering firm to complete a bulk water rate study and present a report on the increased costs which will enable a further understanding of the rate increase and ensure Council that both the costs are accurate and future water needs will continue to be met.

Further, the same report be presented to the UARB, who may be more adept to explain the same rates in comparison to other Municipalities.

BACKGROUND

Property ☐	Public Opinion ☒	Environment ☒	Social ☐	Economic ☒	Councillor Activity ☐
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During the 2021-10-12 Committee of the Whole, the bulk water filling station and UARB rates were reviewed for informational purposes. Several concerns were raised regarding the increased rate amounts, reasoning behind the increase and the ability to afford the increase without compromising the health and safety and financial wellbeing of the individuals who use bulk water.

DISCUSSION

NEXT STEPS

Council can choose to accept and proceed with hiring an independent to perform a rate study and have the report submitted for review.

Council can reject the decision.

FINANCIAL IMPLICATIONS

ALTERNATIVES

- Council can choose to accept and proceed with hiring an independent engineering firm to perform a rate study and have the report submitted for review.
- Council can reject the decision.

ATTACHMENTS

- 2021-10-12 Informational Report - Bulk Water Filling Station – UARB Rates with attached Consolidated Water and Sewer Rate Study, presented to the former Municipality of West Hants Council on November 27, 2018.
- 2020-21 Bulk and Residential Water Comparisons

CHIEF ADMINISTRATIVE OFFICER REVIEW

Report Prepared by: _____

Mark McLean, Councillor

Report Reviewed by: _____

Carlee Rochon, Dir. Financial Services

Report Approved by: _____

Mark Phillips, Chief Administrative Officer



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☒	Recommendation ☐	Decision Request ☐	Councillor Activity ☐
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To: Committee of the Whole

Submitted by: Carlee Rochon
Carlee Rochon, Director, Financial Services

Date: October 12, 2021

Subject: Bulk Water Filling Station – UARB Rates

LEGISLATIVE AUTHORITY

Nova Scotia Utility and Review Board, Order M09013

RECOMMENDATION or DECISION REQUEST

Not applicable.

BACKGROUND

Property ☐	Public Opinion ☒	Environment ☐	Social ☐	Economic ☒	Councillor Activity ☐
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At a Nova Scotia Utility and Review Board (NSUARB) hearing under the former Municipality of West Hants, it was noted that the Bulk Water Hauler Station was not regulated. This would need to be corrected at the next scheduled rate hearing.

During the 2018 Water Rate Study, the proposed rates were presented to the former Municipality of West Hants Council. Based on the study, Council made a motion to apply to the Nova Scotia Utility and Review Board for a rate hearing.

Through the NSUARB, a public hearing was scheduled. After due public notice, the hearing was held on March 27, 2019. The order was given May 27, 2019, with compliance filing on June 3, 2019. The order outlined the new rates to begin on July 1, 2019.

Bulk water was addressed in the order. The rates were outlined as follows:

2019-20	\$6.42 per cubic meter, minimum purchase of \$40.00
2020-21	\$6.75 per cubic meter, minimum purchase of \$40.00
2021-22	\$7.20 per cubic meter, minimum purchase of \$40.00

The order mandated that the Bulk Water Filling Station be moved from 76 Morison Drive (within the Windsor Water Utility) to a location within the West Hants Water Utility. This was determined to be a two-phase project. The design portion was approved in the 2019-20 Capital Budget and the construction portion was approved in the 2020-21 Capital Budget.

While the new bulk water filling station was under design and construction, the existing bulk water filling station continued to operate. The new bulk water rates could not be charged until the transition of the station was completed. The rate set of \$7.50 per 600 gallons in June 2014 by the former West Hants Council remained in place.

DISCUSSION

Under the former model, water was sold at cost with no investment into the utility infrastructure.

Under current regulations, users of the bulk water filling station will pay for a share of the operating cost for the utility. This is a standard calculation for most Municipal units. To deviate from this calculation would result in a higher level of scrutiny by the Utility and Review Board.

The calculation first takes into consideration the total operating and non operating expenses, and divides that by the total water consumption by all utility customers. A 30% markup is applied, as the users of the stations do not pay base charges like residential and commercial utility consumers. This creates fairness amongst all utility customers. The Nova Scotia Utility Review Board reviews all rates to ensure there is fairness for everyone prior to issuing their orders.

The Municipality does not control where bulk water users get their water, nor does it control what they charge if reselling this water.

NEXT STEPS

Not applicable

FINANCIAL IMPLICATIONS

Not applicable

ALTERNATIVES

Not applicable

ATTACHMENTS

- Consolidated Water and Sewer Rate Study, presented to the former Municipality of West Hants Council on November 27, 2018

CHIEF ADMINISTRATIVE OFFICER REVIEW

The comments made by the Director outline the history and rationale for the rate study and the eventual rate changes directed by the Utility and Review Board.

Report Prepared by: 
Carlee Rochon, Director, Financial Services

Report Reviewed by: _____
Todd Richard, Director of Public Works

Report Approved by: 
Mark Phillips, Chief Administrative Officer



THE MUNICIPALITY OF THE DISTRICT OF WEST HANTS
RECOMMENDATION REPORT

To: Warden Zebian and Members West Hants Council

Submitted by: _____
Martin Laycock, Chief Administrative Officer

Date: November 27, 2018

Subject: Consolidated Water and Sewer Rate Study

Origin:

Council's July 10th motion to consolidate the three water utilities and sewer services.

Legislative Authority:

Public Utilities Act, Section 64

Municipal Government Act, Section 81 (1)[a] & [b]; and Sections 333-343

Recommendation:

Committee of the Whole recommends to Council that:

...the Municipality of the District of West Hants apply to the Nova Scotia Utility and Review Board for changes in its rates for water, water service and fire protection to the Municipality of the District of West Hants, and changes to its rules and regulations for customers served by the Three Miles Plains/Wentworth Water Utility, the Falmouth Water Utility, and the Hantsport Water Utility, as set out in the water rate study prepared by G.A. Isenor Consulting Limited in association with Blaine S. Rooney Consulting Limited dated November 1, 2018.

...the rates for sewer service for customers in Three Miles Plains/Wentworth, Falmouth, and Hantsport, as set out in the sewer rate study prepared by G.A. Isenor Consulting Limited in association with Blaine S. Rooney Consulting Limited dated November 1, 2018 be adopted and that staff prepare the necessary changes to related by-laws and policies.

Background:

Council made a motion to consolidate the water utilities and sewer services in July 2018. As a result of this, G.A. Isenor Consulting and Blaine S. Rooney Consulting were hired by the three water utilities and sewer services to conduct a water rate study and a sewer rate study to determine their financial needs over for the next three years.

It is common for water utilities and sewer services to review their rates every three to five years to determine if they are remaining self-sufficient.

Discussion:

Water rates

The proposed rates for the water utility have taken into account the combined needs of the three water utilities. The consultants looked at a number of factors, including water consumption over the past year, previous rate studies, audited statements, capital investment plans, consultations with staff, among others. From this they were able to make predictions on future financial requirements, both operational and capital, for the water utilities. The methods used by the consultants are consistent with previous rate studies done for the Municipality that have resulted in approval by the Nova Scotia Utility and Review Board (UARB) and the establishment of effective rates for the purposes of running the water utilities on a breakeven basis.

The water rate study must first be presented to Council for approval. Should Council approve the water rate study, it would then be passed on to the UARB for a rate hearing. This hearing is open to the public. Based on the evidenced presented at the rate hearing, the UARB will either establish the proposed water rates, make adjustments, or require another rate study be submitted.

It should be noted that regardless of the consolidation of the water utilities, water rates hearings were required for all three of the water utilities for the upcoming fiscal year.

Sewer rates:

In addition to the water rates, Council is being asked to approve proposed sewer rates. The approval of the sewer rates is different for a few reasons. Firstly, approval from the UARB for sewer rates is not required; this is strictly a Council decision. Secondly, and as discussed in the June 26 Committee of the Whole presentation by G.A. Isenor, the method of determining the sewer rates has been changed. Revenue generated for sewer services will from a combination of a base rate and effluent charge per cubic meter based on water consumption. This will be different than the current approach taken in Three Mile Plains

(TMP) and Falmouth where sewer rates are based on a flat fee related to the number of dwelling units. Also, there will be a slight change for Hantsport residents as they will now see a base charge on their water bill for sewer services.

Based on the study, it is anticipated that on average rates for Hantsport users will increase slightly. Residents in Three Mile Plains on average may see their over all water and sewer rates increase, while residents in Falmouth, on average, may see their combined water and sewer rates decrease. These are estimates based on the data from the water consumption over the past year. It is important to note that each resident's experience with the changed rate structure will be different as each household's water consumption is unique. It is not anticipated that the change in the rate structure will be cost prohibitive for users.

Communications regarding the change in the rate structure for sewer have been sent to residents. In addition to the Municipal website and Facebook postings, an insert was included in all water bills that were sent in October providing an overview of the proposed changes. Feedback from residents, to date, about this change has been minor.

Financial Implications:

The rate studies presented illustrate, based on evidence, what is required to effectively run the water and sewer utilities on a breakeven basis. It is important to note that the UARB requires that water utilities be run on a breakeven basis, including setting aside a reserve for ongoing capital repairs and replacements. The same methodology has been applied in the rate study to the sewer services. Although the financial stability of sewer services is not regulated by an outside authority, it is a sound financial practice and recommended that the sewer service be self-sufficient and be able to meet its current and future operational and capital requirements. In recent years this is the approach that has been taken and is recommended to be maintained.

Alternatives:

1. Council could reject the water and/or the sewer rate study and ask that it be revised. Direction on what changes are required would be needed.
2. Council could reject the consolidation of the water utilities and/or sewer services. This would require a notice of rescission for the July 2018 motion and then after the allotted time period, a motion of Council to rescind the original motion would be required. Should this occur, the water rate studies for each water utility would have to be redone and may not be in effect for the upcoming fiscal year due to UARB scheduling.

Attachments:

- Water Utility Water Rate Study
 - Sewer Service Rate Study
-

Report Prepared by: =====
Martin Laycock, Chief Administrative Officer

Report reviewed by: =====
Rhonda Brown, Municipal Clerk

Report reviewed by: =====
Carlee Rochon, Director of Finance

West Hants Water Utility
Water Rate Study

Prepared By

G. A. Isenor Consulting Limited

in Association with

Blaine S. Rooney Consulting Limited

01-Nov-18

INDEX

NOTES TO WORKSHEETS

WORKSHEETS B-1 TO D-2

SCHEDULES A, B, AND C – RATES AND CHARGES

SCHEDULE D – PROPOSED RULES AND REGULATIONS

**WEST HANTS WATER UTILITY
NOTES ON WORKSHEETS
SUPPLEMENTAL NOTES ON WORKSHEETS**

WORKSHEET B-3

Operating Revenue

The Rate Study includes projected growth 5 residential customers (5/8" Meters) per year.

Non-operating Expenditures – The non-operating expenditures include a transfer to a reserve account for sludge handling at the Falmouth Water Treatment Plant.

WORKSHEETC-3

The allocations used are based on the Handbook except for Transmission and Distribution which has been allocated 25% to Base and 75% to delivery for rate design purposes.

WORKSHEETC-4

The Worksheet includes projected growth of 5 residential customers (5/8" meter) in each test year. The Worksheet includes two six inch meters for the Glooscap First Nation.

WORKSHEET C-6

The water consumption for 5/8 inch customers has been declining since the last rate study. This decline has been occurring in most water Utilities in Canada and is projected to continue in this Utility. Based on this the water consumption trend the water rate study includes a 1.5% per year reduction for each of the test years for the 5/8" customers. Flow for the Glooscap First Nation are based on historical flow data from the meters.

WORKSHEETC-9

The Utility requests a Bulk Water rate be set as it plans on installing a bulk meter as noted on the capital expenditures on Worksheet B-3.

WORKSHEET D-1

The Worksheet includes comparison of the existing three separate utilities (Falmouth, Hantsport, and Three Mile Plains/Wentworth) for the first test year. Subsequent years are based on the average customer for the West Hants Water Utility.

GENERAL NOTES ON WORKSHEETS

Worksheet B-1

This worksheet includes a summary of the operating revenues, operating expenditures, non-operating revenues and non-operating expenditures for the year 17/18 (actual) and 18/19 (estimated) as provided by the Utility.

Operating Revenues - The operating revenue for 19/20, 10/21 and 21/22 is based on the Utility's budget. There is growth of 5 new customers per year. The fire protection rate is based on the rate approved in the last rate hearing.

Operating Expenditures - The projection of expenses for the test years is as derived from Worksheet B-2a/2b/2c/2d/2e. The Depreciation has been calculated based on the addition of the planned infrastructure.

Non-operating Revenues – The non-operating revenue projected during the test years is the proposed transfer from the depreciation fund for principal debt payments.

Non-operating Expenditures – The non-operating expenditures include interest and principal on the existing debt.

Accumulated Surplus (Deficit) The Utility has a projected deficit in all three test years.

Worksheet B-2

This worksheet takes the information from Worksheet B-1 to develop revenue requirements for the years for 19/20, 10/21 and 21/22.

Worksheet B-2a/2b/2c/2d/2e

This worksheet provides the breakdown of the estimated operating expenditures as provided by the Utility for the year 18/19. The projected expenditures for the years 19/20, 10/21 and 21/22 for all items are based on the 18/19 budget plus 3% per year for inflationary increases.

Worksheet B-3

This worksheet calculates the depreciation per year and the depreciation fund balance based on the proposed capital works for the years 18/19, 19/20, 10/21 and 21/22. The opening depreciation fund balance is taken from the 17/18 financial statements.

Worksheet B-4

This worksheet details the known and projected capital contributions.

Worksheet B-5

This worksheet allocates the assets of the Utility between general service and fire protection. Each year includes the addition of the proposed capital works identified in Worksheet B-3. Production assets are allocated 90% general service and 10% fire protection. Demand assets are allocated 40% general service and 60% fire protection.

Worksheet C-1

This worksheet uses the percentage of total assets allocated to fire protection from worksheet B-5 to determine the allocation of transmission and distribution; depreciation, taxes and return on rate base to the fire protection charge.

Worksheet C-2

This worksheet calculates the return on rate base.

Worksheet C-3

This worksheet allocates expenses among customer charge, base charge, delivery and production.

Worksheet C-4

This worksheet sets out the number and size of meters in the Utility and by use of the capacity ratio establishes the system equivalents. The Utility is projecting growth of 5 residential customers per year.

Worksheet C-5

This worksheet uses the information from Worksheet's C-3 and C-4 to calculate the quarterly base charge for each size of meter.

Worksheet C-6

This worksheet sets out the water consumption by meter size. The data for the current year is based on information provided by the Utility. The rate study is based on the continuation of the current single block rate structure.

Worksheet C-7

This worksheet uses information from Worksheet's C-3 and C-6 to calculate the consumption charge for years 19/20, 10/21 and 21/22 based on a single block rate.

Worksheet C-8

This worksheet is used as a check to determine that the potential revenues will be the same as the requirements on Worksheet C-3.

Worksheet D-1

This worksheet is a comparison of existing and proposed rates.

Worksheet D-2

This worksheet provides a comparative statement of Operations for the current year as well as the test years.

Appendix 1

This appendix provides the debt repayment calculation for the planned capital works.

West Hants Water Utility
Comparative Statement of Operations
Fiscal Years ending March 31st

	2017/18 Actual	2018/19 Estimated	Projection Using Current Rates		
			2019/20 Budget	2020/21 Budget	2021/22 Budget
OPERATING REVENUES					
Metered Sales	1,296,453	1,300,000	1,300,000	1,300,000	1,300,000
Public Fire Protection - Prescribed	578,466	604,438	604,438	604,438	604,438
Sprinklers/Private Hydrants	800	800	800	800	800
Interest on Overdue Accounts	3,834	4,000	4,000	4,000	4,000
Other	13,574	13,500	13,500	13,500	13,500
Total	1,893,127	1,922,738	1,922,738	1,922,738	1,922,738
OPERATING EXPENDITURES					
Source of Supply	352,236	369,485	370,850	381,975	393,434
Power and Pumping	40,839	43,425	44,728	46,070	47,452
Water Treatment	246,896	271,797	279,951	288,349	297,000
Transmission and Distribution	591,619	585,341	602,901	620,988	639,617
Administration and General	261,199	191,108	196,841	202,746	208,829
Depreciation	316,195	379,526	430,709	452,129	489,733
Taxes		39,655	40,845	42,070	43,332
Total	1,808,984	1,880,337	1,966,824	2,034,327	2,119,397
OPERATING PROFIT (LOSS)	84,143	42,401	-44,086	-111,589	-196,659
			0		
NON-OPERATING REVENUES					
Interest	9,933	2,060	2,122	2,185	2,251
Special Service	0	0	0	0	0
Other		0	0	0	0
Total	9,933	2,060	2,122	2,185	2,251
NON-OPERATING EXPENDITURES					
Debt Charges - Principal	60,133	60,133	60,133	87,814	87,814
Debt Charges - Interest	48,942	46,321	43,637	35,867	32,347
Principal - New Debt		0	0	0	0
Interest - New Debt		0	0	0	0
Principal - New Debt		0	22,291	23,629	25,047
Interest - New Debt		0	49,200	47,863	46,445
Principal - New Debt		0	0	0	0
Interest - New Debt		0	0	0	0
Principal - New Debt		0	0	0	16,165
Interest - New Debt		0	0	0	26,725
Capital out of Revenue		0	0	0	0
Transfer to reserve for sludge handling		10,000	10,000	10,000	10,000
Earnings		0	0	0	0
COMBINED TOTAL	109,075	116,454	185,261	205,172	244,542
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	-14,999	-71,993	-227,225	-314,576	-438,950
SURPLUS AT BEGINNING OF YEAR *	-2,321	-17,320	-89,313	-316,538	-631,114
ACCUMULATED SURPLUS (DEFICIT)	-17,320	-89,313	-316,538	-631,114	-1,070,064

West Hants Water Utility Statement of Operating Expenditures and Revenue Requirements				
	2018/19 (Estimated)	2019/20 Budget	2020/21 Budget	2021/22 Budget
OPERATING EXPENDITURES				
Source of Supply	369,485	370,850	381,975	393,434
Power and Pumping	43,425	44,728	46,070	47,452
Water Treatment	271,797	279,951	288,349	297,000
Transmission and Distribution	585,341	602,901	620,988	639,617
Administration and General	191,108	196,841	202,746	208,829
Depreciation	379,526	430,709	452,129	489,733
Taxes	39,655	40,845	42,070	43,332
Total	1,880,337	1,966,824	2,034,327	2,119,397
NON OPERATING EXPENSES				
Debt Charges - Principal	60,133	60,133	87,814	87,814
Debt Charges - Interest	46,321	43,637	35,867	32,347
Principal - New Debt		22,291	23,629	25,047
Interest - New Debt		49,200	47,863	46,445
Principal - New Debt			0	16,165
Interest - New Debt			0	26,725
Capital out of Revenue	0	0	0	0
Transfer to reserve for sludge handling	10,000	10,000	10,000	10,000
Earnings	0	0	0	0
Combined Total	116,454	185,261	205,172	244,542
LESS NON-OPERATING REVENUES				
Interest	2,060	2,122	2,185	2,251
Transfer from Reserves	0	0	0	0
Other	0	0	0	0
Combined Total	2,060	2,122	2,185	2,251
LESS OTHER OPERATING REVENUE				
Interest on Overdue Accounts	4,000	4,000	4,000	4,000
Sprinklers/Private Hydrants	800	800	800	800
Other Revenue	13,500	13,500	13,500	13,500
Total	18,300	18,300	18,300	18,300
REVENUE REQUIRED FROM FIRE PROTECTION AND WATER CUSTOMERS	1,976,431	2,131,663	2,219,014	2,343,388

West Hants Water Utility
Statement of Operating Expenditures

	2018/19 (Estimated)	2019/20 Budget	2020/21 Budget	2021/22 Budget
SOURCE OF SUPPLY				
Operation Labour	35,700	36,771	37,874	39,010
Maintenance of Impounding Reservoir	2,060	2,122	2,185	2,251
Maintenance of Watershed	4,120	4,244	4,371	4,502
Maintenance of Intakes	1,545	1,591	1,639	1,688
Maintenance of Other Source Structures	1,545	1,591	1,639	1,688
Permits	515	530	546	563
Water Purchased from Windsor	324,000	324,000	333,720	343,732
Other	0	0	0	0
TOTAL SOURCE OF SUPPLY	369,485	370,850	381,975	393,434
POWER AND PUMPING				
Operations Labour	35,700	36,771	37,874	39,010
Fuel Purchased	515	530	546	563
Power Purchased	4,635	4,774	4,917	5,065
Maintenance	0	0	0	0
Maintenance of Structures	515	530	546	563
Maintenance of Equipment	1,545	1,591	1,639	1,688
Other - Pump expenses	515	530	546	563
TOTAL POWER AND PUMPING	43,425	44,728	46,070	47,452
WATER TREATMENT				
Operation Labour	107,100	110,313	113,622	117,031
Power	63,036	64,927	66,875	68,881
Chemical Additives	50,470	51,984	53,544	55,150
Telephone	5,047	5,198	5,354	5,515
Alarm	824	849	874	900
Maintenance of Treatment Plant	0	0	0	0
Maintenance of Structures	5,150	5,305	5,464	5,628
Maintenance of Equipment	33,990	35,010	36,060	37,142
Insurance	6,180	6,365	6,556	6,753
Other	0	0	0	0
TOTAL WATER TREATMENT	271,797	279,951	288,349	297,000

Worksheet B-2a/2b/2c/2d/2e

TRANSMISSION AND DISTRIBUTION				
Engineering	515	530	546	563
Supervision	184,620	190,159	195,863	201,739
Operational Labour - Mains	95,370	98,231	101,178	104,213
Operational Labour - Meters	78,030	80,371	82,782	85,265
Maintenance - Reservoirs	15,965	16,444	16,937	17,445
Maintenance of Structures	515	530	546	563
Maintenance of Distribution Mains	21,630	22,279	22,947	23,636
Maintenance of Other Distribution Plant	5,150	5,305	5,464	5,628
Leak Detection	2,060	2,122	2,185	2,251
Maintenance of Services	30,900	31,827	32,782	33,765
Maintenance of Meters	4,120	4,244	4,371	4,502
Maintenance of Hydrants	9,270	9,548	9,835	10,130
Public Works Cost Allocation	55,620	57,289	59,007	60,777
Rents (DMA Radio)	1,597	1,644	1,694	1,745
Transportation Expenses				
Freight Expenses	3,605	3,713	3,825	3,939
Truck Maintenance	5,613	5,781	5,955	6,133
Truck Fuel	20,085	20,688	21,308	21,947
Truck Registration	1,339	1,379	1,421	1,463
Shop Expenses	1,030	1,061	1,093	1,126
Monitoring Services	7,725	7,957	8,195	8,441
Supplies and Expenses	1,030	1,061	1,093	1,126
Testing / Lab Analysis	24,720	25,462	26,225	27,012
Power - 422 Falmouth Back Rd, Falmouth	1,545	1,591	1,639	1,688
Power - 17 Wilewood , Falmouth	824	849	874	900
Power - Hantsport	9,270	9,548	9,835	10,130
Insurance	3,090	3,183	3,278	3,377
Other	103	106	109	113
TOTAL TRANSMISSION AND DISTRIBUTION	585,341	602,901	620,988	639,617
ADMINISTRATION AND GENERAL				
Uncollected Accounts	515	530	546	563
General Office Expenses and Administration Fee	105,060	108,212	111,458	114,802
Mileage and Expenses	4,841	4,986	5,136	5,290
Training and Development	5,356	5,517	5,682	5,853
Conventions and Conferences	1,545	1,591	1,639	1,688
Membership Fees	618	637	656	675
Telephone	7,416	7,638	7,868	8,104
Advertising	927	955	983	1,013
General	4,429	4,562	4,699	4,840
Audit	10,712	11,033	11,364	11,705
ORDC	30,900	31,827	32,782	33,765
Regulatory Expenses	4,120	4,244	4,371	4,502
Insurance	6,077	6,259	6,447	6,641
General Property	3,090	3,183	3,278	3,377
Other	5,502	5,667	5,837	6,012
TOTAL ADMINISTRATION AND GENERAL	191,108	196,841	202,746	208,829

01-Nov-18

West Hants Water Utility Calculation of Depreciation of Tangible Plant at Total Cost 2018/19					
	Additions to Utility Plant in Service	Capital Cost Contribution from Others	Utility Cost of Plant in Service	Depreciation Rate	Annual Depreciation
			Depreciation Rate in 2017/18		316,195
LAND AND LAND RIGHTS					
Source of Supply Land	0				0
Land - General					0
STRUCTURES AND IMPROVEMENTS					0
Source of Supply Structures - Roads	5,000		5,000	0.04	200
Power and Pumping Structures	0		0	0.04	0
Purification	0		0	0.05	0
Distribution Reservoirs and Standpipes	420,000	420,000	0	0.04	16,800
Water Treatment Plant	90,000		90,000	0.04	3,600
Sludge Pond	0	0	0	0.04	0
Other- Bulk Water Station	10,000		10,000	0.05	500
Equipment	0		0		0
Electrical Pumping	460,000	450,000	10,000	0.04	18,400
Purification Equipment	6,500	0	6,500	0.05	325
Office Furniture and Equipment	0		0		0
Transportation Equipment	0	0	0	0.1	0
Tools and Work Equipment	25,000		25,000	0.1	2,500
Software / computers	0		0	0.02	0
Control and Monitoring equipment	7,000		7,000	0.143	1,001
Geotubes for Biosolids Handling	0	0	0	0.333	0
Generator	0	0	0	0.1	0
Mains	0		0		0
Transmission	15,000	0	15,000	0.0133	200
Distribution	417,000	290,000	127,000	0.0133	5,546
Meters	38,000	0	38,000	0.05	1,900
Hydrants	6,000	0	6,000	0.0133	80
Service Upgrades	600,000	300,000	300,000	0.02	12,000
Services	14,000	0	14,000	0.02	280
Other	0	0	0	0	0
TOTAL	2,113,500	1,460,000	653,500		63,331
Source of Funding					
Outside Sources	1,460,000		Depreciation Fund Balance beginning of year		1,222,097
Depreciation fund	653,500		Interest on Fund balance		15,276
Long Term Debt	0		Fund balance before expenditures		1,553,568
Capital out of revenue	0		Depreciation Contribution for the Year		379,526
TOTAL	2,113,500		Depreciation Spent During the Year		-653,500
			Balance after expenditures and transfer		1,279,595

West Hants Water Utility Calculation of Depreciation of Tangible Plant at Total Cost 2019/20					
	Additions to Utility Plant in Service	Capital Cost Contribution from Others	Utility Cost of Plant in Service	Depreciation Rate	Annual Depreciation
			Depreciation Rate in 2013/14		379,526
LAND AND LAND RIGHTS					
Source of Supply Land	0		0		0
Land - General			0		0
STRUCTURES AND IMPROVEMENTS			0		0
Source of Supply Structures - Roads	5,000		5,000	0.04	200
Power and Pumping Structures	0		0	0	0
Purification	0	0	0	0.05	0
Distribution Reservoirs and Standpipes	0	0	0	0.04	0
Water Treatment Plant	30,000	0	30,000	0.04	1,200
Sludge Pond	0	0	0	0.05	0
Other - Dam Improvements Design	200,000		200,000	0.02	4,000
Equipment	0		0		0
Electrical Pumping	20,000	0	20,000	0.04	800
Purification Equipment	6,500	0	6,500	0.05	325
Office Furniture and Equipment	0		0		0
Transportation Equipment	24,000	0	24,000	0.1	2,400
Tools and Work Equipment	0		0	0.1	0
Software / computers	0	0	0	0.2	0
Control and Monitoring equipment	0	0	0	0.143	0
Geotubes for Biosolids Handling	0	0	0	0.333	0
Leak Detection Monitoring Equip	0		0	0.143	0
Mains	0				
Transmission	2,125,000	500,000	1,625,000	0.0133	28,263
Distribution	187,000	130,000	57,000	0.0133	2,487
Meters	19,500	0	19,500	0.05	975
Hydrants	19,000	0	19,000	0.0133	253
Service Upgrades	500,000	200,000	300,000	0.02	10,000
Services	14,000	0	14,000	0.02	280
Other	0	0	0	0	0
TOTAL	3,150,000	830,000	2,320,000	1	51,182
Source of Funding			Depreciation Fund Balance beginning of year		1,279,595
Outside Sources	830,000		Interest on Fund balance		15,995
Depreciation fund	1,500,000		Fund balance before expenditures		1,295,590
Long Term Debt	820,000		Depreciation Contribution for the Year		430,709
Capital out of revenue	0		Depreciation Spent During the Year		-1,500,000
TOTAL	3,150,000		Balance after expenditures and transfer		226,298

West Hants Water Utility Calculation of Depreciation of Tangible Plant at Total Cost 2020/21					
	Additions to Utility Plant in Service	Capital Cost Contribution from Others	Utility Cost of Plant in Service	Depreciation Rate	Annual Depreciation
			Depreciation Rate in 2014/15		430,709
LAND AND LAND RIGHTS					
Source of Supply Land	0	0	0	0	0
Source Water Protection		0			0
STRUCTURES AND IMPROVEMENTS		0			0
Source of Supply Structures - Roads	5,000	0	5,000	0.04	200
Power and Pumping Structures	0	0	0	0.04	0
Purification	0	0	0	0.05	0
Distribution Reservoirs and Standpipes	0	0	0	0.04	0
Water Treatment Plant	0	0	0	0.04	0
Sludge Pond	0	0	0	0.04	0
Other- Bulk Water Station	60,000	0	60,000	0.05	3,000
Equipment	0	0	0		0
Electrical Pumping	20,000	0	20,000	0.04	800
Purification Equipment	7,000	0	7,000	0.05	350
Office Furniture and Equipment	0	0	0	0.05	0
Transportation Equipment	0	0	0	0.1	0
Tools and Work Equipment	0	0	0	0.1	0
Software / computers	0	0	0	0.1	0
SCADA Upgrades	0	0	0	0.143	0
Geotubes for Biosolids Handling	30,000	0	30,000	0.333	9,990
Generator	0	0	0	0.04	0
Mains	0	0	0		0
Transmission	250,000	250,000	0	0.01333	3,333
Distribution	187,000	0	187,000	0.01333	2,493
Meters	19,500	0	19,500	0.05	975
Hydrants	0	0	0	0.01333	0
Sprinkler Connections	0		0		0
Services	14,000	0	14,000	0.02	280
Other	0		0	0	0
TOTAL	592,500	250,000	342,500		21,420
Source of Funding					
Outside Sources	250,000	Depreciation Fund Balance beginning of year		226,298	
Depreciation fund	342,500	Interest on Fund balance		2,829	
Long Term Debt	0	Fund balance before expenditures		229,127	
Capital out of revenue	0	Depreciation Contribution for the Year		452,129	
TOTAL	592,500	Depreciation Spent During the Year		-342,500	
		Balance after expenditures and transfer		338,756	

West Hants Water Utility Calculation of Depreciation of Tangible Plant at Total Cost 2021/22					
	Additions to Utility Plant in Service	Capital Cost Contribution from Others	Utility Cost of Plant in Service	Depreciation Rate	Annual Depreciation
			Depreciation Rate in 2015/16		452,129
LAND AND LAND RIGHTS					
Source of Supply Land	0		0		0
Land - General			0		0
STRUCTURES AND IMPROVEMENTS			0		0
Source of Supply Structures - Roads	5,000		5,000	0.04	200
Power and Pumping Structures	0		0		0
Purification	0		0	0.05	0
Distribution Reservoirs and Standpipes	0	0	0	0.1	0
Water Treatment Plant	10,000		10,000	0.04	400
Sludge Pond	0	0	0	0.1	0
Other -Watershed dam	1,500,000	500,000	1,000,000	0.02	30,000
Equipment	0		0		0
Electrical Pumping	10,000	0	10,000	0.04	400
Purification Equipment	7,000	0	7,000	0.05	350
Office Furniture and Equipment	0		0		0
Transportation Equipment	24,000	0	24,000	0.1	2,400
Tools and Work Equipment	0		0	0.1	0
Software / computers	0		0	0.2	0
Control and Monitoring equipment	0		0		0
Digital Mapping	0	0	0	0.05	0
Generator	0		0		0
Mains	0		0		0
Transmission	0	0	0	0.0133	0
Distribution	175,000	0	175,000	0.01333	2,333
Meters	19,500		19,500	0.05	975
Hydrants	20,000		20,000	0.01333	267
Sprinkler Connections	0		0		0
Services	14,000	0	14,000	0.02	280
Other	0				0
TOTAL	1,784,500	500,000	1,284,500		37,604
Source of Funding					
	Outside Sources	500,000	Depreciation Fund Balance beginning of year		338,756
	Depreciation fund	750,000	Interest on Fund balance		4,234
	Long Term Debt	534,500	Fund balance before expenditures		342,990
	Capital out of revenue	0	Depreciation Contribution for the Year		489,733
	TOTAL	1,784,500	Depreciation Spent During the Year		-750,000
			Balance after expenditures and transfer		82,724

West Hants Water Utility Calculation of Amortization on Capital Contributions (to Plant) 2018/19			
	Capital Contributions to Utility Plant in Service	Amortization Rate	Annual Amortization
LAND AND LAND RIGHTS			
Source of Supply Land	0	0.00	0
Land - General	0	0.00	0
STRUCTURES AND IMPROVEMENTS	0	0.00	0
Source of Supply Structures Flood Study	0	0.04	0
Power and Pumping Structures	0	0.04	0
Purification	0	0.05	0
Distribution Reservoirs and Standpipes	420,000	0.04	16,800
Water Treatment Plant	0	0.04	0
Test Well	0	0.04	0
Other	0	0.05	0
Equipment	0	0.00	0
Electrical Pumping	450,000	0.04	18,000
Purification Equipment	0	0.05	0
Office Furniture and Equipment	0	0.00	0
Transportation Equipment	0	0.10	0
Tools and Work Equipment	0	0.10	0
Software / computers	0	0.02	0
Control and Monitoring equipment	0	0.14	0
Digital Mapping	0	0.33	0
Generator	0	0.10	0
Mains	0	0.00	0
Transmission	0	0.01	0
Distribution	290,000	0.0133	3,857
Meters	0	0.05	0
Hydrants	0	0.01	0
Sprinkler Connections	300,000	0.02	6,000
Services	0	0.02	0
Other	0	0.00	0
TOTAL	1,460,000		44,657

West Hants Water Utility Calculation of Amoritization on Capital Contributions (to Plant) 2019/20			
	Capital Contributions to Utility Plant in Service	Amortization Rate	Annual Amortization
LAND AND LAND RIGHTS			
Source of Supply Land	0	0.00	0
Land - General	0	0.00	0
STRUCTURES AND IMPROVEMENTS	0	0.00	0
Source of Supply Structures Flood Study	0	0.04	0
Power and Pumping Structures	0	0.00	0
Purification	0	0.05	0
Distribution Reservoirs and Standpipes	0	0.04	0
Water Treatment Plant	0	0.04	0
Test Well	0	0.05	0
Other	0	0.02	0
Equipment	0	0.00	0
Electrical Pumping	0	0.04	0
Purification Equipment	0	0.05	0
Office Furniture and Equipment	0	0.00	0
Transportation Equipment	0	0.1000	0
Tools and Work Equipment	0	0.10	0
Software / computers	0	0.20	0
Control and Monitoring equipment	0	0.20	0
Digital Mapping	0	0.14	0
Generator	0	0.33	0
Mains	0	0.14	0
Transmission	500,000	0.0133	6,650
Distribution	130,000	0.0133	1,729
Meters	0	0.050	0
Hydrants	0	0.0133	0
Sprinkler Connections	200,000	0.02	4,000
Services	0	0.02	0
Other	0	0.00	0
TOTAL	830,000		12,379

West Hants Water Utility Calculation of Amoritization on Capital Contributions (to Plant) 2020/21			
	Capital Contributions to Utility Plant in Service	Amortization Rate	Annual Amortization
LAND AND LAND RIGHTS			
Source of Supply Land	0	0.00	0
Land - General	0	0.00	0
STRUCTURES AND IMPROVEMENTS	0	0.00	0
Source of Supply Structures Flood Study	0	0.04	0
Power and Pumping Structures	0	0.04	0
Purification	0	0.05	0
Distribution Reservoirs and Standpipes	0	0.0400	0
Water Treatment Plant	0	0.04	0
Test Well	0	0.04	0
Other	0	0.05	0
Equipment	0	0.00	0
Electrical Pumping	0	0.04	0
Purification Equipment	0	0.05	0
Office Furniture and Equipment	0	0.05	0
Transportation Equipment	0	0.10	0
Tools and Work Equipment	0	0.10	0
Software / computers	0	0.10	0
Control and Monitoring equipment	0	0.14	0
Digital Mapping	0	0.33	0
Generator	0	0.04	0
Mains	0	0.00	0
Transmission	250,000	0.0133	3,333
Distribution	0	0.0133	0
Meters	0	0.05	0
Hydrants	0	0.01	0
Sprinkler Connections	0	0.00	0
Services	0	0.02	0
Other	0	0.00	0
TOTAL	250,000		3,333

West Hants Water Utility Calculation of Amortization on Capital Contributions (to Plant) 2021/22			
	Capital Contributions to Utility Plant in Service	Amortization Rate	Annual Amortization
LAND AND LAND RIGHTS			
Source of Supply Land	0	0.00	0
Land - General	0	0.00	0
STRUCTURES AND IMPROVEMENTS	0	0.00	0
Source of Supply Structures Flood Study	0	0.04	0
Power and Pumping Structures	0	0.00	0
Purification	0	0.05	0
Distribution Reservoirs and Standpipes	0	0.10	0
Water Treatment Plant	0	0.04	0
Test Well	0	0.10	0
Other	500,000	0.02	10,000
Equipment	0	0.00	0
Electrical Pumping	0	0.04	0
Purification Equipment	0	0.05	0
Office Furniture and Equipment	0	0.00	0
Transportation Equipment	0	0.10	0
Tools and Work Equipment	0	0.10	0
Software / computers	0	0.20	0
Control and Monitoring equipment	0	0.00	0
Digital Mapping	0	0.05	0
Generator	0	0.00	0
Mains	0	0.00	0
Transmission	0	0.0133	0
Distribution	0	0.0133	0
Meters	0	0.05	0
Hydrants	0	0.01	0
Sprinkler Connections	0	0.00	0
Services	0	0.02	0
Other	0	0.00	0
TOTAL	500,000		10,000

West Hants Water Utility Allocation of the Total Cost of Utility Plant in Service Between General Service and Fire Protection 2018/19							
	Falmouth						
	Utility Plant in Service Previous Year	Additions	Utility Plant in Service	Percent	General Service	Percent	Fire Protection
Intangible Plant							
Organization and Working Capital	5,928		5,928	100.0%	5,928	0.0%	0
Tangible Plant	-		-				
LAND AND LAND RIGHTS	-		-				
Source of Supply Land	183,490	-	183,490	90.0%	165,141	10.0%	18,349
Land - General	279,130	-	279,130	90.0%	251,217	10.0%	27,913
STRUCTURES AND IMPROVEMENTS	-	-	-		0		0
Source of Supply Structures	51,275	5,000	56,275	90.0%	50,648	10.0%	5,628
Power and Pumping Structures	90,380	-	90,380	90.0%	81,342	10.0%	9,038
Purification	760,834	-	760,834	90.0%	684,751	10.0%	76,083
Distribution Reservoirs and Standpipes	786,528	420,000	1,206,528	40.0%	482,611	60.0%	723,917
Water Treatment Plant	441,980	90,000	531,980	90.0%	478,782	10.0%	53,198
Sludge Pond	63,088	-	63,088	90.0%	56,779	10.0%	6,309
Other	-	10,000	10,000	90.0%	9,000	10.0%	1,000
Equipment	-		-		0		0
Electrical Pumping	76,870	460,000	536,870	90.0%	483,183	10.0%	53,687
Purification Equipment	2,657,433	6,500	2,663,933	90.0%	2,397,540	10.0%	266,393
Office Furniture and Equipment	-	-	-	90.0%	0	10.0%	0
Transportation Equipment	88,887	-	88,887	90.0%	79,998	10.0%	8,889
Tools and Work Equipment	11,644	25,000	36,644	90.0%	32,980	10.0%	3,664
Software / computers	-	-	-	90.0%	0	10.0%	0
Control and Monitoring equipment	-	7,000	7,000	90.0%	6,300	10.0%	700
Geotubes for Biosolids Handling	-	-	-	90.0%	0	10.0%	0
Leak Detection Monitoring Equip	-	-	-	90.0%	0	10.0%	0
Mains	-	-	-		0		0
Transmission	334,471	15,000	349,471	40.0%	139,788	60.0%	209,683
Distribution	5,070,029	417,000	5,487,029	40.0%	2,194,812	60.0%	3,292,217
Meters	983,106	38,000	1,021,106	100.0%	1,021,106	0.0%	0
Hydrants	395,096	6,000	401,096	0.0%	0	100.0%	401,096
	-	600,000	600,000	0.0%	0	100.0%	600,000
Services	440,598	14,000	454,598	100.0%	454,598	0.0%	0
Other	111,072	-	111,072	90.0%	99,965	10.0%	11,107
TOTAL	12,831,839	2,113,500	14,945,339	61.4%	9,176,468	38.6%	5,768,871

West Hants Water Utility Allocation of the Total Cost of Utility Plant in Service Between General Service and Fire Protection 2019/20							
	Falmouth						
	Utility Plant in Service Previous Year	Additions	Utility Plant in Service	Percent	General Service	Percent	Fire Protection
Intangible Plant							
Organization and Working Capital	5,928		5,928	100.0%	5,928	0.0%	0
Tangible Plant	-	-	-				
LAND AND LAND RIGHTS	-	-	-				
Source of Supply Land	183,490	-	183,490	90.0%	165,141	10.0%	18,349
Land - General	279,130	-	279,130	90.0%	251,217	10.0%	27,913
STRUCTURES AND IMPROVEMENTS	-	-	-		0		0
Source of Supply Structures	56,275	5,000	61,275	90.0%	55,148	10.0%	6,128
Power and Pumping Structures	90,380	-	90,380	90.0%	81,342	10.0%	9,038
Purification	760,834	-	760,834	90.0%	684,751	10.0%	76,083
Distribution Reservoirs and Standpipes	1,206,528	-	1,206,528	40.0%	482,611	60.0%	723,917
Water Treatment Plant	531,980	30,000	561,980	90.0%	505,782	10.0%	56,198
Sludge Pond	63,088	-	63,088	90.0%	56,779	10.0%	6,309
Other-Watershed Dam	10,000	200,000	210,000	90.0%	189,000	10.0%	21,000
Equipment	-	-	-		0		0
Electrical Pumping	536,870	20,000	556,870	90.0%	501,183	10.0%	55,687
Purification Equipment	2,663,933	6,500	2,670,433	90.0%	2,403,390	10.0%	267,043
Office Furniture and Equipment	-	-	-	90.0%	0	10.0%	0
Transportation Equipment	88,887	24,000	112,887	90.0%	101,598	10.0%	11,289
Tools and Work Equipment	36,644	-	36,644	90.0%	32,980	10.0%	3,664
Software / computers	-	-	-	90.0%	0	10.0%	0
Control and Monitoring equipment	7,000	-	7,000	90.0%	6,300	10.0%	700
Geotubes for Biosolids Handling	-	-	-	90.0%	0	10.0%	0
Leak Detection Monitoring Equip	-	-	-	90.0%	0	10.0%	0
Mains	-	-	-		0		0
Transmission	349,471	2,125,000	2,474,471	40.0%	989,788	60.0%	1,484,683
Distribution	5,487,029	187,000	5,674,029	40.0%	2,269,612	60.0%	3,404,417
Meters	1,021,106	19,500	1,040,606	100.0%	1,040,606	0.0%	0
Hydrants	401,096	19,000	420,096	0.0%	0	100.0%	420,096
Sprinkler Connections	600,000	500,000	1,100,000	0.0%	0	100.0%	1,100,000
Services	454,598	14,000	468,598	100.0%	468,598	0.0%	0
Other	111,072	-	111,072	90.0%	99,965	10.0%	11,107
TOTAL	14,945,339	3,150,000	18,095,339	57.4%	10,391,718	42.6%	7,703,621

West Hants Water Utility Allocation of the Total Cost of Utility Plant in Service Between General Service and Fire Protection 2020/21							
	Falmouth						
	Utility Plant in Service Previous Year	Additions	Utility Plant in Service	Percent	General Service	Percent	Fire Protection
Intangible Plant							
Organization and Working Capital	5,928		5,928	100.0%	5,928	0.0%	0
Tangible Plant	-						
LAND AND LAND RIGHTS							
Source of Supply Land	183,490	0	183,490	90.0%	165,141	10.0%	18,349
Land - General	279,130	0	279,130	90.0%	251,217	10.0%	27,913
STRUCTURES AND IMPROVEMENTS	-	0	-		0		0
Source of Supply Structures	61,275	5,000	66,275	90.0%	59,648	10.0%	6,628
Power and Pumping Structures	90,380	0	90,380	90.0%	81,342	10.0%	9,038
Purification	760,834	0	760,834	90.0%	684,751	10.0%	76,083
Distribution Reservoirs and Standpipes	1,206,528	0	1,206,528	40.0%	482,611	60.0%	723,917
Water Treatment Plant	561,980	0	561,980	90.0%	505,782	10.0%	56,198
Sludge Pond	63,088	0	63,088	90.0%	56,779	10.0%	6,309
Other	210,000	60,000	270,000	90.0%	243,000	10.0%	27,000
Equipment	-	0	-		0		0
Electrical Pumping	556,870	20,000	576,870	90.0%	519,183	10.0%	57,687
Purification Equipment	2,670,433	7,000	2,677,433	90.0%	2,409,690	10.0%	267,743
Office Furniture and Equipment	-	0	-	90.0%	0	10.0%	0
Transportation Equipment	112,887	0	112,887	90.0%	101,598	10.0%	11,289
Tools and Work Equipment	36,644	0	36,644	90.0%	32,980	10.0%	3,664
Software / computers	-	0	-	90.0%	0	10.0%	0
SCADA Upgrades	7,000	0	7,000	90.0%	6,300	10.0%	700
Geotubes for Biosolids Handling	-	30,000	30,000	90.0%	27,000	10.0%	3,000
Leak Detection Monitoring Equip	-	0	-	90.0%	0	10.0%	0
Mains	-	0	-		0		0
Transmission	2,474,471	250,000	2,724,471	40.0%	1,089,788	60.0%	1,634,683
Distribution	5,674,029	187,000	5,861,029	40.0%	2,344,412	60.0%	3,516,617
Meters	1,040,606	19,500	1,060,106	100.0%	1,060,106	0.0%	0
Hydrants	420,096	0	420,096	0.0%	0	100.0%	420,096
Sprinkler Connections	1,100,000	0	1,100,000	0.0%	0	100.0%	1,100,000
Services	468,598	14,000	482,598	100.0%	482,598	0.0%	0
Other	111,072	0	111,072	90.0%	99,965	10.0%	11,107
TOTAL	18,095,339	592,500	18,687,839	57.3%	10,709,818	42.7%	7,978,021

West Hants Water Utility Allocation of the Total Cost of Utility Plant in Service Between General Service and Fire Protection 2021/22							
	Falmouth						
	Utility Plant in Service Previous Year	Additions	Utility Plant in Service	Percent	General Service	Percent	Fire Protection
Intangible Plant							
Organization and Working Capital	5,928		5,928	100.0%	5,928	0.0%	0
Tangible Plant							
LAND AND LAND RIGHTS	-		-				
Source of Supply Land	183,490	0	183,490	90.0%	165,141	10.0%	18,349
Land - General	279,130	0	279,130	90.0%	251,217	10.0%	27,913
STRUCTURES AND IMPROVEMENTS	-	0	-		0		0
Source of Supply Structures	66,275	5,000	71,275	90.0%	64,148	10.0%	7,128
Power and Pumping Structures	90,380	0	90,380	90.0%	81,342	10.0%	9,038
Purification	760,834	0	760,834	90.0%	684,751	10.0%	76,083
Distribution Reservoirs and Standpipes	1,206,528	0	1,206,528	40.0%	482,611	60.0%	723,917
Water Treatment Plant	561,980	10,000	571,980	90.0%	514,782	10.0%	57,198
Sludge Pond	63,088	0	63,088	90.0%	56,779	10.0%	6,309
Other	270,000	1,500,000	1,770,000	90.0%	1,593,000	10.0%	177,000
Equipment	-	0	-				
Electrical Pumping	576,870	10,000	586,870	90.0%	528,183	10.0%	58,687
Purification Equipment	2,677,433	7,000	2,684,433	90.0%	2,415,990	10.0%	268,443
Office Furniture and Equipment	-	0	-	90.0%	0	10.0%	0
Transportation Equipment	112,887	24,000	136,887	90.0%	123,198	10.0%	13,689
Tools and Work Equipment	36,644	0	36,644	90.0%	32,980	10.0%	3,664
Software / computers	-	0	-	90.0%	0	10.0%	0
SCADA Upgrades	7,000	0	7,000	90.0%	6,300	10.0%	700
Geotubes for Biosolids Handling	30,000	0	30,000	90.0%	27,000	10.0%	3,000
Leak Detection Monitoring Equip	-	0	-	90.0%	0	10.0%	0
Mains	-	0	-		0		0
Transmission	2,724,471	0	2,724,471	40.0%	1,089,788	60.0%	1,634,683
Distribution	5,861,029	175,000	6,036,029	40.0%	2,414,412	60.0%	3,621,617
Meters	1,060,106	19,500	1,079,606	100.0%	1,079,606	0.0%	0
Hydrants	420,096	20,000	440,096	0.0%	0	100.0%	440,096
Sprinkler Connections	1,100,000	0	1,100,000	0.0%	0	100.0%	1,100,000
Services	482,598	14,000	496,598	100.0%	496,598	0.0%	0
Other	111,072	0	111,072	90.0%	99,965	10.0%	11,107
TOTAL	18,687,839	1,784,500	20,472,339	59.7%	12,213,718	40.3%	8,258,621

West Hants Water Utility Allocation of Fire Protection Charges Projected Expenses for 2019/20			
	Estimated Expenses	PerCent Allocation to fire Protection	Fire Protection Charge
Source of Supply	370,850	10.0%	37,085
Power and Pumping	44,728	10.0%	4,473
Water Treatment	279,951	10.0%	27,995
Transmission and Distribution	602,901	42.6%	256,669
Administration and General	196,841	10.0%	19,684
Depreciation	430,709	42.6%	183,363
Taxes	40,845	42.6%	17,389
Return on Rate Base	164,840	42.6%	70,176
Total	2,131,663	28.9%	616,834

West Hants Water Utility Allocation of Fire Protection Charges Projected Expenses for Year 2020/21			
	Estimated Expenses	PerCent Allocation to fire Protection	Fire Protection Charge
Source of Supply	381,975	10.0%	38,198
Power and Pumping	46,070	10.0%	4,607
Water Treatment	288,349	10.0%	28,835
Transmission and Distribution	620,988	42.7%	265,106
Administration and General	202,746	10.0%	20,275
Depreciation	452,129	42.7%	193,018
Taxes	42,070	42.7%	17,960
Return on Rate Base	184,686	42.7%	78,844
Total	2,219,014	29.2%	646,843

West Hants Water Utility Allocation of Fire Protection Charges Projected Expenses for Year 2021/22			
	Estimated Expenses	PerCent Allocation to fire Protection	Fire Protection Charge
Source of Supply	393,434	10.0%	39,343
Power and Pumping	47,452	10.0%	4,745
Water Treatment	297,000	10.0%	29,700
Transmission and Distribution	639,617	40.3%	258,024
Administration and General	208,829	10.0%	20,883
Depreciation	489,733	40.3%	197,560
Taxes	43,332	40.3%	17,480
Return on Rate Base	223,991	40.3%	90,359
Total	2,343,388	28.1%	658,095

West Hants Water Utility				
Calculation of rate Base and required Return on rate Base				
Years Ending March 31st				
	2018/19	2019/20	2020/21	2021/22
	(Actual)	(Estimate)	(Estimate)	(Estimate)
RATE BASE				
Utility plant in Service March 31st	14,945,339	18,095,339	18,687,839	20,472,339
Less Accumulated Depreciaton on actual cost of plant in service (Estimated)	(3,730,890)	(4,161,599)	(4,613,728)	(5,103,461)
Less Unamortized amount of capital contribution for plant in service	(2,999,045)	(3,772,009)	(3,961,641)	(4,391,272)
Estimated Rate Base at Year End	8,215,404	10,161,731	10,112,470	10,977,606
REQUIRED RETURN				
Non-operating Expenditures (B-2)	116,454	185,261	205,172	244,542
Less Non-operating Revenue	(2,060)	(2,122)	(2,185)	(2,251)
Less Other Non-operating Revenue (B-2)	(18,300)	(18,300)	(18,300)	(18,300)
Return on Rate Base	96,094	164,840	184,686	223,991
Required Rate of Return (Req'd Return/Est Rate Base)	1.17%	1.62%	1.83%	2.04%

West Hants Water Utility
Calculation of Revenue Required for Each Billing/Cost Category
2019/20

	Total Revenue Required	Fire Protection Revenue	Revenue Required from Metered Rates	Charge				Commodity Charge			
				Customer		Base		Delivery		Production	
Source of Supply	370,850	37,085	333,765							100%	333,765
Power and Pumping	44,728	4,473	40,255							100%	40,255
Water Treatment	279,951	27,995	251,956							100%	251,956
Transmission and Distribution	602,901	256,669	346,231			25%	86,558	75%	259,674		
Administration and General	196,841	19,684	177,157	10%	17,716	90%	159,441	0%	0		
Depreciation	430,709	183,363	247,346			100%	247,346				
Taxes	40,845	17,389	23,456			100%	23,456				
Return on Rate Base	164,840	70,176	94,663			40%	37,865	30%	28,399	30%	28,399
SUBTOTAL	2,131,663	616,834	1,514,829		17,716		554,666		288,073		654,374
							-				-
TOTAL	2,131,663	616,834	1,514,829		17,716		554,666		288,073		654,374

West Hants Water Utility
Calculation of Revenue Required for Each Billing/Cost Category
2020/21

	Total Revenue Required	Fire Protection Revenue	Revenue Required from Metered Rates	Charge				Commodity Charge			
				Customer		Base		Delivery		Production	
Source of Supply	381,975	38,198	343,778							100%	343,778
Power and Pumping	46,070	4,607	41,463							100%	41,463
Water Treatment	288,349	28,835	259,514							100%	259,514
Transmission and Distribution	620,988	265,106	355,882			25%	88,971	75%	266,912		
Administration and General	202,746	20,275	182,472	10%	18,247	90%	164,225	0%	0		
Depreciation	452,129	193,018	259,111			100%	259,111				
Taxes	42,070	17,960	24,110			100%	24,110				
Return on Rate Base	184,686	78,844	105,842			40%	42,337	30%	31,753	30%	31,753
SUBTOTAL	2,219,014	646,843	1,572,171		18,247		578,752		298,664		676,507
TOTAL	2,219,014	646,843	1,572,171		18,247		578,752		298,664		676,507

West Hants Water Utility
Calculation of Revenue Required for Each Billing/Cost Category
2021/22

	Total Revenue Required	Fire Protection Revenue	Revenue Required from Metered Rates	Charge				Commodity Charge			
				Customer		Base		Delivery		Production	
Source of Supply	393,434	39,343	354,091							100%	354,091
Power and Pumping	47,452	4,745	42,707							100%	42,707
Water Treatment	297,000	29,700	267,300							100%	267,300
Transmission and Distribution	639,617	258,024	381,593			25%	95,398	75%	286,195		
Administration and General	208,829	20,883	187,946	10%	18,795	90%	169,151	0%	0		
Depreciation	489,733	197,560	292,173			100%	292,173				
Taxes	43,332	17,480	25,852			100%	25,852				
Return on Rate Base	223,991	90,359	133,632			40%	53,453	30%	40,090	30%	40,090
SUBTOTAL	2,343,388	658,095	1,685,293		18,795		636,027		326,285		704,187
TOTAL	2,343,388	658,095	1,685,293		18,795		636,027		326,285		704,187

Worksheet C-4

01-Nov-18

West Hants Water Utility Service Connections and Equivalents 2019/20			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
5/8"	2,376	1	2,376
3/4"	10	1.5	15
1"	19	2.5	48
1.5"	8	5	40
2"	7	8	56
3"	3	16	48
4"	2	25	50
6"	2	50	100
8"	0	90	0
TOTAL	2427		2,733

West Hants Water Utility Service Connections and Equivalents 2020/21			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
5/8"	2,381	1	2,381
3/4"	10	1.5	15
1"	19	2.5	48
1.5"	8	5	40
2"	7	8	56
3"	3	16	48
4"	2	25	50
6"	2	50	100
8"	0	90	0
TOTAL	2432		2,738

West Hants Water Utility
Service Connections and Equivalents
2021/22

Meter Size	Number of Services	Capacity Ratio	System Equivalents
5/8"	2,386	1	2,386
3/4"	10	1.5	15
1"	19	2.5	48
1.5"	8	5	40
2"	7	8	56
3"	3	16	48
4"	2	25	50
6"	2	50	100
8"	0	90	0
TOTAL	2437		2,743

Worksheet C-5

01-Nov-18

West Hants Water Utility Service Connections and Equivalents 2019/20					
Meter Size	Capacity Ratio	Base Charge	Customer Charge	Total Base Charge	
				Annual	Quarterly
5/8"	1	202.99	7.30	210.29	52.57
3/4"	1.5	304.48	7.30	311.78	77.95
1"	2.5	507.47	7.30	514.77	128.69
1.5"	5	1,014.94	7.30	1,022.24	255.56
2"	8	1,623.91	7.30	1,631.21	407.80
3"	16	3,247.82	7.30	3,255.12	813.78
4"	25	5,074.71	7.30	5,082.01	1,270.50
6"	50	10,149.43	7.30	10,156.73	2,539.18
8"	90	18,268.97	7.30	18,276.27	4,569.07
TOTAL					

West Hants Water Utility Service Connections and Equivalents 2020/21					
Meter Size	Capacity Ratio	Base Charge	Customer Charge	Total Base Charge	
				Annual	Quarterly
5/8"	1	211.42	7.50	218.92	54.73
3/4"	1.5	317.12	7.50	324.63	81.16
1"	2.5	528.54	7.50	536.04	134.01
1.5"	5	1,057.08	7.50	1,064.59	266.15
2"	8	1,691.33	7.50	1,698.83	424.71
3"	16	3,382.66	7.50	3,390.17	847.54
4"	25	5,285.41	7.50	5,292.91	1,323.23
6"	50	10,570.82	7.50	10,578.32	2,644.58
8"	90	19,027.48	7.50	19,034.98	4,758.75
TOTAL					

West Hants Water Utility Service Connections and Equivalents 2021/22					
Meter Size	Capacity Ratio	Base Charge	Customer Charge	Total Base Charge	
				Annual	Quarterly
5/8"	1	231.92	7.71	239.63	59.91
3/4"	1.5	347.87	7.71	355.58	88.90
1"	2.5	579.79	7.71	587.50	146.88
1.5"	5	1,159.58	7.71	1,167.29	291.82
2"	8	1,855.32	7.71	1,863.03	465.76
3"	16	3,710.64	7.71	3,718.35	929.59
4"	25	5,797.88	7.71	5,805.59	1,451.40
6"	50	11,595.76	7.71	11,603.47	2,900.87
8"	90	20,872.36	7.71	20,880.07	5,220.02
TOTAL					

Worksheet C-6

01-Nov-18

West Hants Water Utility Water Consumption by Block		
Meter Size	2018/19	2019/20
	Total 1st Block Cubic Metres	Total 1st Block Cubic Metres
Unmetered		
5/8"	356,860	351,507
3/4"	2,213	2,213
1"	13,698	13,698
1.5"	9,063	9,063
2"	8,020	8,020
3"	17,313	17,313
4"	2,229	2,229
6"	0	31,792
8"		
TOTAL	409,396	435,835

West Hants Water Utility Water Consumption by Block		
Meter Size	2020/21	2021/22
	Total 1st Block Cubic Metres	Total 1st Block Cubic Metres
Unmetered		
5/8"	346,985	342,532
3/4"	2,213	2,213
1"	13,698	13,698
1.5"	9,063	9,063
2"	8,020	8,020
3"	17,313	17,313
4"	2,229	2,229
6"	31,792	31,792
8"		
TOTAL	431,313	426,860

Worksheet C-7

01-Nov-18

West Hants Water Utility Calculation of Consumption Charge 2019/20		
NET PRODUCTION EXPENSE		Cubic Metres
<u>Total Charge Worksheet C-3</u> Quantity Worksheet C-6		1.50
NET DELIVERY EXPENSES		
<u>Total Charge Worksheet C-3</u> Quantity Worksheet C-6		0.66
TOTAL CONSUMPTION CHARGE		2.16

West Hants Water Utility Calculation of Consumption Charge 2020/21		
NET PRODUCTION EXPENSE		Cubic Metres
<u>Total Charge Worksheet C-3</u> Quantity Worksheet C-6		1.57
NET DELIVERY EXPENSES		
<u>Total Charge Worksheet C-3</u> Quantity Worksheet C-6		0.69
TOTAL CONSUMPTION CHARGE		2.26

West Hants Water Utility Calculation of Consumption Charge 2021/22		
NET PRODUCTION EXPENSE		Cubic Metres
<u>Total Charge Worksheet C-3</u> Quantity Worksheet C-6		1.65
NET DELIVERY EXPENSES		
<u>Total Charge Worksheet C-3</u> Quantity Worksheet C-6		0.76
TOTAL CONSUMPTION CHARGE PER 1000 imp Gallons		2.41

Worksheet C-8

01-Nov-18

West Hants Water Utility
Water Consumption by Block
2019/20

BASE CHARGE

<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>
5/8"	2,376	210.29	499,644
3/4"	10	311.78	3,118
1"	19	514.77	9,781
1.5"	8	1,022.24	8,178
2"	7	1,631.21	11,418
3"	3	3,255.12	9,765
4"	2	5,082.01	10,164
6"	2	10,156.73	20,313
8"	0	18,276.27	0

TOTAL BASE REVENUE 572,382

CONSUMPTION CHARGE

	Quantity	per cubic meter	
1st Block	435,835	2.16	942,447
TOTAL CONSUMPTION REVENUE			942,447

TOTAL OPERATING REVENUES FOR YEAR (BASE + CONSUMPTION) 1,514,829

West Hants Water Utility
Water Consumption by Block
2020/21

BASE CHARGE

<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>
5/8"	2,381	218.92	521,247
3/4"	10	324.63	3,246
1"	19	536.04	10,185
1.5"	8	1,064.59	8,517
2"	7	1,698.83	11,892
3"	3	3,390.17	10,170
4"	2	5,292.91	10,586
6"	2	10,578.32	21,157
8"	0	19,034.98	0

TOTAL BASE REVENUE 597,000

CONSUMPTION CHARGE

	Quantity	per cubic meter	
1st Block	431,313	2.26	975,171
TOTAL CONSUMPTION REVENUE			975,171

TOTAL OPERATING REVENUES FOR YEAR (BASE + CONSUMPTION) 1,572,171

West Hants Water Utility Water Consumption by Block 2021/22			
BASE CHARGE			
<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>
5/8"	2,386	239.63	571,751
3/4"	10	355.58	3,556
1"	19	587.50	11,163
1.5"	8	1,167.29	9,338
2"	7	1,863.03	13,041
3"	3	3,718.35	11,155
4"	2	5,805.59	11,611
6"	2	11,603.47	23,207
8"	0	20,880.07	0
TOTAL BASE REVENUE			654,822
CONSUMPTION CHARGE			
	Quantity	per cubic meter	
1st Block	426,860	2.41	1,030,471
TOTAL CONSUMPTION REVENUE			1,030,471
TOTAL OPERATING REVENUES FOR YEAR (BASE + CONSUMPTION)			1,685,293

West Hants Water Utility Calculation of Bulk Water Rate Years Ending March 31st			
Cost Base	2019/20	2020/21	2021/22
Total Operating Expenses (Worksheet B-2)	1,966,824	2,034,327	2,119,397
Total Non Operating Expenses (Worksheet B-2)	185,261	205,172	244,542
Total Expenses	2,152,085	2,239,499	2,363,939
Water Consumption in Cubic Meters	435,835	431,313	426,860
Unit Calculations			
Unit cost per cubic metre	4.94	5.19	5.54
Operating cost and profit mark-up	30%	30%	30%
Bulk rate per cubic metre	6.42	6.75	7.20

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Hantsport

West Hants Water Utility										
Comparison of Current Water Rates with Proposed New Rates										
2018/19										
Meter Size	Average Quarterly Consumption	Base Charge		Percent Change	Commodity Charge		Percent Change	Quarterly Water Bill		Percent Change
	1st Block	Current	Proposed		Current	Proposed		Current	Proposed	
5/8"	37	91.12	52.57	-42.3%	80.26	79.98	-0.4%	171.38	132.55	-22.7%
3/4"	55	134.15	77.95	-41.9%	120.06	119.63	-0.4%	254.21	197.58	-22.3%
1"	180	220.19	128.69	-41.6%	391.11	389.74	-0.4%	611.30	518.44	-15.2%
1.5"	283	435.31	255.56	-41.3%	614.58	612.43	-0.4%	1,049.89	867.99	-17.3%
2"	286	693.45	407.80	-41.2%	621.55	619.37	-0.4%	1,315.00	1,027.17	-21.9%
3"	1,443		813.78			3,119.79				
4"	279	2,156.26	1,270.50	-41.1%	604.62	602.50	-0.4%	2,760.88	1,873.00	-32.2%
6"	3,974	4,307.45	2,539.18	-41.1%		8,593.35				

TMP/Wentworth

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West Hants Water Utility Comparison of Current Water Rates with Proposed New Rates 2018/19										
Meter Size	Average Quarterly Consumption	Base Charge		Percent Change	Commodity Charge		Percent Change	Quarterly Water Bill		Percent Change
	1st Block	Current	Proposed		Current	Proposed		Current	Proposed	
5/8"	37	42.65	52.57	23.3%	92.50	79.98	-13.5%	135.15	132.55	-1.9%
3/4"	55	63.34	77.95	23.1%	138.37	119.63	-13.5%	201.71	197.58	-2.0%
1"	180	104.74	128.69	22.9%	450.77	389.74	-13.5%	555.51	518.44	-6.7%
1.5"	283	208.23	255.56	22.7%	708.33	612.43	-13.5%	916.56	867.99	-5.3%
2"	286	332.41	407.80	22.7%	716.36	619.37	-13.5%	1,048.77	1,027.17	-2.1%
3"	1,443		813.78	#DIV/0!		3,119.79				
4"	279		1,270.50	#DIV/0!		602.50				
6"	3,974		2,539.18			8,593.35				

Falmouth

West Hants Water Utility Comparison of Current Water Rates with Proposed New Rates 2018/19										
Meter Size	Average Quarterly Consumption	Base Charge		Percent Change	Commodity Charge		Percent Change	Quarterly Water Bill		Percent Change
	1st Block	Current	Proposed		Current	Proposed		Current	Proposed	
5/8"	37	36.29	52.57	44.9%	51.41	79.98	55.6%	87.70	132.55	51.1%
3/4"	55	53.68	77.95	45.2%	77.03	119.63	55.3%	130.71	197.58	51.2%
1"	180	88.47	128.69	45.5%	250.94	389.74	55.3%	339.41	518.44	52.7%
1.5"	283	175.44	255.56	45.7%	394.32	612.43	55.3%	569.76	867.99	52.3%
2"	286	279.81	407.80	45.7%	398.79	619.37	55.3%	678.60	1,027.17	51.4%
3"	1,443	558.12	813.78	45.8%	2,008.73	3,119.79	55.3%	2,566.85	3,933.57	53.2%
4"	279		1,270.50			602.50				
6"	3,974		2,539.18			8,593.35				

West Hants Water Utility											
Comparison of Current Water Rates with Proposed New Rates											
2019/20											
Meter Size	Average Quarterly Consumption		Base Charge	Proposed	Percent Change	Commodity Charge		Percent Change	Quarterly Water Bill		Percent Change
	1st Block	Current				Current	Proposed		Current	Proposed	
5/8"	36	52.57	54.73	4.1%	79.98	82.37	3.0%	132.55	137.10	3.4%	
3/4"	55	77.95	81.16	4.1%	119.63	125.09	4.6%	197.58	206.24	4.4%	
1"	180	128.69	134.01	4.1%	389.74	407.50	4.6%	518.44	541.51	4.5%	
1.5"	283	255.56	266.15	4.1%	612.43	640.34	4.6%	867.99	906.49	4.4%	
2"	286	407.80	424.71	4.1%	619.37	647.60	4.6%	1,027.17	1,072.30	4.4%	
3"	1,443	813.78	847.54	4.1%	3,119.79	3,261.96	4.6%	3,933.57	4,109.50	0.0%	
4"	279	1,270.50	1,323.23	4.1%	602.50	629.95	4.6%	1,873.00	1,953.18	4.3%	
6"	3,974	2,539.18	2,644.58	4.2%	8,593.35	8,984.95	4.6%	11,132.53	11,629.53	4.5%	

West Hants Water Utility											
Comparison of Current Water Rates with Proposed New Rates											
2020/21											
Meter Size	Average Quarterly Consumption		Base Charge		Percent Change	Commodity Charge		Percent Change	Quarterly Water Bill		Percent Change
	1st Block	Current				Proposed	Current		Proposed	Current	
5/8"	36	54.73	59.91	9.5%	82.37	86.64	5.2%	137.10	146.55	6.9%	
3/4"	55	81.16	88.90	9.5%	125.09	133.56	6.8%	206.24	222.45	7.9%	
1"	180	134.01	146.88	9.6%	407.50	435.11	6.8%	541.51	581.98	7.5%	
1.5"	283	266.15	291.82	9.6%	640.34	683.71	6.8%	906.49	975.53	7.6%	
2"	286	424.71	465.76	9.7%	647.60	691.46	6.8%	1,072.30	1,157.22	7.9%	
3"	1,443	847.54	929.59	9.7%	3,261.96	3,482.91	6.8%	4,109.50	4,412.50	7.4%	
4"	279	1,323.23	1,451.40	9.7%	629.95	672.62	6.8%	1,953.18	2,124.02	8.7%	
6"	3,974	2,644.58	2,900.87	9.7%	8,984.95	9,593.54	6.8%	11,629.53	12,494.40	7.4%	

West Hants Water Utility

Comparative Statement of Operations

Fiscal Years ending March 31st

	2017/18 Year	Projection Using Proposed Rates		
		2019/20 Test Yr 1	2020/21 Test Yr 2	2021/22 Test Yr 3
OPERATING REVENUES				
Metered Sales	1,300,000	1,514,829	1,572,171	1,685,293
Public Fire Protection	604,438	616,834	646,843	658,095
Total	1,904,438	2,131,663	2,219,014	2,343,388
OPERATING EXPENDITURES				
Source of Supply	369,485	370,850	381,975	393,434
Power and Pumping	43,425	44,728	46,070	47,452
Water Treatment	271,797	279,951	288,349	297,000
Transmission and Distribution	585,341	602,901	620,988	639,617
Administration and General	191,108	196,841	202,746	208,829
Depreciation	379,526	430,709	452,129	489,733
Taxes	39,655	40,845	42,070	43,332
Total	1,880,337	1,966,824	2,034,327	2,119,397
OPERATING PROFIT (LOSS)				
LESS NON-OPERATING REVENUES				
Interest	2,060	2,122	2,185	2,251
Transfer from Reserves	0	0	0	0
Other	0	0	0	0
Total	2,060	2,122	2,185	2,251
OTHER OPERATING REVENUES				
Interest on Overdue Accounts	4,000	4,000	4,000	4,000
Sprinklers/Private Hydrants	800	800	800	800
Other Revenue	13,500	13,500	13,500	13,500
Total	18,300	18,300	18,300	18,300
NON-OPERATING EXPENDITURES				
Debt Charges - Principal	60,133	60,133	87,814	87,814
Debt Charges - Interest	46,321	43,637	35,867	32,347
Capital out of Revenue	0	0	0	0
Transfer to reserve for sludge handling	10,000	10,000	10,000	10,000
Earnings	0	0	0	0
Total	116,454	185,261	205,172	244,542
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	-71,993	0	0	0

Appendix 1

Loan Calculator Long Term Debt 2018/19

Interest Rate	6.0%
Term in years	20
Capital \$	-

Payment Schedule for Capital Works

	Principal	Interest	Total	Balance
Year				
1	\$0.00	\$0.00	-	-
2	\$0.00	\$0.00	-	-
3	\$0.00	\$0.00	-	-
4	\$0.00	\$0.00	-	-
5	\$0.00	\$0.00	-	-
6	\$0.00	\$0.00	-	-
7	\$0.00	\$0.00	-	-
8	\$0.00	\$0.00	-	-
9	\$0.00	\$0.00	-	-
10	\$0.00	\$0.00	-	-
11	\$0.00	\$0.00	-	-
12	\$0.00	\$0.00	-	-
13	\$0.00	\$0.00	-	-
14	\$0.00	\$0.00	-	-
15	\$0.00	\$0.00	-	-
16	\$0.00	\$0.00	-	-
17	\$0.00	\$0.00	-	-
18	\$0.00	\$0.00	-	-
19	\$0.00	\$0.00	-	-
20	\$0.00	\$0.00	-	-

Loan Calculator Long Term Debt 2019/20

Interest Rate	6.0%
Term in years	20
Capital \$	820,000

Payment Schedule for Capital Works

	Principal	Interest	Total	Balance
Year				
1	\$22,291.34	\$49,200.00	71,491.34	797,708.66
2	\$23,628.82	\$47,862.52	71,491.34	774,079.85
3	\$25,046.55	\$46,444.79	71,491.34	749,033.30
4	\$26,549.34	\$44,942.00	71,491.34	722,483.96
5	\$28,142.30	\$43,349.04	71,491.34	694,341.66
6	\$29,830.84	\$41,660.50	71,491.34	664,510.83
7	\$31,620.69	\$39,870.65	71,491.34	632,890.14
8	\$33,517.93	\$37,973.41	71,491.34	599,372.21
9	\$35,529.00	\$35,962.33	71,491.34	563,843.21
10	\$37,660.74	\$33,830.59	71,491.34	526,182.46
11	\$39,920.39	\$31,570.95	71,491.34	486,262.07
12	\$42,315.61	\$29,175.72	71,491.34	443,946.46
13	\$44,854.55	\$26,636.79	71,491.34	399,091.91
14	\$47,545.82	\$23,945.51	71,491.34	351,546.09
15	\$50,398.57	\$21,092.77	71,491.34	301,147.52
16	\$53,422.49	\$18,068.85	71,491.34	247,725.03
17	\$56,627.83	\$14,863.50	71,491.34	191,097.20
18	\$60,025.50	\$11,465.83	71,491.34	131,071.69
19	\$63,627.04	\$7,864.30	71,491.34	67,444.66
20	\$67,444.66	\$4,046.68	71,491.34	(0.00)

Loan Calculator
Long Term Debt
2020/21

Interest Rate	6.0%
Term in years	20
Capital \$	-

Payment Schedule for Capital Works

	Principal	Interest	Total	Balance
Year				
1	\$0.00	\$0.00	-	-
2	\$0.00	\$0.00	-	-
3	\$0.00	\$0.00	-	-
4	\$0.00	\$0.00	-	-
5	\$0.00	\$0.00	-	-
6	\$0.00	\$0.00	-	-
7	\$0.00	\$0.00	-	-
8	\$0.00	\$0.00	-	-
9	\$0.00	\$0.00	-	-
10	\$0.00	\$0.00	-	-
11	\$0.00	\$0.00	-	-
12	\$0.00	\$0.00	-	-
13	\$0.00	\$0.00	-	-
14	\$0.00	\$0.00	-	-
15	\$0.00	\$0.00	-	-
16	\$0.00	\$0.00	-	-
17	\$0.00	\$0.00	-	-
18	\$0.00	\$0.00	-	-
19	\$0.00	\$0.00	-	-
20	\$0.00	\$0.00	-	-

Loan Calculator
Long Term Debt
2021/22

Interest Rate	5.0%
Term in years	20
Capital \$	534,500

Payment Schedule for Capital Works

	Principal	Interest	Total	Balance
Year				
1	\$16,164.66	\$26,725.00	42,889.66	518,335.34
2	\$16,972.90	\$25,916.77	42,889.66	501,362.44
3	\$17,821.54	\$25,068.12	42,889.66	483,540.90
4	\$18,712.62	\$24,177.05	42,889.66	464,828.28
5	\$19,648.25	\$23,241.41	42,889.66	445,180.03
6	\$20,630.66	\$22,259.00	42,889.66	424,549.37
7	\$21,662.19	\$21,227.47	42,889.66	402,887.18
8	\$22,745.30	\$20,144.36	42,889.66	380,141.87
9	\$23,882.57	\$19,007.09	42,889.66	356,259.31
10	\$25,076.70	\$17,812.97	42,889.66	331,182.61
11	\$26,330.53	\$16,559.13	42,889.66	304,852.08
12	\$27,647.06	\$15,242.60	42,889.66	277,205.02
13	\$29,029.41	\$13,860.25	42,889.66	248,175.60
14	\$30,480.88	\$12,408.78	42,889.66	217,694.72
15	\$32,004.93	\$10,884.74	42,889.66	185,689.79
16	\$33,605.17	\$9,284.49	42,889.66	152,084.62
17	\$35,285.43	\$7,604.23	42,889.66	116,799.19
18	\$37,049.70	\$5,839.96	42,889.66	79,749.49
19	\$38,902.19	\$3,987.47	42,889.66	40,847.30
20	\$40,847.30	\$2,042.36	42,889.66	-

SCHEDULES A, B, AND C
RATES AND CHARGES

SCHEDULE "A"
WEST HANTS WATER UTILITY

SCHEDULE OF RATES AND CHARGES FOR WATER AND WATER SERVICES

(Effective for water supplied on and after 1 April 2019)

RATES

The rates set out below are the rates approved by the Board for water and water services when payment is made within 30 days from the date rendered as shown on the bill.

When payment is made after 30 days from the date rendered as shown on the bill, the rates will include interest charges of 1.25 % per month, or part thereof.

Each bill shall show the amount payable within 30 days from the date rendered as shown on the bill.

In this Schedule, the word "Utility" means the West Hants Water Utility of the Municipality of the District of West Hants.

1. **RATES:**

(a) **Base Charges**

Quarterly

Size of Meter

5/8"	52.57
3/4"	77.95
1"	128.69
1.5"	255.56
2"	407.80
3"	813.78
4"	1,270.50
6"	2,539.18
8"	4,569.07

(b) **Consumption Rate**

\$2.16 per cubic metre
\$9.82 per 1,000 imp. gallons

(c) Minimum Bill

The minimum bill shall be the Base Charge.

2. PUBLIC FIRE PROTECTION RATE

The Municipality of the District of West Hants, the Municipality of the County of Kings, and the Gloosecap First Nation shall pay annually to the Utility for fire protection on or before September 30, 2019 the sum of \$616,843.

The fire protection charge shall be apportioned among the Municipality of the District of West Hants, the Municipality of the County Kings, and the Glooscap First Nation based on the number of hydrants owned and operated by the Utility as the April 1, 2019 in each location.

3. RATES FOR SPRINKLER SERVICE

Each building having a sprinkler system installed shall pay annually for the service as follows:

Each building serviced by a sprinkler service pipe of 6" or less in diameter	\$250.00
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Each building serviced by a sprinkler service pipe of 8" or more in diameter	\$300.00
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4. WATER FOR BUILDINGS OR WORKS UNDER CONSTRUCTION

The Utility may furnish water to any person requiring a supply thereof for the construction of a building or other works. This person shall deposit with the Utility such sum as may be determined by the Utility as is sufficient to defray the cost of making the necessary connection to any water service or main together with the cost of the meter to be installed to measure the water consumed. Upon completion of the work and the return of the meter to the Utility, a refund will be made after deducting the cost, if any, of repairing the water service box, the meter and of testing the same and payment of the base and connection charges and the consumption rates in respect to such installation.

5. PRIVATE HYDRANT CONNECTION RATES

Per hydrant per year \$250.00.

6. RATES FOR WATER SUPPLIED FROM FIRE HYDRANTS

Whenever the use of any fire hydrant is desired for supplying water for any purpose, excepting those of the Fire Department for fire use, the Utility may grant a permit containing such terms and conditions as it may provide, including arrangements regarding supervision of the opening and closing of the hydrant, and a service charge for commercial consumers of \$60.00 for connection and disconnection and a consumption

A

charge for the amount of water used, as estimated by the water Utility, at meter consumption rates.

7. CHARGE FOR RE-ESTABLISHING WATER SERVICE

When water service has been suspended for any violation of the Rules and Regulations of the Utility, such water service shall not be re-established until a reconnection charge of \$50.00 has been paid to the Utility. If reconnection is outside of regular working hours, the charge is \$150.00.

8. CUSTOMER ACCOUNT CREATION FEE

The Utility shall charge a \$50.00 fee for the creation of a water account, notwithstanding the fact that no physical disconnection of the system may have occurred. The Customer Account Creation Fee includes the initial turn-on of the water service to the customer's providing it happens during regular working hours. If the customer requests the initial turn-on be done outside of regular working hours the fee shall be \$150.00 including the Customer Account Creation Fee.

9. CONNECTION FEE

The Utility shall charge a \$50.00 connection fee for turning water on at a customer's premises. If connection is outside of regular working hours, the charge is \$150.00.

10. DISCONNECTION FEE

There is no charge for turning off water to a customer's premises. A connection charge, as noted in Item # 9 above, shall apply when the water is turned on. In the case where the shutting off is requested because there is no operable shut off valve serving the dwelling, an isolation valve must be installed at the customer's expense.

11. SPECIAL SERVICE CHARGE:

A minimum special service charge of \$50.00 (\$150.00 if such work is performed after regular working hours) shall be made to each customer receiving a requested service not provided for elsewhere in the schedules or the rules and regulations except for water service repairs requested by the Utility. The exact charge will be calculated based on the time and materials used by the Utility plus 30% for overhead and profit. The customer shall be informed if the charge will exceed the \$50.00 minimum prior to the service being provided.

12. CHARGE FOR NON-NEGOTIABLE CHEQUES

The Utility may charge a \$25.00 administration fee plus any additional bank charges for cheques that, due to non-negotiability, have been rejected by the Utility's bank.

13. CHARGE FOR MISSED APPOINTMENT BY CUSTOMERS

Where an appointment has been made by a customer to have a water service hooked up or a meter inspected, or water turned on to a property, or other visits to the property for the inception or maintenance of water service to the property, and the customer fails to keep the appointment or the plumbing is not completed to allow for installation of a water meter and the Utility's staff have to return to the property, there may be a charge of \$50.00 for each visit if, in the judgment of the Utility, it is required.

14. CHARGE FOR REVIEW OF DRAWINGS AND SPECIFICATIONS

The Utility shall levy a charge with any person requesting a review of Design Drawings and specifications for additions and or extensions to the Utility's system. The charge shall be \$1.00 per lineal foot (\$3.28 per lineal metre) for reviews undertaken by Utility Staff. If the services of an external Consulting Engineer is deemed necessary by the Utility the charge shall be the total amount paid to the Consulting Engineer plus 25% for the Utility to coordinate the review. Payment is due when the Design Drawings are approved by the Utility.

The Utility will undertake audit inspections of the water system including the building service connections. The applicant shall pay 2% of the construction cost estimate for inspection fees.

15. BULK WATER

Bulk water will be provided to water haulers who have been approved by the Utility at the designated location at a cost of \$6.42 per cubic metre or part thereof with a minimum charge of \$40.00. Such charge shall be rendered for each loading.

SCHEDULE "B"

WEST HANTS WATER UTILITY

SCHEDULE OF RATES AND CHARGES FOR WATER AND WATER SERVICES

(Effective for water supplied on and after 1 April 2020)

RATES

The rates set out below are the rates approved by the Board for water and water services when payment is made within 30 days from the date rendered as shown on the bill.

When payment is made after 30 days from the date rendered as shown on the bill, the rates will include interest charges of 1.25 % per month, or part thereof.

Each bill shall show the amount payable within 30 days from the date rendered as shown on the bill.

In this Schedule, the word "Utility" means the West Hants Water Utility of the Municipality of the District of West Hants.

1. **RATES:**

(a) **Base Charges**

Quarterly

Size of Meter

5/8"	54.73
3/4"	81.16
1"	134.01
1.5"	266.15
2"	424.71
3"	847.54
4"	1,323.23
6"	2,644.58
8"	4,758.75

(b) **Consumption Rate**

\$2.26 per cubic metre
\$10.26 per 1,000 imp. gallons

(c) Minimum Bill

The minimum bill shall be the Base Charge.

2. PUBLIC FIRE PROTECTION RATE

The Municipality of the District of West Hants, the Municipality of the County of Kings, and the Gloosecap First Nation shall pay annually to the Utility for fire protection on or before September 30, 2020 the sum of \$646,843.

The fire protection charge shall be apportioned among the Municipality of the District of West Hants, the Municipality of the County Kings, and the Glooscap First Nation based on the number of hydrants owned and operated by the Utility as the April 1, 2020 in each location.

3. RATES FOR SPRINKLER SERVICE

Each building having a sprinkler system installed shall pay annually for the service as follows:

Each building serviced by a sprinkler service pipe of 6" or less in diameter	\$250.00
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Each building serviced by a sprinkler service pipe of 8" or more in diameter	\$300.00
---	----------

4. WATER FOR BUILDINGS OR WORKS UNDER CONSTRUCTION

The Utility may furnish water to any person requiring a supply thereof for the construction of a building or other works. This person shall deposit with the Utility such sum as may be determined by the Utility as is sufficient to defray the cost of making the necessary connection to any water service or main together with the cost of the meter to be installed to measure the water consumed. Upon completion of the work and the return of the meter to the Utility, a refund will be made after deducting the cost, if any, of repairing the water service box, the meter and of testing the same and payment of the base and connection charges and the consumption rates in respect to such installation.

5. PRIVATE CONNECTION HYDRANT RATES

Per hydrant per year \$250.00.

6. RATES FOR WATER SUPPLIED FROM FIRE HYDRANTS

Whenever the use of any fire hydrant is desired for supplying water for any purpose, excepting those of the Fire Department for fire use, the Utility may grant a permit containing such terms and conditions as it may provide, including arrangements regarding supervision of the opening and closing of the hydrant, and a service charge for commercial consumers of \$60.00 for connection and disconnection and a consumption

B

charge for the amount of water used, as estimated by the water Utility, at meter consumption rates.

7. CHARGE FOR RE-ESTABLISHING WATER SERVICE

When water service has been suspended for any violation of the Rules and Regulations of the Utility, such water service shall not be re-established until a reconnection charge of \$50.00 has been paid to the Utility. If reconnection is outside of regular working hours, the charge is \$150.00.

8. CUSTOMER ACCOUNT CREATION FEE

The Utility shall charge a \$50.00 fee for the creation of a water account, notwithstanding the fact that no physical disconnection of the system may have occurred. The Customer Account Creation Fee includes the initial turn-on of the water service to the customer's providing it happens during regular working hours. If the customer requests the initial turn-on be done outside of regular working hours the fee shall be \$150.00 including the Customer Account Creation Fee.

9. CONNECTION FEE

The Utility shall charge a \$50.00 connection fee for turning water on at a customer's premises. If connection is outside of regular working hours, the charge is \$150.00.

10. DISCONNECTION FEE

There is no charge for turning off water to a customer's premises. A connection charge, as noted in Item # 9 above, shall apply when the water is turned on. In the case where the shutting off is requested because there is no operable shut off valve serving the dwelling, an isolation valve must be installed at the customer's expense.

11. SPECIAL SERVICE CHARGE:

A minimum special service charge of \$50.00 (\$150.00 if such work is performed after regular working hours) shall be made to each customer receiving a requested service not provided for elsewhere in the schedules or the rules and regulations except for water service repairs requested by the Utility. The exact charge will be calculated based on the time and materials used by the Utility plus 30% for overhead and profit. The customer shall be informed if the charge will exceed the \$50.00 minimum prior to the service being provided.

12. CHARGE FOR NON-NEGOTIABLE CHEQUES

The Utility may charge a \$25.00 administration fee plus any additional bank fees for cheques that, due to non-negotiability, have been rejected by the Utility's bank.

13. CHARGE FOR MISSED APPOINTMENT BY CUSTOMERS

Where an appointment has been made by a customer to have a water service hooked up or a meter inspected, or water turned on to a property, or other visits to the property for the inception or maintenance of water service to the property, and the customer fails to keep the appointment or the plumbing is not completed to allow for installation of a water meter and the Utility's staff have to return to the property, there may be a charge of \$50.00 for each visit if, in the judgment of the Utility, it is required.

14. CHARGE FOR REVIEW OF DRAWINGS AND SPECIFICATIONS

The Utility shall levy a charge with any person requesting a review of Design Drawings and specifications for additions and or extensions to the Utility's system. The charge shall be \$1.00 per lineal foot (\$3.28 per lineal metre) for reviews undertaken by Utility Staff. If the services of an external Consulting Engineer is deemed necessary by the Utility the charge shall be the total amount paid to the Consulting Engineer plus 25% for the Utility to coordinate the review. Payment is due when the Design Drawings are approved by the Utility.

The Utility will undertake audit inspections of the water system including the building service connections. The applicant shall pay 2% of the construction cost estimate for inspection fees.

15. BULK WATER

Bulk water will be provided to water haulers who have been approved by the Utility at the designated location at a cost of \$6.75 per cubic metre or part thereof with a minimum charge of \$40.00. Such charge shall be rendered for each loading.

SCHEDULE "C"

WEST HANTS WATER UTILITY

SCHEDULE OF RATES AND CHARGES FOR WATER AND WATER SERVICES

(Effective for water supplied on and after 1 April 2021)

RATES

The rates set out below are the rates approved by the Board for water and water services when payment is made within 30 days from the date rendered as shown on the bill.

When payment is made after 30 days from the date rendered as shown on the bill, the rates will include interest charges of 1.25 % per month, or part thereof.

Each bill shall show the amount payable within 30 days from the date rendered as shown on the bill.

In this Schedule, the word "Utility" means the West Hants Water Utility of the Municipality of the District of West Hants.

1. **RATES:**

(a) **Base Charges**

Quarterly

Size of Meter

5/8"	59.91
3/4"	88.90
1"	146.88
1.5"	291.82
2"	465.76
3"	929.59
4"	1,451.40
6"	2,900.87
8"	5,220.02

(b) **Consumption Rate**

\$2.41 per cubic metre
\$10.96 per 1,000 imp. gallons

(c) Minimum Bill

The minimum bill shall be the Base Charge.

2. PUBLIC FIRE PROTECTION RATE

The Municipality of the District of West Hants, the Municipality of the County of Kings, and the Gloosecap First Nation shall pay annually to the Utility for fire protection on or before September 30, 2021 the sum of \$658,095.

The fire protection charge shall be apportioned among the Municipality of the District of West Hants, the Municipality of the County Kings, and the Glooscap First Nation based on the number of hydrants owned and operated by the Utility as the April 1, 2021 in each location.

For subsequent years, the annual public fire protection rate shall be based on the above or:

(a) the sum of 40.3% of transmission and distribution, taxes and depreciation expenses of the Utility and return on rate base of the immediately preceding year, plus

(b) 10 % of all other expenses,
whichever is the greater.

3. RATES FOR SPRINKLER SERVICE

Each building having a sprinkler system installed shall pay annually for the service as follows:

Each building serviced by a sprinkler service pipe of 6" or less in diameter	\$250.00
Each building serviced by a sprinkler service pipe of 8" or more in diameter	\$300.00

4. WATER FOR BUILDINGS OR WORKS UNDER CONSTRUCTION

The Utility may furnish water to any person requiring a supply thereof for the construction of a building or other works. This person shall deposit with the Utility such sum as may be determined by the Utility as is sufficient to defray the cost of making the necessary connection to any water service or main together with the cost of the meter to be installed to measure the water consumed. Upon completion of the work and the return of the meter to the Utility, a refund will be made after deducting the cost, if any, of repairing the water service box, the meter and of testing the same and payment of the base and connection charges and the consumption rates in respect to such installation.

5. PRIVATE CONNECTION HYDRANT RATES

Per hydrant per year \$250.00

C

6. RATES FOR WATER SUPPLIED FROM FIRE HYDRANTS

Whenever the use of any fire hydrant is desired for supplying water for any purpose, excepting those of the Fire Department for fire use, the Utility may grant a permit containing such terms and conditions as it may provide, including arrangements regarding supervision of the opening and closing of the hydrant, and a service charge for commercial consumers of \$60.00 for connection and disconnection and a consumption charge for the amount of water used, as estimated by the water Utility, at meter consumption rates.

7. CHARGE FOR RE-ESTABLISHING WATER SERVICE

When water service has been suspended for any violation of the Rules and Regulations of the Utility, such water service shall not be re-established until a reconnection charge of \$50.00 has been paid to the Utility. If reconnection is outside of regular working hours, the charge is \$150.00.

8. CUSTOMER ACCOUNT CREATION FEE

The Utility shall charge a \$50.00 fee for the creation of a water account, notwithstanding the fact that no physical disconnection of the system may have occurred. The Customer Account Creation Fee includes the initial turn-on of the water service to the customer's providing it happens during regular working hours. If the customer requests the initial turn-on be done outside of regular working hours the fee shall be \$150.00 including the Customer Account Creation Fee.

9. CONNECTION FEE

The Utility shall charge a \$50.00 connection fee for turning water on at a customer's premises. If connection is outside of regular working hours, the charge is \$150.00.

10. DISCONNECTION FEE

There is no charge for turning off water to a customer's premises. A connection charge, as noted in Item # 9 above, shall apply when the water is turned on. In the case where the shutting off is requested because there is no operable shut off valve serving the dwelling, an isolation valve must be installed at the customer's expense.

11. SPECIAL SERVICE CHARGE:

A minimum special service charge of \$50.00 (\$150.00 if such work is performed after regular working hours) shall be made to each customer receiving a requested service not provided for elsewhere in the schedules or the rules and regulations except for water service repairs requested by the Utility. The exact charge will be calculated based on the time and materials used by the Utility plus 30% for overhead and profit. The customer shall be informed if the charge will exceed the \$50.00 minimum prior to the service being provided.

12. CHARGE FOR NON-NEGOTIABLE CHEQUES

The Utility may charge a \$25.00 administration fee plus any additional bank charges for cheques that, due to non-negotiability, have been rejected by the Utility's bank.

13. CHARGE FOR MISSED APPOINTMENT BY CUSTOMERS

Where an appointment has been made by a customer to have a water service hooked up or a meter inspected, or water turned on to a property, or other visits to the property for the inception or maintenance of water service to the property, and the customer fails to keep the appointment or the plumbing is not completed to allow for installation of a water meter and the Utility's staff have to return to the property, there may be a charge of \$50.00 for each visit if, in the judgment of the Utility, it is required.

14. CHARGE FOR REVIEW OF DRAWINGS AND SPECIFICATIONS

The Utility shall levy a charge with any person requesting a review of Design Drawings and specifications for additions and or extensions to the Utility's system. The charge shall be \$1.00 per lineal foot (\$3.28 per lineal metre) for reviews undertaken by Utility Staff. If the services of an external Consulting Engineer is deemed necessary by the Utility the charge shall be the total amount paid to the Consulting Engineer plus 25% for the Utility to coordinate the review. Payment is due when the Design Drawings are approved by the Utility.

The Utility will undertake audit inspections of the water system including the building service connections. The applicant shall pay 2% of the construction cost estimate for inspection fees.

15. BULK WATER

Bulk water will be provided to water haulers who have been approved by the Utility at the designated location at a cost of \$7.20 per cubic metre or part thereof with a minimum charge of \$40.00. Such charge shall be rendered for each loading.

SCHEDULE D
RULES AND REGULATIONS

WEST HANTS WATER UTILITY

**SCHEDULE OF RULES AND REGULATIONS
GOVERNING THE SUPPLY OF WATER AND WATER SERVICES
(Effective 1 April 2019)**

1. In these Rules and regulations, unless the context otherwise requires, the expression:

“Municipality” means the Municipality of the District of West Hants

“Utility” means the West Hants Water Utility.

“Customer” means a person, a property owner, firm or corporation who, or which, contracts to be supplied with water at a specific location or locations.

“Domestic Service” means that type of service supplied to the owner or his authorized agent or to the occupant or tenant of any space or area occupied for the distinct purpose of a dwelling house, rooming house, apartment, flat, etc.

“Metered Rate Service” means that type of service charged for at metered rates. Metered rate service is required for all new services.

2. **LIABILITY FOR PAYMENT OF WATER BILL:** An agreement/contract is deemed to exist between a customer and the Utility for the supply of water service at such rates and in accordance with these Regulations by virtue of:

- a) the customer applying for and receiving approval for water service;
- b) the customer consuming or paying for water service from the date that the customer who is a party to an agreement pursuant to clause (a) (the customer of record) moves out of the premises, in which case the customer of record shall remain jointly and severally liable for the water service account up to the date the Utility is notified that the customer of record wishes to terminate the supply of water service.

A property owner who rents or leases a property or self-contained unit to a tenant or lessee shall be required to open an account for the provision of water at the property rented or leased.

- 1. Any person, business or corporation that receives water service without the consent of the Utility, shall be liable for the cost of such water service which cost shall be determined in the sole discretion of the Utility based upon its reasonable estimate of the amount of water utilized.
3. Where service is supplied to a condominium unit, the Condominium Corporation in which the unit is situated shall be deemed to be the customer of record and shall be liable for payment of the service bill for the condominium unit.

4. **DEPOSITS:** An applicant for service shall deposit with the Utility a sum of \$100.00. This deposit shall be held by the Utility as collateral security for the payment of the customer's bills, but is not to be considered as a payment on account thereof. When the customer ceases to use the service and discharges all their liability to the Utility in respect of such service, the deposit shall be returned to him with interest based on the rate of interest obtained by the Municipality of the District of West Hants on its surplus cash balances on deposit with its banker as at March 31 of each fiscal year.
5. **REFUSAL OF SERVICE:** Service may be refused or suspended to any customer who has failed to discharge all of his liabilities to the Utility.
6. **BILLING:** If an agreement/contract is entered into or terminated at any time other than a regular billing date, the amount to be charged to the customer shall be the pro rata proportion to the next billing date, of the regular service charge for the billing period, plus the consumption charge, if any.

The Utility charges the base rate for the entire year for seasonal customers. The quarterly base rate charge will apply for each quarter regardless of water turn-offs.

7. **PAYMENT OF BILLS:** Bills shall be rendered to each customer at intervals of approximately three months (quarterly) and shall be payable within thirty days after the date rendered. Bills are due on the billing date and bills not paid within thirty days after the billing date shall be subject to the interest charge as set out in the Schedule of Rates and Charges.
8. **ADJUSTMENT OF BILLS:**
 - (a) Where meters exist - If the seal of a meter is broken or if a meter does not register correctly, the bill for that water service shall be estimated in accordance with the best data available. Any customer desiring to question a water bill must do so in writing within 30 days of the bill being rendered.
 - (b) Customers Under billed - Should it be necessary for the Utility to make a billing adjustment as a result of a customer being under billed for any reason, such adjustment shall be retroactive for a maximum of four billing periods or one year, whichever is the longest. Notwithstanding the above, in the event that a billing adjustment is the result of the customer's illegal connection to the water system or willful interference or damage of metering equipment (where they exist), the billing adjustment in such circumstances will not be limited to one year or four billing periods, but rather the customer shall be responsible for all payments of such accounts from the date such illegal connection or interference to meter equipment took place.
 - (c) Customer Over billed - In the event a customer has been billed in error for a Service they did not receive, the Utility will reimburse such customer the amount billed to and paid by the customer, together with interest calculated as simple interest paid

on savings accounts by the Utility's bank, respecting the period during which the customer was incorrectly billed by the Utility, such period not to exceed five years.

9. **METER READING:** In the case of Metered Service Customers who are billed quarterly, meters shall be read in at least two of the four quarters, normally, the second and fourth, and, subject to Regulation 9, each billing for these quarters shall be based upon the meter reading with adjustment for any earlier estimated reading. The Utility may, at its option, estimate the readings in the alternate quarters based on the actual consumption from the previous quarter. In the case of Metered Service Customers who are billed monthly, meters shall be read monthly.
10. **ESTIMATED READINGS FOR BILLING PURPOSES - METERED CUSTOMERS:** If the Utility is unable to obtain a meter reading for billing purposes, after exercising due diligence in the usual practice of meter reading, the bill for that service shall be estimated in accordance with the best data available, subject, however, to the provision that in no circumstance will an estimated reading be used for more than two (2) consecutive billing periods. If an estimated bill is rendered for two (2) consecutive billing periods, the Utility shall notify the customer by regular mail that arrangements must be made for the Utility to obtain a reading and failing such arrangements, the Utility may suspend service until such arrangements are made. When such meter reading has been obtained the previous estimated bill or bills shall be adjusted accordingly.
11. **SUSPENSION OF SERVICE FOR NON PAYMENT BILLS:** The Utility shall have the right to enter onto customers' premises within reasonable hours to suspend service to customers whose bills remain unpaid for more than forty calendar days after the date rendered. The customer shall pay the reconnection fee as set out in the Charges for Re-establishing Water Service in the Schedule of Rates and Charges when the suspension order is created. Service suspension can be delayed if approved payment arrangements have been made and the customer is in compliance with arrangements.
12. **WATER TO BE SUPPLIED BY METER:** Except where water is used for construction purposes from a hydrant under the supervision of the Utility and except as in these regulations otherwise provided, all services other than those used exclusively for fire protection shall be metered. The Utility shall determine the size and type of meter to be installed in each case. All meters shall be the property of the Utility.
13. **INSTALLATION AND REMOVAL OF METERS:** Meters shall be installed and removed only by employees or duly authorized representatives of the Utility and no other person shall install, alter, change or remove a meter without the written permission of the Utility. The plumbing and connections shall be properly prepared to receive the installation of such meters to the approval of and without expense to the Utility.
14. **METER READERS:** Each meter reader shall be provided with an official identification, which he/she shall exhibit on request.
15. **ACCESS TO CUSTOMER'S PREMISES:** Representatives of the Utility shall have right

of access to all parts of a customer's property or premises at all reasonable hours for the purpose of inspecting any water pipes or fittings, or appliances, or discontinuing service, or for the purpose of installing, removing, repairing, reading or inspecting meters. The Utility shall have the right to suspend service to any customer who refuses such access.

16. **LOCATION OF METERS:** The Utility shall have the right to refuse service to, or suspend the service of, any customer who does not provide a place which, in the opinion of the Utility, is suitable for the meter. It should be in the building served, at or near the point of entry of the service pipe, in a place where it can be easily read and exchanged and where it will not be exposed to freezing temperatures.

Where the premises of a customer are of such a nature that a meter cannot be properly installed in a building or if the building is not sufficiently frost-proof as to guarantee the safety of the meter, the Utility may order the construction of a suitable frost-proof box in which the meter can be installed. Service to such premises may be refused or suspended until such a frost-proof box approved by the Utility is installed.

17. **DAMAGE TO WATER METERS:** Each customer shall be responsible for the meter installed on his service and shall protect it. He shall be liable for any damage to the meter resulting from carelessness, hot water or steam, or the action of frost or from any other cause not the fault of the Utility or its employees. The cost to the Utility occasioned by such damage to the meter shall be paid by the customer. If after the rendering of a bill by the Utility to the customer for such cost the same is not paid within 40 calendar days from the date rendered, the supply of water to the customer concerned may be suspended until all charges are paid.

18. **METER TESTING.** On the request to have their meter tested, the Utility may charge the sum of \$100.00 to defray, in part, the cost of making the test for meters up to 1 inch in size. In the case of meters 1-1/2 inches and larger, the actual cost of the test will be paid by the customer. If the test shows that the meter is over registering by more than one and one half percent (1 ½%) for positive displacement meters and three percent (3%) for turbine or compound meters, the sum so deposited will be refunded to the customer.

19. **PLUMBING TO BE SATISFACTORY:** All plumbing, pipes and fittings, fixtures, and other devices for conveying, distributing, controlling, or utilizing water which are used by a customer and are not the property of the Utility, shall be installed in the manner provided by the Regulations of and be approved by the proper official of the Municipality and/or the operators of the Utility. The water shall not be turned on (except for construction or testing purposes) until the applicant for service has satisfied the Utility that these requirements have been met. The supply of water may be discontinued to any customer at any time if, in the opinion of the proper official of the Municipality and/or the operator of the Utility, the plumbing, pipes, fittings, fixtures, or other devices as hereinbefore mentioned, or any of them, fail to comply with the above requirements, or if any part of the water system of such customer or the meter is in any unsuitable, dirty, unsanitary or inaccessible place. Service shall not be re-established until such condition is corrected to the satisfaction of the Utility.

20. **REMOTE REGISTERING WATER METERS:** When a remote registering water meter is installed on a customer's premises under a general outside register installation program of the Utility, then the cost of the meter and its installation shall be paid by the Utility. The meter shall become the property of the Utility which shall become responsible for its operation, maintenance and replacement. Any damage to the meter caused by the negligence or wrongful acts or omissions by the customer, his agents or members of his family, shall be paid for by the customer, and the failure by the customer to make the payment shall entitle the Utility, after making a forty day written demand for the payment, to disconnect the water service to the customer.

21. **CROSS CONNECTION CONTROL & BACKFLOW PREVENTION:**

(a) No owner, consumer, customer or other person hereinafter collectively referred to in this rule and regulation as "person" shall connect, cause to be connected, or allow to remain connected to the water system, or plumbing installation, without the express written consent of the Utility, any piping fixtures, fittings container or appliance in a manner which, under any circumstances, may allow water, wastewater, or any other liquid, chemical or substance, to ingress or egress the water system.

(b) Where, in the opinion of the Utility, there may be a risk of contamination to the potable water system, notwithstanding the provisions of subparagraph (a), the Utility may require the customer, at the customers sole cost and expense, to install at any point on the customers water service connection or water service pipe, one or more backflow prevention (BFP) devices, which devices shall be of a quality and type approved by the Utility.

(c) All BFP devices shall be maintained in good working order. Such devices must be inspected and tested by a certified tester, approved by the Utility, at the expense of the customer. Such inspections shall take place upon installation, and thereafter annually, or more often if required by the Utility. The customer shall submit a report in a form approved by the Utility on any or all tests performed on a BFP device within 30 days of a test. A record card shall be displayed on or adjacent to the BFP device on which the tester shall record the name and address of the owner of the device; the location, type, manufacturer, serial number and size of the device; and the test date, the tester's initials, the tester's name, the name of his employer, and the tester's license number.

(d) Installation, maintenance, field-testing and selection of all BFP devices shall fully conform to the latest revision of CSA B64.10 and CSA B64 series.

(e) In the event of any breach, contravention or non-compliance by a person of any of the provision and regulations in a sub-paragraphs (a),(b),(c) or (d) the Utility may:

(i) suspend water service to such person, or

(ii) give notice to the person to correct the breach, contravention or non-compliance within 96 hours, or a specified lesser period. If the person fails to comply with such

notice, the Utility may immediately thereafter suspend water service to such person.

22. **ALTERNATE WATER SUPPLY PROHIBITED:** Connection of any customer's installation served by the Utility to any other source of water supply is prohibited. Failure to comply with this regulation shall entitle the Utility to suspend the service.
23. **DANGEROUS CONNECTIONS:** No connection shall be permitted to any installation; equipment or source in such a manner as may allow any contamination to pass from such installation, equipment or source into the Utility's water supply system. If any such connection exists the Utility may discontinue the supply of water to such customer.
24. **PROHIBITED DEVICES:** Service may be refused or suspended by the Utility to any customer who installs or uses any device or appurtenance, as, for example, booster pumps, quick-opening or quick-closing valves, flushometers, water operated pumps or siphons, standpipes, or large outlets for supplying ships, etc., which may occasion sudden large demands of short or long duration, thereby requiring oversize meters and pipe lines, or affect the stability or regulation of water pressure in the Utility's system. Permission to install or use any such device or appurtenance must be obtained from the Utility, which permission shall specify what special arrangements, such as elevated storage tanks, surge tanks or equalizing tanks, etc., must be provided by the customer.
25. **IMPROPER USE OR WASTE OF WATER:** No customer shall permit the improper use or waste of water, such as providing water to more than one single family dwelling and /or apartment building from a single service, nor shall he sell or give water to any person except upon such conditions and for such purposes as may be approved in writing by the Utility.
26. **SERVICE PIPES:** Upon receipt of an application for service to any premises located on any portion of a street through which portion a main water pipe is laid and which premises are not already provided with water service, the Utility shall install a service pipe which it considers to be of suitable size and capacity from the water main to the street line. No pipe smaller than 3/4" in (19 mm) diameter shall be laid for any service.

The necessary excavation for the laying of the service pipe, backfilling and replacement of the street and sidewalk surfaces including the supplying and laying of the 3/4 inch service pipe (complete with a curb stop and corporation stop) from the water main in the street to the premises is the responsibility of the applicant for water service and all such work shall be performed at no cost to the Utility. All work from the pipe in the street to the street line shall be done by the Utility or shall be inspected and approved by the Utility.

In the case of a new sub-division, the sub-divider shall provide the service line from the main in the street to the street line at no cost to the Utility.

Should any person make application for more than one service to his premises, the

decision as to the necessity of the additional service shall be made by the Utility, and if the additional service is installed, the total cost thereof from the main to the customer's premises shall be paid by such applicant.

All services must be installed in accordance with the Municipal Services Specifications Manual of the Municipality of the District of West Hants.

When a service has been installed without objection from the customer as to the location of the same, no subsequent removal of or alteration to the position of the pipe shall be made except at the expense of the customer requesting such removal or alteration.

Each customer desiring the Utility to install a new service shall deposit with the Utility a sum equal to the estimated cost of the work.

27. **REPAIRS TO SERVICES:** If a leak or other trouble occurs it shall be repaired as soon as possible. If the leak or trouble occurs in a service line providing non-fire protection water between the main and the street line it shall be repaired by the Utility at its expense. If the leak or trouble occurs elsewhere in a service line providing non-fire protection water, it shall be repaired by the customer at their expense.

If the leak or trouble occurs in a service line which provides private fire protection services (sprinkler or hydrant) it shall be repaired by the customer at his expense.

The Utility may make such repairs for any customer provided the customer agrees to pay the cost of same. When required, each customer desiring the Utility to do such work shall deposit with the Utility a sum equal to the estimated cost of the work.

If a leak occurs on the customer's portion of their service pipe and, after being notified of same, they refuse or unduly delay to have repairs made, the Utility may discontinue the supply of water to such service pipe if, in its opinion, such action is necessary in order to prevent wastage of water. The Utility shall notify the customer affected of its intention to discontinue such supply.

28. **DEPOSITS IN ADVANCE:** Whenever a customer requests the Utility to do work for which he/she is required to pay and the Utility agrees to do the work, he/she shall deposit with the Utility, before the work is started, a sum of money equal to the Utility's estimate of the probable cost of said work or execute an agreement to pay the actual cost. When the actual cost is determined, an adjustment in the payment shall be made. Service shall not be established by the Utility until all charges are paid in full. Installations shall be made in accordance with the Three Mile Plains/Wentworth Water Utility specifications and be subject to inspection by the Utility's Engineer or Utility's Employees prior to water service being made available.

29. **UNAUTHORIZED EXTENSIONS, ADDITIONS OR CONNECTIONS:** No person shall, without the written consent of the Utility, make or cause to be made any connections to any pipe or main or any part of the water system or in any way obtain or use water

therefrom in any manner other than as set out in these Regulations. Any unauthorized connection shall be subject to removal by the Utility. The cost of the removal including labour and materials and an estimate of the water used together with a \$200 service charge shall be paid by those who made the unauthorized connection.

30. **SEASON FOR LAYING PIPES:** The Utility shall not be required to lay any pipe at any season of the year or at any time which, in its opinion, is not suitable.
31. **PRIVATE FIRE PROTECTION:** Fire protection lines within buildings shall be installed so that all pipes will be open and readily accessible for inspection at any time, and no connection for any purpose other than fire protection shall be made thereto. Unless approved by the Utility in writing, no fire protection line shall be connected in any way to a metered service.
32. **LIABILITY OF UTILITY:** The Utility shall not be deemed to guarantee an uninterrupted supply or a sufficient or uniform pressure and shall not be liable for any damage or injury caused or done by reason of the interruption of supply, variation of pressure or on account of the turning off or turning on of the water for any purpose.
33. **INTERFERENCE WITH UTILITY PROPERTY:** No person, unless authorized by the Utility in writing, shall draw water from, open, close, cut, break, or in any way injure or interfere with any fire hydrant, water main, water pipe, or any property of the Utility or obstruct the free access to any hydrant, stop cock, meter, building, etc., provided, however, that nothing in this paragraph contained shall be deemed to prevent an officer or member of the Fire Department engaged in the work of such Department, from using any hydrant or other source of water supply designated by the Utility for fire protection purposes.
34. **SUSPENDING SERVICE FOR VIOLATION:** Whenever, in the opinion of the Utility, violation of any of these Rules and Regulations is existing or has occurred, the Utility may cause the water service to be suspended from the premises where such violation has occurred or is existing and may keep the same so suspended until satisfied that the cause for such action has been corrected and all outstanding liabilities to the Utility have been discharged.
35. **RESUMPTION OF SERVICE:** In all cases where water service has been suspended for violation of any of these rules, service shall not be restored until the cause for violation has been removed.
36. **SPRINKLER SERVICE MAINS AND HYDRANT SYSTEM:** The customer shall be responsible for the cost of installing and maintaining a sprinkler service pipe from the main in the street to the building. It shall include a proper size control valve so that the service may be shut off if necessary. If requested by the applicant, a domestic service pipe may be connected to the sprinkler service pipe, but only if it is connected outside the building foundation wall and is provided with an approved shutoff valve located outside the building to permit control of the domestic service pipe without the necessity to enter the building.

Before any domestic service pipe is connected to a sprinkler service pipe, the applicant must obtain approval from the appropriate authority and provide the Utility with a certified copy of such approval. The Utility shall supervise the installation of same. When the private fire protection system includes private hydrants, these hydrants must be flushed during the Utility's regular flushing periods, under the supervision of the Utility's personnel. These hydrants shall be maintained by the owner. Fire protection lines within buildings shall be so installed that all pipes will be open and readily accessible for inspection at any time and no connection other than for fire protection shall be made thereto.

The location and spacing of hydrants in new construction shall be installed in accordance with the Municipal Services Specifications Manual of the Municipality of the District of West Hants.

37. **PRESSURE REDUCING VALVES:** Where, in the opinion of the Utility, it is necessary for proper water service, a customer shall install on the service pipe, between the meter and the shut off valve on the customer's side of the meter, a pressure reducing valve of a type satisfactory to the Utility. The customer shall be responsible for the cost of installing and maintaining the pressure reducing valve at all time.
38. **PRESSURE RELIEF VALVES:** Whenever a pressure reducing valve has been installed by a customer in accordance with Regulation 36, the customer shall, for his own safety and protection, install on his hot water boiler and any other hot water heating device connected to the building's plumbing system, a pressure relief valve of an approved type, as well as an approved temperature limiting device. It shall be the customer's responsibility to maintain and keep in service the pressure relief valve at all times.
39. **EXTENSIONS:** Any owner of property situated on a street or highway in which no water main has been laid (or where the main has been laid, but has not been extended to the point opposite the owner's property), may make application to the Utility requesting permission to have such a servicing extension carried out. The Utility would review the application and either give approval in principle for the extension, or advise the property owner that the extension is not feasible, and will provide the owner with the reason for refusing permission.

Any approval of the Utility shall be subject to approval of the Nova Scotia Utility and Review Board (the Board). The Utility will make application to the Board after agreement has been received with the proponent. No work shall be undertaken until approval is received from the Board.

After approval in principle has been granted, the owner may sign a contract with the Utility requesting that the Utility install the water extension at his expense, or the owner may have the water line extended by a private contractor approved by the Utility. Where the latter is done, the extension must be designed and the construction supervised by a registered professional engineer with the design being approved by the Utility.

In any event, the cost of the extension shall be paid fully by the owner and the ownership

of the water line turned over to the Utility before any water services are connected to the extended line.

After the water line has been turned over to the Utility, it shall become a part of the West Hants Water Utility and all of these regulations affecting the operation of the Utility shall apply.

40. **CURB STOP/CONTROL VALVE SERVICE BOX:** The curb stop/control valve service box housing the customers control valve shall be exposed for access by the Utility at all times. The Utility requires all curb stop/control valve service boxes and/or valves to be fully exposed and adjusted to final landscape grade before the installation of a customer's water meter. Any adjustment of the service box or valve box is the responsibility of the customer.

The customer shall ensure the curb stop/control valve service box and/or the valve box is exposed at all times. In the event that the curb stop/control valve service box is buried, paved over, back-filled or damaged as a result of carelessness, willful obstruction or any other occurrence that, in the opinion of the Utility, results in the requirement for the Utility to expose, re-expose, adjust or repair the curb stop /control valve service box, it shall be at the customer's expense. The Utility may undertake such activities as it deems necessary to gain access to the premises curb stop/control valve service box without expense to the Utility. When such action is undertaken, the reinstatement of the road, right-of-way, driveway, sidewalk, curb or landscape will be charged back to the customer if such activity is undertaken by the Utility.

41. **WATER CONSERVATION DIRECTIVES:** The Utility may issue conservation of water directives to its customers if, in the opinion of the Utility, such directives are required to permit the Utility to provide reliable, continuous water supply to all customers served by the Utility.

During such times as these directives are in force, customers who do not comply with the directives may have their water supply suspended until such time as they agree to comply with the directive or upon suspension of the water conservation directive, whichever occurs first. Such customers shall be required to pay the Charge for Re-Establishing Water Service as set out in the Schedule of Rates and Charges.

West Hants Combined Sewer System
Sewer Rate Model

Prepared By
G. A. Isenor Consulting Limited
in Association with
Blaine S. Rooney Consulting Limited

Date
01-Nov-18

INPUTS REQUIRED FOR RATE CALCULATION

The following Inputs are required - See Manual for details

Table S1-1

(a)	Assumed Inflation Rate	2%	Per Year																																	
(b)	Current Year	2018/19																																		
(c)	Test Years	2019/20 2020/21 2021/22 2022/23 2023/24																																		
(d)	Number of Customers by Meter Size for Current Year	<table><tr><th></th><th></th><th>Projected Average Growth per year</th></tr><tr><td>Unmetered</td><td>0</td><td>0</td></tr><tr><td>15mm - 5/8"</td><td>1950</td><td>5</td></tr><tr><td>19 mm - 3/4"</td><td>10</td><td>0</td></tr><tr><td>25 mm - 1"</td><td>19</td><td>0</td></tr><tr><td>37 mm - 1.5"</td><td>8</td><td>0</td></tr><tr><td>50 mm - 2"</td><td>7</td><td>0</td></tr><tr><td>75 mm - 3 "</td><td>3</td><td>0</td></tr><tr><td>100 mm - 4"</td><td>2</td><td>0</td></tr><tr><td>150 mm - 6"</td><td>0</td><td>0</td></tr><tr><td>200 mm - 8"</td><td>0</td><td>0</td></tr></table>				Projected Average Growth per year	Unmetered	0	0	15mm - 5/8"	1950	5	19 mm - 3/4"	10	0	25 mm - 1"	19	0	37 mm - 1.5"	8	0	50 mm - 2"	7	0	75 mm - 3 "	3	0	100 mm - 4"	2	0	150 mm - 6"	0	0	200 mm - 8"	0	0
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200 mm - 8"	0	0																																		
(e)	Effluent Flow by Customer Meter Size for Current Year	<table><tr><th></th><th>(Cubic meters)</th><th>Estimated Change (Increase or Decrease) in Flow per Year (as a percentage) for each Meter Size</th></tr><tr><td>Unmetered</td><td>0</td><td>0.0%</td></tr><tr><td>15mm - 5/8"</td><td>293,495</td><td>-1.5%</td></tr><tr><td>19 mm - 3/4"</td><td>2,213</td><td>0.0%</td></tr><tr><td>25 mm - 1"</td><td>13,698</td><td>0.0%</td></tr><tr><td>37 mm - 1.5"</td><td>9,063</td><td>0.0%</td></tr><tr><td>50 mm - 2"</td><td>8,020</td><td>0.0%</td></tr><tr><td>75 mm - 3 "</td><td>17,313</td><td>0.0%</td></tr><tr><td>100 mm - 4"</td><td>2,229</td><td>0.0%</td></tr><tr><td>150 mm - 6"</td><td>0</td><td>0.0%</td></tr><tr><td>200 mm - 8"</td><td>0</td><td>0.0%</td></tr></table>			(Cubic meters)	Estimated Change (Increase or Decrease) in Flow per Year (as a percentage) for each Meter Size	Unmetered	0	0.0%	15mm - 5/8"	293,495	-1.5%	19 mm - 3/4"	2,213	0.0%	25 mm - 1"	13,698	0.0%	37 mm - 1.5"	9,063	0.0%	50 mm - 2"	8,020	0.0%	75 mm - 3 "	17,313	0.0%	100 mm - 4"	2,229	0.0%	150 mm - 6"	0	0.0%	200 mm - 8"	0	0.0%
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(f)	Long Term Borrowing Parameters	<table><tr><th></th><th>Projected Interest</th><th>Estimated Term in Years</th></tr><tr><td>Year</td><td>Rate</td><td></td></tr><tr><td>2019/20</td><td>6.00%</td><td>20</td></tr><tr><td>2020/21</td><td>6.00%</td><td>20</td></tr><tr><td>2021/22</td><td>6.00%</td><td>20</td></tr><tr><td>2022/23</td><td>6.00%</td><td>20</td></tr><tr><td>2023/24</td><td>6.00%</td><td>20</td></tr></table>			Projected Interest	Estimated Term in Years	Year	Rate		2019/20	6.00%	20	2020/21	6.00%	20	2021/22	6.00%	20	2022/23	6.00%	20	2023/24	6.00%	20												
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2023/24	6.00%	20																																		

Table S2-1

West Hants Combined Sewer System Comparative Statement of Operations Fiscal Years ending March 31st							
	2017/18 (Actual)	Current Year 2018/19 (Estimated)	Projection Using Current Rates				
			2019/20 Test	2020/21 Test	2021/22 Test	2022/23 Test	2023/24 Test
OPERATING REVENUES							
Sewer Rate	929,501	1,012,100	1,012,100	1,012,100	1,012,100	1,012,100	1,012,100
Other revenue		0	0	0	0	0	0
Total	929,501	1,012,100	1,012,100	1,012,100	1,012,100	1,012,100	1,012,100
OPERATING EXPENDITURES							
General Administration	154,534	174,605	164,638	167,931	171,290	174,715	178,210
Sewage Collection Systems	73,236	63,115	64,377	65,665	66,978	68,318	69,684
Lift Stations	131,221	139,160	141,943	144,782	147,678	150,631	153,644
Sewage Treatment and Disposal	281,279	310,525	316,736	323,070	329,532	336,122	342,845
Capital Reserve Contribution	207,531	239,253	255,626	269,984	283,242	296,200	307,172
Deferral of Capital Reserve Contribution	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	847,801	926,658	943,320	971,432	998,719	1,025,987	1,051,555
OPERATING PROFIT (LOSS)	81,700	85,442	68,780	40,668	13,381	-13,887	-39,455
NON-OPERATING REVENUES							
Interest	0	2,605	3,700	3,700	3,700	3,700	3,700
Sewer Connection Permits	0	1,350	1,500	1,500	1,500	1,500	1,500
Bad Debts Collected	0	0	100	100	100	100	100
Transfer from Accumulated Surplus	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	0	3,955	5,300	5,300	5,300	5,300	5,300
NON-OPERATING EXPENDITURES							
Principal on Existing Debt	108,867	108,867	108,867	108,867	108,867	108,867	108,867
Interest on Existing Debt	39,412	35,588	31,503	27,177	22,691	18,051	11,837
New Debt - Principal (Current Year)			0	0	0	0	0
New Debt - Interest (Current Year)			0	0	0	0	0
New Debt - Principal (Test Year 1)				0	0	0	0
New Debt - Interest (Test Year 1)				0	0	0	0
New Debt - Principal (Test Year 2)					0	0	0
New Debt - Interest (Test Year 2)					-	0	-
New Debt - Principal (Test Year 3)						-	-
New Debt - Interest (Test Year 3)						-	-
New Debt - Principal (Test Year 4)							-
New Debt - Interest (Test Year 4)							-
Capital out of Revenue - Sewer Equipment	0	0	0	0	0	0	0
Capital out of Revenue - Sewer Renewal	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	148,279	144,455	140,370	136,044	131,558	126,918	120,704
TOTAL EXPENSES	996,080	1,071,113	1,083,690	1,107,476	1,130,277	1,152,905	1,172,259
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	-66,579	-55,058	-66,290	-90,076	-112,877	-135,505	-154,859
DEFICIT BEGINNING OF THE YEAR	0	-66,579	-121,637	-187,927	-278,002	-390,880	-526,385
ACCUMULATED SURPLUS (DEFICIT)	-66,579	-121,637	-187,927	-278,002	-390,880	-526,385	-681,244

Table S3-1

01-Nov-18

West Hants Combined Sewer System Statement of Operating Expenditures and Revenue Requirements					
	2018/19 (Estimated)	2019/20 Test	2020/21 Test	2021/22 Test	2022/23 Test
OPERATING EXPENDITURES					
General Administration	174,605	164,638	167,931	171,290	174,715
Sewage Collection Systems	63,115	64,377	65,665	66,978	68,318
Lift Stations	139,160	141,943	144,782	147,678	150,631
Sewage Treatment and Disposal	310,525	316,736	323,070	329,532	336,122
Capital Reserve Contribution	239,253	255,626	269,984	283,242	296,200
Deferral of Capital Reserve Contribution	0	0	0	0	0
Other	0	0	0	0	0
Total	926,658	943,320	971,432	998,719	1,025,987
ADD NON-OPERATING EXPENDITURES					
Debt Charges - Principal	108,867	108,867	108,867	108,867	108,867
Debt Charges - Interest	35,588	31,503	27,177	22,691	18,051
New Debt - Principal (Current Year)	0	0	0	0	0
New Debt - Interest (Current Year)	0	0	0	0	0
New Debt - Principal (Test Year 1)	0	0	0	0	0
New Debt - Interest (Test Year 1)	0	0	0	0	0
New Debt - Principal (Test Year 2)	0	0	0	0	0
New Debt - Interest (Test Year 2)	0	0	0	0	0
New Debt - Principal (Test Year 3)	0	0	0	0	0
New Debt - Interest (Test Year 3)	0	0	0	0	0
New Debt - Principal Test Year 4)	0	0	0	0	0
New Debt - Interest (Test Year 4)	0	0	0	0	0
Capital out of Revenue -Sewer Equipment	0	0	0	0	0
Capital out of Revenue - Sewer Renewal	0	0	0	0	0
Other	0	0	0	0	0
Total	144,455	140,370	136,044	131,558	126,918
LESS NON-OPERATING REVENUES					
Interest	2,605	3,700	3,700	3,700	3,700
Sewer Connection Permits	1,350	1,500	1,500	1,500	1,500
Bad Debts Collected	0	100	100	100	100
Transfer from Accumulated Surplus	0	0	0	0	0
Other	0	0	0	0	0
Total	3,955	5,300	5,300	5,300	5,300
REVENUE REQUIRED FROM CUSTOMERS	1,067,158	1,078,390	1,102,176	1,124,977	1,147,605

Table S4-1

West Hants Combined Sewer System Statement of Operating Expenditures						
	2017/18 (Actual)	2018/19 (Budget)	2019/20 (Budget)	2020/21 Test	2021/22 Test	2022/23 Test
GENERAL ADMINISTRATION						
Salaries and Benefits	44,952	46,750	47,685	48,639	49,611	50,604
Mileage & Expenses	600	1,800	1,836	1,873	1,910	1,948
Training & Development	1,025	1,800	1,836	1,873	1,910	1,948
Conventions & Conferences	1,070	600	612	624	637	649
Membership Fees	110	300	306	312	318	325
Telephone	2,250	4,500	4,590	4,682	4,775	4,871
Mandated Communications	0	600	612	624	637	649
Marketing/PR	0	0	0	0	0	0
Public Information	0	0	0	0	0	0
Administration Fee	50,198	61,960	63,199	64,463	65,752	67,067
Insurance	8,665	4,600	4,692	4,786	4,882	4,979
Equipment	0	3,000	3,060	3,121	3,184	3,247
Truck Maintenance	14,570	8,250	8,415	8,583	8,755	8,930
Truck Fuel	5,000	6,750	6,885	7,023	7,163	7,306
Truck Registration	661	1,500	1,530	1,561	1,592	1,624
PW Distribution	11,900	6,000	6,120	6,242	6,367	6,495
Other	33		0	0	0	0
Previous Years Deficit	500	13,195	0	0	0	0
Industrial Park - Town of Windsor	13,000	13,000	13,260	13,525	13,796	14,072
TOTAL GENERAL ADMINISTRATION	154,534	174,605	164,638	167,931	171,290	174,715
SEWAGE COLLECTION SYSTEMS						
Salaries	38,236	39,615	40,407	41,215	42,040	42,881
Pipe Maintenance	18,500	20,000	20,400	20,808	21,224	21,649
Operational Expense	1,500	3,500	3,570	3,641	3,714	3,789
Other - ORDC	15,000	0	0	0	0	0
TOTAL SEWAGE COLLECTION SYSTEMS	73,236	63,115	64,377	65,665	66,978	68,318
LIFT STATIONS						
Salaries	79,042	81,060	82,681	84,335	86,022	87,742
Insurance	4,329	4,600	4,692	4,786	4,882	4,979
Power	24,500	25,500	26,010	26,530	27,061	27,602
Maintenance	23,350	22,500	22,950	23,409	23,877	24,355
Stock Items	0	2,500	2,550	2,601	2,653	2,706
Freight Charges	0	1,500	1,530	1,561	1,592	1,624
Portable Generator	0	1,500	1,530	1,561	1,592	1,624
Other	0	0	0	0	0	0
TOTAL LIFT STATIONS	131,221	139,160	141,943	144,782	147,678	150,631
SEWAGE TREATMENT AND DISPOSAL						
Salaries	62,530	66,325	67,652	69,005	70,385	71,792
Power	50,000	50,000	51,000	52,020	53,060	54,122
Sewage Treatment Fee	142,749	166,200	169,524	172,914	176,373	179,900
Operational Expense	26,000	28,000	28,560	29,131	29,714	30,308
TOTAL SEWAGE TREATMENT & DISPOSAL	281,279	310,525	316,736	323,070	329,532	336,122

Table S5-1

West Hants Combined Sewer System Calculation of Depreciation of Tangible Plant at Total Cost 2018/19				
	Planned Capital Spending Program	Estimated Average Life in Years	Depreciation Rate	Annual Depreciation
		Capital Reserve Rate at the beginning of the Year		207,531
LAND AND LAND RIGHTS				
Land - General	0			0
STRUCTURES AND IMPROVEMENTS				0
Power and Pumping Structures	0	50	0.05	0
Treatment Equipment	15,000	75	0.05	750
Equipment				0
Electrical Pumping	90,000	20	0.05	4,500
Office Furniture and Equipment	0	10	0.10	0
Transportation Equipment	0	5	0.20	0
Tools and Work Equipment	0	5	0.20	0
Collection Mains & Manholes Equipment	0	5	0.20	0
Other SCADA	135,000	7	0.143	19,286
Other	0	5	0.20	0
Collection System				0
Forcemain	0	75	0.0133	0
Mains	150,000	75	0.0133	2,000
Manholes	0	75	0.0133	0
Meters	5,000	20	0.05	250
Services	14,000	75	0.0133	187
Other -Studies	75,000	20	0.05	3,750
Other - Inflow studies/Repairs	20,000	20	0.05	1,000
TOTAL	504,000			31,722
Source of Funding				
Gas Tax	470,000	Capital Reserve fund beginning of year		577,504
Sewer Renewal Capital Reserve	20,000	Capital Reserve Expenditure in Current Year		-20,000
Customers (Services)	14,000	Capital Reserve Contribution in Current Year		239,253
Long Term Debt	0			
Capital from Revenue	0			
TOTAL	504,000	Capital Reserve Balance at end of current Year		796,757

Table S5-2

West Hants Combined Sewer System Calculation of Depreciation of Tangible Plant at Total Cost 2019/20				
	Planned Capital Spending Program	Estimated Average Life in Years	Depreciation Rate	Annual Depreciation
		Capital Reserve Rate at the beginning of the Year		239,253
LAND AND LAND RIGHTS				
Land - General	0			0
STRUCTURES AND IMPROVEMENTS				0
Power and Pumping Structures	0	50	0.0200	0
Treatment Equipment	0	75	0.0500	0
Equipment				0
Electrical Pumping	40,000	20	0.05	2,000
Office Furniture and Equipment	0	20	0.05	0
Transportation Equipment	24,000	10	0.1	2,400
Tools and Work Equipment	0	5	0.2	0
Collection Mains & Manholes Equipment	0	10	0.1	0
Other SCADA	30,000	7	0.143	4,286
Other	0	5	0.2	0
Collection System				0
Forcemain	0	75	0.0133	0
Mains	300,000	75	0.0133	4,000
Manholes	0	75	0.0133	0
Meters	0	20	0.05	0
Services	14,000	75	0.0133	187
Other - Studies	50,000	20	0.05	2,500
Other - Inflow studies/Repairs	20,000	20	0.05	1,000
TOTAL	478,000			16,372
Source of Funding				
Gas Tax	370,000	Capital Reserve fund beginning of year		796,757
Sewer Renewal Capital Reserve	94,000	Capital Reserve Expenditure in Current Year		-94,000
Customers (Services)	14,000	Capital Reserve Contribution in Current Year		255,626
Long Term Debt	0			
Capital from Revenue	0			
TOTAL	478,000	Capital Reserve Balance at end of current Year		958,383

Table S5-3

West Hants Combined Sewer System Calculation of Depreciation of Tangible Plant at Total Cost 2020/21				
	Planned Capital Spending Program	Estimated Average Life in Years	Depreciation Rate	Annual Depreciation
		Depreciation Rate at the beginning of the Year		255,626
LAND AND LAND RIGHTS				
Land - General	0			0
STRUCTURES AND IMPROVEMENTS				0
Power and Pumping Structures	0	75	0.0133	0
Treatment Equipment	0	75	0.0500	0
Equipment				0
Electrical Pumping	82,000	20	0.05	4,100
Office Furniture and Equipment	0	10	0.1	0
Transportation Equipment	0	5	0.2	0
Tools and Work Equipment	0	5	0.2	0
Collection Mains & Manholes Equipment	0	20	0.05	0
Other SCADA	32,000	7	0.143	4,571
Other	0	5	0.2	0
Collection System				0
Forcemain	0	75	0.0133	0
Mains	300,000	75	0.0133	4,000
Manholes	0	75	0.0133	0
Meters	0	20	0.05	0
Services	14,000	75	0.0133	187
Other - Studies	0	50	0.02	0
Other - Inflow studies/Repairs	30,000	20	0.05	1,500
TOTAL	458,000			14,358
Source of Funding				
Gas Tax	144,000	Capital Reserve fund beginning of year		958,383
Sewer Renewal Capital Reserve	300,000	Capital Reserve Expenditure in Current Year		-300,000
Customers (Services)	14,000	Capital Reserve Contribution in Current Year		269,984
Long Term Debt	0			
Capital from Revenue	0			
TOTAL	458,000	Capital Reserve Balance at end of current Year		928,367

Table S5-4

West Hants Combined Sewer System Calculation of Depreciation of Tangible Plant at Total Cost 2021/22				
	Planned Capital Spending Program	Estimated Average Life in Years	Depreciation Rate	Annual Depreciation
		Depreciation Rate at the beginning of the Year		269,984
LAND AND LAND RIGHTS				
Land - General	0			0
STRUCTURES AND IMPROVEMENTS				0
Power and Pumping Structures	0	75	0.0133	0
Treatment Equipment	0	75	0.0500	0
Equipment				0
Electrical Pumping	42,000	20	0.05	2,100
Office Furniture and Equipment	0	20	0.05	0
Transportation Equipment	24,000	10	0.1	2,400
Tools and Work Equipment	0	5	0.2	0
Collection Mains & Manholes Equipment	0	5	0.2	0
Other SCADA	32,000	7	0.143	4,571
Other	0	5	0.2	0
Collection System				0
Forcemain	0	75	0.0133	0
Mains	300,000	75	0.0133	4,000
Manholes	0	75	0.0133	0
Meters	0	20	0.05	0
Services	14,000	75	0.0133	187
Other - Studies	0	50	0.02	0
Other - Inflow studies/Repairs	0	20	0.05	0
TOTAL	412,000			13,258
Source of Funding				
		Capital Reserve fund beginning of year		928,367
Gas Tax	37,500	Capital Reserve Expenditure in Current Year		-360,500
Sewer Renewal Capital Reserve	360,500	Capital Reserve Contribution in Current Year		283,242
Customers (Services)	14,000			
Long Term Debt	0			
Capital from Revenue	0			
TOTAL	412,000	Capital Reserve Balance at end of current Year		851,109

Table S5-5

West Hants Combined Sewer System Calculation of Depreciation of Tangible Plant at Total Cost 2022/23				
	Planned Capital Spending Program	Estimated Average Life in Years	Depreciation Rate	Annual Depreciation
		Depreciation Rate at the beginning of the Year		283,242
LAND AND LAND RIGHTS				
Land - General	0			0
STRUCTURES AND IMPROVEMENTS				0
Power and Pumping Structures	0	75	0.0133	0
Treatment Equipment	0	75	0.0500	0
Equipment				0
Electrical Pumping	84,000	20	0.05	4,200
Office Furniture and Equipment	0	20	0.05	0
Transportation Equipment	0	5	0.2	0
Tools and Work Equipment	0	5	0.2	0
Collection Mains & Manholes Equipment	0	5	0.2	0
Other SCADA	32,000	7	0.143	4,571
Other	0	5	0.2	0
Collection System				0
Forcemain	0	75	0.0133	0
Mains	300,000	75	0.0133	4,000
Manholes	0	75	0.0133	0
Meters	0	20	0.05	0
Services	14,000	75	0.0133	187
Other - Studies	0	50	0.02	0
Other - Inflow studies/Repairs	0	10	0.1	0
TOTAL	430,000			12,958
Source of Funding				
Gas Tax	0	Capital Reserve fund beginning of year		851,109
Sewer Renewal Capital Reserve	416,000	Capital Reserve Expenditure in Current Year		-416,000
Customers (Services)	14,000	Capital Reserve Contribution in Current Year		296,200
Long Term Debt	0			
Capital from Revenue	0			
TOTAL	430,000	Capital Reserve Balance at end of current Year		731,309

Table S6-1

01-Nov-18

West Hants Combined Sewer System Calculation of Revenue Required for Each Billing/Cost Category 2019/20					
	Total Revenue Required	Base		Effluent	
General Administration	164,638	70%	115,247	30%	49,391
Sewage Collection Systems	64,377	30%	19,313	70%	45,064
Lift Stations	141,943	30%	42,583	70%	99,360
Sewage Treatment and Disposal	316,736	50%	158,368	50%	158,368
Capital Reserve Contribution	255,626	50%	127,813	50%	127,813
Deferral of Capital Reserve Contribution	0	50%	0	50%	0
Non Operating Expenditures less non Operating Revenue	135,070	50%	67,535	50%	67,535
SUBTOTAL	1,078,390		530,858		547,531
TOTAL	1,078,390		530,858		547,531

Table S6-2

West Hants Combined Sewer System Calculation of Revenue Required for Each Billing/Cost Category 2020/21					
	Total Revenue Required	Base		Effluent	
General Administration	167,931	70%	117,552	30%	50,379
Sewage Collection Systems	65,665	30%	19,699	70%	45,965
Lift Stations	144,782	30%	43,435	70%	101,347
Sewage Treatment and Disposal	323,070	50%	161,535	50%	161,535
Capital Reserve Contribution	269,984	50%	134,992	50%	134,992
Deferral of Capital Reserve Contribution	0	50%	0	50%	0
Non Operating Expenditures less non Operating Revenue	130,744	50%	65,372	50%	65,372
SUBTOTAL	1,102,176		542,585		559,591
TOTAL	1,102,176		542,585		559,591

Table S6-3

West Hants Combined Sewer System Calculation of Revenue Required for Each Billing/Cost Category 2021/22					
	Total Revenue				
	Required	Base		Effluent	
General Administration	171,290	70%	119,903	30%	51,387
Sewage Collection Systems	66,978	30%	20,093	70%	46,885
Lift Stations	147,678	30%	44,303	70%	103,374
Sewage Treatment and Disposal	329,532	50%	164,766	50%	164,766
Capital Reserve Contribution	283,242	50%	141,621	50%	141,621
Deferral of Capital Reserve Contribution	0	50%	0	50%	0
Non Operating Expenditures less non Operating Revenue	126,258	50%	63,129	50%	63,129
SUBTOTAL	1,124,977		553,815		571,162
TOTAL	1,124,977		553,815		571,162

Table S6-4

West Hants Combined Sewer System Calculation of Revenue Required for Each Billing/Cost Category 2022/23					
	Total Revenue				
	Required	Base		Effluent	
General Administration	174,715	70%	122,301	30%	52,415
Sewage Collection Systems	68,318	30%	20,495	70%	47,822
Lift Stations	150,631	30%	45,189	70%	105,442
Sewage Treatment and Disposal	336,122	50%	168,061	50%	168,061
Capital Reserve Contribution	296,200	50%	148,100	50%	148,100
Deferral of Capital Reserve Contribution	0	50%	0	50%	0
Non Operating Expenditures less non Operating Revenue	121,618	50%	60,809	50%	60,809
SUBTOTAL	1,147,605		564,956		582,649
TOTAL	1,147,605		564,956		582,649

Table S7-1

West Hants Combined Sewer System Service Connections and Equivalents 2019/20			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
Unmetered	0	1	0
15mm - 5/8"	1955	1	1,955
19 mm - 3/4"	10	1.5	15
25 mm - 1"	19	2.5	48
37 mm - 1.5"	8	5	40
50 mm - 2"	7	8	56
75 mm - 3 "	3	16	48
100 mm - 4"	2	25	50
150 mm - 6"	0	50	0
200 mm - 8"	0	90	0
TOTAL	2004		2,212

Table S7-2

West Hants Combined Sewer System Service Connections and Equivalents 2020/21			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
Unmetered	0	1	0
15mm - 5/8"	1960	1	1,960
19 mm - 3/4"	10	1.5	15
25 mm - 1"	19	2.5	48
37 mm - 1.5"	8	5	40
50 mm - 2"	7	8	56
75 mm - 3 "	3	16	48
100 mm - 4"	2	25	50
150 mm - 6"	0	50	0
200 mm - 8"	0	90	0
TOTAL	2009		2,217

Table S7-3

West Hants Combined Sewer System Service Connections and Equivalents 2021/22			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
Unmetered	0	1	0
15mm - 5/8"	1960	1	1,960
19 mm - 3/4"	10	1.5	15
25 mm - 1"	19	2.5	48
37 mm - 1.5"	8	5	40
50 mm - 2"	7	8	56
75 mm - 3 "	3	16	48
100 mm - 4"	2	25	50
150 mm - 6"	0	50	0
200 mm - 8"	0	90	0
TOTAL	2009		2,217

West Hants Combined Sewer System Service Connections and Equivalents 2021/22			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
Unmetered	0	1	0
15mm - 5/8"	1965	1	1,965
19 mm - 3/4"	10	1.5	15
25 mm - 1"	19	2.5	48
37 mm - 1.5"	8	5	40
50 mm - 2"	7	8	56
75 mm - 3 "	3	16	48
100 mm - 4"	2	25	50
150 mm - 6"	0	50	0
200 mm - 8"	0	90	0
TOTAL	2014		2,222

Table S7-4

West Hants Combined Sewer System Service Connections and Equivalents 2022/23			
Meter Size	Number of Services	Capacity Ratio	System Equivalents
Unmetered	0	1	0
15mm - 5/8"	1970	1	1,970
19 mm - 3/4"	10	1.5	15
25 mm - 1"	19	2.5	48
37 mm - 1.5"	8	5	40
50 mm - 2"	7	8	56
75 mm - 3 "	3	16	48
100 mm - 4"	2	25	50
150 mm - 6"	0	50	0
200 mm - 8"	0	90	0
TOTAL	2019		2,227

Table S8-1

01-Nov-18

West Hants Combined Sewer System Wastewater Base Charges 2019/20					
Meter Size	Capacity Ratio	Base Charge	Total Base Charge		
			Annual	Quarterly	Monthly
Unmetered	1.0	240.04	240.04	60.01	20.00
15mm - 5/8"	1.0	240.04	240.04	60.01	20.00
19 mm - 3/4"	1.5	360.07	360.07	90.02	30.01
25 mm - 1"	2.5	600.11	600.11	150.03	50.01
37 mm - 1.5"	5.0	1,200.22	1,200.22	300.06	100.02
50 mm - 2"	8.0	1,920.36	1,920.36	480.09	160.03
75 mm - 3 "	16.0	3,840.71	3,840.71	960.18	320.06
100 mm - 4"	25.0	6,001.11	6,001.11	1,500.28	500.09
150 mm - 6"	50.0	12,002.22	12,002.22	3,000.56	1,000.19
200 mm - 8"	90.0	21,604.00	21,604.00	5,401.00	1,800.33
TOTAL					

Table S8-2

West Hants Combined Sewer System Wastewater Base Charges 2020/21					
Meter Size	Capacity Ratio	Base Charge	Total Base Charge		
			Annual	Quarterly	Monthly
Unmetered	1.0	244.79	244.79	61.20	20.40
15mm - 5/8"	1.0	244.79	244.79	61.20	20.40
19 mm - 3/4"	1.5	367.19	367.19	91.80	30.60
25 mm - 1"	2.5	611.98	611.98	153.00	51.00
37 mm - 1.5"	5.0	1,223.97	1,223.97	305.99	102.00
50 mm - 2"	8.0	1,958.35	1,958.35	489.59	163.20
75 mm - 3 "	16.0	3,916.69	3,916.69	979.17	326.39
100 mm - 4"	25.0	6,119.83	6,119.83	1,529.96	509.99
150 mm - 6"	50.0	12,239.67	12,239.67	3,059.92	1,019.97
200 mm - 8"	90.0	22,031.41	22,031.41	5,507.85	1,835.95
TOTAL					

Table S8-3

West Hants Combined Sewer System Wastewater Base Charges 2021/22					
Meter Size	Capacity Ratio	Base Charge	Total Base Charge		
			Annual	Quarterly	Monthly
Unmetered	1.0	249.30	249.30	62.32	20.77
15mm - 5/8"	1.0	249.30	249.30	62.32	20.77
19 mm - 3/4"	1.5	373.95	373.95	93.49	31.16
25 mm - 1"	2.5	623.24	623.24	155.81	51.94
37 mm - 1.5"	5.0	1,246.49	1,246.49	311.62	103.87
50 mm - 2"	8.0	1,994.38	1,994.38	498.60	166.20
75 mm - 3 "	16.0	3,988.77	3,988.77	997.19	332.40
100 mm - 4"	25.0	6,232.45	6,232.45	1,558.11	519.37
150 mm - 6"	50.0	12,464.90	12,464.90	3,116.22	1,038.74
200 mm - 8"	90.0	22,436.81	22,436.81	5,609.20	1,869.73
TOTAL					

Table S8-4

West Hants Combined Sewer System Wastewater Base Charges 2022/23					
Meter Size	Capacity Ratio	Base Charge	Total Base Charge		
			Annual	Quarterly	Monthly
Unmetered	1.0	253.74	253.74	63.44	21.15
15mm - 5/8"	1.0	253.74	253.74	63.44	21.15
19 mm - 3/4"	1.5	380.61	380.61	95.15	31.72
25 mm - 1"	2.5	634.35	634.35	158.59	52.86
37 mm - 1.5"	5.0	1,268.71	1,268.71	317.18	105.73
50 mm - 2"	8.0	2,029.93	2,029.93	507.48	169.16
75 mm - 3 "	16.0	4,059.87	4,059.87	1,014.97	338.32
100 mm - 4"	25.0	6,343.54	6,343.54	1,585.89	528.63
150 mm - 6"	50.0	12,687.08	12,687.08	3,171.77	1,057.26
200 mm - 8"	90.0	22,836.75	22,836.75	5,709.19	1,903.06
TOTAL					

Table S9-1

01-Nov-18

West Hants Combined Sewer System Estimated Effluent Flow by Block		
Meter Size	Actual Current Consumption	2019/20 Estimated Consumption
	1st Block (Cubic Meters)	1st Block (Cubic Meters)
15mm - 5/8"	293,495	289,832
19 mm - 3/4"	2,213	2,213
25 mm - 1"	13,698	13,698
37 mm - 1.5"	9,063	9,063
50 mm - 2"	8,020	8,020
75 mm - 3 "	17,313	17,313
100 mm - 4"	2,229	2,229
150 mm - 6"	0	0
200 mm - 8"	0	0
TOTAL	346,031	342,368

Table S9-2

West Hants Combined Sewer System Estimated Effluent Flow by Block		
Meter Size	2020/21 Estimated Consumption	2021/22 Estimated Consumption
	1st Block (Cubic Meters)	1st Block (Cubic Meters)
15mm - 5/8"	286,213	282,637
19 mm - 3/4"	2,213	2,213
25 mm - 1"	13,698	13,698
37 mm - 1.5"	9,063	9,063
50 mm - 2"	8,020	8,020
75 mm - 3 "	17,313	17,313
100 mm - 4"	2,229	2,229
150 mm - 6"	0	0
200 mm - 8"	0	0
TOTAL	338,749	335,173

Table S9-3

West Hants Combined Sewer System Estimated Effluent Flow by Block		
Meter Size	2022/23 Current Consumption	
	1st Block (Cubic Meters)	
15mm - 5/8"	279,104	
19 mm - 3/4"	2,213	
25 mm - 1"	13,698	
37 mm - 1.5"	9,063	
50 mm - 2"	8,020	
75 mm - 3 "	17,313	
100 mm - 4"	2,229	
150 mm - 6"	0	
200 mm - 8"	0	
TOTAL	331,640	

Effluent Charge

Table S10-1

01-Nov-18

West Hants Combined Sewer System Calculation of Wastewater Effluent Charge 2019/20	
BLOCK 1	
<u>Total Charge Base and Commodity Worksheet (Table 9-1)</u> Quantity from Effluent Flow Worksheet (Table 12-1)	1.60
TOTAL EFFLUENT CHARGE PER cubic meter	1.60

Table S10-2

West Hants Combined Sewer System Calculation of Wastewater Effluent Charge 2020/21	
BLOCK 1	
Quantity from Effluent Flow Worksheet (Table 12-2)	1.65
TOTAL EFFLUENT CHARGE PER cubic meter	1.65

Table S10-3

West Hants Combined Sewer System Calculation of Wastewater Effluent Charge 2021/22	
BLOCK 1	
<u>Total Charge Base and Commodity Worksheet (Table 9-3)</u> Quantity from Effluent Flow Worksheet (Table 12-3)	1.70
TOTAL EFFLUENT CHARGE PER cubic meter	1.70

Table S10-4

West Hants Combined Sewer System Calculation of Wastewater Effluent Charge 2022/23	
BLOCK 1	
<u>Total Charge Base and Commodity Worksheet (Table 9-4)</u> Quantity from Effluent Flow Worksheet (Table 12-4)	1.76
TOTAL EFFLUENT CHARGE PER cubic meter	1.76

Table S11-1

01-Nov-18

West Hants Combined Sewer System				
Wastewater Effluent Charge				
2019/20				
BASE CHARGE				
<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>	
Unmetered	0	240.04	0	
15mm - 5/8"	1,955	240.04	469,287	
19 mm - 3/4"	10	360.07	3,601	
25 mm - 1"	19	600.11	11,402	
37 mm - 1.5"	8	1,200.22	9,602	
50 mm - 2"	7	1,920.36	13,442	
75 mm - 3 "	3	3,840.71	11,522	
100 mm - 4"	2	6,001.11	12,002	
150 mm - 6"	0	12,002.22	0	
200 mm - 8"	0	21,604.00	0	
Hebron	0	0.00	0	
TOTAL BASE REVENUE			530,858	
EFFLUENT CHARGE				
	Quantity	\$/ cubic meter		
1st Block	342,368	1.60	547,531	
TOTAL EFFLUENT REVENUE			547,531	
TOTAL OPERATING REVENUES FOR YEAR (BASE + EFFLUENT)			1,078,390	

Table S11-2

West Hants Combined Sewer System				
Wastewater Effluent Charge				
2020/21				
BASE CHARGE				
<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>	
Unmetered	0	244.79	0	
15mm - 5/8"	1,960	244.79	479,795	
19 mm - 3/4"	10	367.19	3,672	
25 mm - 1"	19	611.98	11,628	
37 mm - 1.5"	8	1,223.97	9,792	
50 mm - 2"	7	1,958.35	13,708	
75 mm - 3 "	3	3,916.69	11,750	
100 mm - 4"	2	6,119.83	12,240	
150 mm - 6"	0	12,239.67	0	
200 mm - 8"	0	22,031.41	0	
Hebron	0	0.00	0	
TOTAL BASE REVENUE			542,585	
EFFLUENT CHARGE				
	Quantity	\$/ cubic meter		
1st Block	338,749	1.65	559,591	
TOTAL OPERATING REVENUES FOR YEAR (BASE + EFFLUENT)			1,102,176	

Table S11-3

West Hants Combined Sewer System				
Wastewater Effluent Charge				
2021/22				
BASE CHARGE				
<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>	
Unmetered	0	249.30	0	
15mm - 5/8"	1,965	249.30	489,870	
19 mm - 3/4"	10	373.95	3,739	
25 mm - 1"	19	623.24	11,842	
37 mm - 1.5"	8	1,246.49	9,972	
50 mm - 2"	7	1,994.38	13,961	
75 mm - 3 "	3	3,988.77	11,966	
100 mm - 4"	2	6,232.45	12,465	
150 mm - 6"	0	12,464.90	0	
200 mm - 8"	0	22,436.81	0	
Hebron	0	0.00	0	
TOTAL BASE REVENUE			553,815	
EFFLUENT CHARGE				
	Quantity	\$/ cubic meter		
1st Block	335,173	1.70	571,162	
TOTAL OPERATING REVENUES FOR YEAR (BASE + EFFLUENT)			1,124,977	

Table S11-4

West Hants Combined Sewer System				
Wastewater Effluent Charge				
2022/23				
BASE CHARGE				
<u>Meter Size</u>	<u>Number</u>	<u>Base Rate</u>	<u>Dollar Revenue</u>	
Unmetered	0	253.74	0	
15mm - 5/8"	1,970	253.74	499,871	
19 mm - 3/4"	10	380.61	3,806	
25 mm - 1"	19	634.35	12,053	
37 mm - 1.5"	8	1,268.71	10,150	
50 mm - 2"	7	2,029.93	14,210	
75 mm - 3 "	3	4,059.87	12,180	
100 mm - 4"	2	6,343.54	12,687	
150 mm - 6"	0	12,687.08	0	
200 mm - 8"	0	22,836.75	0	
Hebron	0	0.00	0	
TOTAL BASE REVENUE			564,956	
EFFLUENT CHARGE				
	Quantity	\$/ cubic meter		
1st Block	331,640	1.76	582,649	
TOTAL OPERATING REVENUES FOR YEAR (BASE + EFFLUENT)			1,147,605	

Proposed Wastewater Rates

Table S12-1

01-Nov-18

West Hants Combined Sewer System Wastewater Rates 2019/20			
(a) Base Charges			
Size of Meter	Annual	Quarterly	Monthly
15mm - 5/8"	240.04	60.01	20.00
19 mm - 3/4"	360.07	90.02	30.01
25 mm - 1"	600.11	150.03	50.01
37 mm - 1.5"	1,200.22	300.06	100.02
50 mm - 2"	1,920.36	480.09	160.03
75 mm - 3 "	3,840.71	960.18	320.06
100 mm - 4"	6,001.11	1,500.28	500.09
150 mm - 6"	12,002.22	3,000.56	1,000.19
200 mm - 8"	21,604.00	5,401.00	1,800.33
(b) Consumption Rate			
	\$	1.60 per cubic meter	
	\$	7.26 per 1,000 imperial gallons	

Table S12-2

West Hants Combined Sewer System Wastewater Rates 2020/21			
(a) Base Charges			
Size of Meter	Annual	Quarterly	Monthly
15mm - 5/8"	244.79	61.20	20.40
19 mm - 3/4"	367.19	91.80	30.60
25 mm - 1"	611.98	153.00	51.00
37 mm - 1.5"	1,223.97	305.99	102.00
50 mm - 2"	1,958.35	489.59	163.20
75 mm - 3 "	3,916.69	979.17	326.39
100 mm - 4"	6,119.83	1,529.96	509.99
150 mm - 6"	12,239.67	3,059.92	1,019.97
200 mm - 8"	22,031.41	5,507.85	1,835.95
(b) Consumption Rate			
	\$	1.65 per cubic meter	
	\$	7.50 per 1,000 imperial gallons	

Proposed Wastewater Rates

Table S12-3

West Hants Combined Sewer System Wastewater Rates 2021/22			
(a) Base Charges			
Size of Meter	Annual	Quarterly	Monthly
Standard	249.30	62.32	20.77
19 mm	373.95	93.49	31.16
25 mm	623.24	155.81	51.94
37 mm	1,246.49	311.62	103.87
50 mm	1,994.38	498.60	166.20
75 mm	3,988.77	997.19	332.40
100 mm	6,232.45	1,558.11	519.37
150 mm	12,464.90	3,116.22	1,038.74
200 mm	22,436.81	5,609.20	1,869.73
(b) Consumption Rate (per cubic metre)			
	\$	1.70 per cubic meter	
	\$	7.74 per 1,000 imperial gallons	

Table S12-4

West Hants Combined Sewer System Wastewater Rates 2022/23			
(a) Base Charges			
Size of Meter	Annual	Quarterly	Monthly
15mm - 5/8"	253.74	63.44	21.15
19 mm - 3/4"	380.61	95.15	31.72
25 mm - 1"	634.35	158.59	52.86
37 mm - 1.5"	1,268.71	317.18	105.73
50 mm - 2"	2,029.93	507.48	169.16
75 mm - 3 "	4,059.87	1,014.97	338.32
100 mm - 4"	6,343.54	1,585.89	528.63
150 mm - 6"	12,687.08	3,171.77	1,057.26
200 mm - 8"	22,836.75	5,709.19	1,903.06
(b) Consumption Rate			
	\$	1.76 per cubic meter	
	\$	7.98 per 1,000 imperial gallons	

Summary of Rates

#####

West Hants Combined Sewer System Comparison of Average Rates 2019/20										
Meter Size	Average Flow	Quarterly Base Rate		Change	Effluent Rate		Change	Charge per Quarter		Change
	meters/quarter	Existing	Proposed	%	Existing	Proposed	%	Existing	Proposed	%
15mm - 5/8"	37		60.01			59.27		-	119.28	
19 mm - 3/4"	55		90.02			88.48		-	178.50	
25 mm - 1"	180		150.03			288.24		-	438.27	
37 mm - 1.5"	283		300.06			452.94		-	752.99	
50 mm - 2"	286		480.09			458.07		-	938.16	
75 mm - 3"	1,443		960.18			2,307.32		-	3,267.49	
100 mm - 4"	279		1,500.28			445.59		-	1,945.87	
150 mm - 6"	-					-		-		
200 mm - 8"	-					-		-		

West Hants Combined Sewer System Comparison of Average Rates 2020/21										
Meter Size	Average Flow	Quarterly Base Rate		Change	Effluent Rate		Change	Charge per Quarter		Change
	meters/quarter	Existing	Proposed	%	Existing	Proposed	%	Existing	Proposed	%
15mm - 5/8"	37	60.01	61.20	2.0%	59.27	60.31	1.7%	119.28	121.51	1.9%
19 mm - 3/4"	55	90.02	91.80	2.0%	88.48	91.39	3.3%	178.50	183.19	2.6%
25 mm - 1"	180	150.03	153.00	2.0%	288.24	297.74	3.3%	438.27	450.74	2.8%
37 mm - 1.5"	283	300.06	305.99	2.0%	452.94	467.86	3.3%	752.99	773.85	2.8%
50 mm - 2"	286	480.09	489.59	2.0%	458.07	473.16	3.3%	938.16	962.75	2.6%
75 mm - 3"	1,443	960.18	979.17	2.0%	2,307.32	2,383.33	3.3%	3,267.49	3,362.50	2.9%
100 mm - 4"	279	1,500.28	1,529.96	2.0%	445.59	460.27	3.3%	1,945.87	1,990.23	2.3%
150 mm - 6"	-					-				
200 mm - 8"	-					-				

Table S13-3

West Hants Combined Sewer System Comparison of Average Rates 2021/22										
Meter Size	Average Flow	Quarterly Base Rate		Change	Effluent Rate		Change	Charge per Quarter		Change
	cubic meters/quarter	Existing	Proposed	%	Existing	Proposed	%	Existing	Proposed	%
15mm - 5/8"	36	61.20	62.32	1.8%	60.31	61.28	1.6%	121.51	123.60	1.7%
19 mm - 3/4"	55	91.80	93.49	1.8%	91.39	94.28	3.2%	183.19	187.77	2.5%
25 mm - 1"	180	153.00	155.81	1.8%	297.74	307.14	3.2%	450.74	462.95	2.7%
37 mm - 1.5"	283	305.99	311.62	1.8%	467.86	482.63	3.2%	773.85	794.25	2.6%
50 mm - 2"	286	489.59	498.60	1.8%	473.16	488.10	3.2%	962.75	986.69	2.5%
75 mm - 3 "	1,443	979.17	997.19	1.8%	2,383.33	2,458.56	3.2%	3,362.50	3,455.75	2.8%
100 mm - 4"	279	1,529.96	1,558.11	1.8%	460.27	474.80	3.2%	1,990.23	2,032.91	2.1%
150 mm - 6"	-									
200 mm - 8"	-									

Table S13-4

West Hants Combined Sewer System Comparison of Average Rates 2022/23										
Meter Size	Average Flow	Quarterly Base Rate		Change	Effluent Rate		Change	Charge per Quarter		Change
	cubic meters/quarter	Existing	Proposed	%	Existing	Proposed	%	Existing	Proposed	%
15mm - 5/8"	35	62.32	63.44	1.8%	61.28	62.23	1.6%	123.60	125.66	1.7%
19 mm - 3/4"	55	93.49	95.15	1.8%	94.28	97.20	3.1%	187.77	192.35	2.4%
25 mm - 1"	180	155.81	158.59	1.8%	307.14	316.65	3.1%	462.95	475.24	2.7%
37 mm - 1.5"	283	311.62	317.18	1.8%	482.63	497.58	3.1%	794.25	814.76	2.6%
50 mm - 2"	286	498.60	507.48	1.8%	488.10	503.22	3.1%	986.69	1,010.70	2.4%
75 mm - 3 "	1,443	997.19	1,014.97	1.8%	2,458.56	2,534.73	3.1%	3,455.75	3,549.69	2.7%
100 mm - 4"	279	1,558.11	1,585.89	1.8%	474.80	489.51	3.1%	2,032.91	2,075.39	2.1%
150 mm - 6"	-									
200 mm - 8"	-									

Appendix

Table S14-1

Loan Calculator
Long Term Debt
2018/19

Interest Rate	6.00%
Term in years	20
Capital \$	-

Payment Schedule Based on Series Debt Payments

	Loan Balance	Principal	Interest	Total
Year				
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

Table S14-2

Loan Calculator
Long Term Debt
2019/20

Interest Rate	6.00%
Term in years	20
Capital \$	-

Payment Schedule Based on Series Debt Payments

	Loan Balance	Principal	Interest	Total
Year				
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

Table S14-3

Loan Calculator
Long Term Debt
2020/21

Interest Rate	6.00%
Term in years	20
Capital \$	-

Payment Schedule Based on Series Debt Payments

	Loan Balance	Principal	Interest	Total
Year				
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

Table S14-4

Loan Calculator
Long Term Debt
2021/22

Interest Rate	6.00%
Term in years	20
Capital \$	-

Payment Schedule Based on Series Debt Payments

	Loan Balance	Principal	Interest	Total
Year				
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

Comparison of Bulk and Residential Water Costs 2020/21

	Residential Cost		Bulk Cost Nov 2021		Bulk Cost pre Nov 2021
Base Charge 5/8 Meter	\$ 62.25	\$	-	\$	-
Per Cubic Meter	2.45/ m3 (220 gallons)		\$7.20/m3 (220 gallons)		\$7.50 / 600 gal or 2.75/m3 (220 gallons)
Per Imperial Gallon	0.01114		0.03273		0.01250
Per 1100 Gallons (approximately 1 load of water for haulers* supplied by Councillor Smith)	\$ 12.25	\$	36.00	\$	13.75
Total Costs - 1 load or 1100 gallons used	\$ 74.50	\$	36.00	\$	13.75

Scenario 1

@ 1 cubic meter (220 gallons)* Presented at Council	\$ 64.70	\$	7.20	\$	2.75
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Scenario 2

@ 2 loads of water per week (2200 gallons)	\$ 86.75	\$	72.00	\$	27.50
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Scenario 3

@ 6 loads of water per week (6600 gallons)	\$ 135.75	\$	216.00	\$	82.50
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*Bulk Water Haulers can recoup cost through sales, unlike residential costumers.

Revenue Examples:

Research on a cost of load of water to customers - 1000 gallons for \$125 for delivery up within 10 kms of Windsor

	Bulk Cost Nov 2021		Bulk Cost pre Nov 2021
@ 1 load of water			
What customers pay @ 125/per load	\$ 125.00	\$	125.00
Water costs for 1000 gallons	\$ 32.73	\$	12.50
Assuming customer is within the 10km range			
Estimated within 10kms of filling station 10kms x 2 trips	\$ 9.23	\$	9.23
Using Provincial KMs Rate .4615/per km @ 10kms	\$ 4.62	\$	4.62
Estimated revenue remaining	\$ 78.43	\$	98.65
@ 6 loads of water			
What customers pay @ 125/per load	\$ 750.00	\$	750.00
Water costs	\$ 196.36	\$	75.00
Assuming customers is within the 10km range			
Estimated within 10kms of filling station 10kms x 12 trips	\$ 55.38	\$	55.38
Using Provincial KMs Rate .4615/per km @ 6 x 10kms	\$ 27.69	\$	27.69
Estimated revenue remaining	\$ 470.57	\$	591.93



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information X	Recommendation ☐	Decision Request ☐	Councillor Activity ☐
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To: Committee of the Whole

Submitted by: Troy Burgess, Manager of Operations & Traffic Authority

Date: December 7, 2021

Subject: Opening of Edward Dr and Underwood Dr

LEGISLATIVE AUTHORITY

Temporary Opening of Edward Dr and Underwood Dr

RECOMMENDATION or DECISION REQUEST

Information to Committee of the Whole

BACKGROUND

Property X	Public Opinion ☐	Environment ☐	Social ☐	Economic ☐	Councillor Activity ☐
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During the July 13, 2021, Committee of the Whole, direction was given to Staff to bring a report to the Sept 14, 2021, Committee of the Whole regarding the temporary opening of the emergency gate between Edward Dr and Underwood drive until a permanent road is constructed and opened between the area of The Crossing and Tregothic Heights, Payzant Dr area. At Sept 14, 2021, Committee of the Whole Council requested future information regarding Traffic Calming and Future Roads Maps.

DISCUSSION

In addition to the Information report from September 14, it should be noted no assumptions are being made that traffic calming is necessary in this location or that traffic will become a nuisance in the area. This can only be determined if Underwood Drive is re-opened, and traffic

is allowed to flow freely in and out of Edward Drive. It is important to note if Underwood Drive is re-opened the emergency gate can remain closed or be opened or opened on a trial bases and re-closed if so desired by the Municipality, however if Underwood Drive is not re-opened the emergency gate must remain as it is currently.

Re-opening the street would allow for multiple scenarios and Traffic Calming would be considerations following the below decisions by Council;

The currently closed portion of Underwood Drive is re-opened by Council by Policy under s. 312 of the MGA by motion as recommended by CAO Phillips at the September 14, 2021 Committee of the Whole,

Council also decides to not leave the emergency gate closed. This would be a separate decision from the above re-opening.

The Recommended Draft Traffic Calming Policy will go before Committee of the Whole at January 11, 2022 meeting and if supported, the January 25, 2022 Council meeting.

Council recommends Staff follows the steps in the Traffic Calming Policy (if approved) for data and information in the area of Edward Drive and Underwood Drive as per the Traffic Calming Policy.

NEXT STEPS

Council could decide to formally re-open by policy the portion of Underwood Drive that is now closed by following the procedure recommended by Legal.

Following a re-opening motion Council could decide to open the emergency gate for though traffic permanently or on a trial basis.

FINANCIAL IMPLICATIONS

- None if only re-opening with no future action.
- None if temporally opening for trial purposes
- \$7500 split 50/50 from the West Hants Road and Windsor Roads budgets, before permanently opening to traffic.
- Asphalt approximately \$5000 widening street at the connection point.
- Removal of tree, fence and minor civil work approximately \$2500.
- Recommended capital work in the future. Amount undetermined to date.

ALTERNATIVES

- Following a re-opening motion Council could decide to leave the emergency gate closed indefinitely.
- Council could decide to do nothing, leaving the street closed and by default the gate would have to remain as is.

ATTACHMENTS

- Sept 14, 2021 Information Report
- Future Street Conceptual Plan
- Future Street Conceptual Plan 2
- WH Subdivision Map A
- Windsor SUB Consolidation March 13 2014
- Probable future roads map, 2021

CHIEF ADMINISTRATIVE OFFICER REVIEW

Discussion regarding the noted road networks has been ongoing for an extended period of time dating back to the beginning of the Crossing's Development and through to this present Council. Currently the road networks within The Crossing and neighboring residential areas meet both Windsor and West Hants requirements. Further, The Crossing is governed by the existing Development Agreement. Again, compliant with the requirements of the DA.

For Council to continue to wait and see what future developments transpire is advisable. Staff currently have the authority and have exercised the authority to open the gates under emergency situations or to support snow clearing operations.

Report Prepared by:



Troy Burgess, Manager Operations, Traffic Authority

Report Reviewed by:



Mark Phillips, Chief Administrative Officer



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information X	Recommendation ☐	Decision Request ☐	Councillor Activity ☐
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To: Committee of the Whole

Submitted by: _____
Troy Burgess, Traffic Authority

Date: September 14, 2021

Subject: Temporary Opening of Edward Dr and Underwood Dr

LEGISLATIVE AUTHORITY

Municipal Government Act

RECOMMENDATION or DECISION REQUEST

Information to Council

BACKGROUND

Property X	Public Opinion ☐	Environment ☐	Social X	Economic ☐	Councillor Activity ☐
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During the July 13, 2021, Committee of the Whole, direction was given to Staff to bring a report to the Sept 14, 2021, Committee of the Whole regarding the temporary opening of the emergency gate between Edward Dr and Underwood drive until a permanent road is constructed and opened between the area of The Crossing and Tregothic Heights, Payzant Dr area.

DISCUSSION

After Staff reviewed the process, solicitor advice was sought with the following opinion being provided. "Because a portion of Underwood Drive was formally closed under section 315 of the MGA that section would need to be re-opened to allow public passage over the lands as a "street". This can be accomplished under S. 315(6) of the MGA which states:

(6) Upon filing the policy in the registry, all rights of public user in the land described in the policy are forever extinguished and the municipality may sell and convey the land or may subsequently reopen the land as a street in the manner required by this Act. 1998, c. 18, s. 315; 2004, c. 44, s. 4; O.I.C. 2007-553; O.I.C. 2021- 56.

The currently closed portion of Underwood Drive would need to be re-opened by Council under s. 312 of the MGA. The MGA is silent on the process for opening a street but given that the street was closed by Policy of the former Town a Policy to re-open the street would be appropriate. We could essentially reverse the closure policy and use it and the same plan of survey (required under s. 312(2)) to facilitate the re-opening.

A draft policy is attached for Council's consideration. While s. 315 mandates a public hearing for the closing of a street there are no such requirements established for re-opening a street. Instead, the act merely states that the street can be re-opened in a manner required under the Act. The only requirements are a designation of the area as a street by council and the filing of a plan of survey in the Land Registration Office under s. 312(2).

If Council decides to re-open this portion of Underwood Drive, they can also determine whether it will have free passage of traffic or remained gated. Section 322 does allow the Engineer to temporarily close a street "for any purpose beneficial to the public interest." If a new connector road was completed and the Municipality decided to close the Underwood/Edward connection (but not to formally close the street as the Town previously did) this section of the MGA could be used in support of closing the gate between these streets."

NEXT STEPS

Council could decide to formally re-open by policy the portion of Underwood Drive that is now closed by following the procedure recommended by Legal.

Consideration should be given to the following:

On September 9, PAC/HAC considered a report regarding required amendments to the Civic Addressing By-law (Attachment). It is anticipated that PAC/HAC will make a recommendation regarding the amendments to the Civic Addressing By-law which will be considered by Council September 28, 2021. Should Council remove the gate between underwood and Edward, Council will be requested to provide a common name for the entire length of the street.

The Development Agreement for 'The Crossing' would need to be reviewed to determine whether revisions are needed.

The area near the emergency gate would need to be widened a minimum of four feet in order to allow two-way traffic and align the two streets. This would include removing trees and the fence.

The street and sidewalk infrastructure would be recommended to be updated / improved on Underwood Drive.

The 2021 WSP Windsor Intersection Infrastructure Needs Assessment should be taken into consideration as the traffic warrants indicates a traffic circle is recommended at

Payzant Dr and Wentworth Rd along with other recommendations. Currently as part of the approved 2021/22 budget an RFP has been sent out for detailed design for intersection improvements (traffic circle) at this location.

FINANCIAL IMPLICATIONS

- \$7500 split 50/50 from the West Hants Road and Windsor Roads budgets, before opening to traffic.
- Asphalt approximately \$5000 widening street at the connection point.
- Removal of tree, fence and minor civil work approximately \$2500.
- Recommended capital work in the future. Amount undetermined to date.

ALTERNATIVES

Council could decide to do nothing, leave status quo. Background info is as follows;

- 2019 the complete RCMP fleet were given gate keys,
- 2019 Brooklyn Fire, Windsor Fire and Hantsport Fire were given the appropriate number of keys as requested by each. WRHM Public Works Staff all have keys.
- Fall of 2020 the gate was opened during the re-paving project on Underwood Road for the duration of the project.
- During the winter of 2020/21 the gate was opened for snow removal and ice control several times. Note: if the gate wasn't closed immediately many complains were received from The Crossing.

ATTACHMENTS

- Draft Policy to Re-open a Portion of Underwood Drive
- WHRM Civic Addressing By-Law Amendment (PAC Sept 9, 2021)
- Windsor Intersection Infrastructure Needs Assessment (WSP 2021)

CHIEF ADMINISTRATIVE OFFICER REVIEW

Due to the historic effort that was dedicated to the street closure in this section a permanent change does warrant appropriate policy reflection and change if Council wishes. Generally, I support the connectivity of the two residential areas through the public streets for safety reasons, ease of traffic flow and to connect residential areas that now fall under the Regional Municipality versus separate municipalities.

I recommend Council carryout the action items listed in the "Next Steps" section of the report. Further, I recommend the approval of the draft policy attached to the report as provided by the Traffic Authority recognizing a gate can remain in place if so desired or until the noted action items are carried out.

Report Prepared by: _____
Troy Burgess, Manager, Public Works Operations, & Traffic Authority

Report Approved by: 
Mark Phillips, Chief Administrative Officer

West Hants Regional Municipality

A Policy to Re-open a Portion of Underwood Drive

Policy #:

Approval Date:

Revision Date:

Authority

This policy is made by Council under the authority of sections 312 and 315 of the *Municipal Government Act*, SNS 1998, c-18.

Purpose

The purpose of this policy is to re-open as a public street that portion of Underwood Drive identified in the plan of survey prepared by Blake Beaton, NSLS 626 and dated August 31, 2015, a copy of which is attached to this policy.

Definitions

“Act” means the *Municipal Government Act*, SNS, 1998, c-18,

“Council” means the Municipal Council for the West Hants Regional Municipality,

Policy Statement

1. Council hereby re-opens as a public street all that portion of Underwood Drive as depicted in a plan of survey prepared by Blake Beaton, NSLS 626 and dated August 31, 2015. That portion of Underwood Drive that is being re-opened is more particularly described and identified as follows:

ALL AND SINGULAR that certain area of land intended for street closure situated, lying and being at Underwood Drive in the County of West Hants, Province of Nova Scotia, said lands being shown on Plan 15-2464-15B, prepared by Strum Consulting Ltd., dated the 31st of August 2015, being more particularly described as follows:

PREMISING that directions are quadrant bearings, derived from GPS observations referenced to the Nova Scotia Coordinate Survey System and are referred to Central Meridian, 64 degrees 30 minutes West (Zone 5).

BEGINNING at a survey marker being North 42 degrees 39 minutes 45 seconds East a distance of 1013.998 metres from Nova Scotia Coordinate Monument No. 208629. The same point being the northeastern corner of Lot 27A, said Survey Marker being the **POINT OF BEGINNING**.

THENCE South 82 degrees 03 minutes 11 seconds West a distance of 2.339 metres along the north boundary of Lot 27A to a point;

THENCE North 23 degrees 18 minutes 22 seconds East a distance of 23.532 to a point on the southern boundary of Lot 21A-3;

THENCE North 82 degrees 03 minutes 11 seconds East a distance of 2.339 metres along the Southern boundary of Lot 21A-3 to a Survey Marker at the southeast corner of Lot 21A-3 and the western boundary of Lot A-A;

THENCE South 23 degrees 18 minutes 22 seconds West a distance of 23.532 metres along the western boundary of Lot A-A to a Survey Marker. Said survey marker being the **POINT OF BEGINNING**.

SAID LANDS CONTAINING and area of 47.05 Square Metres.

BEING AND INTENDED a portion of Parcel UD-1 to be lands conveyed to the Town of Windsor, Book 559 Page 631.

2. Pursuant to sections 312 and 315 of the Act, this Policy was passed at a duly called meeting of Council and following the delivery of this Policy to the Minister of Transportation and Infrastructure Renewal.

Approved by Council on this ____ day of September, 2021

Abraham Zebian, Mayor

Mark Phillips, CAO

Certificate

I, Mark Phillips, CAO hereby certify that the preceding Policy was passed at a duly called meeting of the Council of the Town of Windsor held on September ____, 2021.

Mark Phillips, CAO

Dated _____, 2021



WEST HANTS REGIONAL MUNICIPALITY RECOMMENDATION REPORT

To: Members of Planning Advisory Committee/Heritage Advisory Committee (PAC/HAC)

Submitted by: _____
Madelyn LeMay, Director, Planning and Development

Date: September 9, 2021

Subject: Civic Addressing By-law Amendment
File # 21-16

1.0 LEGISLATIVE AUTHORITY

Municipal Government Act (MGA) s.313

2.0 RECOMMENDATION

If PAC/HAC wishes to forward a positive recommendation the following motion would be in order:

PAC/HAC recommends that Council give First Reading and proceed to a Public Hearing to amend the Civic Addressing By-law, RC-001, by adding a new clause to allow Council to change a road name without support of those owning lots on the street, in a manner substantively the same as that included as Attachment A to the report entitled *Civic Addressing By-law Amendment* dated September 9, 2021.

3.0 BACKGROUND

West Hants Regional Municipality approved a Civic Addressing By-law on November 24, 2020. Since then it has come to the attention of staff that the only way to rename a road is by the Civic Addressing Coordinator receiving a

petition signed by the owners of seventy-five percent (75%) of the lots with frontage on the road.

4.0 DISCUSSION

The 2020 By-law works well when a road is named or when a name change is wanted by those who own property on the street. However, within the 2020 By-law there is no opportunity for Council itself to change a road name should it become necessary for reasons of safety and/or to meet the requirements of the Nova Scotia Civic Address File (NSCAF) system.

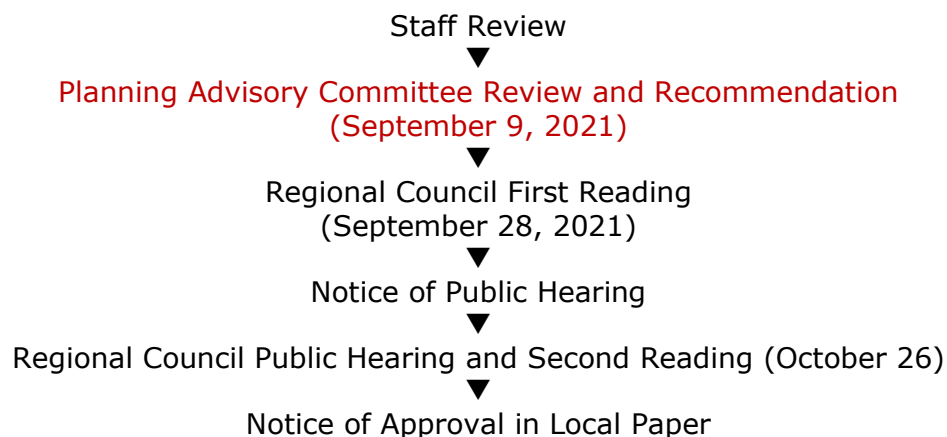
As a result, staff are recommending that Council amend the Civic Addressing By-law (Attachment A) by adding the following clause:

6.2.1 *When a road owned by West Hants Regional Municipality should be named or a name changed in order to comply with or reflect the criteria used by the Nova Scotia Civic Address File (NSCAF) to ensure safety of residents, WHRM Council may direct the Civic Addressing Coordinator to change the road name to a specific road name determined by Council and reviewed by the Civic Addressing Coordinator to ensure it complies with the requirements of Section 6.3, Road Naming Evaluation Criteria, without public consultation. Notice to those affected must be provided a minimum of sixty (60) days prior to the name being changed in the Civic Address File.*

When a road is being named or the name changed because of safety concerns, no opportunity for those who own property on the road to object to Council should be provided. NSCAF requirements need to prevail to ensure emergency services can reach and find residents.

5.0 NEXT STEPS

The following process is required for amendment of the By-law:



▼
Notice of Approval to Municipal Affairs and Housing

6.0 FINANCIAL IMPLICATIONS

There are no financial implications for the Region associated with amending the existing By-law.

7.0 ALTERNATIVES

Should PAC/HAC not wish to recommend this amendment to Council, PAC/HAC may:

- recommend specific amendments to the proposed draft;
- provide alternative direction, such as requesting further information on a specific topic.

8.0 ATTACHMENTS

Attachment A	Region of West Hants Civic Addressing By-law, RC-001, with proposed amendments
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Report Prepared by: _____

Madelyn LeMay, Director, Planning and Development

and

Tracy Babineau, Civic Addressing Coordinator

Civic Addressing Bylaw

Proposed Changes Shown in RED

- 1.0** This By-law is made pursuant to the Municipal Government Act, RSNS 1998, as amended from time-to-time and hereinafter referred to as the "Act" and shall be known and may be cited as the Civic Addressing By-law.

2.0 DEFINITIONS

In this By-law:

- (a) "building" means any structure used, or intended to be used, to support or shelter any use or occupancy, and includes an incomplete building once the footings have been constructed, but does not include a structure accessory to another structure on the same lot or a structure which, if it were now being built for the first time, would not require a Building Permit to authorize its construction;
- (b) "civic address" means the combination of an assigned civic number, the road name and the community;
- (c) "Civic Address File" means the database maintained by the Region containing geographically referenced civic address information including civic points, street network files, and community boundaries;
- (d) "Civic Addressing Coordinator" means the person who administers this By-law;
- (e) "civic number" means the number assigned to a lot or building by the Civic Addressing Coordinator in accordance with this By-law;
- (f) "community" means a geographic area contained within the Region of Windsor and West Hants;
- (g) "owner" has the same meaning as the owner of property in the Municipal Government Act or successor legislation from time to time;
- (h) "private road" means any street, road, lane, bridge or other thoroughfare accessible to motor vehicles which is not a public road defined in clause 2.0 (k) and which serves as a principal vehicular access to three or more dwelling units;

CIVIC ADDRESSING BY-LAW

- (i) “property” means a lot of land;
- (j) “public road” means a road or highway owned and maintained by the Region or the Province of Nova Scotia;
- (k) “Region” or “West Hants Regional Municipality” means the Municipality incorporated by the Region of Windsor and West Hants Act, SNS 2018, c.26 irrespective of whether it has had its name changed by virtue of Section 11 of that Act or otherwise;
- (l) “road name” means the official name of a street, road, or highway as it appears in the Civic Address File.

3.0 DUTIES of CIVIC ADDRESSING COORDINATOR

The Civic Addressing Coordinator shall be responsible for:

- (a) assigning or re-assigning civic numbers to lots or buildings and the keeping of the Civic Address File;
- (b) reviewing and approving all proposed road names for new public and private roads created through the subdivision approval process;
- (c) reviewing and approving all proposed road names for existing unnamed roads; and
- (d) reviewing and recommending to Regional Council the acceptance or rejection of proposed road names submitted through the application process for changing an existing Provincial or Regional road name.

4.0 CIVIC NUMBERS**4.1 Existing Civic Numbers**

A civic number that is recorded in the Civic Address File for a lot or building on the date of the first reading of this By-law is hereby assigned to that lot or building until such time as the Civic Addressing Coordinator, by written notice to an owner, directs otherwise.

CIVIC ADDRESSING BY-LAW

4.2 Assignment of Civic Numbers

4.2.1 The Civic Addressing Coordinator may assign civic numbers to:

- (a) buildings that have permanent or temporary occupancy or use; and
- (b) vacant lots or developed sites and in the assignment of a number shall take into consideration the public use thereof which may require emergency services, such as parks, playgrounds and trails where public activity will occur.

4.2.2 The Civic Addressing Coordinator may assign more than one civic number to a lot or building.

4.2.3 The Civic Addressing Coordinator shall assign new civic numbers using a spatial formatting system which has all roads divided into intervals and numbers are assigned depending upon where the driveway intersects the road.

4.2.4 The Civic Addressing Coordinator may assign a new civic number with a spatial formatting system based on the surrounding civic numbers where an existing civic number prevents the use of the usual spatial formatting system.

4.2.5 The Civic Addressing Coordinator shall assign a new civic number where:

- (a) a building permit has been issued; or
- (b) there is no building permit issued, once a site inspection has been done by the Building Inspector or Civic Addressing Coordinator to confirm whether a civic number is required.

4.3 Deletion of Civic Numbers

Deletion of civic numbers shall be at the discretion of the Civic Addressing Coordinator.

4.4 Refusal of Civic Number

The Civic Addressing Coordinator shall not issue a civic number if they are made aware of an outstanding order against the property under the National Building Code, Fire Safety Act, or the Municipal Government Act.

CIVIC ADDRESSING BY-LAW

4.5 Change and Reassignment of Existing Civic Numbers

- (a) The Civic Addressing Coordinator may, by sixty (60) days written notice to an owner, change or reassign civic numbers where necessary to avoid potentially confusing numbering irregularities and to assure an adequate supply of civic numbers for existing and future development.
- (b) The Region shall not be liable for any costs or damages whatsoever that may be incurred by an owner related to the reassignment of a civic number.

5.0 POSTING of CIVIC NUMBERS**5.1 Civic Number Specifications**

The owner of a property for which a civic number is issued shall keep the assigned civic number posted on the lot or building in the following manner:

- (a) civic numbers shall be in Arabic numerals;
- (b) the numerals shall be right side up;
- (c) the colour of the numerals shall clearly contrast with the background upon which the numbers are displayed;
- (d) civic numbers shall either be composed of highly reflective material or be effectively illuminated during the hours of darkness;
- (e) the bottom of the numbers shall be a minimum of 90 centimeters (36 inches) above grade;
- (f) the height of the numerals shall not be less than 65 millimeters (2.5 inches);
- (g) civic numbers shall be posted within 6 meters (20 feet) of the closest edge of the traveled portion of the public road or private road which forms part of the civic address for the lot or building;

CIVIC ADDRESSING BY-LAW

- (h) the civic number shall be posted on the building or on a gatepost, signpost, or other structure on the lot on which the building is situated, excluding a utility pole for electrical, telephone, or other utility service;
- (i) civic numbers shall face towards the public road or private road upon which the lot or building is situated and which forms part of the civic address for the lot or building, except that double-sided signage may be used, in which event the civic number shall be on both sides of the sign and perpendicular to the public road or private road;
- (j) civic numbers shall be posted in a location which is not obstructed from view when viewed from the closest place on the traveled portion of the public or private road upon which the lot or building is situated or from which it has access and from all points at least 10 meters (33 feet) in either direction from that place, except that an intervening tree trunk or a vertical pole or post shall not alone be considered an obstruction for purposes of this subsection; and
- (k) no person shall post or permit to be posted a number that could be reasonably confused with a civic number as determined by the Civic Addressing Coordinator.

5.2 Occupancy Permit

An occupancy permit shall not be issued for a property unless a civic number is posted on that property.

6.0 ROAD NAMING**6.1 Application Process for Naming New Roads Created Through Subdivision Approval**

- (a) The applicant shall complete the "Application to Name a Road" form and submit it to the Civic Addressing Coordinator;
- (b) The Civic Addressing Coordinator shall review the application;
- (c) If the road name does not meet the evaluation criteria, the Civic Addressing Coordinator shall advise the applicant and provide an explanation for the rejection;

CIVIC ADDRESSING BY-LAW

- (d) If the road name meets the evaluation criteria, the Civic Addressing Coordinator shall approve the name;
- (e) Within one week of notification of final approval of the plan of subdivision, the Civic Addressing Coordinator shall notify the appropriate agencies. Once the road is constructed the Civic Addressing Coordinator shall record the location of the road in the Civic Address File;
- (f) If a subdivision plan creating a new road is repealed, all agencies notified of the new road name(s) shall be notified of the repeal; and
- (g) The Civic Addressing Coordinator shall contact all property owners on the road(s) to inform them of the name of the new road(s).

6.2 Application Process for Naming an Existing Unnamed Road or Changing an Existing Road Name

6.2.1 When a road owned by West Hants Regional Municipality should be named or a name changed in order to comply with or reflect the criteria used by the Nova Scotia Civic Address File (NSCAF) to ensure safety of residents, WHRM Council may direct the Civic Addressing Coordinator to change the road name to a specific road name determined by Council and reviewed by the Civic Addressing Coordinator to ensure it complies with the requirements of Section 6.3, *Road Naming Evaluation Criteria*, without public consultation. Notice to those affected must be provided a minimum of sixty (60) days prior to the name being changed in the Civic Address File.

6.2.2 When individuals wish to have an unnamed road named, or a name changed, the following process must be followed:

- (a) Application shall be made by completing the "Application to Name a Road" form and submitting it to the Civic Addressing Coordinator. The application shall be accompanied by a petition signed by the owners of seventy-five percent (75%) of the lots with frontage on the road;
- (b) The Civic Addressing Coordinator shall review the application;
- (c) If the road name does not meet the evaluation criteria, the Civic Addressing Coordinator shall advise the applicant and provide an explanation for the rejection;

CIVIC ADDRESSING BY-LAW

-
- (d) If the application meets the evaluation criteria, the Civic Addressing Coordinator shall:
 - (i) seek approval from the authority having jurisdiction over the road, if applicable, and approve the name; or
 - (ii) seek approval from Council when an existing Provincial or Regional Road name is to be changed.
 - (e) Within one week of the approval of the new road name, the Civic Addressing Coordinator shall record the new name in the Civic Address File and notify the appropriate agencies; and
 - (f) The Civic Addressing Coordinator shall contact all owners of property on the road to inform of the new road name. If a subdivision plan creating a new road is repealed, all agencies notified of the new road name(s) shall be notified of the repeal.

6.3 Road Naming Evaluation Criteria

- (a) The name must be easy to pronounce and spell and have recognizable words or an acceptable combination of words;
- (b) Consideration must be given to the long-standing local usage of the name by the local public;
- (c) Road names must be in good taste;
- (d) Qualifying words (such as Upper, Lower, New, Old, etc.) should be avoided, but may be accepted in cases where the qualifier has been applied in an official context (e.g., as found in the Nova Scotia Gazetteer);
- (e) All names must have an associated road type and the road type must be checked against a standard list before the submitted name can be accepted;
- (f) Road names must be alphanumeric (e.g. First Street); name submissions using a numeral (e.g. 1st Street) shall be rejected;
- (g) Where a new road is a continuation of an existing road, wherever possible the new road shall be given the same name as the existing road;

CIVIC ADDRESSING BY-LAW

- (h) There must be no duplication of road names within the Region and, if possible, duplication of road names used in immediately adjoining municipal units shall be avoided;
- (i) All road name submissions must be checked against the alias field in the road names database both for the community in question and its adjacent communities. If the suggested name appears as an alias, it must be rejected;
- (j) There should be no like-sounding names within the Region;

CIVIC ADDRESSING BY-LAW

- (k) Official road names, including road type, must have no more than 35 characters (including special characters and spaces);
- (l) If the road is named after a topographic feature, the name must reflect the official name found in the Nova Scotia Gazetteer;
- (m) A personal name (given name and surname) should not be applied to a road unless such application is in the public interest. The person commemorated should have contributed significantly to the area where the road is located. The adoption of a personal name during the lifetime of the person concerned should only be made in exceptional circumstances and with the person's written consent;
- (n) No formal titles of distinction may be associated with the personal name (e.g., Captain, Major);
- (o) Company or commercial product names, as well as names associated with copyright or trademarks, shall be avoided;
- (p) The spelling and accenting of names must agree with the rules of the language in which they are written; and
- (q) Changes to established existing road names shall be discouraged unless there are recognized difficulties with the existing name.

7.0 POSTING ROAD SIGNS

7.1 Public Road Signs

Identification of provincially or municipally owned public roads is the responsibility of the respective jurisdiction.

7.2 Private Road Signs

The owners of a private road shall ensure that a road sign is erected and maintained according to specifications outlined in this Civic Addressing By-law.

7.3 Posting Private Road Signs through the Nova Scotia Department of Transportation (DTIR)

CIVIC ADDRESSING BY-LAW

- 7.3.1 Private roads which intersect with public roads shall be identified only by an approved road name sign.
- 7.3.2 Private roads which intersect with public roads and are not already identified by an approved road name sign shall be provided with a road name sign upon the written request of one or more residents of the road subject to the following criteria:
- (a) prior to approval of a sign by the Civic Addressing Coordinator the applicant(s) has paid to the Region one hundred percent (100%) of the fees charged by DTIR for such purchase; and
 - (b) the name of the road is to be that designated by the Civic Addressing Coordinator; and
 - (c) the administrative process developed by the Region from time-to-time shall be followed for the erection of private road signs.
- 7.3.3 When a private road sign requires repair, removal or replacement, costs shall be determined by DTIR and borne by the applicant.

7.4 Posting Private Road Signs by Applicant

- 7.4.1 The applicant shall erect, maintain in good condition and replace as necessary, a sign and signpost at the intersection of the private road and the public street in a manner consistent with any conditions attached to such permission and other lawful requirements; and
- 7.4.2 The residents of a private road shall apply for and obtain permission to erect an identifying sign and a signpost from any person or regulatory authority whose permission is required by law to erect an identifying sign and a signpost, subject to the following requirements:
- (a) the cost of fabrication and installation of such sign shall be the responsibility of the residents;
 - (b) it will be the residents' responsibility to install, maintain in good condition and replace as necessary the sign and signpost;

CIVIC ADDRESSING BY-LAW

- (c) the name of the road is to be that designated by the Civic Addressing Coordinator;
- (d) to the extent possible, the signpost is to be located in an unobstructed line of sight for vehicles approaching the private road from either direction along the intersecting public street, and is to be set back a minimum of 1.5 meters (5 feet) from the outside edge of the travel lane of the intersecting public road;
- (e) double-sided signage placed perpendicular to the intersecting road shall be used so that the name of the road is visible for vehicles approaching the private road from either direction;
- (f) lettering of the private road name shall be 100 millimeters (4 inches) in height and in uppercase letters;
- (g) the sign shall be painted with reflective paint with lettering in black against a white background;
- (h) the bottom of the sign shall be between 1.5 meters (5 feet) and 2.5 meters (8 feet) above the road grade of the intersecting public road; and
- (i) the signpost shall be made of pressure-treated lumber with cross-sectional dimensions not less than 85 millimeters (3.3 inches) by 85 millimeters (3.3 inches), or rigid non-ferrous metal, and sufficiently fastened to the ground to hold the sign rigidly in place and to prevent turning of the sign.

8.0 COMPLIANCE

8.1 Special Conditions

8.1.1 Upon application by an owner, the Civic Addressing Coordinator may provide written authorization for signage for civic numbers or road names to vary from the standards contained in this By-law, with or without conditions, when:

- (a) compliance with the standards is not reasonably possible, due to the physical features of the site or other matters; or

CIVIC ADDRESSING BY-LAW

- (b) compliance with this By-law would not effectively meet the objectives of this By-law as an alternative approach.

8.1.2 The Civic Addressing Coordinator may revoke or vary an authorization under this section. Owners shall comply with any conditions contained within authorizations granted under this section.

9.0 VIOLATIONS

9.1 It shall be an offence for a person to refuse or fail to comply with a written notice issued by the Civic Addressing Coordinator to an owner which assigns, reassigns, or deletes a civic number of a lot or building.

9.2 Any person who violates any provision of this By-law shall be liable on summary conviction to a penalty of not less than \$200.00 and not more than \$5,000.00, and in default of payment to imprisonment for a period of not more than 90 days.

9.3 In the event of contravention of this By-law, the Region may:

- (a) prepare and serve a notice in writing to an owner to undertake work including, but not limited to, the posting or re-posting of a civic number on a building or lot, the erection or re-erection of signage for a private road, or the removal of a civic number or signage for a private road;
- (b) in the event that:
 - (i) required remedial work regarding a road sign has not been completed within thirty (30) days; or
 - (ii) required remedial work regarding a civic number has not been completed within fourteen (14) days,

of the date of service of the notice, enter upon the property of the owner and undertake the work, and the cost of the work with interest at the same rate as taxes from the date of completion until the date of payment, shall be a first lien on the property upon which, or for the benefit of which, the work was done.

9.4 The notice required to be served pursuant to this By-law may be served:

- (a) in person;
- (b) by regular mail to the address shown on the Assessment Roll;
- (c) by electronic mail; or
- (d) by facsimile.

A notice is deemed to have been served on the seventh (7th) day after it was sent.

10.0 REPEAL

- 10.1** The Town of Windsor Civic Addressing By-law dated November 19, 2019 and the Municipality of the District of West Hants Civic Addressing By-law , C-003, dated November 27, 2018 are hereby repealed.

I, Rhonda Brown, Municipal Clerk, of the West Hants Regional Municipality, the Province of Nova Scotia, do hereby certify that this is a true copy of the By-law as adopted by the Council of the West Hants Regional Municipality at a meeting duly called and held on the **24th** day of **November, 2020**.



R. N. Brown
Municipal Clerk

By-law Adoption	
First Reading:	September 22, 2020
Notice Published:	November 3, 2020
Second Reading & Approval	November 24, 2020
Final Publication	December 1, 2020
Notice to Municipal Affairs	December 1, 2020
Description: Initial approval of the Civic Addressing By-law, RC-001, which includes the repeal of previous Civic Addressing By-laws of the former Town of Hantsport and Municipality of the District of West Hants.	

WINDSOR INTERSECTION INFRASTRUCTURE NEEDS ASSESSMENT



PREPARED FOR:
WEST HANTS REGIONAL MUNICIPALITY

SEPTEMBER 2021

Project No. 201-11983



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A	TRAFFIC VOLUME DATA
B	WARRANT ANALYSIS
C	INTERSECTION PERFORMANCE ANALYSIS

1 INTRODUCTION

Background

Plans are currently being prepared for modifications to the regional transportation network in Windsor, Nova Scotia. The Nova Scotia Department of Transportation and Active Transit (NSTAT) is considering re-aligning the Highway 101 Eastbound Exit 5A Ramp at Industrial Drive. With the realignment of the Exit 5A Ramp, the Hants County Exhibition entrance will be required to be relocated along Wentworth Road. Since the main access to the Hants County Exhibition will be relocated, the Windsor Agricultural Society is planning to expand the site to accommodate additional commercial development and a new access location on Wentworth Road. Among the future changes to the road network, the West Hants Regional Municipality (WHRM) is also considering extending Payzant Drive to the west to connect with Centennial Drive. WSP Canada Inc. was retained to complete a Traffic Impact Study (TIS) for the proposed Exhibition Expansion with respect to several future road network scenarios, which followed the March 31st, 2021 Scoping Document reviewed by NSTAT.

In addition to the changes resulting from the realignment if the Highway 101 Eastbound Exit 5A Ramp and the Hants County Exhibition Expansion, the WHRM is considering an extension of Payzant Drive to the east to connect with King Street.

The potential changes to the road network will have an impact on traffic volumes on Wentworth Road and King Street. WSP Canada Inc. has been retained to assess the impact of these changes at a series of key intersections and provide recommendations to mitigate the infrastructure impacts of the changes to the regional transportation system. A summary of the potential changes to the transportation network is provided in Figure 1.

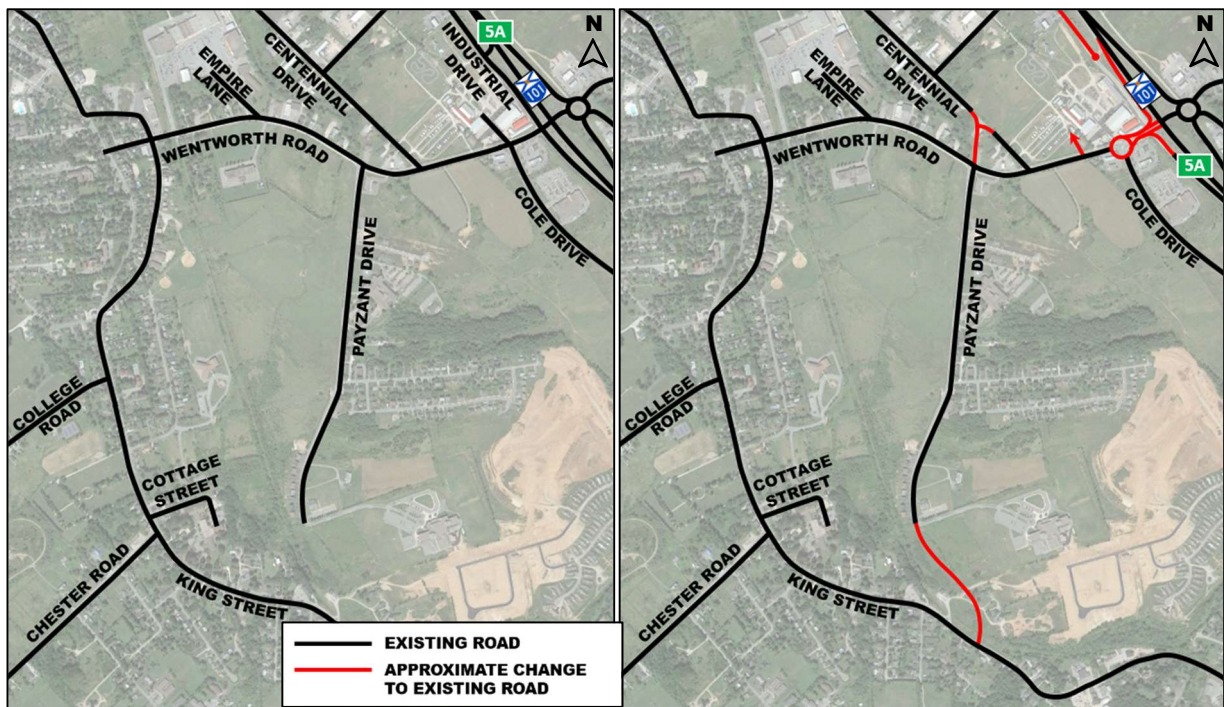


Figure 1 – Summary of Potential Changes to the Road Network

Study Objectives

1. Establishing existing traffic conditions in the Study Area with input from the studied traffic volume changes at the Hants County Exhibition;
2. Determining the future growth based on municipality approach and future developments;
3. Preparing the Design Hourly Volumes for analysis;
4. Completing warrant analyses and operational analyses at the Study Intersections for existing and future growth scenarios;
5. Determining improvements to the Study Intersections to mitigate future growth and traffic volume redistribution; and,
6. Preparing intersection concept drawings with planning level cost estimates for implementation.

Descriptions of Major Study Area Roads

Wentworth Road is an arterial roadway, generally aligned north-south for the purposes of this study. Wentworth Road provides a key link between the Town of Windsor and Highway 101. Wentworth Road generally consists of one lane in each direction with an alternating left-turning lane and concrete sidewalk on both sides. The posted speed limit is 50 km/h.

King Street is an arterial roadway, generally aligned north-south for the purposes of this study. King Street provides a major link between the Avon River in Downtown Windsor and the Curry's Corner / Garlands Crossing neighbourhoods. In the Study Area, King Street generally consists of one lane in each direction and has an asphalt sidewalk on the north side of the street. The posted speed limit is 50 km/h.

Payzant Drive is a collector roadway, generally aligned east-west for the purposes of this study, that runs approximately 1.4 kms between Wentworth Road and the Avon View High School. Payzant Drive is the only road access the Avon View High School and the Hants Community Hospital. Payzant Drive generally consists of one lane in each direction and the posted speed limit is 50 km/h.

Study Intersections

This study will focus on four (4) existing intersections and one (1) future intersection, as shown in Figure 2. The existing conditions and future changes anticipated at each Study Intersection are described in detail in Section 4.

- #1 – Wentworth Road at Payzant Drive
- #2 – Wentworth Road at Empire Lane
- #3 – King Street at College Road
- #4 – King Street at Chester Road
- #5 – King Street at Payzant Drive

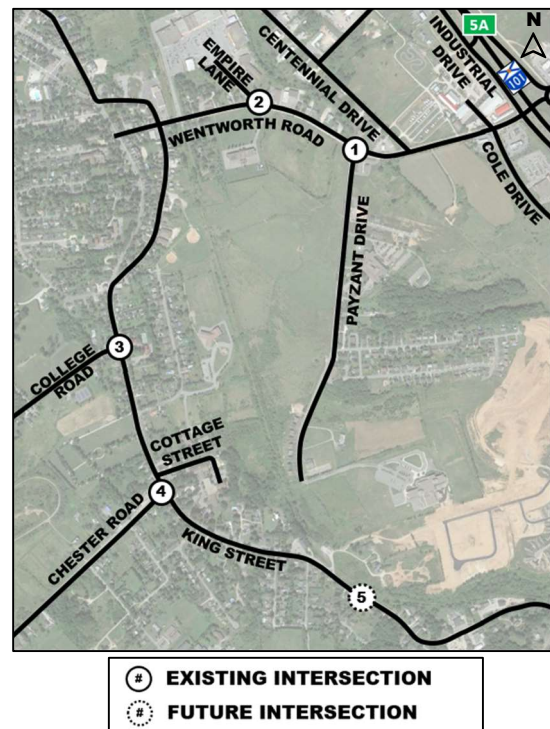


Figure 2 – Study Intersections

2 BACKGROUND TRAFFIC

Turning Movement Counts

Turning movement volumes were collected by WSP between Tuesday, January 19th and Thursday, January 21st, 2021 at the existing Study Intersections. Traffic volumes were collected during the morning (7:00-9:00AM), midday (11:30AM-1:30PM) and afternoon (3:30-5:30PM) peak periods. Intersection counts have been tabulated in 15-minute intervals with peak hours indicated by shaded areas. Turning movement volumes are provided in Tables A-1 to A-4, Appendix A.

Seasonal Adjustment Factor

NSTAT completes traffic counts on various roads and highways throughout the year. In order to normalize the collected traffic counts completed for different types of roads and to account for seasonal variation in traffic volumes, NSTAT develops average traffic count group factors. There is a factor determined for each week of the year for each road class.

Road classes consider the type of traffic use carried on a particular road section. A road section that primarily carries commuter traffic in an urban area does not see as much variation in volumes as a rural road in a tourist area would experience.

With respect to traffic volumes collected in the third week of January, the associated NSTAT seasonal adjustment factor for a 'A' class roadway (Wentworth Road and King Street) is 1.17 factor, as shown in Table A-5, Appendix A.

Covid-19 Adjustment Factor

It should be noted that the traffic volume data was collected amidst the Covid-19 pandemic. Since traffic volumes in the WHRM appear to be similar to pre-pandemic conditions, volumes will be increased by 5% to account for potentially reduced travel patterns to be conservative.

Background Traffic from the Existing West Hants Sports Complex and Exhibition

Since traffic volume data was collected amidst the Covid-19 pandemic, typical weekday traffic generated by the existing West Hants Sports Complex and Hants County Exhibition would not have been captured in the turning movement volumes collected at the Study Intersections.

The distribution of trips at Study Intersection #1 from the existing West Hants Sports Complex and Hants County Exhibition were extracted from the *Hants County Exhibition Expansion Traffic Impact Study (WSP, May 2021)*. Based on trips at the Wentworth / Payzant Drive intersection, trips were then distributed through the study area network.

Traffic from the existing West Hants Sports Complex and Hants County Exhibition is considered in 2021 volume projections, which is carried through to the 2030 volume projections.

Future Background Traffic from developments within WHRM

There are ongoing developments in WHRM that are being constructed or plan to be constructed between the years 2021 and 2030 and will be considered in the 2030 volume projections. These developments include:

- Payzant Drive Area: 258 single family units, 250 apartment units with a community centre (10,000 sq. ft.).
- College Road Area: 88 units of Senior housing, 128 beds Long-term care, 42 units of assisted living, 10 units with disability requirements, 44 units of independent living with a commercial (medical centre/pharmacy)/café (8,000 sq.ft.) development and community centre (11,000 sq.ft.).
- Empire Lane Area: 27 apartment units
- The Crossing Area: 60 single family dwelling units

The above developments have been added to the 2030 volume projections and distributed onto the study network using the existing travel patterns.

Historical data was unavailable for Wentworth Road or King Street within the Study Area, therefore, historical traffic volume data on Highway 101, near Exit 5, 5A and 6, was utilized for background growth.

The available traffic data for Highway 101 Section 60 (between Exit 5 and 5A) was reviewed and found a 1.76% growth rate, as shown in Figure 3. Similarly, the available data for Highway 101 Section 65 (between Exit 5A and 6) was reviewed and found a 1.74% growth rate, as shown in Figure 4.

To account for future annual growth of the unknown developments, an annual growth rate of 1.5% will be applied to the background volumes between 2021 and 2030 for this study.

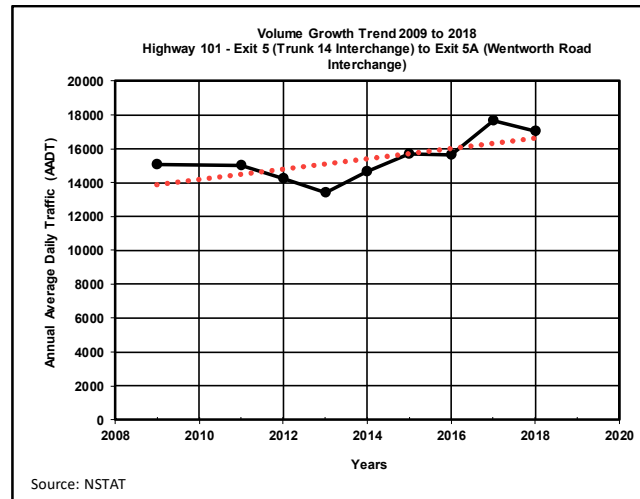


Figure 3 – Volume Growth Trend on Highway 101 Section 60 (2009 to 2018)

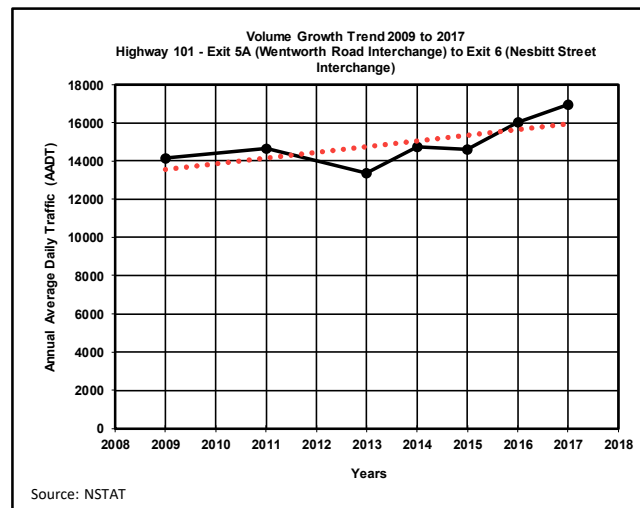


Figure 4 – Volume Growth Trend on Highway 101 Section 65 (2009 to 2017)

**Future Traffic
from the
Hants County
Exhibition
Expansion**

The expansion of the Hants County Exhibition is expected to include approximately 35,000 ft² of commercial development, consisting of office space, retail establishments and restaurants. The distribution of trips at Study Intersection #1 from the Hants County Exhibition Expansion were extracted from the *Hants County Exhibition Expansion Traffic Impact Study (WSP, May 2021)*.

Traffic from the Hants County Exhibition Expansion is only considered in 2030 volume projections.

3 ANALYSIS SCENARIOS

Analysis Scenarios Considered

WSP considered the following analysis scenarios at the Study Intersections:

1. 2021 Existing Conditions;
2. 2030 *without* Payzant Drive connection; and,
3. 2030 *with* Payzant Drive connection.

The scenarios are described in more detail in the following subsections. It should be noted that the scenarios do not apply to all Study Intersections. Study Intersections will be evaluated based on appropriate scenarios. Similarly, there may be additional scenarios considered that reflect slightly modified scenarios, depending on the intersection being considered.

It should be noted that the 2030 scenarios assume the following:

- Highway 101 Exit 5A Eastbound Ramp is re-aligned with Wentworth Road;
- Full build-out of the expansion to the Hants County Exhibition; and,
- Payzant Drive is extended west and connects with Centennial Drive.

3.1 SCENARIO 1: 2021 EXISTING CONDITIONS

Projected 2021 Volumes

Projected 2021 AM and PM peak hour volumes consider:

- 1.17 Seasonal Adjustment Factor
- 1.05 Covid-19 Adjustment Factor
- Trips generated by the West Hants Sports Complex on a typical weekday
- Trips generated by the existing Hants County Exhibition on a typical weekday

Study Intersections reviewed based on traffic volumes in Scenario 1 will be evaluated with respect to the existing traffic control and lane configurations.

3.2 SCENARIO 2: 2030 WITHOUT PAYZANT DRIVE CONNECTION

Projected 2030 Volumes without Payzant Drive connection

Projected 2030 AM and PM peak hour background volumes *without* the Payzant Drive connection consider:

- 2021 Volumes
- Future Background Developments
- 1.5% Annual Growth between 2021-2030
- Trips generated by the Hants County Exhibition Expansion on a typical weekday

3.3 SCENARIO 3: 2030 WITH PAYZANT DRIVE CONNECTION

Projected 2030 Volumes with Payzant Drive connection

Projected 2030 AM and PM peak hour background volumes *with* the Payzant Drive connection consider:

- 2021 Volumes
- Future Background Developments
- 1.5% Annual Growth between 2021-2030
- Trips generated by the Hants County Exhibition Expansion on a typical weekday
- Estimation of Redistributed Trips with the Payzant Drive connection open

4 INTERSECTION OPERATIONAL ANALYSIS

Intersection Level of Service (LOS) Analysis was completed to estimate how intersections may be expected to operate into the future without and with site generated trips. This section of the report addresses how left-turn lane warrants and traffic signal warrants were conducted and how each intersection was evaluated. The following subsections identify each study intersection and summarize the results of the operational analysis.

Left-Turn Lane Warrant Analysis

Left-turn movements on a two-lane street may cause both operational and safety problems. Operational problems result as a vehicle stopped waiting for an opportunity to turn across ‘heavy’ opposing traffic causes a queue of stopped vehicles to form. Safety problems result from rear end collisions when a stopped left-turning vehicle is struck by an advancing vehicle, or from head-on or right-angle collisions when a left-turning vehicle is struck by an opposing vehicle.

The *Geometric Design Standards for Ontario Highways Manual* contains nomographs for left-turn lane analysis for two lane streets at unsignalized intersections. The analysis method, which is normally used by WSP Atlantic to evaluate the need for left-turn lanes, uses a series of nomographs that consider speed, advancing volumes, left-turns as a percentage of advancing volumes, and opposing volumes. A point, based on ‘opposing’ and ‘advancing’ volumes, plotted to the right of the ‘warrant line’ of the appropriate ‘% left-turns’ and ‘approach speed’ nomograph, indicates that a left-turn lane is warranted for the conditions used in the analysis. Similarly, a point that is plotted to the left of the warrant line indicates that a left-turn lane is not warranted.

Left-turn lane warrant analyses are included in Appendix B.

Traffic Signal Warrant Analysis

A signal warrant analysis is completed to determine if the installation of traffic signals at an intersection will provide a positive impact on total intersection operation. That is, the benefits in time saved and improved safety that will accrue to vehicles entering from a side street will exceed the impact that signals will have in time lost and potential additional collisions for vehicles approaching the intersection on the main street.

The *Canadian Traffic Signal Warrant Matrix Analysis (Transportation Association of Canada (TAC), 2005)* considers 100 warrant points as an indication that traffic signals will provide a positive impact. Signal warrant analysis uses vehicular and pedestrian volumes, and intersection, roadway and study area characteristics to calculate a warrant point value.

Traffic signal warrant analyses are included in Appendix B.

Intersection Capacity Analysis Results

Synchro 11.0 / Arcady 9 software have been used for performance evaluation of the Study Intersections. Summaries of the results are provided in the following sub-sections and detailed results of the analyses are included in Appendix C.

Intersection Level of Service Analysis

The level or quality of performance of an intersection in terms of traffic movement is determined by a level of service (LOS) analysis. LOS for intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and increased travel time.

LOS criteria, as shown in Table 1 are stated in terms of average control delay per vehicle which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Table 1 – Level of Service Criteria for Intersections

LOS	Signalized Intersections Control Delay (Seconds per Vehicle)	LOS Description	Roundabouts and Two Way Stop Controlled (TWSC) Intersections Control Delay (Seconds per Vehicle)
A	Less than 10.0	Very low delay; most vehicles do not stop (Excellent)	Less than 10.0
B	Between 10.0 and 20.0	Higher delay; most vehicles stop (Very Good)	Between 10.0 and 15.0
C	Between 20.0 and 35.0	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping (Good)	Between 15.0 and 25.0
D	Between 35.0 and 55.0	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (Satisfactory)	Between 25.0 and 35.0
E	Between 55.0 and 80.0	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of acceptable delay	Between 35.0 and 50.0
F	Greater than 80.0	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (Unacceptable)	Greater than 50.0

4.1 INTERSECTION #1: WENTWORTH ROAD AT PAYZANT DRIVE

Existing / Future Intersection Description

The existing intersection of *Wentworth Road at Payzant Drive / Commercial Driveway* is a 4-leg intersection with stop-control on the Payzant Drive and Commercial Driveway approaches, as shown in Photo 1. The Wentworth Road and Payzant Drive approaches are supplemented with a left-turn lane. There are painted crosswalks on the east and west legs and there is an enhanced crosswalk on the north leg.



Photo 1 – Wentworth Road at Payzant Drive (Looking Southbound on Wentworth Road)

With full build-out of the Hants County Exhibition Expansion, there are future plans to reconfigure this intersection. In Scenario 1, the west leg of this intersection is considered to be the existing commercial driveway. In Scenarios 2 and 3, the west leg of the intersection is considered an extension to Payzant Drive, as illustrated in Figure 5. It should be noted that this particular intersection is being considered for traffic signals or a roundabout as a result of the expansion to the Hants County Exhibition. Since there is some uncertainty of the future traffic control at this time, an operational analysis of a signalized and roundabout intersection was completed in Scenarios 2 and 3.

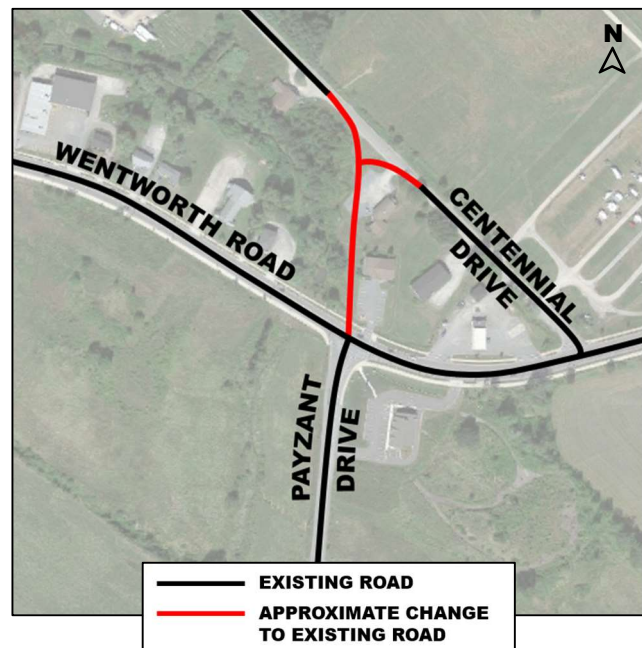


Figure 5 – Future Intersection Configuration

Another option for the intersection of Wentworth Road at Payzant Drive is to remain as a three-legged intersection with turning restrictions at the Centennial Drive/Wentworth Road intersection. This option may be reviewed during the detailed design of the project, however, was not considered in the analysis.

Traffic volume figures were prepared for existing conditions and future traffic volumes without and with the Payzant Drive connection. Table 2 provides a summary of the volume figures prepared and the location of the figure in Appendix A.

Table 2 – Summary of Traffic Volume Figures: Wentworth Road at Payzant Drive

	Description	Volume Figure
Scenario 1	Stop-control	Figure A-1 (Boxes A & B)
Scenario 2	Traffic Signals	Figure A-1 (Boxes C & D)
	Roundabout	Figure A-1 (Boxes E & F)
Scenario 3	Traffic Signals	Figure A-2 (Boxes A & B)
	Roundabout	Figure A-2 (Boxes C & D)

Warrant Summary

Based on the existing traffic control and lane configurations, traffic signal warrants were completed, and no turning lane warrants were completed. It was determined that:

- Traffic signals are not warranted with respect to Scenario 1 (**82 Warrant Points**, Table B-1, Appendix B).
- Traffic signals are warranted with respect to Scenario 2¹ (**229 Warrant Points**, Table B-2, Appendix B).
- Traffic signals are warranted with respect to Scenario 3² (**145 Warrant Points**, Table B-3, Appendix B).

Intersection Operational Analysis Results

Operational performance results for this intersection are provided in Table 4 (AM peak hour) and Table 5 (PM peak hour).

The signalized alternative in Scenarios 2 and 3 was evaluated with a northbound channelized right-turn from Wentworth Road to Payzant Drive and the eastbound approach consists of a lane for right-turn movements and a lane for shared left-turn and through movements. It should be noted that no changes were made to the traffic signal timing plan or lane configurations between Scenario 2 and 3 for comparison purposes. Without the Payzant Drive connection, all movements are expected to operate at a LOS 'E' or better and a v/c ratio of 0.99 or better.

The roundabout configuration evaluated in Scenarios 2 and 3 is provided on Page C-5 and C-8, Appendix C. No changes were made to the intersection geometry or lane configurations between Scenario 2 and 3 for comparison purposes.

Key Takeaways:

- The existing intersection is operating at a poor LOS.
- **Traffic signals are warranted** based on existing traffic volumes and are expected to **remain warranted** for future scenarios.
- The intersection performs better as a roundabout compared to traffic signals.
- Traffic signals are expected to provide an acceptable level of service at this intersection.
- Some **traffic is diverted from the intersection with the Payzant Drive connection open**, which slightly improves the operational performance of the intersection.
- **Minimal changes in the operational performance of this intersection are expected with the Payzant Drive connection.**

¹ Traffic signal warrant was completed based on traffic volumes in Figure A-1 (Boxes C & D)

² Traffic signal warrant was completed based on traffic volumes in Figure A-2 (Boxes A & B)

Without the Payzant Drive connection and with the roundabout option, all movements are expected to operate at a LOS 'B' and a v/c ratio of 0.65 or better.

In general, the operational performance of the intersection is expected to improve slightly with the Payzant Drive connection, regardless of the selected traffic control.

Intersection Recommendations & Planning Cost Estimate

Based on findings from this study, in conjunction with the *Hants County Exhibition Expansion Traffic Impact Study (WSP, May 2021)*, it is recommended that plans be prepared to upgrade this intersection to a roundabout. The general configuration of roundabout is provided in Figure 6³ and schematic image to show lane configuration. It is recommended that the roundabout include:

- Right-turn lane on the northbound approach;
- Left-turn lane on the southbound approach;
- Single lane on the eastbound and westbound approaches;
- Pedestrian crosswalks consisting of zebra markings and side-mounted signage (RA-4) as appropriate;
- Yield signage on all approaches; and,
- Sidewalk connections to crosswalks.

A planning cost estimate for these items is provided in Table 3. It is estimated that these intersection modifications would be in the range of approximately \$2,400,000 plus HST.

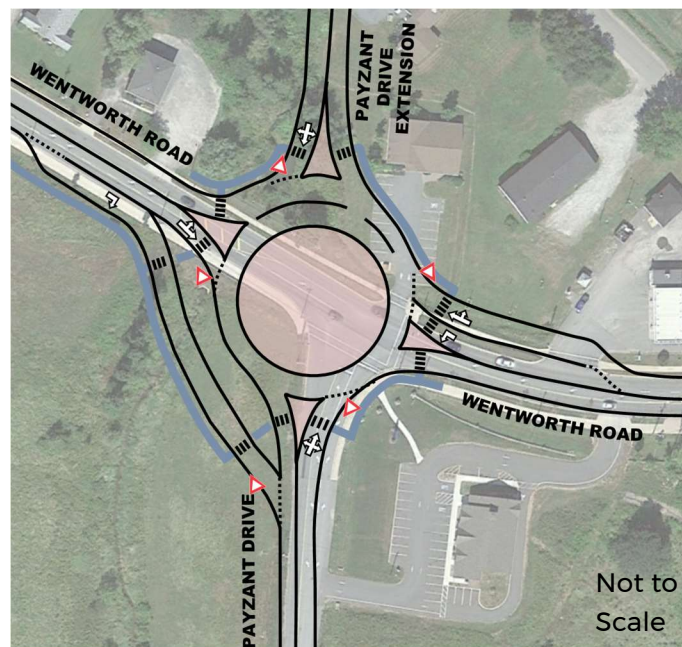


Figure 6 – Recommended Intersection Configuration: Wentworth Road at Payzant Drive³

Table 3 – Planning Cost Estimate: Wentworth Road at Payzant Drive

Item	Cost (HST Excluded)
Roundabout	\$1,600,000
50% Contingency	\$800,000
Total	\$2,400,000

³ The rendering is not to scale and is intended for conceptual purposes only.

Table 4 – Intersection Capacity Analysis: Wentworth Road at Payzant Drive (AM Peak)

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement								Overall Intersection	
	Driveway		Payzant Drive		Wentworth Road					
	EB-LTR		WB-L	WB-TR	NB-L	NB-TR	SB-L	SB-TR	Delay	LOS
Scenario 1 - 2021 AM Peak Hour with Existing Conditions - <i>Stop Control</i> (Page C-1)										
Delay	71.7		345.9	16.4	8.3	0.0	11.1	0.0	18.2	C
LOS	F		F	C	A	A	B	A		
v/c	0.05		1.30	0.37	0.00	0.40	0.35	0.27		
Queue	1.3		50.3	13.6	0.0	0.0	12.9	0.0		
LOS Criteria	Payzant Drive				Wentworth Road				Overall Intersection	
	EB-L	EB-TR	WB-L	WB-TR	NB-L	NB-TR	SB-L	SB-TR	Delay	LOS
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - <i>Traffic Signals</i> (Page C-3)										
Delay	48.6	17.1	52.6	7.5	20.3	57.6	73.3	10.1	40.9	D
LOS	D	B	D	A	C	E	E	B		
v/c	0.3	0.22	0.78	0.53	0.17	0.99	0.99	0.43		
Queue	48.6	17.1	52.6	7.5	20.3	57.6	73.3	10.1		
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - <i>Roundabout</i> (Page C-5)										
Delay	7.8		9.9		10.1		3.9		7.4	A
LOS	A		A		B		A			
v/c	0.15		0.55		0.59		0.51			
Queue	3.5		19.6		17.5		10.5			
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - <i>Traffic Signals</i> (Page C-6)										
Delay	42.8	18.6	33.6	7.9	17.8	36.3	27.6	9.7	23.5	C
LOS	D	B	C	A	B	D	C	A		
v/c	0.22	0.20	0.40	0.48	0.16	0.88	0.76	0.44		
Queue	16.5	13.4	37.7	20.9	17.2	190.7	74.8	75.4		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - <i>Roundabout</i> (Page C-8)										
Delay	6.4		7.0		8.7		3.3		6.0	A
LOS	A		A		A		A			
v/c	0.13		0.38		0.54		0.44			
Queue	3.5		19.6		15.4		14.0			

Table 5 – Intersection Capacity Analysis: Wentworth Road at Payzant Drive (PM Peak)

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement								Overall Intersection	
	Driveway		Payzant Drive		Wentworth Road					
	EB-LTR		WB-L	WB-TR	NB-L	NB-TR	SB-L	SB-TR	Delay	LOS
Scenario 1 - 2021 PM Peak Hour with Existing Conditions - <i>Stop Control</i> (Page C-2)										
Delay	39.6		134.2	17.2	8.5	0.0	9.1	0.0	13.3	B
LOS	E		F	C	A	A	A	A		
v/c	0.10		0.95	0.38	0.00	0.35	0.09	0.32		
Queue	2.5		50.8	14.3	0.1	0.0	2.4	0.0		
LOS Criteria	Payzant Drive				Wentworth Road				Overall Intersection	
	EB-L	EB-TR	WB-L	WB-TR	NB-L	NB-TR	SB-L	SB-TR	Delay	LOS
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - <i>Traffic Signals</i> (Page C-4)										
Delay	60.5	13.6	46.3	7.0	16.3	45.0	33.4	12.5	30.5	C
LOS	E	B	D	A	B	D	C	B		
v/c	0.61	0.30	0.72	0.45	0.14	0.94	0.70	0.51		
Queue	36.5	14.7	70.2	20.8	14.9	255.1	53.1	97.6		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - <i>Roundabout</i> (Page C-5)										
Delay	8.6		18.0		12.8		3.5		10.3	B
LOS	A		C		B		A			
v/c	0.29		0.72		0.70		0.45			
Queue	11.2		79.8		56.0		13.3			
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - <i>Traffic Signals</i> (Page C-7)										
Delay	49.6	15.3	30.4	7.8	15.6	33.8	9.7	11.4	22	C
LOS	D	B	C	A	B	C	A	B		
v/c	0.51	0.28	0.32	0.43	0.14	0.87	0.35	0.50		
Queue	35.3	16.6	32.4	20.9	13.3	172.6	16.3	87.5		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - <i>Roundabout</i> (Page C-8)										
Delay	6.8		9.3		10.9		2.9		7.3	A
LOS	A		A		B		A			
v/c	0.25		0.47		0.65		0.39			
Queue	9.8		22.4		31.5		18.9			

4.2 INTERSECTION #2: WENTWORTH ROAD AT EMPIRE LANE

Existing Intersection Description

The existing intersection of *Wentworth Road at Empire Lane* is a 3-leg intersection with stop-control on the Empire Lane approach, as shown in Photo 2. The existing intersection was constructed with underground conduit in preparation for future potential signalization of the intersection. Empire Lane provides the primary vehicle access to the Fort Edward Mall, a shopping plaza consisting of major retail destinations in the area. The Empire Lane approach consists of a right-turn and left-turn lane separated by a splitter island. In addition, two-way vehicle movements on Empire Lane are separated by a median. The northbound approach on Wentworth Road is supplemented with a left-turn lane to the shopping plaza. There are painted crosswalks on the west leg and there is an enhanced crosswalk on the north leg.



Photo 2 – Wentworth Road at Empire Lane (Looking Southbound on Wentworth Road)

Projected Traffic Volumes

Traffic volume figures were prepared for existing conditions and future traffic volumes without and with Payzant Drive connection open. Table 6 provides a summary of the volume figures prepared and the location of the figure in Appendix A.

Table 6 – Summary of Traffic Volume Figures: Wentworth Road at Empire Lane

	Volume Figure
Scenario 1	Figure A-3 (Boxes A & B)
Scenario 2	Figure A-3 (Boxes C & D)
Scenario 3	Figure A-3 (Boxes E & F)

Warrant Summary

Based on the existing traffic control and lane configurations, traffic signal warrants were completed, and no turning lane warrants were completed. It was determined that:

- Traffic signals are not warranted with respect to Scenario 1 (**37 Warrant Points**, Table B-4, Appendix B).
- Traffic signals are not warranted with respect to Scenario 2 (**62 Warrant Points**, Table B-5, Appendix B).
- Traffic signals are not warranted with respect to Scenario 3 (**50 Warrant Points**, Table B-6, Appendix B).



Intersection Operational Analysis Results

Operational performance results for this intersection are provided in Table 7.

The existing intersection is operating well during the morning and afternoon peak hours. This intersection was evaluated in Scenarios 2 and 3 with the existing intersection geometry and lane configurations.

In 2030 without the Payzant Drive connection, movements on the Wentworth Road approaches are expected to operate at LOS 'B' or better. Left turning traffic from the Fort Edward Mall is expected to experience the largest delay at LOS 'D' during the PM peak.

In 2030 with the Payzant Drive connection, all movements are expected to operate at a LOS 'C' or better and a v/c ratio of 0.45 or better. In general, with the Payzant Drive connection, the operational performance of the intersection is expected to improve slightly.

Key Takeaways:

- The existing intersection is operating well.
- **Traffic signals are not warranted** based on existing traffic volumes and are expected to **remain unwarranted** for all future scenarios.
- Implementing traffic signals at this intersection is expected to introduce an unnecessary delay to the Wentworth Road approaches.
- Some **traffic is diverted from the intersection with the Payzant Drive connection open**, which slightly improves the operational performance of the intersection.
- **Minimal changes in the operational performance of this intersection are expected with the Payzant Drive connection.**

Intersection Recommendations

Since the existing intersection is currently operating well and is expected to continue to operate well in 2030 without and with the Payzant Drive connection, no major changes to the intersection geometry, traffic control or lane configurations are proposed. It is recommended that the intersection be monitored for future signalization.

Table 7 – Intersection Capacity Analysis: Wentworth Road at Empire Lane

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement					Overall Intersection	
	Empire Lane		Wentworth Road			Delay	LOS
	EB-L	EB-R	NB-L	NB-T	SB-TR		
Scenario 1 - 2021 AM Peak Hour with Existing Conditions - <i>Stop Control</i> (Page C-9)							
Delay	15.3	11.4	8.6	0.0	0.0	1.0	A
LOS	C	B	A	A	A		
v/c	0.09	0.05	0.05	0.40	0.30		
Queue	2.3	1.2	1.2	0.0	0.0		
Scenario 1 - 2021 PM Peak Hour with Existing Conditions - <i>Stop Control</i> (Page C-10)							
Delay	23.0	18.4	10.6	0.0	0.0	3.6	A
LOS	C	C	B	A	A		
v/c	0.40	0.23	0.09	0.28	0.42		
Queue	14.7	7.1	2.4	0.0	0.0		
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - <i>Stop Control</i> (Page C-11)							
Delay	19.2	14.1	9.5	0.0	0.0	1.1	A
LOS	C	B	A	A	A		
v/c	0.14	0.09	0.07	0.49	0.44		
Queue	3.7	2.3	1.7	0.0	0.0		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - <i>Stop Control</i> (Page C-12)							
Delay	32.7	18.9	10.5	0.0	0.0	3.8	A
LOS	D	C	B	A	A		
v/c	0.54	0.27	0.11	0.43	0.55		
Queue	24	8.7	3.0	0.0	0.0		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - <i>Stop Control</i> (Page C-13)							
Delay	16.8	12.5	9.0	0.0	0.0	1.1	A
LOS	C	B	A	A	A		
v/c	0.12	0.07	0.06	0.42	0.36		
Queue	3.1	1.9	1.5	0.0	0.0		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - <i>Stop Control</i> (Page C-14)							
Delay	24.5	15.4	9.7	0.0	0.0	3.5	A
LOS	C	C	A	A	A		
v/c	0.45	0.22	0.10	0.36	0.45		
Queue	17.9	6.5	2.6	0.0	0.0		

4.3 INTERSECTION #3: KING STREET AT COLLEGE ROAD

Existing Intersection Description

The existing intersection of **King Street at College Road** is a 3-leg intersection with stop-control on the College Road approach, as shown in Photo 3. All approaches consist of one lane and there is a pedestrian crosswalk offset from the south leg (approximately 10 m). There is a painted dashed yellow line present indicating the vehicle path for left turning vehicles. Since College Road consists of an uphill grade approaching King Street, and the STOP bar present on College Road is offset from the intersection, available sightlines from the STOP bar on College Road are restricted and are represented in Photo 4.



Photo 3 – King Street at College Road (Looking Southbound on King Street)



Photo 4 - College Road Approach

Projected Traffic Volumes

Traffic volume figures were prepared for existing conditions and future traffic volumes without and with Payzant Drive connection open. Table 8 provides a summary of the volume figures prepared and the location of the figure in Appendix A.

Table 8 – Summary of Traffic Volume Figures: King Street at College Road

	Volume Figure
Scenario 1	Figure A-4 (Boxes A & B)
Scenario 2	Figure A-4 (Boxes C & D)
Scenario 3	Figure A-4 (Boxes E & F)

Based on the existing traffic control and lane configurations, traffic signal and left-turn lane warrants were completed. It was determined that:

- A northbound left-turn lane is currently warranted and is expected to remain warranted in Scenarios 2 and 3 (Figure B-1, Appendix B).
- Traffic signals are not warranted with respect to Scenario 2 (**29 Warrant Points with less than 75 vph average side street volumes**, Table B-8, Appendix B).

The largest traffic volumes expected at this intersection are projected in 2030 without the Payzant Drive connection (Scenario 2). Since traffic signals are not warranted in Scenario 2, traffic signals are not expected to be warranted in Scenario 3.

**Intersection
Operational
Analysis Results**

Operational performance results for this intersection are provided in Table 10.

It should be noted that this intersection was initially modelled with a northbound left-turn lane on King Street, however, minimal improvements to the operational performance of this intersection were observed. Since there is little benefit to the operational performance of this intersection and available space is limited, a left-turn lane was not considered in the analysis.

The existing intersection is operating well during the morning and afternoon peak hours.

In 2030 without the Payzant Drive connection (Scenario 2), King Street approaches are expected to operate at LOS 'A'. Left turning traffic from College Road is expected to experience the largest delay at LOS 'E' during the PM peak.

In 2030 with the Payzant Drive connection (Scenario 3), all movements are expected to operate at a LOS 'D' or better and a v/c ratio of 0.35 or better. In general, with the Payzant Drive connection, the operational performance of the intersection is expected to improve minimally.

Key Takeaways:

- The existing intersection is operating well.
- **Traffic signals are not warranted** based on Scenario 2 volumes and are expected to **remain unwarranted** for all future scenarios.
- A northbound left-turn lane is currently warranted and is expected to remain warranted in Scenarios 2 and 3.
- Negligible changes in the operational performance are expected with the introduction of a northbound left-turn.
- A northbound left-turn lane can be incorporated when future road work takes place.
- Some **traffic is diverted from the intersection with the Payzant Drive connection open**, which slightly improves the operational performance of the intersection.
- **Minimal changes in the operational performance of this intersection are expected with the Payzant Drive connection.**

Since the existing intersection is currently operating well and is expected to continue to operate well in 2030 without and with the Payzant Drive connection, minor changes to the intersection geometry are proposed. These are provided in Figure 7⁴. It is recommended that the intersection include the following:

- Complete a sightline review on King Street to determine the location for the crosswalk, as there is a crest on King Street;
- Provide curb extensions to reduce crossing distance for pedestrians, lower vehicle turning speeds and improve sightlines;
- Update pedestrian crosswalk on King Street to include zebra markings, side-mounted signage (RA-4);
- Relocate the stop bar on College Road approximately 5 m east to improve sightlines;
- Provide pedestrian crossing on College Road consisting of parallel bars;
- Update pavement markings;
- Remove existing yellow dashed line; and,
- Cut back vegetation to improve sightlines.

It is recommended that consideration be given to incorporating the construction of a northbound left-turn lane with future planned rehabilitation on King Street and the re-location of the crosswalk.

A planning cost estimate for these changes to the intersection are provided in Table 9. It is estimated that these intersection modifications would be in the range of approximately \$15,000 plus HST.

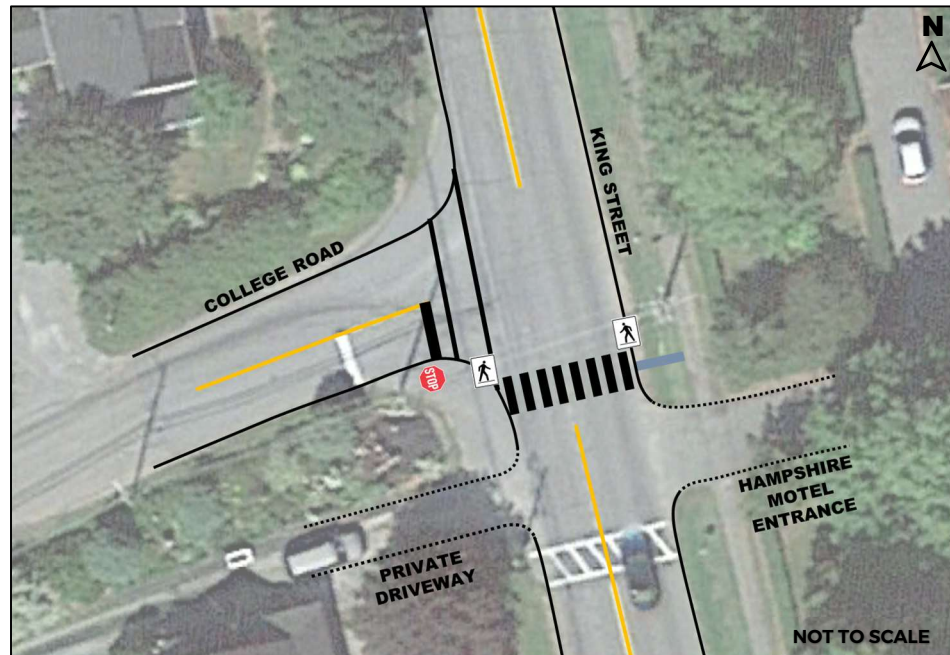


Figure 7 – Recommended Intersection Configuration: King Street at College Road⁴

⁴ The rendering is not to scale and is intended for conceptual purposes only.

Table 9 – Planning Cost Estimate: King Street at College Road

Item	Cost (HST Excluded)
Intersection Modifications	\$10,000
50% Contingency	\$5,000
Total	\$15,000

Table 10 - Intersection Capacity Analysis: King Street at College Road

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement			Overall Intersection	
	College Road	King Street		Delay	LOS
	EB-LR	NB-LT	SB-TR		
Scenario 1 - 2021 AM Peak Hour with Existing Conditions - Stop Control (Page C-15)					
Delay	13.7	1.3	0.0	1.7	A
LOS	B	A	A		
v/c	0.13	0.04	0.17		
Queue	3.5	1.1	0.0		
Scenario 1 - 2021 PM Peak Hour with Existing Conditions - Stop Control (Page C-16)					
Delay	18.5	1.1	0.0	1.4	A
LOS	C	A	A		
v/c	0.17	0.04	0.34		
Queue	4.8	1.0	0.0		
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - Stop Control (Page C-17)					
Delay	18.8	1.5	0.0	2.3	A
LOS	C	A	A		
v/c	0.24	0.06	0.25		
Queue	7.5	1.5	0.0		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - Stop Control (Page C-18)					
Delay	35.7	1.5	0.0	2.9	A
LOS	E	A	A		
v/c	0.45	0.06	0.43		
Queue	16.9	1.7	0.0		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - Stop Control (Page C-19)					
Delay	15	1.5	0.0	2.3	A
LOS	C	A	A		
v/c	0.19	0.05	0.18		
Queue	5.5	1.3	0.0		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - Stop Control (Page C-20)					
Delay	25.1	1.3	0.0	2.5	A
LOS	D	A	A		
v/c	0.35	0.05	0.35		
Queue	11.8	1.3	0.0		

4.4 INTERSECTION #4: KING STREET AT CHESTER ROAD

Existing / Future Intersection Description

The existing intersection of *King Street at Chester Road* is a 3-leg intersection with stop-control on the Chester Road approach, as shown in Photo 5. All approaches consist of one lane. There are painted crosswalks on the west and north legs. In addition, there is a painted dashed line indicating the vehicle path for northbound left-turning vehicles. It should be noted that the exit driveway for the Clockmaker's Inn is within 5 m of the intersection to the south on King Street.



Photo 5 – King Street at Chester Road (Looking Northbound on King Street)

In addition, there is an unoccupied lot adjacent to the intersection and there is no curb present in this area, resulting in an empty asphalt area with no delineation between the lot and King Street and Chester Road, as shown in Photo 6 and Photo 7. Currently there are no treatments to discourage vehicles from cutting through the site to bypass the intersection.



Photo 6 – Unoccupied Lot Fronting King Street



Photo 7 – Unoccupied Lot Fronting Chester Road

Consideration is currently being given to realigning this intersection to include Cottage Street as a fourth leg. Implications of this realignment are considered in the following subsections of this report (Sections 4.4.1 & 4.4.2). This section of the report specifically focus on King Street and Chester Road as a 3-leg intersection.

**Projected Traffic
Volumes**

Traffic volume figures were prepared for existing conditions and future traffic volumes without and with Payzant Drive connection open. Table 11 provides a summary of the volume figures prepared and the location of the figure in Appendix A.

Table 11 – Summary of Traffic Volume Figures: King Street at Chester Road

	Volume Figure
Scenario 1	Figure A-5 (Boxes A & B)
Scenario 2	Figure A-5 (Boxes C & D)
Scenario 3	Figure A-5 (Boxes E & F)

**Warrant
Summary**

Based on the existing traffic control and lane configurations, traffic signal and left-turn lane warrants were completed. It was determined that:

- A northbound left-turn lane is **currently warranted** and is **expected to remain warranted** in Scenarios 2 and 3 (Figure B-2, Appendix B).
- Volumes are approaching the warrant threshold for traffic signals with respect to Scenario 2 (**83 Warrant Points**, Table B-10, Appendix B).
- Traffic signals are not warranted with respect to Scenario 3 (**67 Warrant Points**, Table B-11, Appendix B).

Since projected traffic volumes are approaching the warrant threshold with respect to Scenarios 2 and 3, traffic signals are expected to be warranted at this location in the future.

Operational performance results for this intersection are provided in Table 12 (AM peak hours) and Table 13 (PM peak hours).

The existing intersection is operating at a poor LOS during the afternoon peak, which is largely due to significantly delays on Chester Road. The Chester Road approach is currently operating near capacity during the afternoon peak ($v/c = 0.87$).

This intersection was initially evaluated with stop-control on Chester Road, including northbound and eastbound left-turn lanes. Based on Scenario 2 volume projections, left-turning vehicles from Chester Road are expected to operate above capacity and at LOS 'F' during both peak periods. Similarly, left-turning vehicles were operating at LOS 'F' in Scenario 3.

Since this intersection approaches the warrant threshold in future Scenario 2, the intersection was evaluated with traffic signals and as a roundabout for comparison. It should be noted that the signalized alternatives also include a southbound right-turn channel in order to reduce delays introduced to through traffic on King Street. With traffic signals in Scenario 2, all movements are expected to operate at LOS 'C' or better with a v/c ratio of 0.70 or better. Similarly, in Scenario 3, all movements are expected to operate at LOS 'C' or better with a v/c ratio of 0.69 or better. For comparative purposes, no changes were made to the lane configurations or the traffic signal timing plans between Scenarios 2 and 3.

Key Takeaways:

- The existing Chester Road approach is operating at a poor LOS.
- This intersection **approaches the traffic signal warrant threshold** in Scenario 2.
- In 2030, to achieve an acceptable LOS for left-turning vehicles from Chester Road, traffic signals are recommended.
- Traffic signals are expected to provide an acceptable level of service at this intersection without and with the Payzant Drive connection.
- The 3-leg roundabout is expected to operate well with a LOS 'B' or better for both AM and PM peak hours.
- Some **traffic is diverted from the intersection with the Payzant Drive connection open**, which slightly improves the operational performance of the intersection.
- **Minimal changes in the operational performance of this intersection are expected with the Payzant Drive connection.**

The intersection was modelled as a 3-leg roundabout for Scenario 2 and all movements are expected to operate at LOS 'B' or better with a v/c ratio of 0.64 or better. Additional details regarding the roundabout configuration are provided on Page C-46, Appendix C.

Table 12 – Intersection Capacity Analysis: King Street at Chester Road (AM Peak)

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement						Overall Intersection	
	Chester Road		King Street				Delay	LOS
	EB-L	EB-R	NB-L	NB-T	SB-T	SB-R		
Scenario 1 - 2021 AM Peak Hour with Existing Conditions - Stop Control (Page C-21)								
Delay	27.6		2.2		C		8.9	A
LOS	D		A		A			
v/c	0.64		0.07		0.15			
Queue	34.5		1.7		0.0			
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - Stop Control (Page C-23)								
Delay	67.0	10.7	8.4	0.0	0.0		14.8	B
LOS	F	B	A	A	A			
v/c	0.87	0.09	0.08	0.23	0.22			
Queue	59.6	2.5	2.2	0.0	0.0			
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - Traffic Signals (Page C-25)								
Delay	22.7	6.3	6.6	9.7	19.4	6.8	14.1	B
LOS	C	A	A	A	B	A		
v/c	0.52	0.14	0.17	0.42	0.49	0.15		
Queue	43.8	7.8	11.2	45.2	51.7	9.8		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - Stop Control (Page C-27)								
Delay	31.6	10.3	8.1	0.0	0.0		7.4	A
LOS	D	B	A	A	A			
v/c	0.57	0.16	0.09	0.22	0.15			
Queue	26.7	4.4	2.4	0.0	0.0			
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - Traffic Signals (Page C-29)								
Delay	20	5.9	6.0	8.6	18.0	6.1	11.5	B
LOS	C	A	A	A	B	A		
v/c	0.44	0.28	0.18	0.39	0.38	0.13		
Queue	30.4	10.4	11.1	35.7	33.1	7.3		
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - Roundabout (Page C-46)								
Delay	5.2		7.1		4.7		6.0	A
LOS	A		A		A			
v/c	0.31		0.49		0.25			
Queue	13.3		14.0		9.8			

Table 13 – Intersection Capacity Analysis: King Street at Chester Road (PM Peak)

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement						Overall Intersection	
	Chester Road		King Street					
	EB-L	EB-R	NB-L	NB-T	SB-T	SB-R	Delay	LOS
Scenario 1 - 2021 PM Peak Hour with Existing Condition - Stop Control (Page C-22)								
Delay	67.8		4.5		0.0		13.8	B
LOS	F		A		A			
v/c	0.87		0.16		0.35			
Queue	58.8		4.6		0.0			
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - Stop Control (Page C-24)								
Delay	268.5	13.9	10.3	0.0	0.0		30.7	C
LOS	F	B	B	A	A			
v/c	1.36	0.19	0.21	0.24	0.44			
Queue	90.4	5.4	6.3	0.0	0.0			
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - Traffic Signals (Page C-26)								
Delay	27.8	7.8	6.5	7.6	23.2	8.1	14.2	B
LOS	C	A	A	A	C	A		
v/c	0.47	0.23	0.33	0.38	0.70	0.44		
Queue	41.2	11.2	16.7	43.1	81.6	26.4		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - Stop Control (Page C-28)								
Delay	193	13.4	10.1	0.0	0.0		18.8	C
LOS	F	B	B	A	A			
v/c	1.12	0.24	0.26	0.23	0.36			
Queue	61.7	7.6	8.5	0.0	0.0			
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - Traffic Signals (Page C-30)								
Delay	28	8.4	6.1	6.4	25.0	8.1	13.4	B
LOS	C	A	A	A	C	A		
v/c	0.42	0.36	0.39	0.35	0.69	0.37		
Queue	31.4	13.8	20.2	35.5	72.7	20.6		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - Roundabout (Page C-46)								
Delay	5.8		9.7		10.4		9.3	A
LOS	A		A		B			
v/c	0.30		0.64		0.64			
Queue	12.6		20.3		24.5			

It is recommended that the King Street / Chester Road intersection be upgraded to a signalized intersection or a single lane roundabout. For the signalized intersection option, the recommendations proposed are provided in Figure 8⁵. It is recommended that the intersection include the following:

- Upgrade traffic control device to traffic signals;
- Provide a southbound channelized right-turn lane;
- Provide a northbound left-turn lane;
- Provide an eastbound left-turn lane;
- Provide corner curb extensions to reduce crossing distance for pedestrians, lower vehicle turning speeds and improve sightlines;
- Provide pedestrian crossings on all approaches consisting of parallel bars;
- Updated pavement markings; and
- Remove existing yellow dashed line.

A planning cost estimate for these items is provided in Table 14. It is estimated that these intersection modifications would be in the range of approximately \$450,000 plus HST.

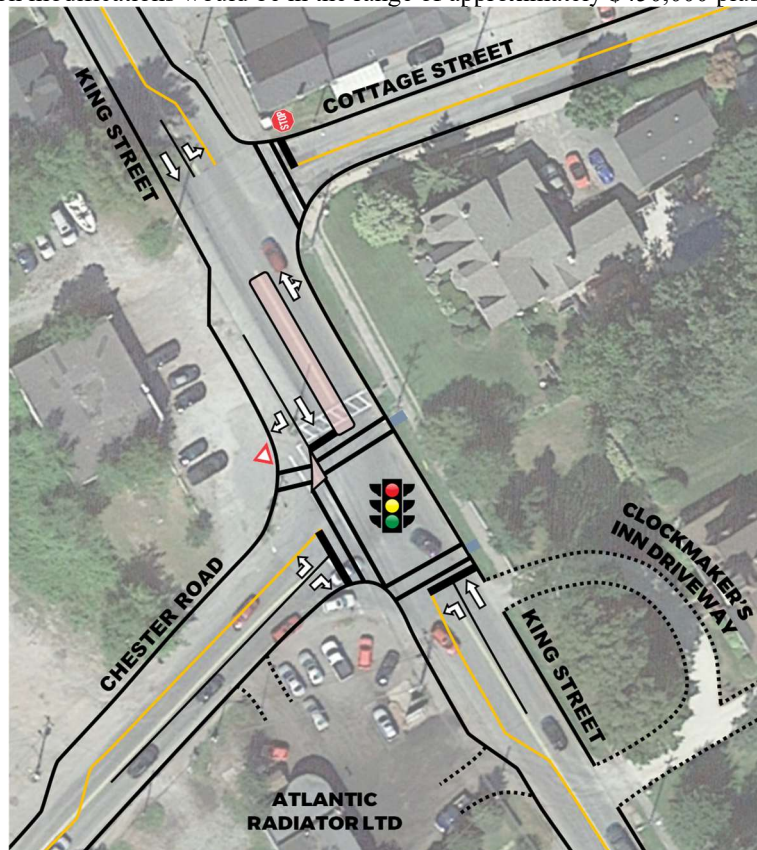


Figure 8 – Recommended Intersection Configuration: King Street at Chester Road⁵

Table 14 – Planning Cost Estimate: King Street at Chester Road

Item	Cost (HST Excluded)
Intersection Modifications with Traffic Signals	\$300,000
50% Contingency	\$150,000
Total	\$450,000

⁵ The rendering is not to sale and is intended for conceptual purposes only.

For the roundabout option, the recommended layout is shown in Figure 9, which illustrates a single lane roundabout.

A planning cost estimate for these items is provided in Table 15. It is estimated that these intersection modifications would be in the range of approximately \$1,875,000 plus HST.

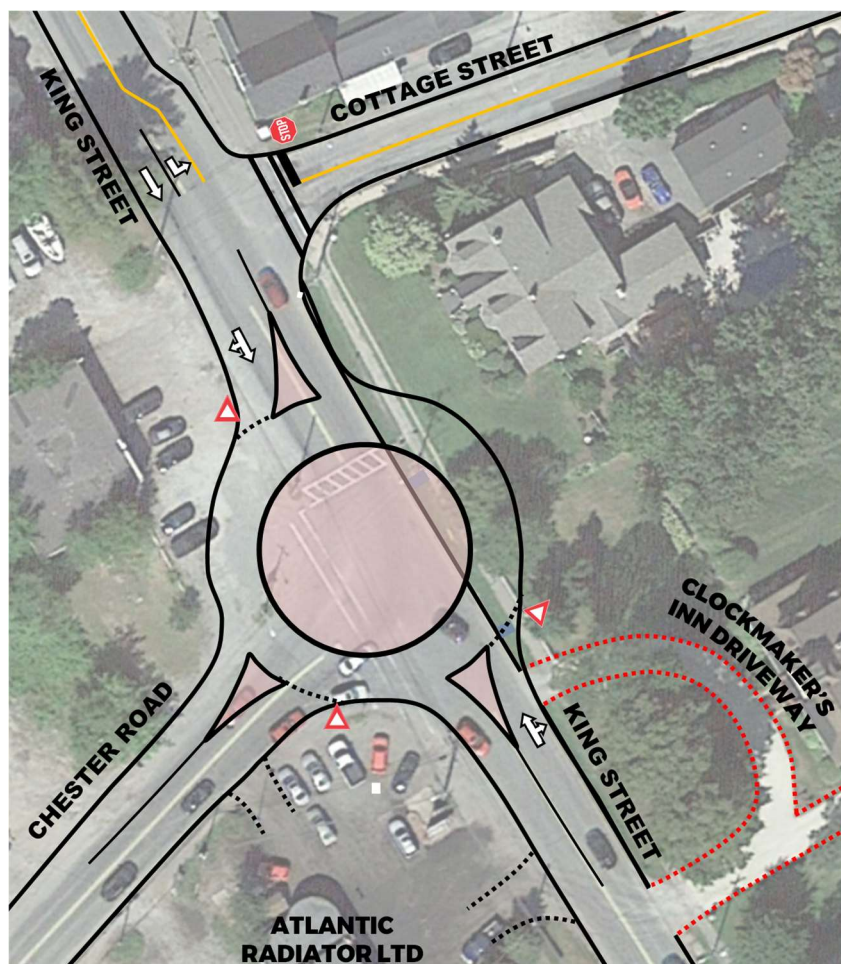


Figure 9 – Recommended Intersection Configuration: King Street at Chester Road⁵

Table 15 – Planning Cost Estimate: King Street at Chester Road

Item	Cost (HST Excluded)
Intersection Modifications with Roundabout	\$1,250,000
50% Contingency	\$625,000
Total	\$1,875,000

4.4.1 KING STREET AT COTTAGE STREET

Existing / Future Intersection Description

As previously mentioned, consideration is being given to assessing the implications of realigning Cottage Street with the King Street / Chester Road intersection. The existing intersection of **King Street at Cottage Street** is a 3-leg intersection with stop-control on the Cottage Street approach, as shown in Photo 8. All approaches consist of one lane and there is a painted crosswalk on the east leg. This intersection is located approximately 25 m north of the King Street / Chester Road intersection.



Photo 8 – Existing King Street at Cottage Street Intersection

Intersection Operational Analysis Results: 3 Leg Intersection

In order to compare the impacts of realigning Cottage Street with the King Street / Chester Road intersection, analyses were completed to determine the operational performance of King Street / Cottage Street with respect to Scenario 2 volumes (the largest traffic volumes expected at this intersection).

To better understand the implications of introducing traffic signals downstream, this analysis was completed once with stop-control at the King Street / Chester Road intersection and once with traffic signals. In general, slight improvements to the operational performance of this intersection were observed with traffic signals at the King Street / Chester Road intersection. Operational performance results for the 3-leg intersection are provided in Table 16.

In general, the King Street / Cottage Street intersection is expected to perform well in 2030 without the Payzant Drive connection. The King Street approaches are expected to operate at LOS 'A' and the Cottage Street approach is expected to operate at LOS 'C' or better during the morning and afternoon peak hours.

Table 16 – Intersection Capacity Analysis: King Street at Cottage Street (3-Leg Intersection)

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement			Overall Intersection	
	Cottage Street	King Street			
	WB-LR	NB-TR	SB-LT	Delay	LOS
Modelled with Stop Control at King Street / Chester Road					
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - Stop Control (Page C-31)					
Delay	14.6	0.0	0.9	0.6	A
LOS	B	A	A		
v/c	0.05	0.37	0.03		
Queue	1.3	0.0	0.7		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - Stop Control (Page C-32)					
Delay	23.4	0.0	0.3	1.3	A
LOS	C	A	A		
v/c	0.25	0.34	0.01		
Queue	7.8	0.0	0.3		
Modelled with Traffic Signals at King Street / Chester Road					
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - SIGNALS at King/Chester (Page C-33)					
Delay	14.6	0.0	0.9	0.6	A
LOS	B	A	A		
v/c	0.05	0.37	0.03		
Queue	1.3	0.0	0.7		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - SIGNALS at King/Chester (Page C-34)					
Delay	21.8	0.0	0.3	1.0	A
LOS	C	A	A		
v/c	0.20	0.34	0.01		
Queue	6.0	0.0	0.3		

4.4.2 KING STREET AT CHESTER ROAD / COTTAGE STREET

Projected Traffic Volumes: 4-Leg Intersection

Traffic volume projections were prepared to estimate turning movement counts at the potential 4-leg intersection without and with Payzant Drive connection. Table 17 provides a summary of the volume figures prepared and the location of the figure in Appendix A.

Table 17 – Summary of Traffic Volume Figures: King Street at Chester Road / Cottage Street

	Volume Figure
Scenario 2	Figure A-6 (Boxes A & B)
Scenario 3	Figure A-6 (Boxes C & D)

Warrant Summary: 4-Leg Intersection

Based on the existing traffic control and lane configurations, traffic signal and left-turn lane warrants were completed. It was determined that:

- A southbound left-turn lane is **warranted** and in Scenarios 2 and 3 (Figure B-2, Appendix B).
- Volumes are approaching the warrant threshold for traffic signals with respect to Scenario 2 (**91 Warrant Points**, Table B-12, Appendix B).
- Traffic signals are not warranted with respect to Scenario 3 (**75 Warrant Points**, Table B-13, Appendix B).

Intersection Operational Analysis Results: 4-Leg Intersection

Operational performance results for the 4-leg intersection are provided in Table 18.

In addition to the lane configuration recommendations for the future King Street / Chester Road intersection (northbound and eastbound left-turn lanes and a channelized southbound right-turn lane), the intersection was evaluated with the realignment of Chester Street approach to Cottage Street.

In Scenario 2, traffic signals are nearing the warrant threshold (91 warrant points). It should be noted that no changes were made to the lane configurations or the traffic signal timing plans between Scenarios 2 and 3 for comparative purposes.

With traffic signals in Scenario 2, all movements are expected to operate at LOS 'D' or better with a v/c ratio of 0.87 or better. Similarly, in Scenario 3, all movements are expected to operate at LOS 'D' or better with a v/c ratio of 0.84 or better.

A roundabout analysis was completed at the 4-leg intersection with the realigned approach of Chester Street. The roundabout is expected to operate with a LOS 'B' or better with a v/c ratio of 0.64 or better. Additional details regarding the roundabout configuration are provided on Page C-47, Appendix C.

Key Takeaways:

- This intersection approaches the traffic signal warrant threshold in Scenario 2.
- Traffic signals are expected to provide an acceptable level of service at this intersection without and with the Payzant Drive connection.
- The 4-leg roundabout is expected to operate at an acceptable level of service.
- Some **traffic is diverted from the intersection with the Payzant Drive connection open**, which slightly improves the operational performance of the intersection.
- **Minimal changes in the operational performance of this intersection are expected with the Payzant Drive connection.**

Table 18 – Intersection Capacity Analysis: King Street at Chester Road / Cottage Street (4-Leg Alternative)

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement							Overall Intersection	
	Chester Road		Cottage Street	King Street					
	EB-L	EB-TR	WB-LTR	NB-L	NB-TR	SB-L	SB-TR	Delay	LOS
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - <i>Traffic Signals</i> (Page C-35)									
Delay	26.5	6.6	10.6	8.2	11.1	15.9	21.6	16.9	B
LOS	C	A	B	A	B	B	C		
v/c	0.60	0.14	0.05	0.20	0.42	0.05	0.61		
Queue	50.2	8.9	5.4	13.6	53.5	5.6	69.8		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - <i>Traffic Signals</i> (Page C-36)									
Delay	43.1	9.2	20.4	10.6	7.5	11.1	29.2	21.6	C
LOS	D	A	C	B	A	B	C		
v/c	0.64	0.24	0.19	0.50	0.35	0.02	0.87		
Queue	54.9	13.1	16.5	19.8	47.3	3.7	149.6		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - <i>Traffic Signals</i> (Page C-37)									
Delay	23.6	6.0	10.3	6.6	9.1	15.6	17.6	12.9	B
LOS	C	A	B	A	A	B	B		
v/c	0.50	0.27	0.06	0.19	0.38	0.05	0.44		
Queue	33.2	11.1	5.0	12.9	39.8	5.3	41.9		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - <i>Traffic Signals</i> (Page C-38)									
Delay	36.9	8.8	20.0	9.3	6.6	13.5	29.5	18.7	B
LOS	D	A	B	A	A	B	C		
v/c	0.51	0.34	0.21	0.51	0.33	0.03	0.84		
Queue	39.1	15.5	15.8	27.1	40.1	4.1	117.0		
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection - <i>Roundabout</i> (Page C-47)									
Delay	5.4		4.9	7.1		4.8		6.0	A
LOS	A		A	A		A			
v/c	0.32		0.03	0.49		0.26			
Queue	14.0		3.5	14.7		7.7			
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection - <i>Roundabout</i> (Page C-47)									
Delay	5.9		5.7	9.8		10.5		9.2	A
LOS	A		A	A		B			
v/c	0.30		0.09	0.64		0.64			
Queue	12.6		3.5	21.7		23.1			

Table 19 – Intersection Capacity Analysis: King Street at Cottage Street with Southbound Left-Turn Lane

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement				Overall Intersection	
	Cottage Street	King Street				
	WB-LR	NB-TR	SB-L	SB-T	Delay	LOS
Traffic Signals at King Street / Chester Road & Southbound Left-Turn Lane on King Street at Cottage Street						
Scenario 2 - 2030 AM Peak Hour without Payzant Drive Connection (Page C-39)						
Delay	14.6	0.0	9.0	0.0	0.5	A
LOS	B	A	A	A		
v/c	0.05	0.37	0.03	0.22		
Queue	1.3	0.0	0.7	0.0		
Scenario 2 - 2030 PM Peak Hour without Payzant Drive Connection (Page C-40)						
Delay	21.8	0.0	8.8	0.0	0.9	A
LOS	C	A	A	A		
v/c	0.20	0.34	0.01	0.43		
Queue	6.0	0.0	0.3	0.0		

Conclusions & Recommendations for Realigning Cottage Street with King Street / Chester Road Intersection

A review was completed to position a roundabout at Cottage Street with a realigned Chester Road at King Street. This roundabout option would have significant land impacts north and east of the intersection, along with significant construction costs. Due to these challenges the realigned option focused on a signalized intersection and is shown in Figure 10.

A planning cost estimate for re-alignment of Cottage Street and the addition of traffic signals is provided in Table 20. It is estimated that these intersection modifications would be in the range of approximately \$900,000 plus HST.

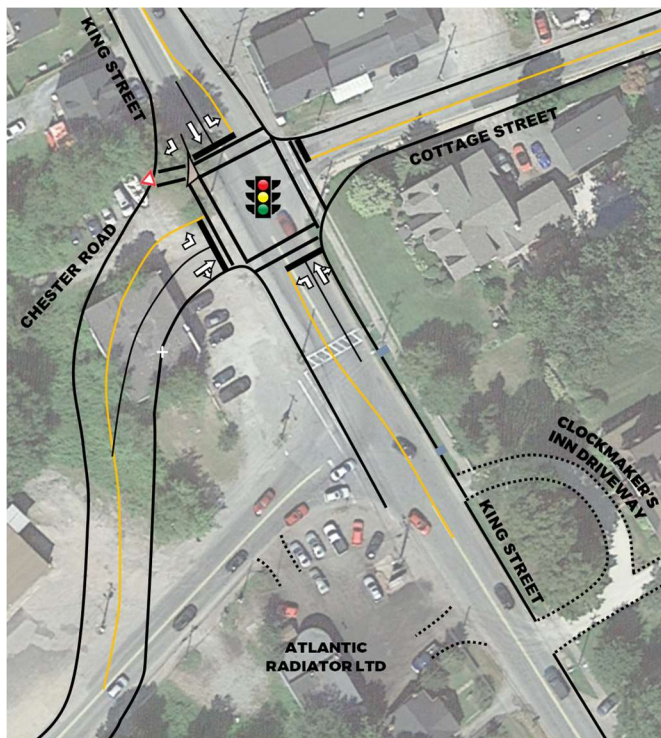


Figure 10 – Recommended Intersection Configuration: King Street at Chester St/Cottage St

Table 20 – Planning Cost Estimate: King Street at Chester St/Cottage St

Item	Cost (HST Excluded)
Traffic Signals and Re-alignment of Chester Street	\$600,000
50% Contingency	\$300,000
Total	\$900,000

4.5 INTERSECTION #5: KING STREET AT PAYZANT DRIVE

Existing / Future Intersection Description

Unlike Study Intersections #1-4, this intersection only exists in Scenario 3 when Payzant Drive connections with King Street. King Street, in the approximate area that Payzant Drive is expected to connect to, consists of one lane in each direction with a posted speed limit of 50 km/h.

Projected Traffic Volumes

Traffic volume projections were prepared for Scenario 3 based on an estimated redistribution of future traffic volumes expected. Traffic volume figures for Scenario 3 are provided in Figure A-7, Appendix A.

Warrant Summary

A traffic signal warrant and a left turning lane warrant were completed. It was determined that:

- A southbound left-turn lane is warranted (Figure B-3, Appendix B).
- Traffic signals are not warranted (**60 Warrant Points**, Table B-15, Appendix B).

It was determined that the future intersection of King Street / Payzant Drive would not warrant traffic signals in 2030. Similarly, the resulting 2030 traffic volumes do not necessarily warrant a higher level of traffic beyond stop-control. Despite the warranted traffic control, this intersection was evaluated with stop-control, traffic signals and as a roundabout in order to better understand the potential for a future major intersection.

Intersection Operational Analysis Results

Operational performance results for this intersection are provided in Table 23.

The stop-control alternative was examined with southbound and westbound left-turn lanes. With stop-control on Payzant Drive and free flow on King Street, the intersection is expected to operate at an acceptable level of service. King Street movements are expected to operate at LOS 'A' with a v/c ratio of 0.40 or better. Left-turning traffic from Payzant Drive is expected to operate over capacity at LOS 'E' and 'F' during the morning and afternoon peak periods, respectively.

The signalized intersection alternative was examined with the same lane configuration as the stop-control option. With traffic signals, the performance of the Payzant Drive approach is expected to improve, however, additional delays are introduced to the King Street approaches. With traffic signals, the intersection is expected to operate at LOS 'B' or better during morning and afternoon peak periods.

The roundabout alternative was evaluated with single lane approaches. Addition details regarding the roundabout configuration are provided on Page C-45, Appendix C. With the roundabout, all approaches are expected to operate at LOS 'A' with a v/c ratio of 0.67 or better.

Key Takeaways:

- Traffic signals are not expected to be warranted in 2030 with the Payzant Drive connection open. **However, with the delay expected for left-turn traffic, a higher level of traffic control is recommended.**

With the left-turn from Payzant Drive operating at a LOS 'E' and 'F' during the AM and PM peak hours, respectively, a higher level of traffic control is recommended for this intersection. Since acceptable performance results are achievable with a signalized intersection or a roundabout, it is recommended that the King Street / Payzant Drive intersection be designed with either traffic control.

If WHRM would like to proceed with the installation of traffic signals, it is recommended that intersection include the following (shown in Figure 11⁶):

- Provide stop-control on Payzant Drive approach;
- Provide a westbound left-turn lane on Payzant Drive;
- Provide a southbound left-turn lane on King Street;
- Install underground conduit during construction of this intersection to prepare for future signalization; and,
- Monitor intersection for future signalization.

A planning cost estimate for these items is provided in Table 21. It is estimated that these intersection modifications would be in the range of approximately \$90,000 plus HST. It should be noted that the planning cost estimate assumes that the Payzant Drive connection has been constructed and conduit has been run for future signalization. The planning cost estimate reflects the costs associated with providing an eastbound left-turn lane on Payzant Drive and a southbound left-turn lane on King Street. These budgets may vary based on the requirements for the railway crossing.



Figure 11 – Recommended Intersection Configuration: King Street at Payzant Drive⁶

Table 21 – Planning Cost Estimate: King Street at Payzant Drive - Signalization

Item	Cost (HST Excluded)
STOP Controlled Intersection with Left-Turn Lane & underground conduit for future signalization	\$60,000
50% Contingency	\$30,000
Total	\$90,000

⁶ The rendering is not to scale and is intended for conceptual purposes only.

If WHRM would like to proceed with the installation of a roundabout, it is recommended that the intersection be a single lane roundabout.

A planning cost estimate for these items is provided in Table 22. It is estimated that these intersection modifications would be in the range of approximately \$1,875,000 plus HST. It should be noted that the planning cost estimate assumes that the Payzant Drive connection has been constructed. These budgets may vary based on the requirements for the railway crossing.

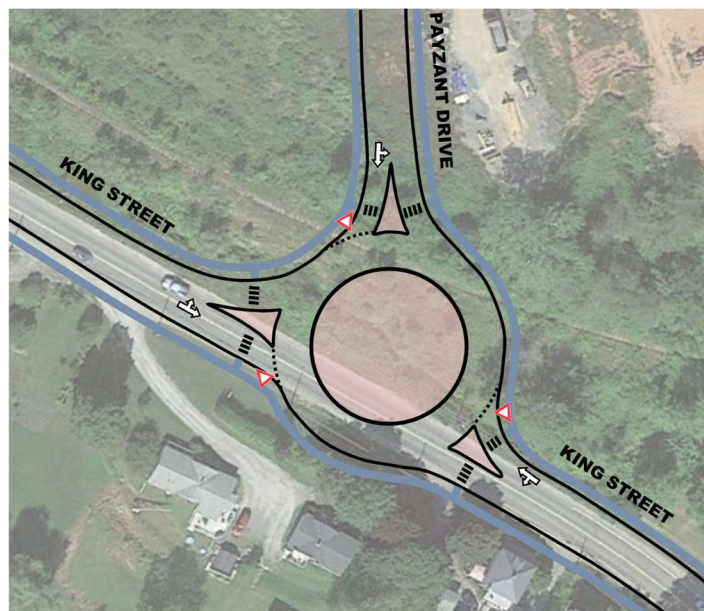


Figure 12 – Recommended Roundabout Configuration: King Street at Payzant Dr⁶

Table 22 – Planning Cost Estimate: King Street at Payzant Drive - Roundabout

Item	Cost (HST Excluded)
Single lane Roundabout	\$1,250,000
50% Contingency	\$625,000
Total	\$1,875,000

Table 23 – Intersection Capacity Analysis: King Street at Payzant Drive

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95th %ile Queue (m) by Intersection Movement					Overall Intersection	
	Payzant Drive Connector		King Street				
	WB-L	WB-R	NB-TR	SB-L	SB-T	Delay	LOS
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - Stop Control (Page C-41)							
Delay	37.1	12.8	0.0	9.1	0.0	5.2	A
LOS	E	B	A	A	A		
v/c	0.50	0.16	0.34	0.12	0.17		
Queue	20.0	4.4	0.0	3.4	0.0		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - Stop Control (Page C-42)							
Delay	62.8	15.4	0.0	9.5	0.0	5.8	A
LOS	F	C	A	A	A		
v/c	0.61	0.28	0.40	0.12	0.29		
Queue	26.0	9.0	0.0	3.4	0.0		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - Traffic Signals (Page C-43)							
Delay	15.1	5.9	10.2	9.7	7.4	9.5	A
LOS	B	A	B	A	A		
v/c	0.21	0.18	0.56	0.31	0.27		
Queue	16.8	8.5	53.9	14.3	23.2		
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - Traffic Signals (Page C-44)							
Delay	18.1	6.4	13.0	12.4	9.5	11.6	B
LOS	B	A	B	B	A		
v/c	0.25	0.29	0.71	0.42	0.51		
Queue	19.9	11.4	70.4	15.6	44.7		
Scenario 3 - 2030 AM Peak Hour with Payzant Drive Connection - Roundabout (Page C-45)							
Delay	5.4		5.7	8.2		6.9	A
LOS	A		A	A			
v/c	0.21		0.40	0.57			
Queue	8.4		18.9	10.5			
Scenario 3 - 2030 PM Peak Hour with Payzant Drive Connection - Roundabout (Page C-45)							
Delay	6.5		8.5	10.5		9.1	A
LOS	A		A	B			
v/c	0.29		0.59	0.67			
Queue	11.2		11.9	0.0			

5 SUMMARY, RECOMMENDATIONS & CONCLUSIONS

5.1 SUMMARY

Background	1. WHRM is preparing for potential changes to the road network that will have an impact on traffic volumes on Wentworth Road and King Street. Consideration is being given to re-aligning the Highway 101 Eastbound Exit 5A Ramp at Industrial Drive by NSTAT. With this realignment, the existing entrance to the Hants County Exhibition will be required to be relocated along Wentworth Road. In addition, the WHRM is considering extending Payzant Drive to the east to connect with King Street.
Study Objective	2. WSP Canada Inc. has been retained to determine the impact of these changes at a series of key intersections and provide recommendations to mitigate the impacts of the changes to the regional transportation system.
Study Intersections	3. This study focused on four (4) existing intersections and one (1) future intersection: #1 – Wentworth Road at Payzant Drive #2 – Wentworth Road at Empire Lane #3 – King Street at College Road #4 – King Street at Chester Road #5 – King Street at Payzant Drive (<i>future intersection</i>)
Turning Movement Counts	4. Turning movement volumes were collected by WSP between Tuesday, January 19 th and Thursday, January 21 st , 2021 at the existing Study Intersections.
Analysis Scenarios Considered	5. WSP considered the following analysis scenarios <i>Scenario 1</i> – 2021 Existing Conditions <i>Scenario 2</i> – 2030 <i>without</i> Payzant Drive connection <i>Scenario 3</i> – 2030 <i>with</i> Payzant Drive connection <i>Scenario 1:</i> Projected 2021 AM and PM peak hour volumes consider: • 1.17 Seasonal Adjustment Factor • 1.05 Covid-19 Adjustment Factor • Trips generated by the West Hants Sports Complex on a typical weekday • Trips generated by the existing Hants County Exhibition on a typical weekday <i>Scenario 2:</i> Projected 2030 AM and PM peak hour background volumes <i>without</i> the Payzant Drive connection consider: • Projected 2021 Volumes • 1.5% Annual Growth between 2021-2030 • Trips generated by the Hants County Exhibition Expansion on a typical weekday <i>Scenario 3:</i> Projected 2030 AM and PM peak hour background volumes <i>with</i> the Payzant Drive connection consider: • Projected 2021 Volumes • 1.5% Annual Growth between 2021-2030 • Trips generated by the Hants County Exhibition Expansion on a typical weekday Estimation of Redistributed Trips with the Payzant Drive connection open

Upgrade Warrant Analysis	6. Warrant analyses were completed for left-turn lanes and traffic signals for different scenarios at the different Study Intersections, as required. Warranted intersection upgrades are included in the intersection analysis, as appropriate.
Summary – Intersection Capacity Analysis	7. Intersection performance analysis was completed using <i>Synchro 11.0</i> and/or <i>Arcady 9</i> at the Study Intersections.

5.2 RECOMMENDATIONS

Intersection #1	8. <i>Wentworth Road at Payzant Drive</i> – Based on findings from this study, in conjunction with the <i>Hants County Exhibition Expansion Traffic Impact Study (WSP, May 2021)</i> , it is recommended that plans be prepared to enhance this intersection to a roundabout. The planning cost estimate indicates that these modifications will be in the range of approximately \$2,400,000 plus HST.
Intersection #2	9. <i>Wentworth Road at Empire Lane</i> – It is recommended that this intersection be monitored for future signalization.
Intersection #3	10. <i>King Street at College Road</i> – Minor recommendations for this intersection include curb extensions, relocating/upgrading the pedestrian crosswalk on King Street, relocating the stop bar on College Road, providing a crosswalk on College Road consisting of parallel bars, updating pavement markings, removing the existing yellow dashed line and cutting back vegetation. The planning cost estimate indicates that these modifications will be in the range of approximately \$15,000 plus HST.
Intersection #4	11. <i>King Street at Chester Road</i> – It is recommended that this intersection be signalized with a southbound right-turn channel, a northbound left-turn lane and an eastbound left-turn lane. Pedestrian crosswalks consisting of parallel bars are recommended on all approaches. In addition, a southbound left-turn lane is recommended on King Street at Cottage Street. The planning cost estimate indicates that the modifications to King Street / Chester Road will be in the range of approximately \$450,000 plus HST. If WHRM completes the realignment of Chester Road with Cottage Street at King Street, it is recommended that the 4-leg intersection be signalized with a southbound right-turn channel, northbound left-turn lane and eastbound left-turn lane. The planning cost estimate indicates that the modifications to King Street / Chester Road & Cottage Road intersection will be in the range of approximately \$900,000 plus HST.
Intersection #5	12. <i>King Street at Payzant Drive</i> – It is recommended that this future intersection consist of stop-control on the Payzant Drive approach with a southbound left-turn lane and an eastbound left-turn lane and plan for future signalization with underground conduit. The planning cost estimate indicates that this new intersection will be in the range of approximately \$90,000 plus HST.

5.3 CONCLUSIONS

- | | |
|-------------------|---|
| Conclusion | <div>13. With the recommended upgrades, the Study Intersections are expected to operate within the outlined performance guidelines.</div> <div>14. Some traffic is expected to divert from King Street and Wentworth Road when the Payzant Drive connection is open. The operational performance of all Study Intersections is projected to improve slightly with diverted through traffic on King Street and Wentworth Road.</div> |
|-------------------|---|
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APPENDIX

A

TRAFFIC VOLUME DATA



Table A-1 Wentworth Road @ Payzant Drive / Commercial Driveway Windsor, Nova Scotia Tuesday, January 19, 2021														Driveway I H G J K L Wentworth Road Wentworth Road Payzant Drive A B C Ped 3 Ped 4 Ped 2 Ped 1 F E D													
AM Peak Period Volume Data																											
Time		Payzant Drive Westbound Approach			Wentworth Road Southbound Approach			Commercial Driveway Eastbound Approach			Wentworth Road Northbound Approach			Total Vehicles													
		A	B	C	D	E	F	G	H	I	J	K	L														
07:00	07:15	4	0	16	13	28	0	0	0	0	0	35	9	105													
07:15	07:30	6	0	12	13	38	0	0	0	0	3	49	8	129													
07:30	07:45	6	0	9	21	37	1	0	0	0	3	60	10	147													
07:45	08:00	4	0	8	36	68	0	0	0	2	2	73	17	210													
08:00	08:15	12	0	13	34	84	1	0	0	0	0	87	23	254													
08:15	08:30	14	0	24	48	77	0	0	0	0	1	71	36	271													
08:30	08:45	15	0	43	68	82	0	0	0	0	0	68	63	339													
08:45	09:00	14	0	59	91	94	2	2	0	0	1	87	65	415													
AM Peak Hour		55	0	139	241	337	3	2	0	0	2	313	187	1279													
07:00	08:00	20	0	45	83	171	1	0	0	2	8	217	44	591													
08:00	09:00	55	0	139	241	337	3	2	0	0	2	313	187	1279													
		Ped 1			Ped 2			Ped 3			Ped 4			Total Peds													
07:00	08:00	4			0			1			0			5													
08:00	09:00	5			3			5			0			13													
Midday Peak Period Volume Data																											
Time		Payzant Drive Westbound Approach			Wentworth Road Southbound Approach			Commercial Driveway Eastbound Approach			Wentworth Road Northbound Approach			Total Vehicles													
		A	B	C	D	E	F	G	H	I	J	K	L														
11:30	11:45	20	0	38	18	103	0	1	0	1	0	89	26	296													
11:45	12:00	21	0	24	29	105	0	1	0	0	0	93	22	295													
12:00	12:15	12	0	22	22	109	0	1	0	1	2	114	16	299													
12:15	12:30	19	0	20	20	91	0	2	2	1	0	109	14	278													
12:30	12:45	17	0	15	13	110	0	0	0	1	1	104	18	279													
12:45	13:00	20	0	12	18	85	0	0	0	1	1	101	14	252													
13:00	13:15	17	0	16	22	87	0	0	0	1	1	92	21	257													
13:15	13:30	35	0	67	23	102	0	0	0	0	1	117	15	360													
Midday Peak Hour		72	0	104	89	408	0	5	2	3	2	405	78	1168													
11:30	12:30	72	0	104	89	408	0	5	2	3	2	405	78	1168													
12:30	13:30	89	0	110	76	384	0	0	0	3	4	414	68	1148													
		Ped 1			Ped 2			Ped 3			Ped 4			Total Peds													
11:30	12:30	4			1			6			0			11													
12:30	13:30	3			1			3			0			7													
PM Peak Period Volume Data																											
Time		Payzant Drive Westbound Approach			Wentworth Road Southbound Approach			Commercial Driveway Eastbound Approach			Wentworth Road Northbound Approach			Total Vehicles													
		A	B	C	D	E	F	G	H	I	J	K	L														
15:30	15:45	34	0	51	22	90	1	0	0	1	0	95	9	303													
15:45	16:00	21	0	32	16	85	0	0	0	1	0	99	12	266													
16:00	16:15	14	0	31	14	123	0	0	0	0	0	107	14	303													
16:15	16:30	20	1	22	13	91	0	1	0	2	1	94	10	255													
16:30	16:45	6	0	14	15	113	0	1	0	2	0	95	18	264													
16:45	17:00	22	0	15	12	105	0	0	0	4	0	94	11	263													
17:00	17:15	17	0	19	14	107	0	0	0	0	0	95	6	258													
17:15	17:30	9	0	13	12	81	0	0	0	0	0	72	11	198													
PM Peak Hour		89	1	136	65	389	1	1	0	4	1	395	45	1127													
15:30	16:30	89	1	136	65	389	1	1	0	4	1	395	45	1127													
16:30	17:30	54	0	61	53	406	0	1	0	6	0	356	46	983													
		Ped 1			Ped 2			Ped 3			Ped 4			Total Peds													
15:30	16:30	2			5			5			0			12													
16:30	17:30	1			0			2			0			3													

* Count completed by WSP

Table A-2 Wentworth Road @ Empire Lane Windsor, Nova Scotia Tuesday, January 19, 2021							
--	--	--	--	--	--	--	--

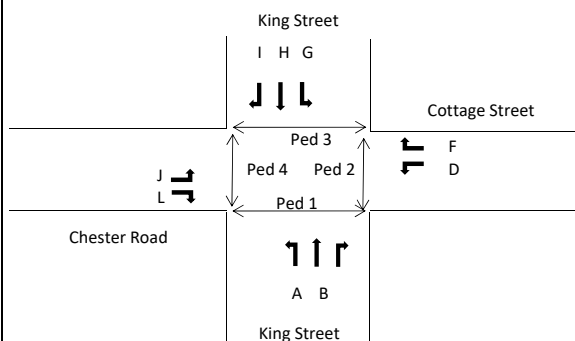
* Count completed by WSP

Table A-3 King Street (Trunk 1) @ College Road Windsor, Nova Scotia Thursday, January 21, 2021								
AM Peak Period Volume Data								
Time		King Street Northbound Approach		King Street Southbound Approach		College Road Eastbound Approach		Total Vehicles
		A	B	H	I	J	L	
07:00	07:15	1	48	22	2	1	2	76
07:15	07:30	4	46	23	1	5	3	82
07:30	07:45	4	47	45	1	3	0	100
07:45	08:00	15	74	64	5	4	7	169
08:00	08:15	9	80	51	6	6	8	160
08:15	08:30	13	102	43	4	3	9	174
08:30	08:45	4	78	38	3	9	2	134
08:45	09:00	3	96	51	3	5	1	159
AM Peak Hour		41	334	196	18	22	26	637
07:00	08:00	24	215	154	9	13	12	427
08:00	09:00	29	356	183	16	23	20	627
		Ped 1		Ped 3		Ped 4		Total Peds
07:00	08:00	0		0		0		0
08:00	09:00	1		0		0		1
Midday Peak Period Volume Data								
Time		King Street Northbound Approach		King Street Southbound Approach		College Road Eastbound Approach		Total Vehicles
		A	B	H	I	J	L	
11:30	11:45	2	65	80	4	4	2	157
11:45	12:00	5	93	76	5	8	3	190
12:00	12:15	1	87	85	9	4	4	190
12:15	12:30	5	57	80	2	6	1	151
12:30	12:45	3	72	64	5	8	4	156
12:45	13:00	2	95	72	4	7	4	184
13:00	13:15	4	74	64	3	8	5	158
13:15	13:30	3	64	74	4	4	4	153
Midday Peak Hour		13	302	321	20	22	10	688
11:30	12:30	13	302	321	20	22	10	688
12:30	13:30	12	305	274	16	27	17	651
		Ped 1		Ped 3		Ped 4		Total Peds
11:30	12:30	3		0		0		3
12:30	13:30	1		0		0		1
PM Peak Period Volume Data								
Time		King Street Northbound Approach		King Street Southbound Approach		College Road Eastbound Approach		Total Vehicles
		A	B	H	I	J	L	
15:30	15:45	8	88	104	7	5	6	218
15:45	16:00	5	80	97	12	4	5	203
16:00	16:15	3	100	105	3	4	6	221
16:15	16:30	12	66	98	7	7	3	193
16:30	16:45	3	76	104	4	6	11	204
16:45	17:00	2	71	108	4	2	3	190
17:00	17:15	7	79	98	5	4	5	198
17:15	17:30	4	54	78	9	3	8	156
PM Peak Hour		28	334	404	29	20	20	835
15:30	16:30	28	334	404	29	20	20	835
16:30	17:30	16	280	388	22	15	27	748
		Ped 1		Ped 3		Ped 4		Total Peds
15:30	16:30	2		0		0		2
16:30	17:30	1		0		0		1

* Count completed by WSP

Table A-4
King Street (Trunk 1)
@
Chester Road / Cottage Street

Windsor, Nova Scotia
Thursday, January 21, 2021



AM Peak Period Volume Data

Time	King Street Northbound Approach			Cottage Street Westbound Approach		King Street Southbound Approach			Chester Road Eastbound Approach		Total Vehicles
	A	B	C	D	F	G	H	I	J	L	
07:00 07:15	5	31	1	3	5	2	18	8	19	5	97
07:15 07:30	10	36	0	0	1	1	24	7	21	15	115
07:30 07:45	8	25	2	2	1	4	24	15	31	11	123
07:45 08:00	8	52	5	1	2	9	37	12	34	6	166
08:00 08:15	11	60	5	1	2	2	45	10	32	8	176
08:15 08:30	17	71	1	1	0	2	32	15	44	14	197
08:30 08:45	17	45	1	0	0	8	20	14	37	13	155
08:45 09:00	20	61	8	1	9	2	43	13	42	12	211
AM Peak Hour	65	237	15	3	11	14	140	52	155	47	739
07:00 08:00	31	144	8	6	9	16	103	42	105	37	501
08:00 09:00	65	237	15	3	11	14	140	52	155	47	739
	Ped 1			Ped 2		Ped 3			Ped 4		Total Peds
07:00 08:00	0			1		0			0		1
08:00 09:00	0			3		0			0		3

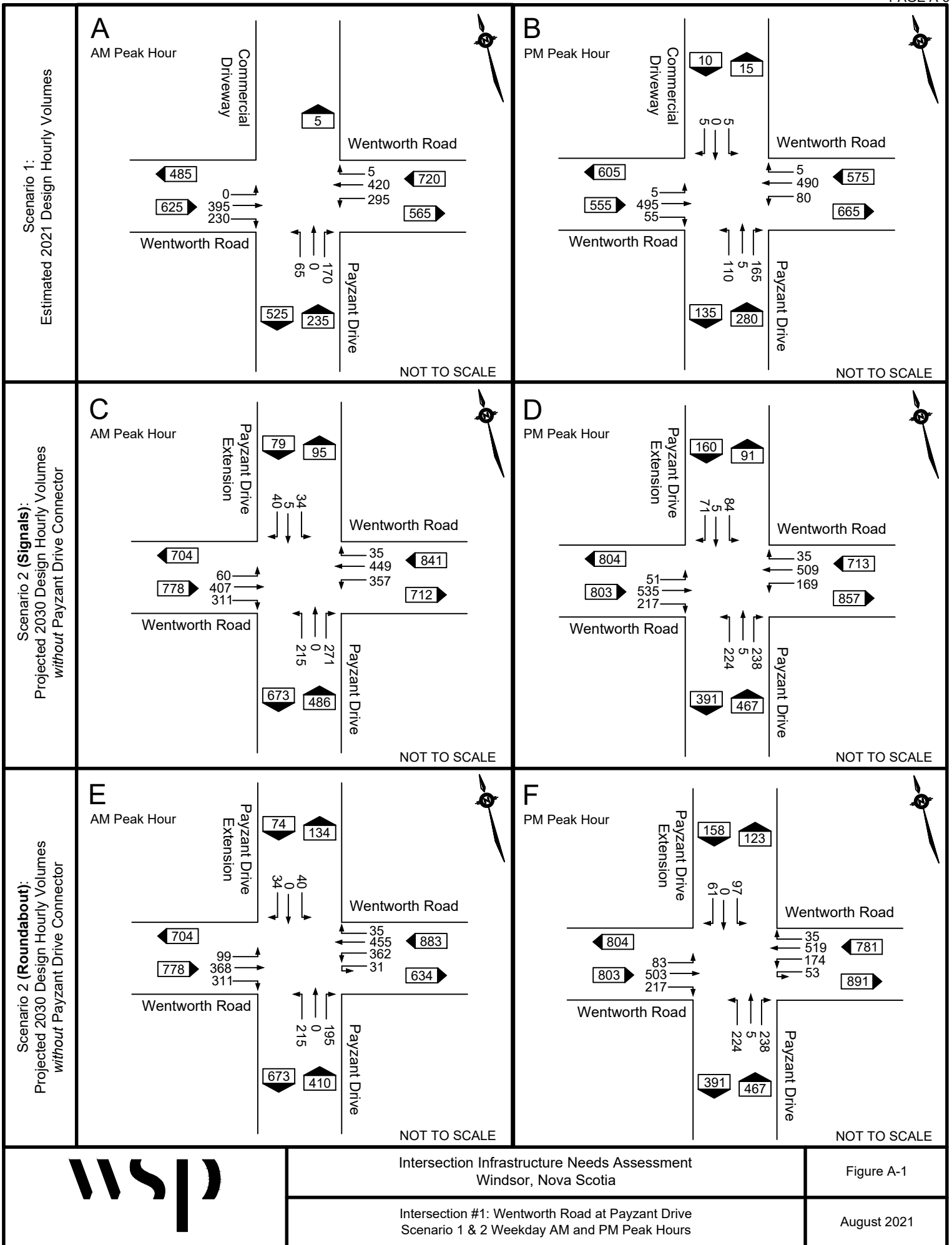
Midday Peak Period Volume Data

Time	King Street Northbound Approach			Cottage Street Westbound Approach		King Street Southbound Approach			Chester Road Eastbound Approach		Total Vehicles
	A	B	C	D	F	G	H	I	J	L	
11:30 11:45	14	46	0	1	1	5	48	28	22	12	177
11:45 12:00	11	49	5	6	5	1	48	33	37	14	209
12:00 12:15	16	64	1	3	4	1	44	41	25	10	209
12:15 12:30	10	39	0	4	2	1	56	25	20	17	174
12:30 12:45	10	51	0	0	1	5	49	20	26	17	179
12:45 13:00	11	59	1	1	2	1	47	24	34	16	196
13:00 13:15	8	48	2	1	2	0	44	27	26	21	179
13:15 13:30	11	44	1	0	0	1	49	30	28	15	179
Midday Peak Hour	47	203	6	13	12	8	197	119	108	58	771
11:30 12:30	51	198	6	14	12	8	196	127	104	53	769
12:30 13:30	40	202	4	2	5	7	189	101	114	69	733
	Ped 1			Ped 2		Ped 3			Ped 4		Total Peds
11:30 12:30	0			4		1			0		5
12:30 13:30	0			0		0			0		0

PM Peak Period Volume Data

Time	King Street Northbound Approach			Cottage Street Westbound Approach		King Street Southbound Approach			Chester Road Eastbound Approach		Total Vehicles
	A	B	C	D	F	G	H	I	J	L	
15:30 15:45	24	66	1	2	5	1	74	41	27	17	258
15:45 16:00	28	49	2	2	0	2	57	44	38	11	233
16:00 16:15	23	61	1	8	11	2	63	40	29	19	257
16:15 16:30	32	54	0	3	1	1	57	47	19	9	223
16:30 16:45	31	52	1	1	4	2	66	51	30	14	252
16:45 17:00	33	48	3	6	2	2	68	53	29	18	262
17:00 17:15	28	58	0	1	0	1	56	42	24	17	227
17:15 17:30	24	44	0	0	2	1	51	33	13	9	177
PM Peak Hour	119	215	5	18	18	7	254	191	107	60	994
15:30 16:30	107	230	4	15	17	6	251	172	113	56	971
16:30 17:30	116	202	4	8	8	6	241	179	96	58	918
	Ped 1			Ped 2		Ped 3			Ped 4		Total Peds
15:30 16:30	1			5		1			0		7
16:30 17:30	0			5		5			0		10

* Count completed by WSP



Intersection Infrastructure Needs Assessment
Windsor, Nova Scotia

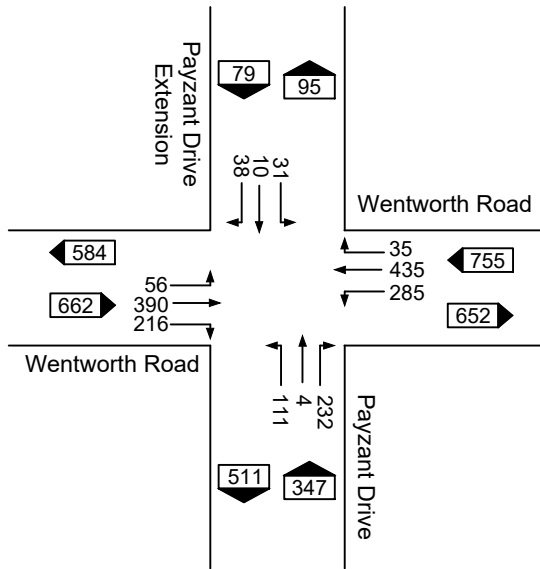
Figure A-1

Intersection #1: Wentworth Road at Payzant Drive
Scenario 1 & 2 Weekday AM and PM Peak Hours

August 2021

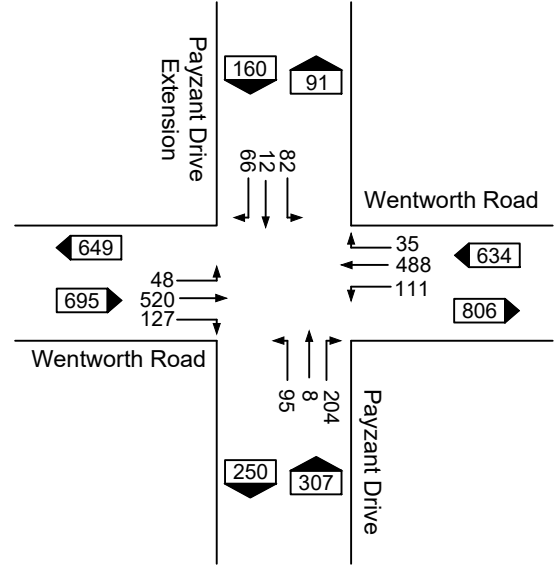
Scenario 3 (Signals):
Projected 2030 Design Hourly Volumes with Payzant Drive Connector

A
AM Peak Hour



NOT TO SCALE

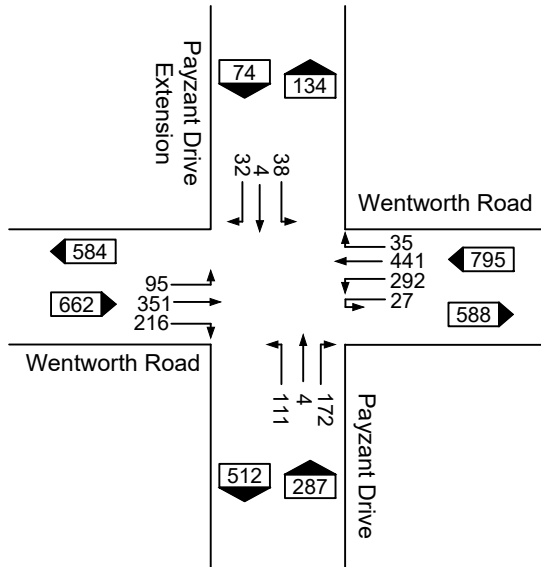
B
PM Peak Hour



NOT TO SCALE

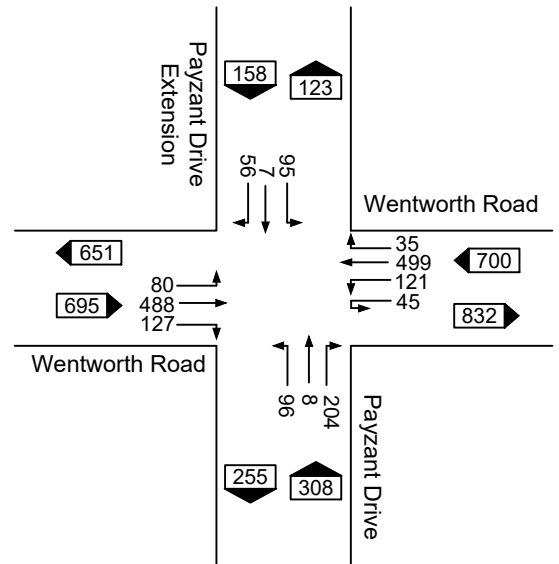
Scenario 3 (Roundabout):
Projected 2030 Design Hourly Volumes with Payzant Drive Connector

C
AM Peak Hour



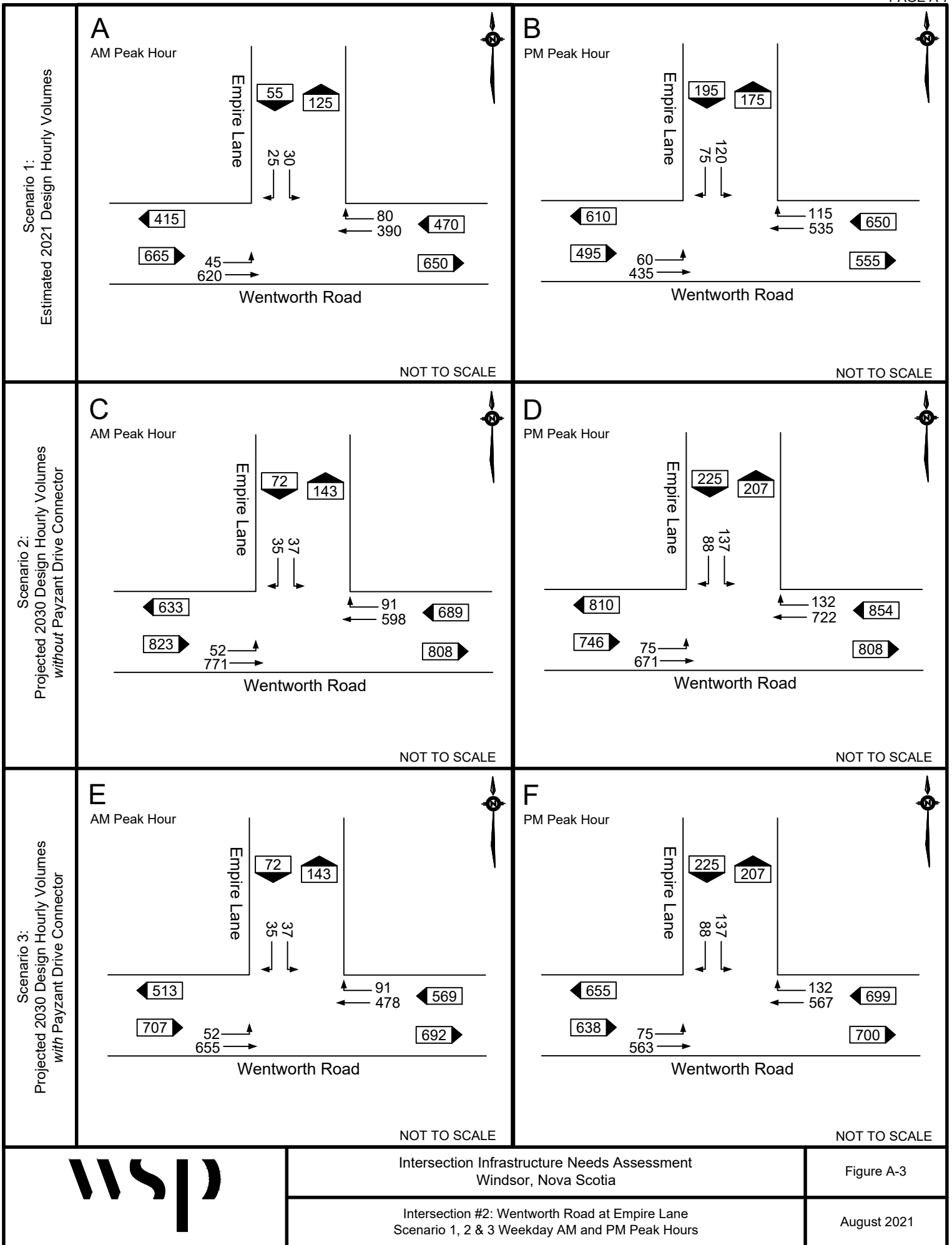
NOT TO SCALE

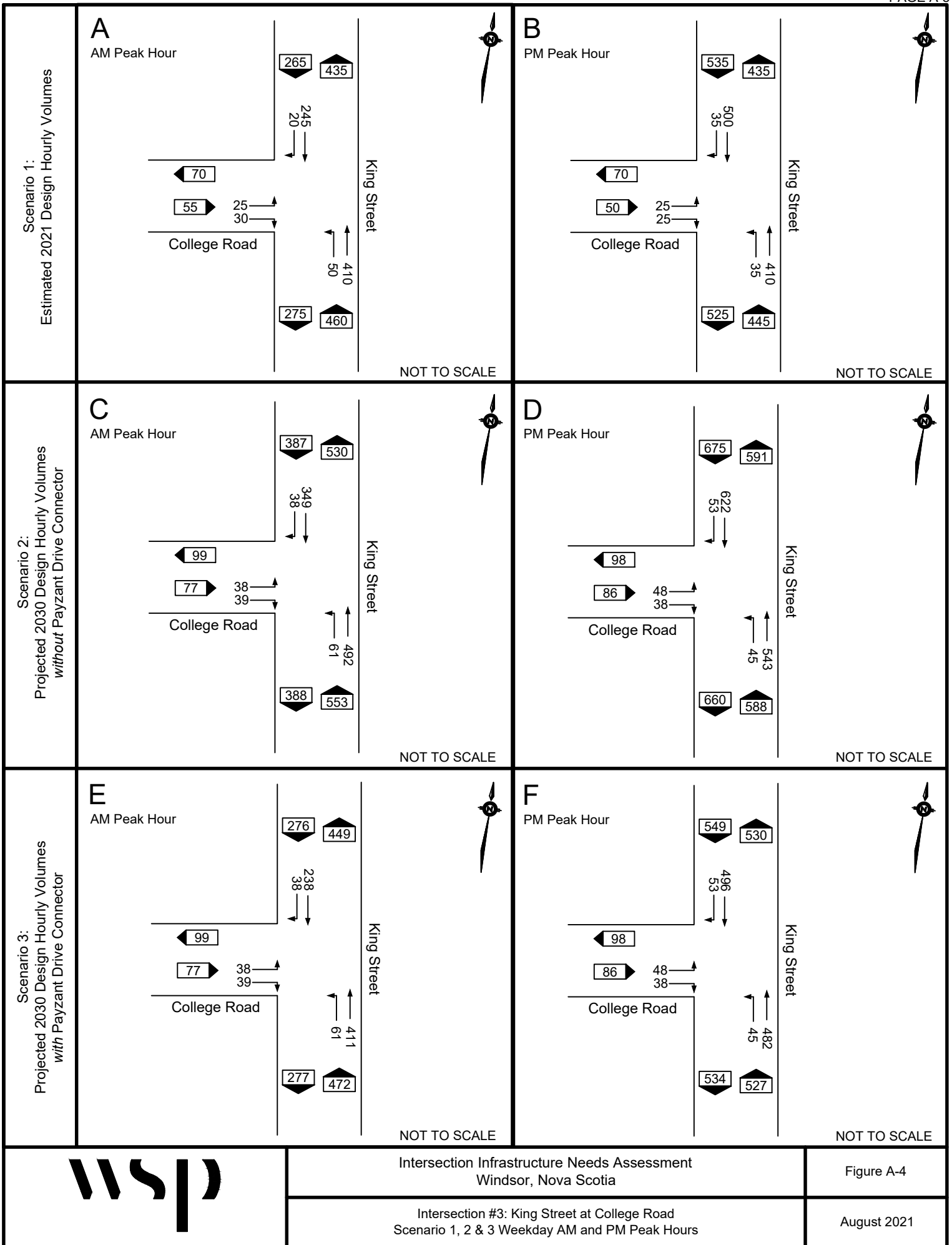
D
PM Peak Hour

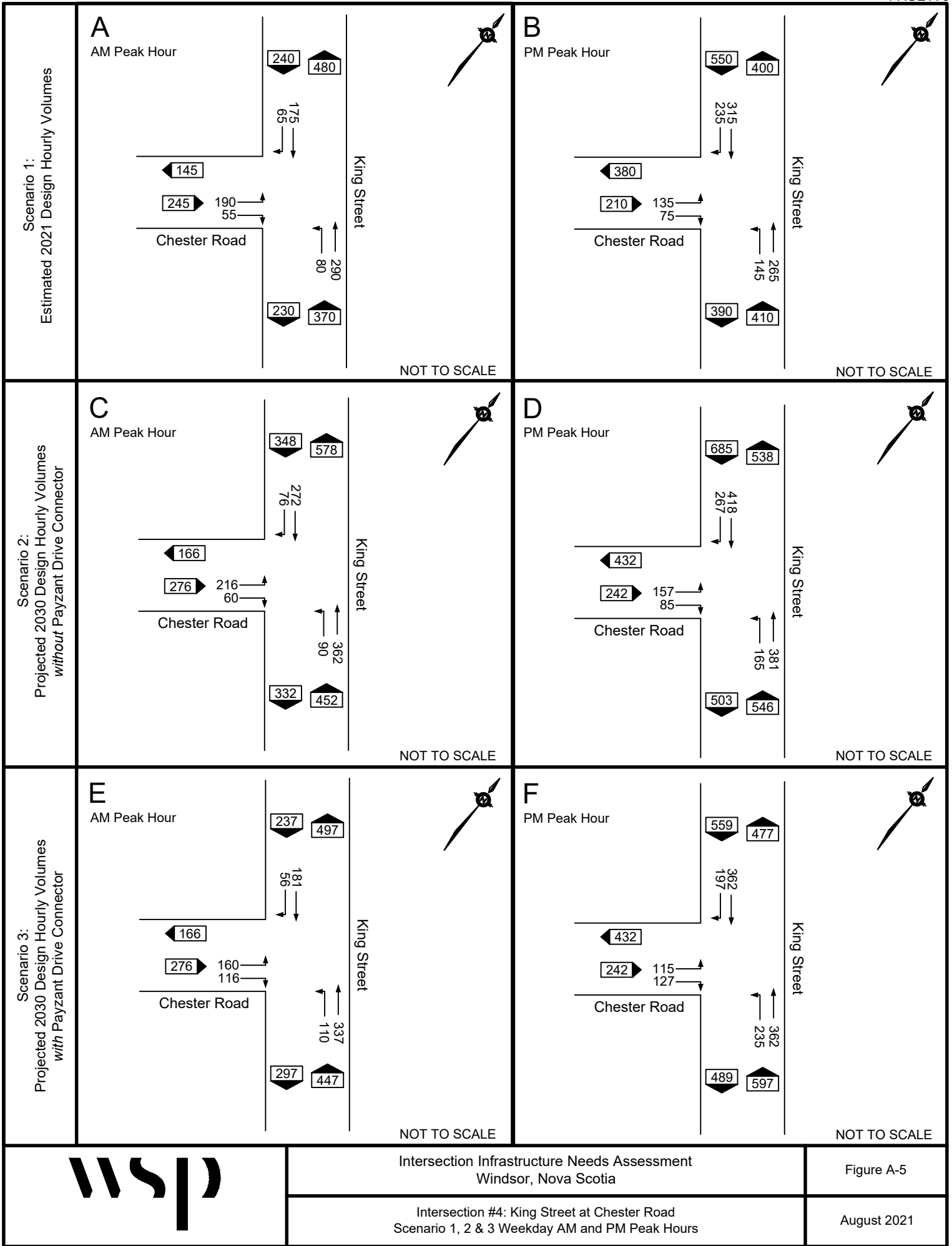


NOT TO SCALE

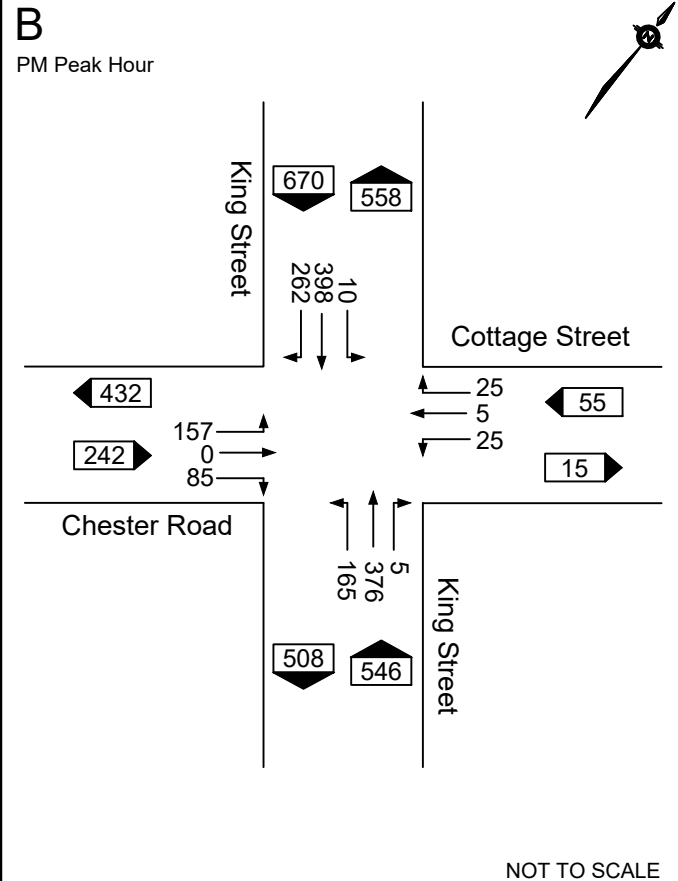
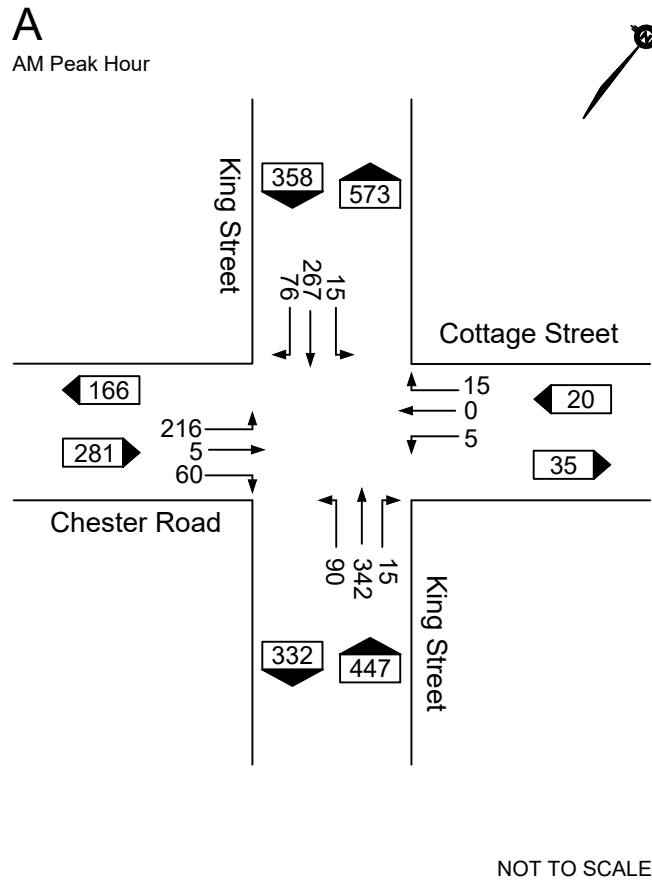




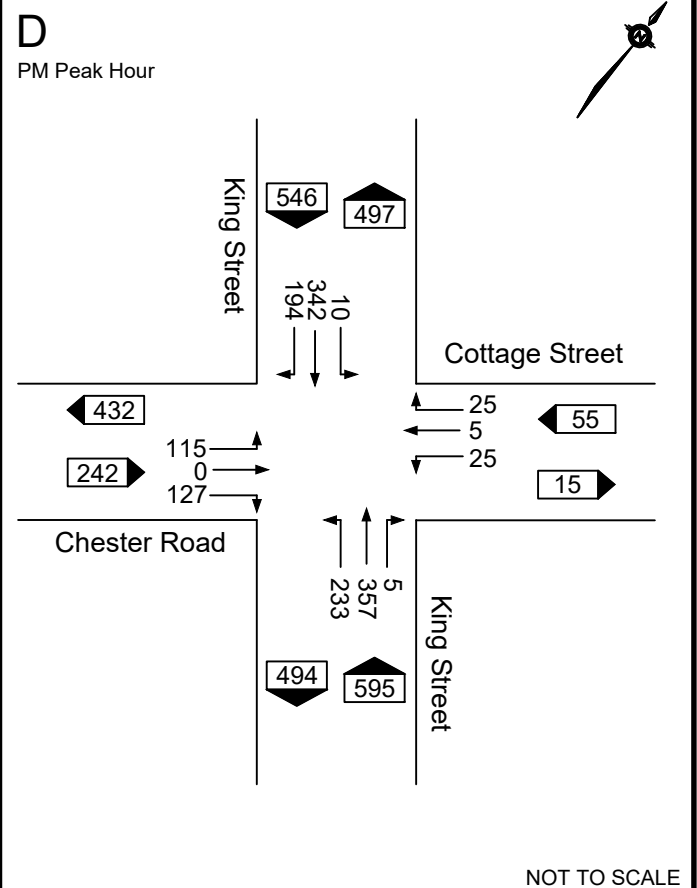
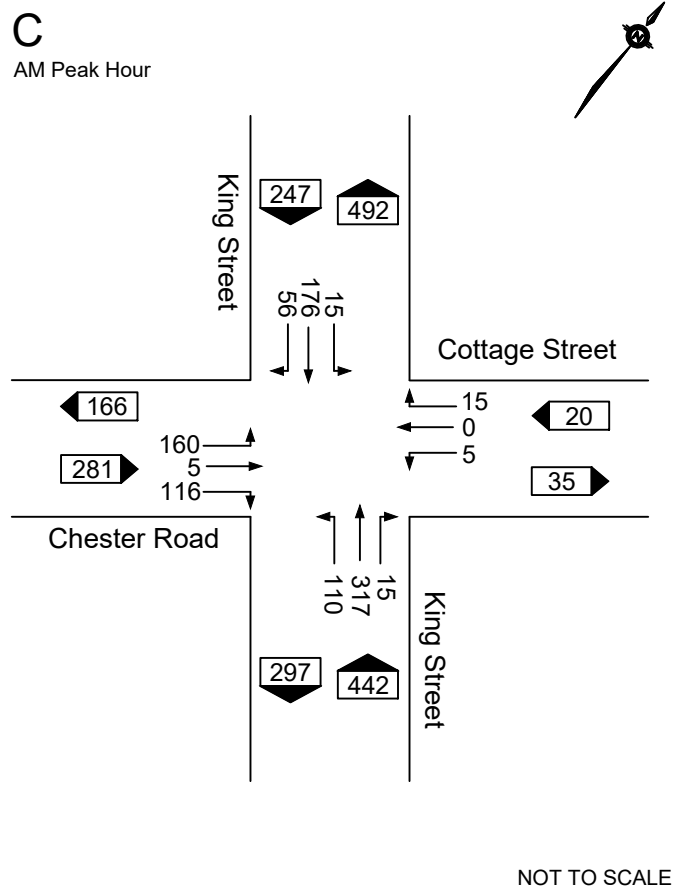




Scenario 2:
Projected 2030 Design Hourly Volumes
without Payzant Drive Connector



Scenario 3:
Projected 2030 Design Hourly Volumes
with Payzant Drive Connector



Intersection Infrastructure Needs Assessment
Windsor, Nova Scotia

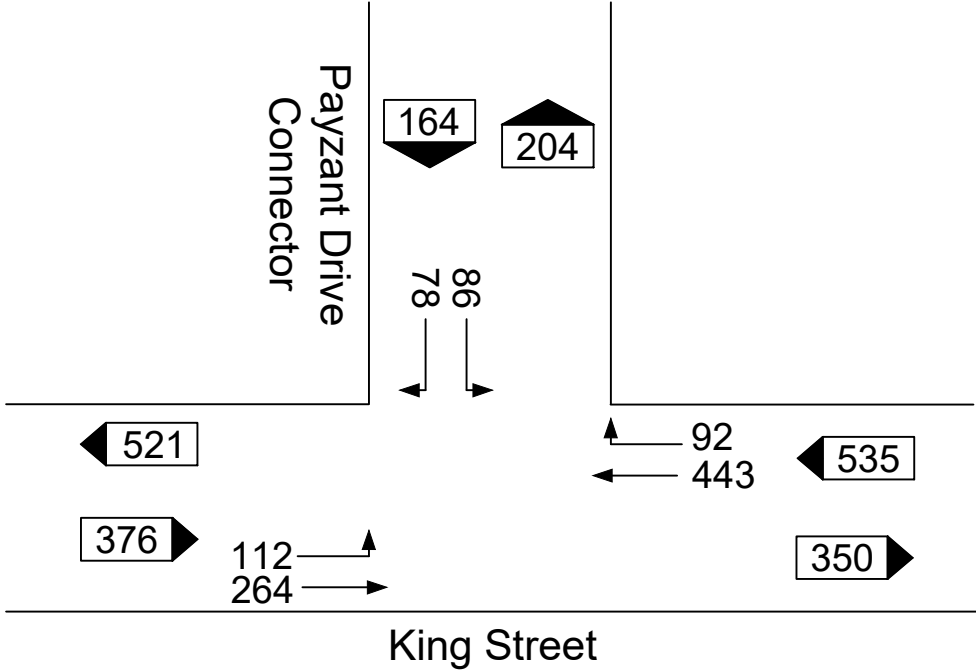
Intersection #4: King Street at Chester Road & Cottage Street
Scenario 2 & 3 Weekday AM and PM Peak Hours

Figure A-6

August 2021

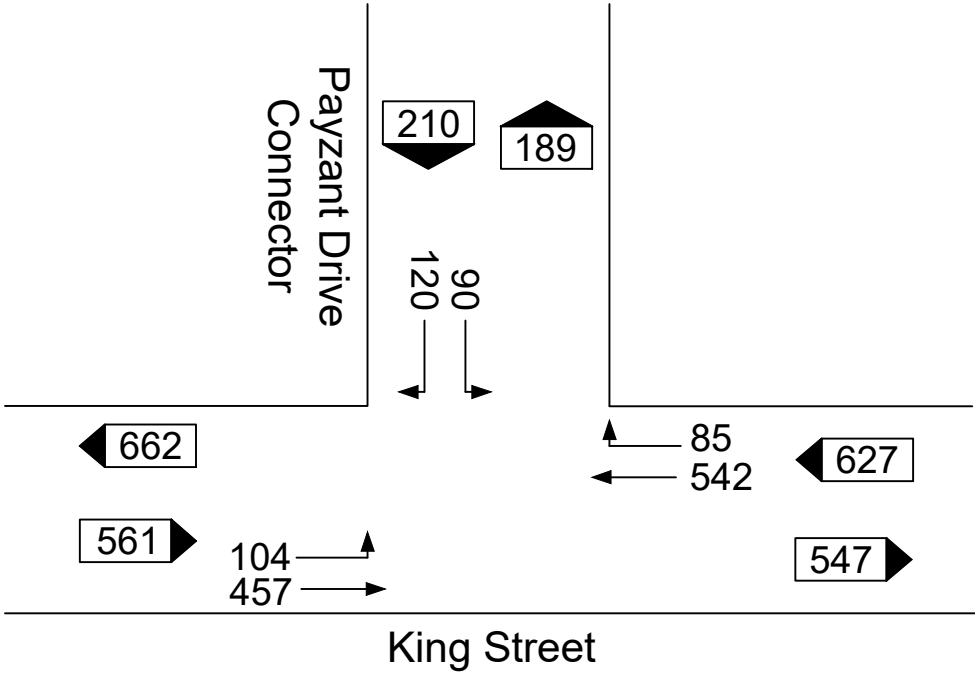
Scenario 3: Projected 2030 Design Hourly Volumes with Payzant Drive Connector

A
AM Peak Hour



NOT TO SCALE

B
PM Peak Hour



NOT TO SCALE



Table A-5
2020 COUNT PROGRAM
Average Group Factors (2010 to 2019)

G:/im/Asset.sys/censustm/counts/factors/fac10-19.xlw

Week Number	2020 Starting Date	AA Week Factor	A Week Factor	B Week Factor	C Week Factor	D Week Factor	E Week Factor	F Week Factor	G Week Factor	H Week Factor
1	30-Dec	1.27	1.60	1.79	1.62	1.83	2.44	2.57	3.19	3.74
2	06-Jan	1.03	1.16	1.34	1.37	1.47	1.60	1.79	2.22	2.82
3	13-Jan	1.04	1.17	1.36	1.40	1.45	1.59	1.75	2.42	2.91
4	20-Jan	1.02	1.13	1.31	1.34	1.44	1.52	1.77	2.36	2.85
5	27-Jan	1.02	1.20	1.34	1.36	1.52	1.59	1.86	2.39	2.91
6	03-Feb	1.06	1.19	1.31	1.36	1.45	1.60	1.86	2.56	2.97
7	10-Feb	0.99	1.16	1.27	1.33	1.41	1.53	1.74	2.26	2.78
8	17-Feb	1.00	1.19	1.33	1.32	1.52	1.52	1.73	2.32	3.10
9	24-Feb	1.01	1.11	1.22	1.25	1.31	1.43	1.62	2.09	2.65
10	02-Mar	1.00	1.16	1.24	1.26	1.41	1.55	1.67	2.25	2.57
11	09-Mar	1.00	1.11	1.14	1.21	1.17	1.42	1.49	1.99	2.53
12	16-Mar	0.98	1.11	1.20	1.24	1.16	1.55	1.61	2.15	2.63
13	23-Mar	1.02	1.12	1.20	1.24	1.28	1.54	1.65	2.11	2.47
14	30-Mar	1.00	1.08	1.15	1.23	1.24	1.53	1.65	2.23	2.34
15	06-Apr	1.01	1.08	1.10	1.31	1.11	1.42	1.50	2.01	2.11
16	13-Apr	0.99	1.03	1.06	1.12	1.06	1.30	1.42	1.87	1.94
17	20-Apr	1.00	1.01	1.04	1.15	1.04	1.25	1.35	1.78	1.72
18	27-Apr	1.00	0.98	1.02	1.08	1.03	1.18	1.24	1.59	1.24
19	04-May	0.98	0.96	1.00	1.05	1.01	1.12	1.20	1.44	0.97
20	11-May	0.99	0.96	0.97	0.99	0.97	0.97	1.10	1.25	0.92
21	18-May	1.00	0.96	0.98	0.96	0.93	0.97	0.98	1.10	0.87
22	25-May	1.01	0.93	0.94	0.94	0.92	0.95	0.97	1.09	0.87
23	01-Jun	0.99	0.93	0.94	0.94	0.92	0.94	0.98	1.07	0.86
24	08-Jun	0.98	0.93	0.93	0.93	0.93	0.93	0.90	0.90	0.78
25	15-Jun	0.98	0.92	0.90	0.89	0.90	0.84	0.82	0.81	0.72
26	22-Jun	0.99	0.92	0.90	0.87	0.87	0.79	0.77	0.72	0.65
27	29-Jun	1.02	0.89	0.88	0.81	0.81	0.70	0.66	0.61	0.53
28	06-Jul	0.99	0.89	0.84	0.77	0.77	0.66	0.64	0.54	0.50
29	13-Jul	1.00	0.87	0.84	0.75	0.74	0.67	0.60	0.51	0.50
30	20-Jul	1.00	0.89	0.83	0.74	0.71	0.62	0.58	0.48	0.47
31	27-Jul	1.01	0.89	0.81	0.71	0.69	0.58	0.55	0.43	0.46
32	03-Aug	1.04	0.88	0.79	0.69	0.71	0.57	0.52	0.41	0.43
33	10-Aug	1.01	0.87	0.78	0.72	0.73	0.61	0.55	0.44	0.45
34	17-Aug	0.99	0.84	0.77	0.74	0.74	0.63	0.56	0.46	0.47
35	24-Aug	1.00	0.88	0.80	0.74	0.74	0.66	0.62	0.51	0.51
36	31-Aug	1.02	0.90	0.85	0.80	0.80	0.73	0.68	0.60	0.61
37	07-Sep	1.00	0.95	0.89	0.87	0.87	0.80	0.75	0.69	0.64
38	14-Sep	0.98	0.94	0.89	0.89	0.93	0.85	0.79	0.67	0.65
39	21-Sep	0.98	0.93	0.89	0.89	0.93	0.87	0.78	0.72	0.71
40	28-Sep	0.99	0.94	0.91	0.91	0.98	0.89	0.80	0.75	0.83
41	05-Oct	1.00	0.93	0.89	0.85	0.92	0.91	0.73	0.64	0.86
42	12-Oct	1.00	0.97	0.93	0.91	0.94	0.96	0.76	0.72	0.99
43	19-Oct	0.97	0.96	0.95	0.97	1.02	1.04	1.00	1.05	1.19
44	26-Oct	0.97	1.00	1.00	1.03	1.05	1.11	1.17	1.36	1.34
45	02-Nov	0.96	1.04	1.03	1.09	1.09	1.17	1.30	1.57	1.40
46	09-Nov	1.00	1.08	1.04	1.10	1.09	1.27	1.36	1.70	1.41
47	16-Nov	0.97	1.04	1.04	1.09	1.11	1.26	1.35	1.72	1.51
48	23-Nov	0.98	1.05	1.07	1.15	1.15	1.31	1.40	1.77	1.61
49	30-Nov	0.97	1.07	1.08	1.18	1.09	1.30	1.42	1.85	1.65
50	07-Dec	0.99	1.04	1.10	1.17	1.14	1.33	1.47	1.88	1.68
51	14-Dec	1.00	1.06	1.16	1.21	1.19	1.36	1.51	1.91	1.92
52	21-Dec	1.25	1.16	1.24	1.21	1.11	1.60	1.71	2.07	2.54
53	28-Dec	1.35	1.79	1.65	1.88	1.35	1.64	1.90	3.32	3.17

APPENDIX

B

WARRANT ANALYSIS



2005 Canadian Traffic Signal Warrant Matrix Analysis

Table B-1 - Wentworth Road at Payzant Drive / Driveway

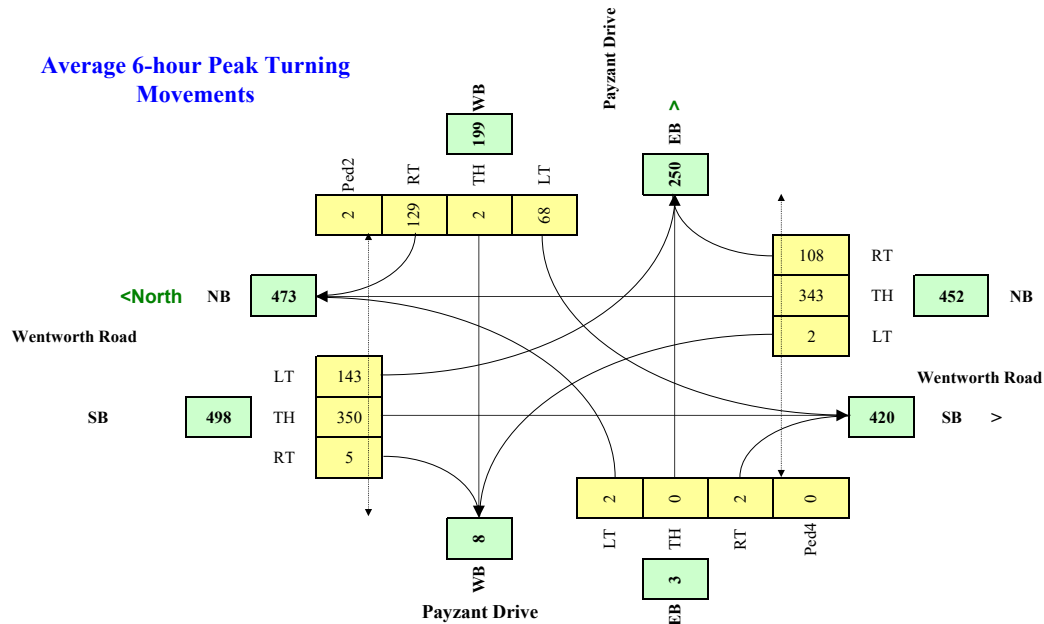
Scenario 1 - 2021 Existing Conditions

Main Street (name)	Wentworth Road			Direction (EW or NS)		NS	Date:		August 2021
Side Street (name)	Payzant Drive			Direction (EW or NS)		EW	City:		Windsor, NS
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Wentworth Road	NB	1			1		450	1	
Wentworth Road	SB	1			1		680	1	
Payzant Drive	WB	1			1				
Driveway	EB			1					
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
Wentworth Road	NS	50	2.0%	n	0.0				
Payzant Drive	EW	50	2.0%	n					

	Ped3 NS W Side	Ped1 NS E Side	Ped2 EW N Side	Ped4 EW S Side
7:00 - 8:00	1	4	0	0
8:00 - 9:00	5	5	3	0
11:30 - 12:30	6	4	1	0
12:30 - 13:30	3	3	1	0
15:30 - 16:30	5	2	5	0
16:30 - 17:30	2	1	0	0
Total (6-hour peak)	22	19	10	0
Average (6-hour peak)	4	3	2	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	0	395	230	295	420	5	65	0	170	0	0	0
8:00 - 9:00	0	295	175	220	315	5	50	0	130	0	0	0
11:30 - 12:30	0	225	70	95	230	5	45	0	85	0	0	0
12:30 - 13:30	0	225	70	95	230	5	45	0	85	0	0	0
15:30 - 16:30	5	420	45	70	415	5	95	5	140	5	0	5
16:30 - 17:30	5	495	55	80	490	5	110	5	165	5	0	5
Total (6-hour peak)	10	2,055	645	855	2,100	30	410	10	775	10	0	10
Average (6-hour peak)	2	343	108	143	350	5	68	2	129	2	0	2



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 82 Veh 81 Veh 1 Ped
NOT Warranted

2005 Canadian Traffic Signal Warrant Matrix Analysis

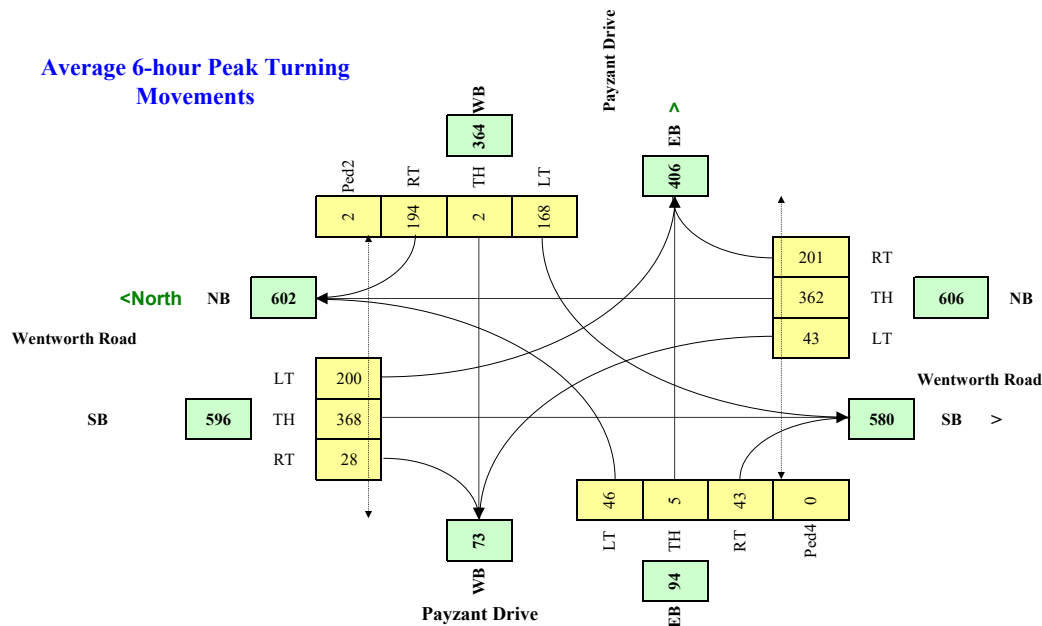
Table B-2 - Wentworth Road at Payzant Drive
Scenario 2 - 2030 Without Payzant Drive Connector Open

Main Street (name)	Wentworth Road			Direction (EW or NS)		NS	Date:	August 2021	
Side Street (name)	Payzant Drive			Direction (EW or NS)		EW		City:	Windsor, NS
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Wentworth Road	NB	1			1		450	1	
Wentworth Road	SB	1			1		680	1	
Payzant Drive	WB	1			1				
Payzant Drive	EB	1			1				
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
Wentworth Road	NS	50	2.0%	n	0.0				
Payzant Drive	EW	50	2.0%	n					

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	1	4	0	0
8:00 - 9:00	5	5	3	0
11:30 - 12:30	6	4	1	0
12:30 - 13:30	3	3	1	0
15:30 - 16:30	5	2	5	0
16:30 - 17:30	2	1	0	0
Total (6-hour peak)	22	19	10	0
Average (6-hour peak)	4	3	2	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	60	405	310	355	450	35	215	0	270	35	5	40
8:00 - 9:00	45	305	235	270	335	25	160	0	205	25	5	30
11:30 - 12:30	30	235	130	130	240	20	110	0	125	30	5	30
12:30 - 13:30	30	235	130	130	240	20	110	0	125	30	5	30
15:30 - 16:30	45	455	185	145	435	30	190	5	200	70	5	60
16:30 - 17:30	50	535	215	170	510	35	225	5	240	85	5	70
Total (6-hour peak)	260	2,170	1,205	1,200	2,210	165	1,010	10	1,165	275	30	260
Average (6-hour peak)	43	362	201	200	368	28	168	2	194	46	5	43



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W =	229	227	2
		Veh	Ped
Warranted			

2005 Canadian Traffic Signal Warrant Matrix Analysis

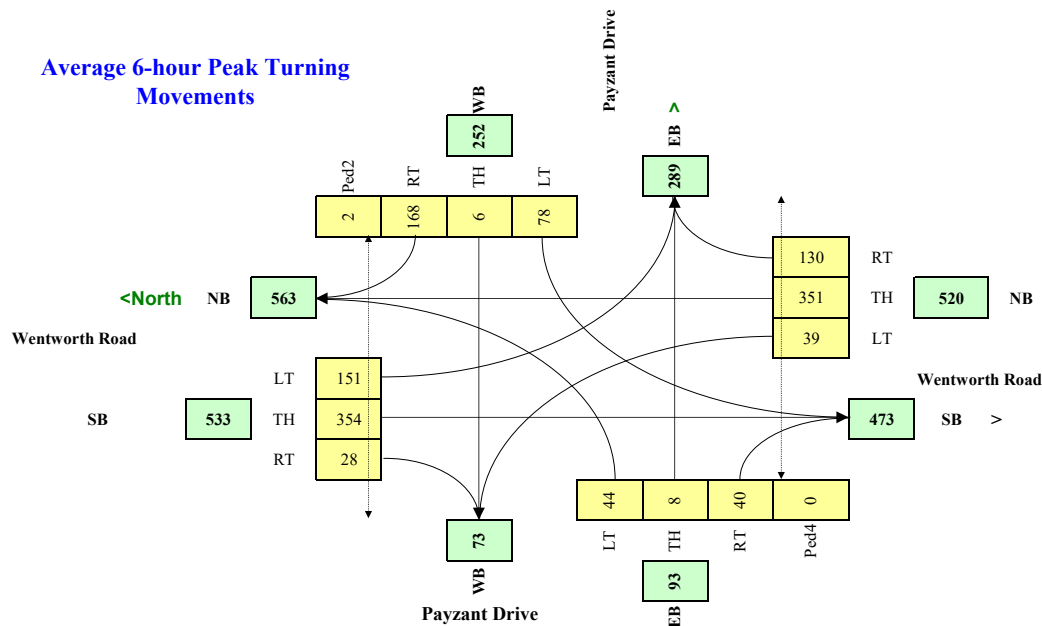
Table B-3 - Wentworth Road at Payzant Drive
Scenario 3 - 2030 With Payzant Drive Connector Open

Main Street (name)	Wentworth Road			Direction (EW or NS)			NS	Date:	August 2021
Side Street (name)	Payzant Drive			Direction (EW or NS)			EW		City:
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Wentworth Road	NB	1			1		450	1	
Wentworth Road	SB	1			1		680	1	
Payzant Drive	WB	1			1				
Payzant Drive	EB	1			1				
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
Wentworth Road	NS	50	2.0%	n	0.0				
Payzant Drive	EW	50	2.0%	n					

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	1	4	0	0
8:00 - 9:00	5	5	3	0
11:30 - 12:30	6	4	1	0
12:30 - 13:30	3	3	1	0
15:30 - 16:30	5	2	5	0
16:30 - 17:30	2	1	0	0
Total (6-hour peak)	22	19	10	0
Average (6-hour peak)	4	3	2	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	55	390	215	285	435	35	110	5	230	30	10	40
8:00 - 9:00	40	295	160	215	325	25	85	5	175	25	10	30
11:30 - 12:30	25	230	85	100	230	20	50	5	110	30	5	25
12:30 - 13:30	25	230	85	100	230	20	50	5	110	30	5	25
15:30 - 16:30	40	440	110	95	415	30	80	5	175	70	10	55
16:30 - 17:30	50	520	125	110	490	35	95	10	205	80	10	65
Total (6-hour peak)	235	2,105	780	905	2,125	165	470	35	1,005	265	50	240
Average (6-hour peak)	39	351	130	151	354	28	78	6	168	44	8	40



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 145 143 2
 Veh Ped
Warranted

2005 Canadian Traffic Signal Warrant Matrix Analysis

Table B-4 - Wentworth Road at Empire Lane
Scenario 1 - 2021 Existing Conditions

Main Street (name)	Wentworth Road	Direction (EW or NS)	NS	Date:	August 2021
Side Street (name)	Empire Lane	Direction (EW or NS)	EW	City:	Windsor, NS

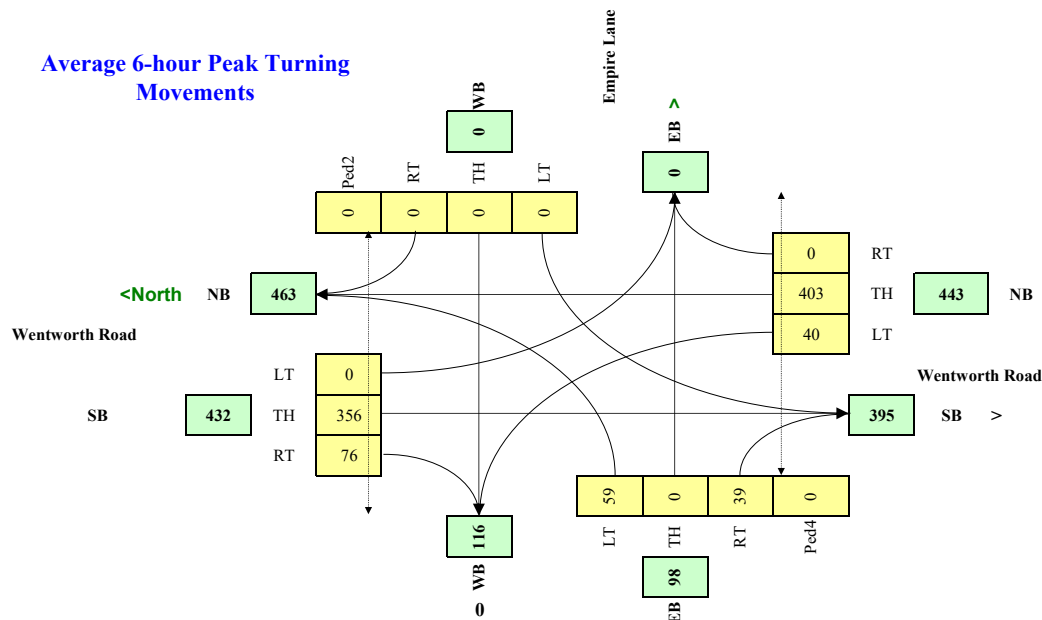
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Wentworth Road	NB	1		1			850	1	
Wentworth Road	SB				1		300	1	
Empire Lane	EB	1				1			

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Wentworth Road	NS	50	2.0%	n	0.0
Empire Lane	EW	50	2.0%	n	

	Ped3 NS W Side	Ped1 NS E Side	Ped2 EW N Side	Ped4 EW S Side
7:00 - 8:00	1	0	0	0
8:00 - 9:00	4	0	0	0
11:30 - 12:30	5	0	0	0
12:30 - 13:30	4	0	0	0
15:30 - 16:30	6	0	0	0
16:30 - 17:30	1	0	1	0
Total (6-hour peak)	21	0	1	0
Average (6-hour peak)	4	0	0	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	45	620	0	0	390	80	0	0	0	30	0	25
8:00 - 9:00	35	465	0	0	295	60	0	0	0	25	0	20
11:30 - 12:30	25	265	0	0	230	50	0	0	0	40	0	25
12:30 - 13:30	25	265	0	0	230	50	0	0	0	40	0	25
15:30 - 16:30	50	370	0	0	455	100	0	0	0	100	0	65
16:30 - 17:30	60	435	0	0	535	115	0	0	0	120	0	75
Total (6-hour peak)	240	2,420	0	0	2,135	455	0	0	0	355	0	235
Average (6-hour peak)	40	403	0	0	356	76	0	0	0	59	0	39



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 37 37 0
Veh Ped
NOT Warranted

2005 Canadian Traffic Signal Warrant Matrix Analysis

**Table B-5 - Wentworth Road at Empire Lane
Scenario 2 - 2030 Without Payzant Drive Connector Open**

Main Street (name)	Wentworth Road	Direction (EW or NS)	NS	Date:	August 2021
Side Street (name)	Empire Lane	Direction (EW or NS)	EW	City:	Windsor, NS

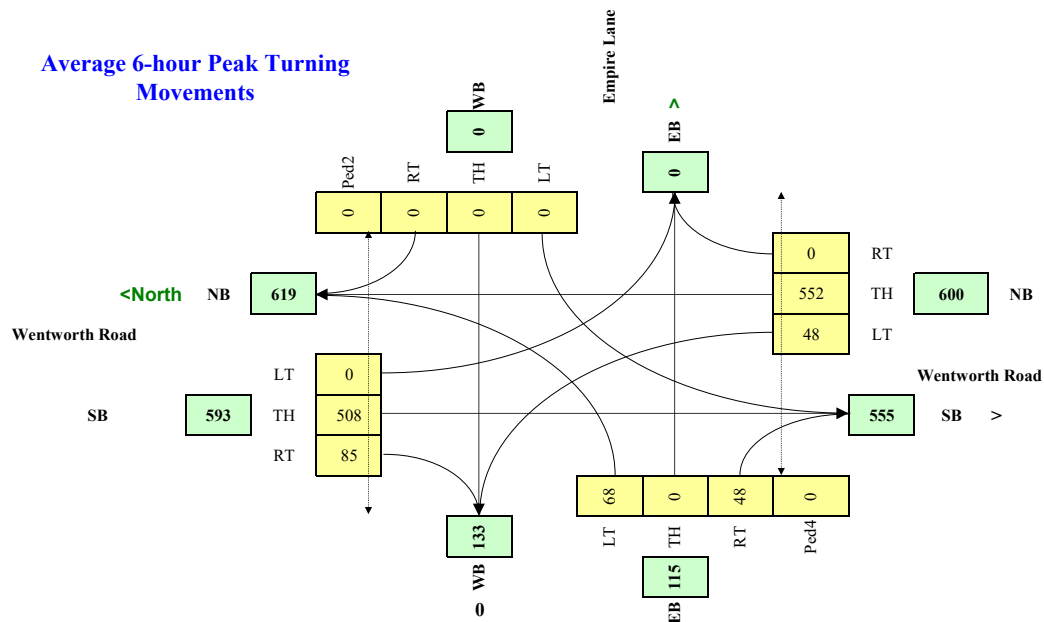
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Wentworth Road	NB	1		1			850	1	
Wentworth Road	SB				1		300	1	
Empire Lane	EB	1				1			

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Wentworth Road	NS	50	2.0%	n	0.0
Empire Lane	EW	50	2.0%	n	

	Ped3 NS W Side	Ped1 NS E Side	Ped2 EW N Side	Ped4 EW S Side
7:00 - 8:00	1	0	0	0
8:00 - 9:00	4	0	0	0
11:30 - 12:30	5	0	0	0
12:30 - 13:30	4	0	0	0
15:30 - 16:30	6	0	0	0
16:30 - 17:30	1	0	1	0
Total (6-hour peak)	21	0	1	0
Average (6-hour peak)	4	0	0	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	50	770	0	0	600	90	0	0	0	35	0	35
8:00 - 9:00	40	580	0	0	450	70	0	0	0	30	0	25
11:30 - 12:30	30	360	0	0	330	55	0	0	0	45	0	30
12:30 - 13:30	30	360	0	0	330	55	0	0	0	45	0	30
15:30 - 16:30	65	570	0	0	615	110	0	0	0	115	0	75
16:30 - 17:30	75	670	0	0	720	130	0	0	0	135	0	90
Total (6-hour peak)	290	3,310	0	0	3,045	510	0	0	0	405	0	285
Average (6-hour peak)	48	552	0	0	508	85	0	0	0	68	0	48



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 62 62 0
 Veh Ped
NOT Warranted

2005 Canadian Traffic Signal Warrant Matrix Analysis

**Table B-6 - Wentworth Road at Empire Lane
Scenario 3 - 2030 With Payzant Drive Connector Open**

Main Street (name)	Wentworth Road		Direction (EW or NS)		NS	Date:	August 2021
Side Street (name)	Empire Lane		Direction (EW or NS)		EW	City:	Windsor, NS

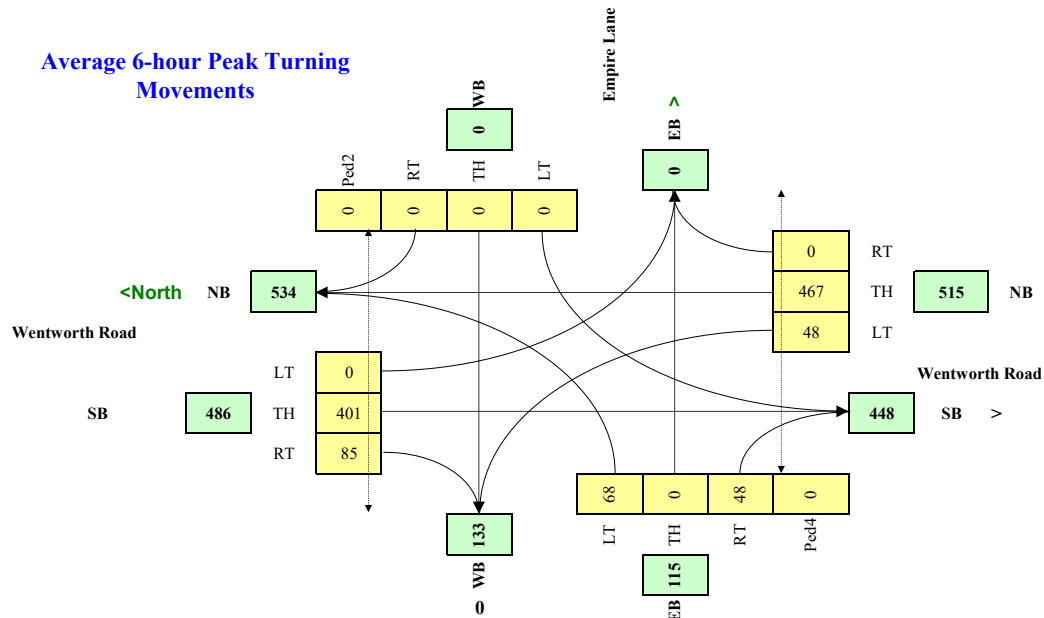
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
Wentworth Road	NB	1		1			850	1	
Wentworth Road	SB				1		300	1	
	WB								
Empire Lane	EB	1				1			

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
Wentworth Road	NS	50	2.0%	n	0.0
Empire Lane	EW	50	2.0%	n	

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S Side
7:00 - 8:00	1	0	0	0
8:00 - 9:00	4	0	0	0
11:30 - 12:30	5	0	0	0
12:30 - 13:30	4	0	0	0
15:30 - 16:30	6	0	0	0
16:30 - 17:30	1	0	1	0
Total (6-hour peak)	21	0	1	0
Average (6-hour peak)	4	0	0	0

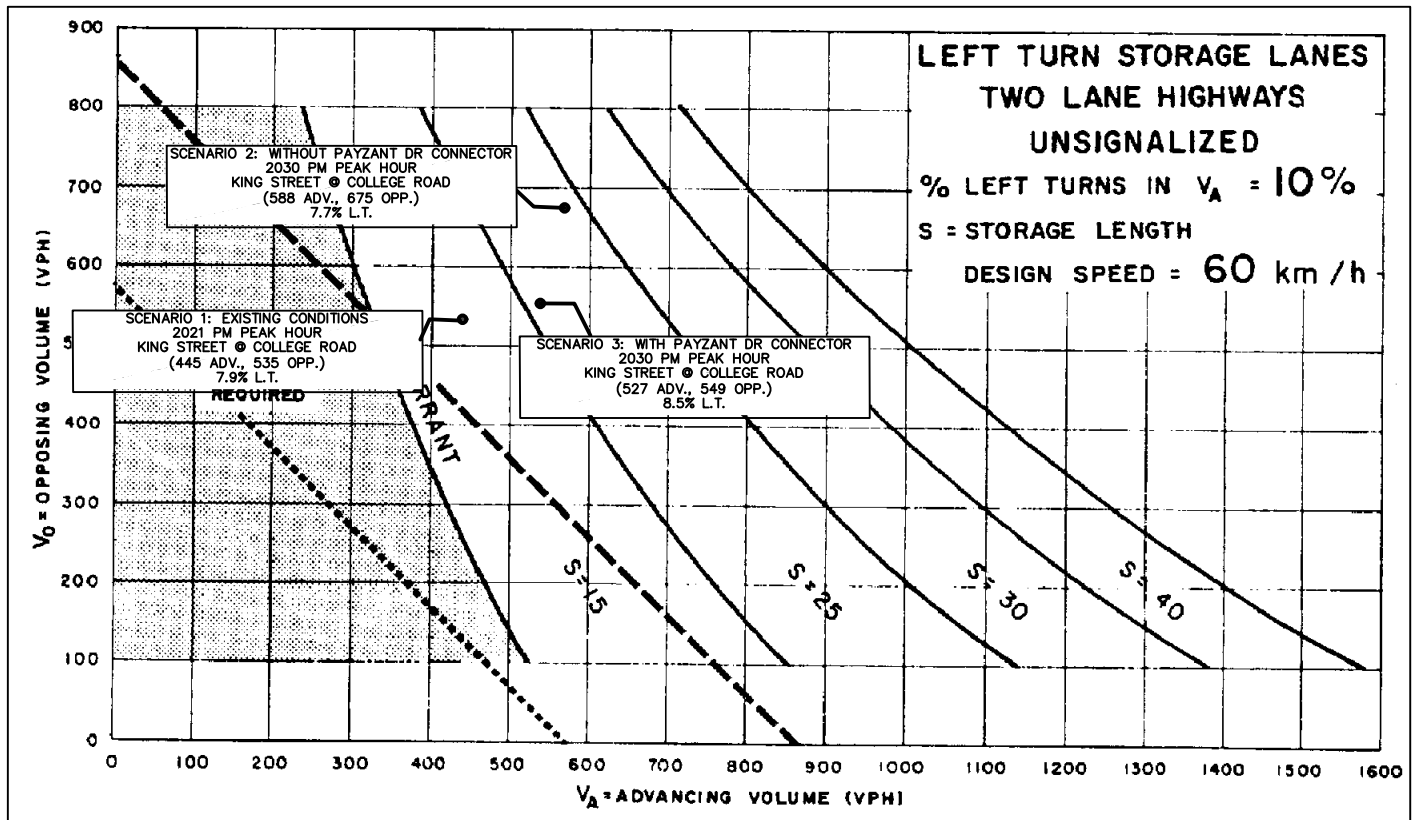
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	50	655	0	0	480	90	0	0	0	35	0	35
8:00 - 9:00	40	490	0	0	360	70	0	0	0	30	0	25
11:30 - 12:30	30	305	0	0	260	55	0	0	0	45	0	30
12:30 - 13:30	30	305	0	0	260	55	0	0	0	45	0	30
15:30 - 16:30	65	480	0	0	480	110	0	0	0	115	0	75
16:30 - 17:30	75	565	0	0	565	130	0	0	0	135	0	90
Total (6-hour peak)	290	2,800	0	0	2,405	510	0	0	0	405	0	285
Average (6-hour peak)	48	467	0	0	401	85	0	0	0	68	0	48



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 50 50 0
 Veh Ped
NOT Warranted



Intersection Infrastructure Needs Assessment
 Windsor, NS

Figure B-1

Left Turn Lane Warrants
 Intersection #3: King Street at College Road
 AM and PM Peak Hours

August 2021

2005 Canadian Traffic Signal Warrant Matrix Analysis

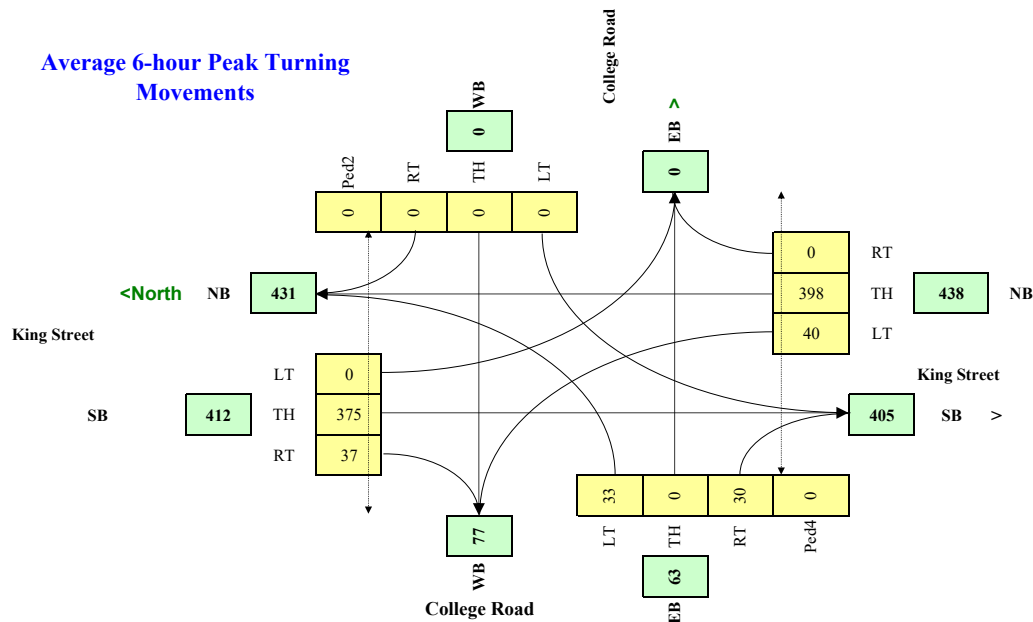
Table B-8 - King Street at College Road
Scenario 2 - 2030 Without Payzant Drive Connector Open

Main Street (name)		King Street		Direction (EW or NS)		NS	Date:		August 2021	
Side Street (name)		College Road		Direction (EW or NS)		EW	City:		Windsor, NS	
Lane Configuration			Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
King Street		NB	1		1			999	1	
King Street		SB				1		999	1	
		WB								
College Road		EB			1					
Other input			Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
King Street		NS	50	2.0%	n	0.0				
College Road		EW	50	2.0%	n					

	Ped3 NS	Ped1 NS	Ped2 EW	Ped4 EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	1	0	0
11:30 - 12:30	0	3	0	0
12:30 - 13:30	0	1	0	0
15:30 - 16:30	0	2	0	0
16:30 - 17:30	0	1	0	0
Total (6-hour peak)	0	8	0	0
Average (6-hour peak)	0	1	0	0

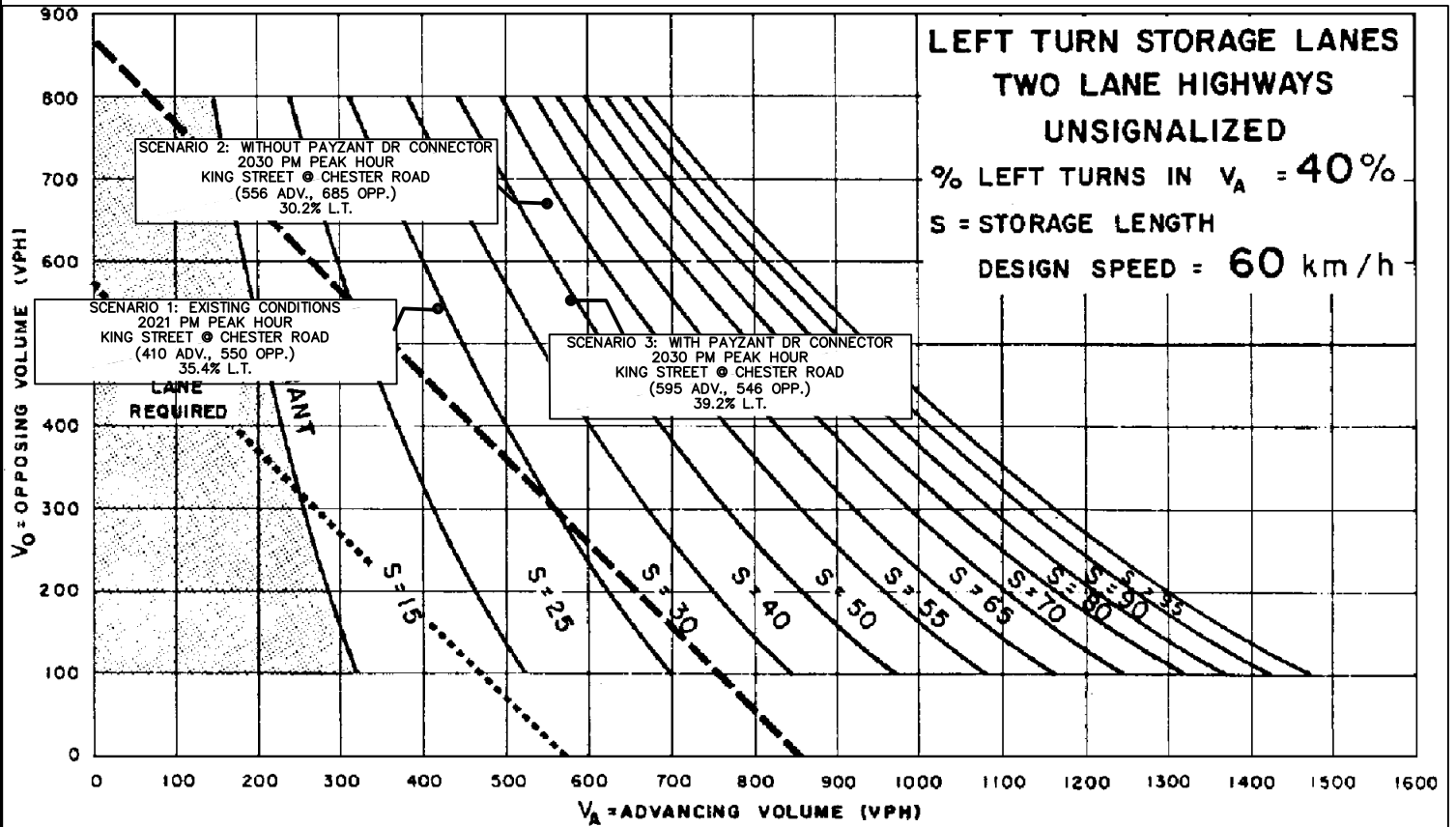
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	60	490	0	0	350	40	0	0	0	40	0	40
8:00 - 9:00	45	370	0	0	260	30	0	0	0	30	0	30
11:30 - 12:30	25	260	0	0	245	25	0	0	0	20	0	20
12:30 - 13:30	25	260	0	0	245	25	0	0	0	20	0	20
15:30 - 16:30	40	460	0	0	530	45	0	0	0	40	0	30
16:30 - 17:30	45	545	0	0	620	55	0	0	0	50	0	40
Total (6-hour peak)	240	2,385	0	0	2,250	220	0	0	0	200	0	180
Average (6-hour peak)	40	398	0	0	375	37	0	0	0	33	0	30



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 29 Veh 29 Ped 0
Not Warranted - $V_s < 75$



4-LEG INTERSECTION



Intersection Infrastructure Needs Assessment
Windsor, NS

Figure B-2

Left Turn Lane Warrants
Intersection #4: King Street at Chester Road
AM and PM Peak Hours

August 2021

2005 Canadian Traffic Signal Warrant Matrix Analysis

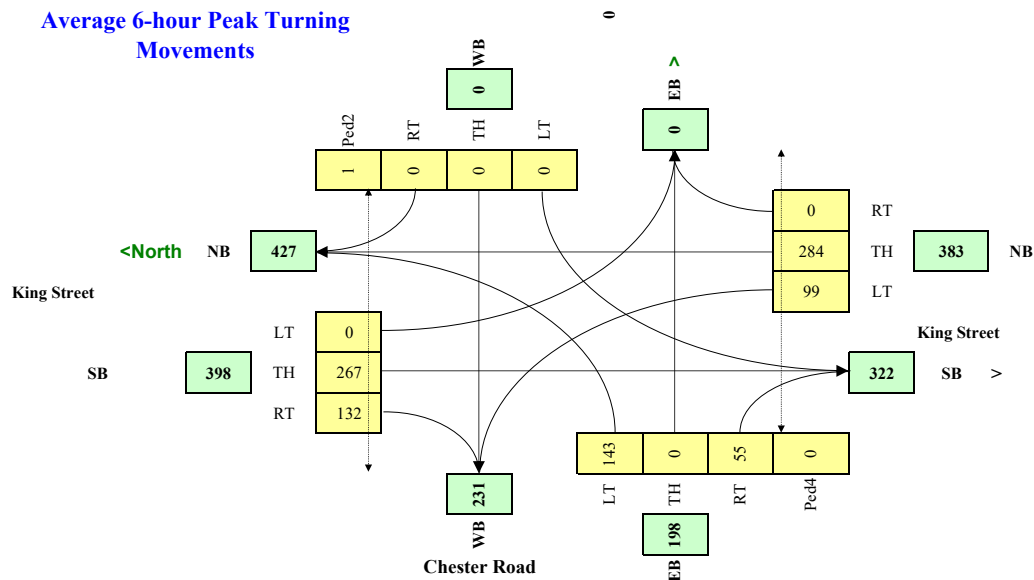
Table B-10 - King Street at Chester Road
Scenario 2 - 2030 Without Payzant Drive Connector Open

Main Street (name)		King Street		Direction (EW or NS)		NS	Date:		August 2021	
Side Street (name)		Chester Road		Direction (EW or NS)		EW	City:		Windsor, NS	
Lane Configuration			Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
King Street		NB	1		1			999	1	
King Street		SB				1		999	1	
		WB								
Chester Road		EB		1			1			
Other input			Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
King Street		NS	50	2.0%	n	0.0				
Chester Road		EW	50	2.0%	n					

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	1	0
16:30 - 17:30	0	0	5	0
Total (6-hour peak)	0	0	7	0
Average (6-hour peak)	0	0	1	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	90	360	0	0	270	75	0	0	0	215	0	60
8:00 - 9:00	70	270	0	0	205	55	0	0	0	160	0	45
11:30 - 12:30	65	185	0	0	175	85	0	0	0	95	0	35
12:30 - 13:30	65	185	0	0	175	85	0	0	0	95	0	35
15:30 - 16:30	140	325	0	0	355	225	0	0	0	135	0	70
16:30 - 17:30	165	380	0	0	420	265	0	0	0	155	0	85
Total (6-hour peak)	595	1,705	0	0	1,600	790	0	0	0	855	0	330
Average (6-hour peak)	99	284	0	0	267	132	0	0	0	143	0	55



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W =	83	82	1
		Veh	Ped
NOT Warranted			

2005 Canadian Traffic Signal Warrant Matrix Analysis

Table B-11 - King Street at Chester Road
Scenario 3 - 2030 With Payzant Drive Connector Open

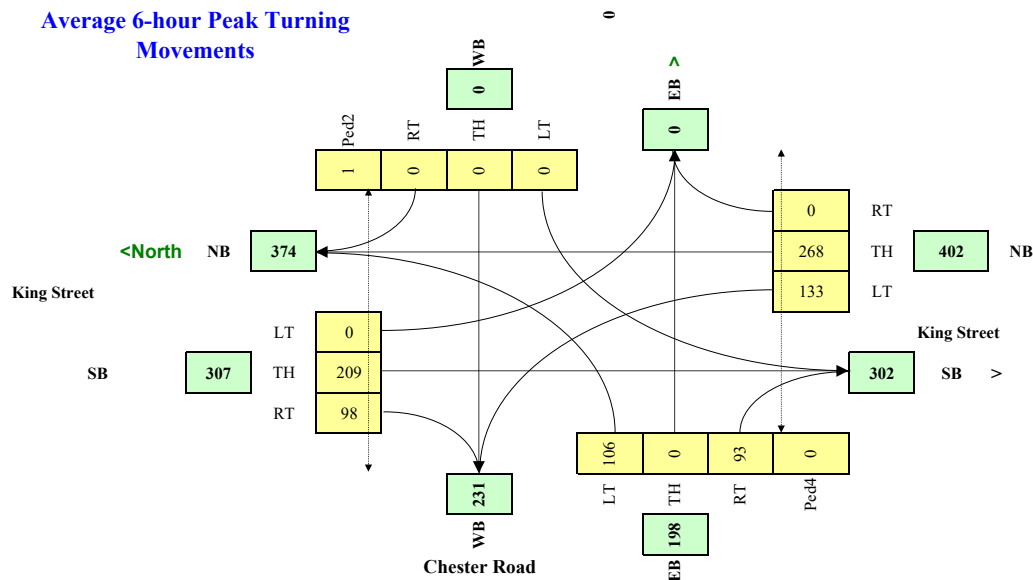
Main Street (name)		King Street		Direction (EW or NS)		NS	Date:		August 2021	
Side Street (name)		Chester Road		Direction (EW or NS)		EW	City:		Windsor, NS	
Lane Configuration			Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
King Street		NB	1		1			999	1	
King Street		SB				1		999	1	
		WB								
Chester Road		EB	1			1				
Other input			Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
King Street		NS	50	2.0%	n	0.0				
Chester Road		EW	50	2.0%	n					

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	1	0
16:30 - 17:30	0	0	5	0
Total (6-hour peak)	0	0	7	0
Average (6-hour peak)	0	0	1	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	110	335	0	0	180	55	0	0	0	160	0	115
8:00 - 9:00	85	255	0	0	135	40	0	0	0	120	0	85
11:30 - 12:30	85	175	0	0	135	65	0	0	0	70	0	60
12:30 - 13:30	85	175	0	0	135	65	0	0	0	70	0	60
15:30 - 16:30	200	310	0	0	310	165	0	0	0	100	0	110
16:30 - 17:30	235	360	0	0	360	195	0	0	0	115	0	125
Total (6-hour peak)	800	1,610	0	0	1,255	585	0	0	0	635	0	555
Average (6-hour peak)	133	268	0	0	209	98	0	0	0	106	0	93

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 67 66 1
 Veh Ped
NOT Warranted

2005 Canadian Traffic Signal Warrant Matrix Analysis

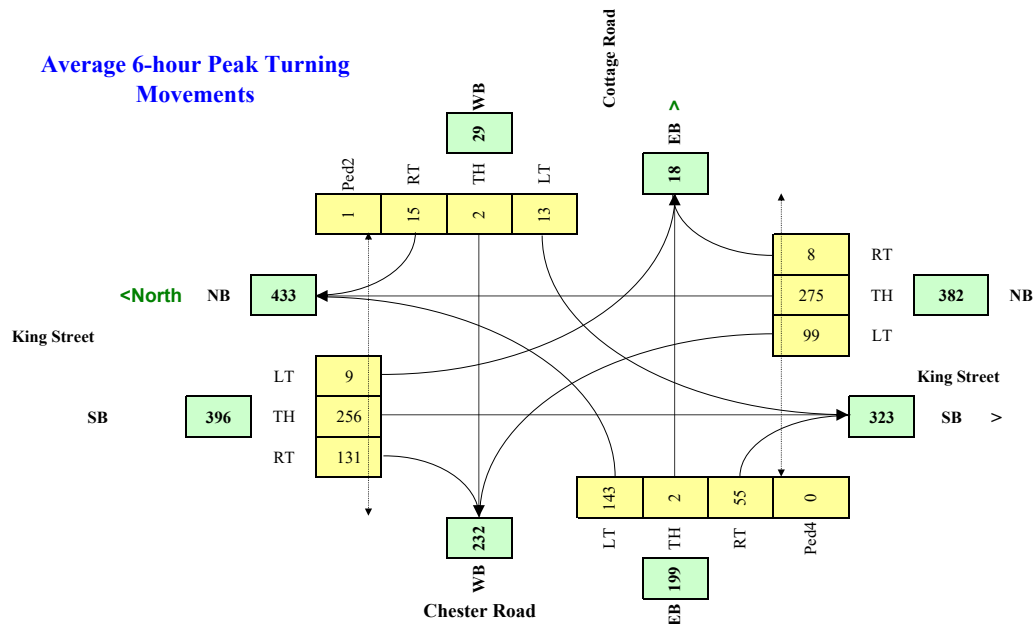
Table B-12 - King Street at Chester Road / Cottage Street
Scenario 2 - 2030 Without Payzant Drive Connector Open

Main Street (name)	King Street		Direction (EW or NS)		NS	Date:	August 2021		
Side Street (name)	Chester Road		Direction (EW or NS)		EW		City:	Windsor, NS	
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes	
King Street	NB	1		1			999	1	
King Street	SB	1		1		1	999	1	
Cottage Road	WB			1					
Chester Road	EB	1			1				
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
King Street	NS	50	2.0%	n	0.0				
Chester Road	EW	50	2.0%	n					

	Ped3 NS	Ped1 E Side	Ped2 N Side	Ped4 S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	1	0
16:30 - 17:30	0	0	5	0
Total (6-hour peak)	0	0	7	0
Average (6-hour peak)	0	0	1	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	90	340	15	15	265	75	5	0	15	215	5	60
8:00 - 9:00	70	255	10	10	200	55	5	0	10	160	5	45
11:30 - 12:30	65	180	5	5	165	85	10	0	10	95	0	35
12:30 - 13:30	65	180	5	5	165	85	10	0	10	95	0	35
15:30 - 16:30	140	320	5	10	340	225	20	5	20	135	0	70
16:30 - 17:30	165	375	5	10	400	260	25	5	25	155	0	85
Total (6-hour peak)	595	1,650	45	55	1,535	785	75	10	90	855	10	330
Average (6-hour peak)	99	275	8	9	256	131	13	2	15	143	2	55



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W =	91	90	1
	Veh	Ped	
NOT Warranted			

2005 Canadian Traffic Signal Warrant Matrix Analysis

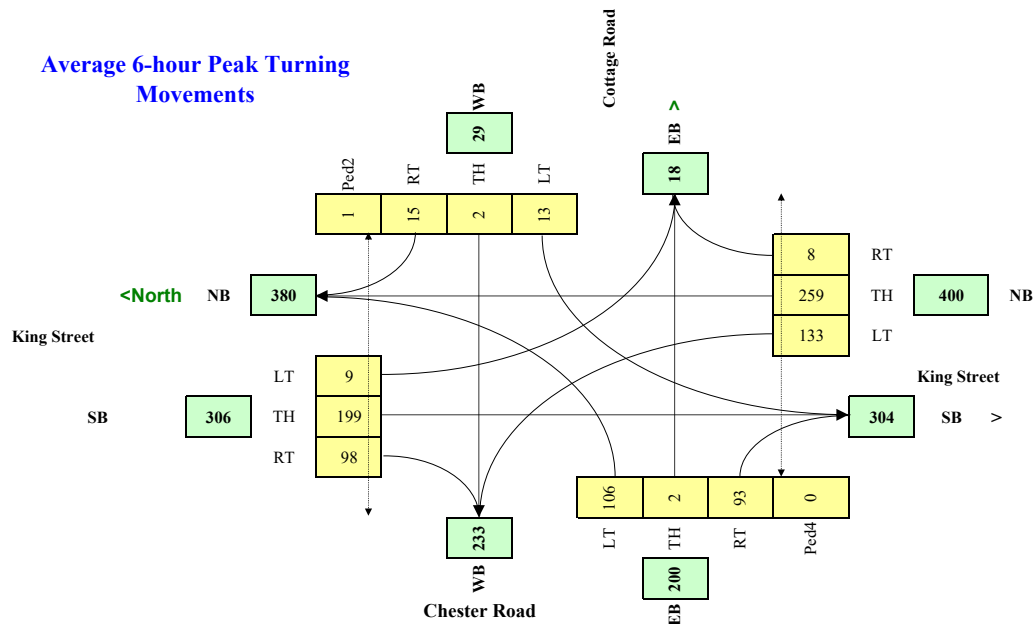
Table B-13 - King Street at Chester Road / Cottage Street
Scenario 3 - 2030 With Payzant Drive Connector Open

Main Street (name)	King Street		Direction (EW or NS)		NS	Date:	August 2021		
Side Street (name)	Chester Road		Direction (EW or NS)		EW		City:	Windsor, NS	
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT		UpStream Signal (m)	# of Thru Lanes
King Street	NB	1		1			999	1	
King Street	SB	1		1		1	999	1	
Cottage Road	WB			1					
Chester Road	EB	1				1			
Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)				
King Street	NS	50	2.0%	n	0.0				
Chester Road	EW	50	2.0%	n					

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	1	0
16:30 - 17:30	0	0	5	0
Total (6-hour peak)	0	0	7	0
Average (6-hour peak)	0	0	1	0

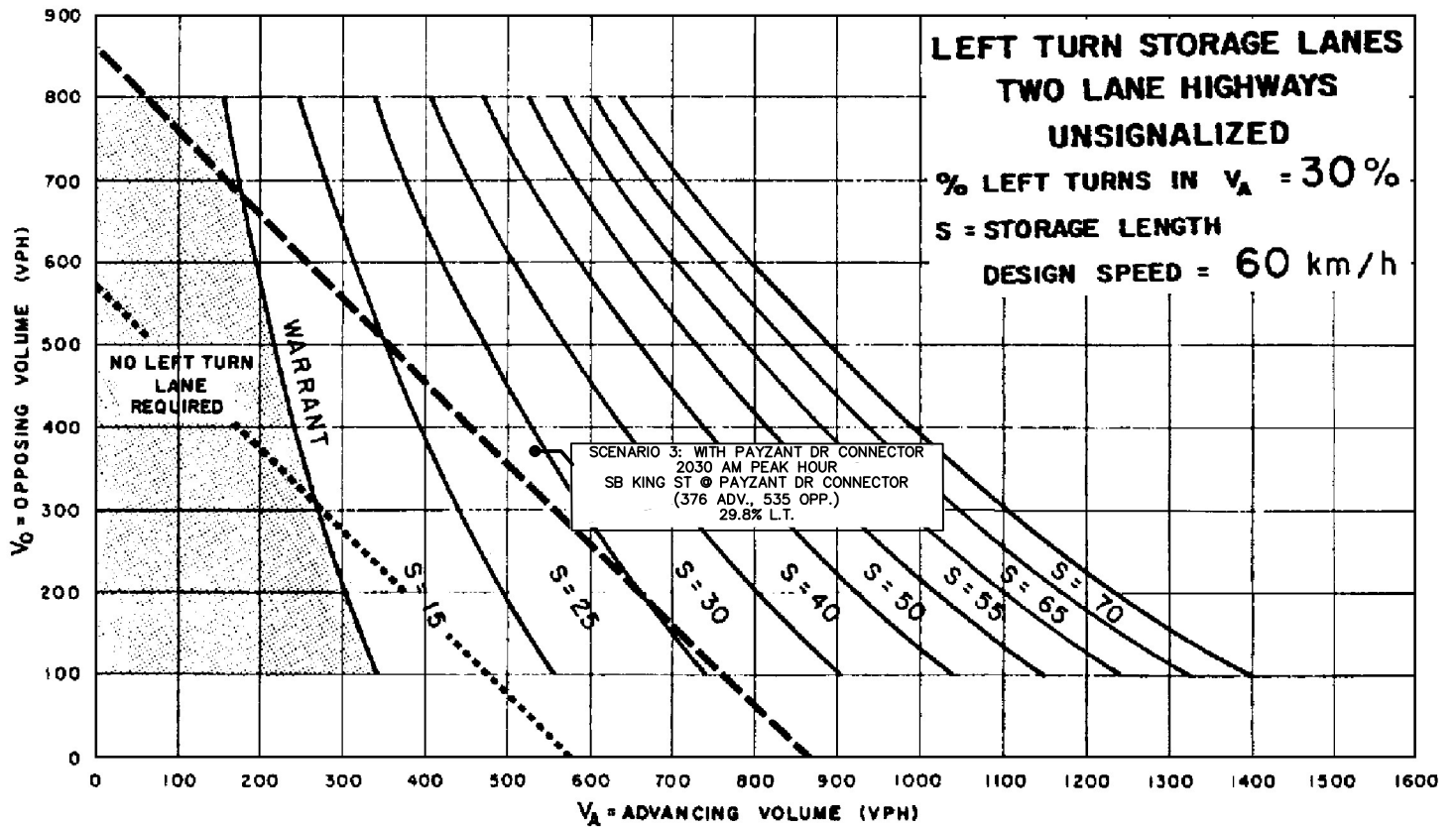
Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	110	315	15	15	175	55	5	0	15	160	5	115
8:00 - 9:00	85	240	10	10	130	40	5	0	10	120	5	85
11:30 - 12:30	85	170	5	5	130	65	10	0	10	70	0	60
12:30 - 13:30	85	170	5	5	130	65	10	0	10	70	0	60
15:30 - 16:30	200	305	5	10	290	165	20	5	20	100	0	110
16:30 - 17:30	235	355	5	10	340	195	25	5	25	115	0	125
Total (6-hour peak)	800	1,555	45	55	1,195	585	75	10	90	635	10	555
Average (6-hour peak)	133	259	8	9	199	98	13	2	15	106	2	93



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W = 75 74 1
Veh Ped
NOT Warranted



Intersection Infrastructure Needs Assessment
Windsor, NS

Figure B-3

Left Turn Lane Warrant
Intersection #5: King Street at Payzant Drive Connector
AM and PM Peak Hours

August 2021

2005 Canadian Traffic Signal Warrant Matrix Analysis

Table B-15 - King Street at Payzant Drive Connector
Scenario 3 - 2030 With Payzant Drive Connector Open

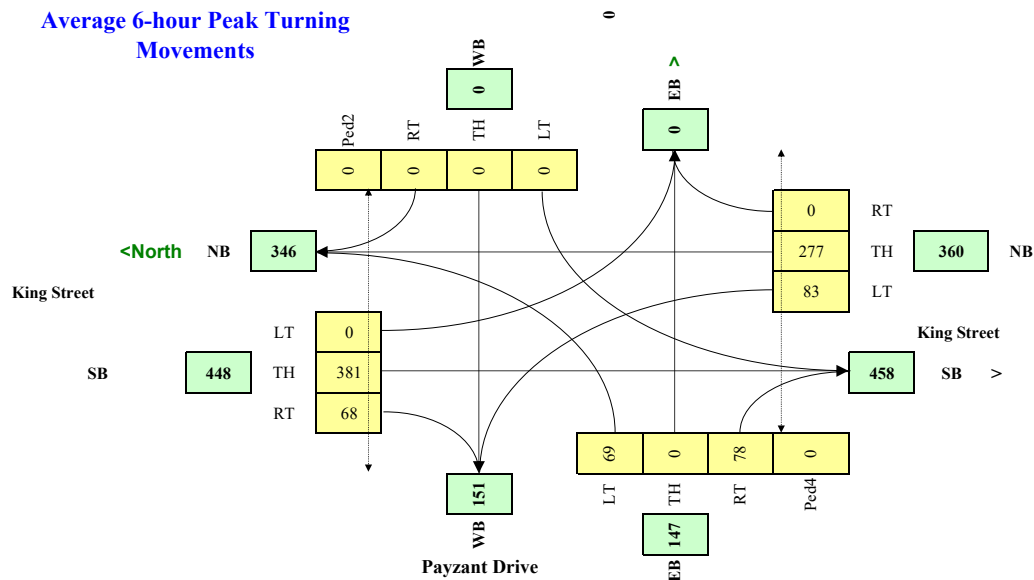
Main Street (name)	King Street		Direction (EW or NS)		NS	Date:	August 2021	
Side Street (name)	Payzant Drive		Direction (EW or NS)		EW	City:	Windsor, NS	
Lane Configuration		Excl LT	Th & LT	Through or Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
King Street	NB			1			999	1
King Street	SB	1		1			999	1
Payzant Drive	WB			1				
	EB							

Other input		Speed (Km/h)	Trucks %	Bus Rt (y/n)	Median (m)
King Street	NS	50	2.0%	n	0.0
Payzant Drive	EW	50	2.0%	n	

	Ped3	Ped1	Ped2	Ped4
	NS	NS	EW	EW
	W Side	E Side	N Side	S side
7:00 - 8:00	0	0	0	0
8:00 - 9:00	0	0	0	0
11:30 - 12:30	0	0	0	0
12:30 - 13:30	0	0	0	0
15:30 - 16:30	0	0	0	0
16:30 - 17:30	0	0	0	0
Total (6-hour peak)	0	0	0	0
Average (6-hour peak)	0	0	0	0

Demographics		
Elementary School	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population (#)		16,000
Central Business District	(y/n)	n

Traffic Input	NB			SB			WB			EB		
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT
7:00 - 8:00	110	265	0	0	450	90	0	0	0	100	0	80
8:00 - 9:00	85	200	0	0	335	70	0	0	0	75	0	60
11:30 - 12:30	55	180	0	0	250	45	0	0	0	45	0	50
12:30 - 13:30	55	180	0	0	250	45	0	0	0	45	0	50
15:30 - 16:30	90	385	0	0	460	70	0	0	0	70	0	105
16:30 - 17:30	105	450	0	0	540	85	0	0	0	80	0	120
Total (6-hour peak)	500	1,660	0	0	2,285	405	0	0	0	415	0	465
Average (6-hour peak)	83	277	0	0	381	68	0	0	0	69	0	78



$$W = [C_{bt}(X_{v-v}) / K_1 + (F(X_{v-p}) L) / K_2] \times C_i$$

W =	60	60	0
	Veh	Veh	Ped
NOT Warranted			

APPENDIX

C

INTERSECTION PERFORMANCE ANALYSIS



Windsor Intersection Needs Assessment
1: Wentworth Road & Driveway/Payzant Drive

Page C-1
Scenario 1 - 2021 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1	1	65	1	170	1	395	230	295	420	5
Future Volume (Veh/h)	1	1	1	65	1	170	1	395	230	295	420	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	71	1	185	1	429	250	321	457	5
Pedestrians		5			5						5	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1728	1792	464	1662	1670	564	467			684		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1728	1792	464	1662	1670	564	467			684		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	98	100	0	98	64	100			65		
cM capacity (veh/h)	32	52	595	55	61	521	1090			905		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	3	71	186	1	679	321	462					
Volume Left	1	71	0	1	0	321	0					
Volume Right	1	0	185	0	250	0	5					
cSH	57	55	501	1090	1700	905	1700					
Volume to Capacity	0.05	1.30	0.37	0.00	0.40	0.35	0.27					
Queue Length 95th (m)	1.3	50.3	13.6	0.0	0.0	12.9	0.0					
Control Delay (s)	71.7	345.9	16.4	8.3	0.0	11.1	0.0					
Lane LOS	F	F	C	A		B						
Approach Delay (s)	71.7	107.4		0.0		4.6						
Approach LOS	F	F										
Intersection Summary												
Average Delay			18.2									
Intersection Capacity Utilization			72.8%		ICU Level of Service					C		
Analysis Period (min)			15									

Windsor Intersection Needs Assessment
1: Wentworth Road & Driveway/Payzant Drive

Page C-2
Scenario 1 - 2021 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1	5	110	5	165	5	495	55	80	490	5
Future Volume (Veh/h)	5	1	5	110	5	165	5	495	55	80	490	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	5	120	5	179	5	538	60	87	533	5
Pedestrians		5			5						5	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.2			1.2						1.2	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1449	1328	540	1296	1300	578	543			603		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1449	1328	540	1296	1300	578	543			603		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	99	99	5	97	65	100			91		
cM capacity (veh/h)	63	139	539	126	145	511	1022			971		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	11	120	184	5	598	87	538					
Volume Left	5	120	0	5	0	87	0					
Volume Right	5	0	179	0	60	0	5					
cSH	115	126	478	1022	1700	971	1700					
Volume to Capacity	0.10	0.95	0.38	0.00	0.35	0.09	0.32					
Queue Length 95th (m)	2.5	50.8	14.3	0.1	0.0	2.4	0.0					
Control Delay (s)	39.6	134.2	17.2	8.5	0.0	9.1	0.0					
Lane LOS	E	F	C	A		A						
Approach Delay (s)	39.6	63.4		0.1		1.3						
Approach LOS	E	F										
Intersection Summary												
Average Delay			13.3									
Intersection Capacity Utilization			55.8%		ICU Level of Service					B		
Analysis Period (min)			15									

1: Wentworth Road & Payzant Drive Extension/Payzant Drive

Scenario 2 - 2030 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	5	40	215	1	271	60	407	311	357	449	35
Future Volume (vph)	34	5	40	215	1	271	60	407	311	357	449	35
Satd. Flow (prot)	1770	1563	0	1770	1530	0	1770	1715	0	1770	1838	0
Flt Permitted	0.579			0.507			0.469			0.081		
Satd. Flow (perm)	1079	1563	0	944	1530	0	874	1715	0	151	1838	0
Satd. Flow (RTOR)		43			295			42			7	
Lane Group Flow (vph)	37	48	0	234	296	0	65	780	0	388	526	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	24.0	24.0		13.0	37.0		51.0	51.0		22.0	73.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Act Effct Green (s)	11.6	11.6		23.7	21.7		45.2	45.2		69.3	67.3	
Actuated g/C Ratio	0.11	0.11		0.23	0.21		0.45	0.45		0.69	0.67	
v/c Ratio	0.30	0.22		0.78	0.53		0.17	0.99		0.99	0.43	
Control Delay	48.6	17.1		52.6	7.5		20.3	57.6		73.3	10.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	48.6	17.1		52.6	7.5		20.3	57.6		73.3	10.1	
LOS	D	B		D	A		C	E		E	B	
Approach Delay		30.8			27.4			54.7			36.9	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	7.3	1.0		42.6	0.2		8.0	152.3		~64.4	46.7	
Queue Length 95th (m)	17.7	11.7		66.5	20.6		19.5	#267.2		#142.7	85.2	
Internal Link Dist (m)		208.9			175.7			168.9			157.6	
Turn Bay Length (m)	40.0			75.0			30.0			85.0		
Base Capacity (vph)	193	314		301	675		390	790		392	1226	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.15		0.78	0.44		0.17	0.99		0.99	0.43	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 101.1

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 40.9

Intersection LOS: D

Intersection Capacity Utilization 102.0%

ICU Level of Service G

Analysis Period (min) 15

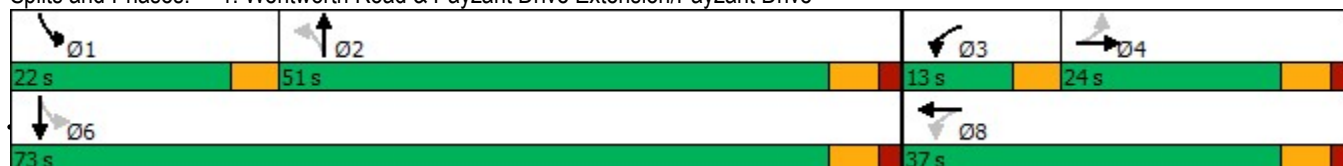
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Wentworth Road & Payzant Drive Extension/Payzant Drive



1: Wentworth Road & Payzant Drive Extension/Payzant Drive

Scenario 2 - 2030 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	5	71	224	5	238	51	535	217	169	509	35
Future Volume (vph)	84	5	71	224	5	238	51	535	217	169	509	35
Satd. Flow (prot)	1770	1548	0	1770	1534	0	1770	1765	0	1770	1840	0
Flt Permitted	0.596			0.546			0.441			0.079		
Satd. Flow (perm)	1110	1548	0	1017	1534	0	821	1765	0	147	1840	0
Satd. Flow (RTOR)		77			259			26			6	
Lane Group Flow (vph)	91	82	0	243	264	0	55	818	0	184	591	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	24.0	24.0		12.0	36.0		59.0	59.0		15.0	74.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Act Effect Green (s)	13.8	13.8		27.9	25.9		49.4	49.4		66.1	64.1	
Actuated g/C Ratio	0.14	0.14		0.27	0.25		0.48	0.48		0.65	0.63	
v/c Ratio	0.61	0.30		0.72	0.45		0.14	0.94		0.70	0.51	
Control Delay	60.5	13.6		46.3	7.0		16.3	45.0		33.4	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	60.5	13.6		46.3	7.0		16.3	45.0		33.4	12.5	
LOS	E	B		D	A		B	D		C	B	
Approach Delay		38.3			25.9			43.2			17.4	
Approach LOS		D			C			D			B	
Queue Length 50th (m)	19.0	1.0		45.1	0.8		6.2	153.4		19.1	61.0	
Queue Length 95th (m)	36.5	14.7		#70.2	20.8		14.9	#255.1		#53.1	97.6	
Internal Link Dist (m)		208.9			175.7			168.9			157.6	
Turn Bay Length (m)	45.0			75.0			30.0			85.0		
Base Capacity (vph)	197	338		337	636		429	935		271	1237	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.46	0.24		0.72	0.42		0.13	0.87		0.68	0.48	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 102.1

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 30.5

Intersection LOS: C

Intersection Capacity Utilization 93.1%

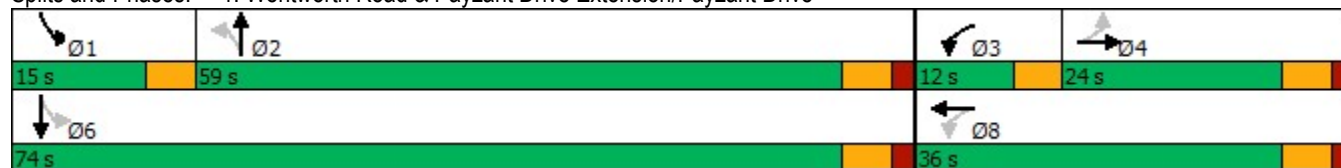
ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

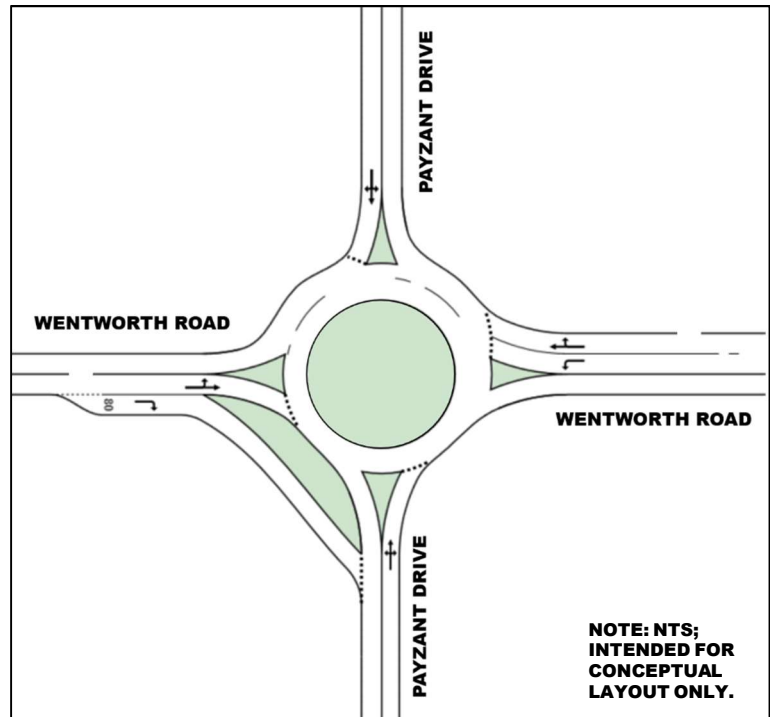
Splits and Phases: 1: Wentworth Road & Payzant Drive Extension/Payzant Drive



ARCADY ANALYSIS – 2030 AM & PM PEAK HOUR

Scenario 2

Wentworth Road at Payzant Drive Without Payzant Drive Connector



Arm	V- Approach Road half-width (m)	E-Entry Width (m)	I'- Effective flare length (m)	R – Entry Radius (m)	D – Inscribed circle diameter (m)	PHI – Conflict (entry) angle (deg)
Wentworth Rd SB	3.5	7.5	60	30	60	20
Wentworth Rd NB	3.5	3.5	0	30	60	20
Payzant Dr WB	3.5	3.5	0	30	60	20
Payzant Dr EB	3.5	3.5	0	30	60	20

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement				Overall Intersection	
	Payzant Drive		Wentworth Road			
	EB	WB	NB	SB	Delay	LOS
Scenario 2 - 2030 AM Peak Hour <i>without</i> Payzant Drive Connection						
Delay	7.8	9.9	10.1	3.9	7.4	A
LOS	A	A	B	A		
v/c	0.15	0.55	0.59	0.51		
Queue	3.5	19.6	17.5	10.5		
Scenario 2 - 2030 PM Peak Hour <i>without</i> Payzant Drive Connection						
Delay	8.6	18.0	12.8	3.5	10.3	B
LOS	A	C	B	A		
v/c	0.29	0.72	0.70	0.45		
Queue	11.2	79.8	56.0	13.3		

1: Wentworth Road & Payzant Drive Extension/Payzant Drive

Scenario 3 - 2030 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	10	38	111	4	232	56	390	216	285	435	35
Future Volume (vph)	31	10	38	111	4	232	56	390	216	285	435	35
Satd. Flow (prot)	1770	1598	0	1770	1532	0	1770	1742	0	1770	1837	0
Flt Permitted	0.601			0.540			0.475			0.140		
Satd. Flow (perm)	1120	1598	0	1006	1532	0	885	1742	0	261	1837	0
Satd. Flow (RTOR)		41			252			33			7	
Lane Group Flow (vph)	34	52	0	121	256	0	61	659	0	310	511	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	24.0	24.0		10.0	34.0		55.0	55.0		21.0	76.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Act Effect Green (s)	11.8	11.8		21.4	19.3		36.3	36.3		56.2	54.1	
Actuated g/C Ratio	0.14	0.14		0.25	0.22		0.42	0.42		0.65	0.63	
v/c Ratio	0.22	0.20		0.40	0.48		0.16	0.88		0.76	0.44	
Control Delay	42.8	18.6		33.6	7.9		17.8	36.3		27.6	9.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.8	18.6		33.6	7.9		17.8	36.3		27.6	9.7	
LOS	D	B		C	A		B	D		C	A	
Approach Delay		28.2			16.1			34.7			16.5	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	5.6	1.8		17.2	0.6		6.3	95.6		26.0	40.2	
Queue Length 95th (m)	16.5	13.4		37.7	20.9		17.2	#190.7		#74.8	75.4	
Internal Link Dist (m)		208.9			175.7			168.9			157.6	
Turn Bay Length (m)	40.0			75.0			30.0			85.0		
Base Capacity (vph)	247	384		306	691		531	1060		485	1486	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.14		0.40	0.37		0.11	0.62		0.64	0.34	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 86.1

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 88.8%

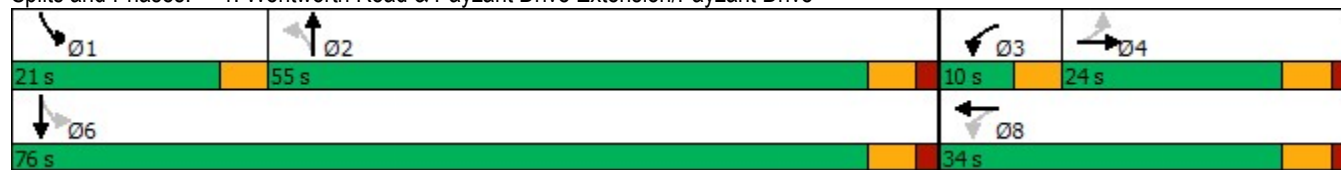
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Wentworth Road & Payzant Drive Extension/Payzant Drive



1: Wentworth Road & Payzant Drive Extension/Payzant Drive

Scenario 2 - 2030 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	12	66	95	8	204	48	520	127	111	488	35
Future Volume (vph)	82	12	66	95	8	204	48	520	127	111	488	35
Satd. Flow (prot)	1770	1578	0	1770	1541	0	1770	1796	0	1770	1840	0
Flt Permitted	0.615			0.538			0.451			0.131		
Satd. Flow (perm)	1146	1578	0	1002	1541	0	840	1796	0	244	1840	0
Satd. Flow (RTOR)		72			222			16			6	
Lane Group Flow (vph)	89	85	0	103	231	0	52	703	0	121	568	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	24.0	24.0		10.0	34.0		61.0	61.0		15.0	76.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Act Effect Green (s)	13.1	13.1		22.8	20.7		38.7	38.7		55.5	53.4	
Actuated g/C Ratio	0.15	0.15		0.26	0.24		0.45	0.45		0.64	0.62	
v/c Ratio	0.51	0.28		0.32	0.43		0.14	0.87		0.35	0.50	
Control Delay	49.6	15.3		30.4	7.8		15.6	33.8		9.7	11.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.6	15.3		30.4	7.8		15.6	33.8		9.7	11.4	
LOS	D	B		C	A		B	C		A	B	
Approach Delay		32.8			14.8			32.5			11.1	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	14.8	2.0		13.9	1.2		5.2	105.8		7.6	51.0	
Queue Length 95th (m)	35.3	16.6		32.4	20.9		13.3	172.6		16.3	87.5	
Internal Link Dist (m)		208.9			175.7			168.9			157.6	
Turn Bay Length (m)	45.0			75.0			30.0			85.0		
Base Capacity (vph)	248	399		319	667		557	1196		358	1493	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.36	0.21		0.32	0.35		0.09	0.59		0.34	0.38	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 86.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 22.0

Intersection Capacity Utilization 84.0%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service E

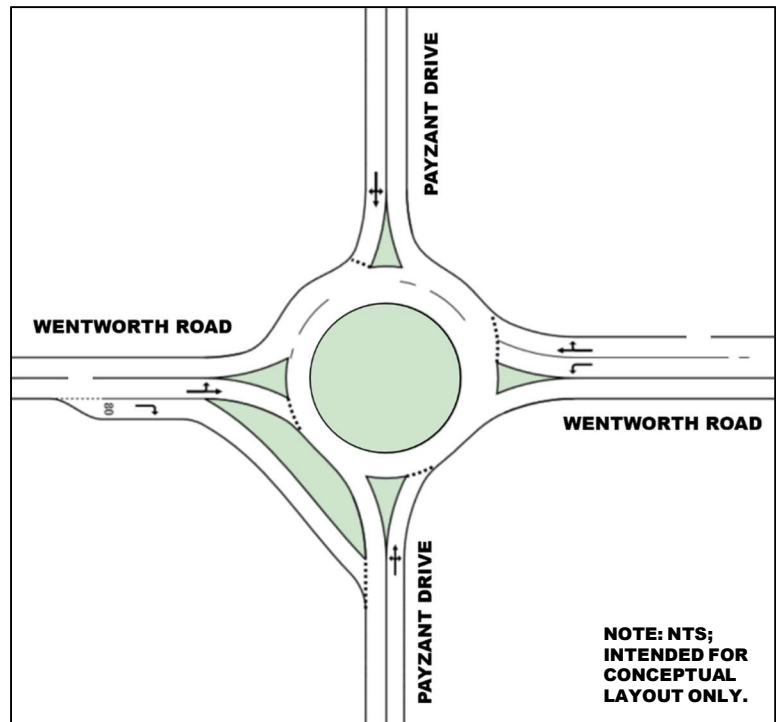
Splits and Phases: 1: Wentworth Road & Payzant Drive Extension/Payzant Drive

			
15 s	61 s	10 s	24 s
			
76 s		34 s	

ARCADY ANALYSIS – 2030 AM & PM PEAK HOUR

Scenario 3

Wentworth Road at Payzant Drive With Payzant Drive Connector



Arm	V- Approach Road half-width (m)	E-Entry Width (m)	I'- Effective flare length (m)	R – Entry Radius (m)	D – Inscribed circle diameter (m)	PHI – Conflict (entry) angle (deg)
Wentworth Rd SB	3.5	7.5	60	30	60	20
Wentworth Rd NB	3.5	3.5	0	30	60	20
Payzant Dr WB	3.5	3.5	0	30	60	20
Payzant Dr EB	3.5	3.5	0	30	60	20

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement				Overall Intersection	
	Payzant Drive		Wentworth Road			
	EB	WB	NB	SB	Delay	LOS
Scenario 3 - 2030 AM Peak Hour <i>with</i> Payzant Drive Connection						
Delay	6.4	7.0	8.7	3.3	6.0	A
LOS	A	A	A	A		
v/c	0.13	0.38	0.54	0.44		
Queue	3.5	19.6	15.4	14.0		
Scenario 3 - 2030 PM Peak Hour <i>with</i> Payzant Drive Connection						
Delay	6.8	9.3	10.9	2.9	7.3	A
LOS	A	A	B	A		
v/c	0.25	0.47	0.65	0.39		
Queue	9.8	22.4	31.5	18.9		

Windsor Intersection Needs Assessment

2: Wentworth Road & Empire Lane

Page C-9
Scenario 1 - 2021 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	25	45	620	390	80
Future Volume (Veh/h)	30	25	45	620	390	80
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	27	49	674	424	87
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage (veh)					2	
Upstream signal (m)				327		
pX, platoon unblocked						
vC, conflicting volume	1244	472	516			
vC1, stage 1 conf vol	472					
vC2, stage 2 conf vol	772					
vCu, unblocked vol	1244	472	516			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	95	95			
cM capacity (veh/h)	382	589	1045			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	33	27	49	674	511	
Volume Left	33	0	49	0	0	
Volume Right	0	27	0	0	87	
cSH	382	589	1045	1700	1700	
Volume to Capacity	0.09	0.05	0.05	0.40	0.30	
Queue Length 95th (m)	2.3	1.2	1.2	0.0	0.0	
Control Delay (s)	15.3	11.4	8.6	0.0	0.0	
Lane LOS	C	B	A			
Approach Delay (s)	13.6		0.6		0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			42.6%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

2: Wentworth Road & Empire Lane

Page C-10
Scenario 1 - 2021 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	120	75	60	435	535	115
Future Volume (Veh/h)	120	75	60	435	535	115
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	130	82	65	473	582	125
Pedestrians	135					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	11					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage (veh)					2	
Upstream signal (m)				327		
pX, platoon unblocked						
vC, conflicting volume	1382	780	842			
vC1, stage 1 conf vol	780					
vC2, stage 2 conf vol	603					
vCu, unblocked vol	1382	780	842			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	60	77	91			
cM capacity (veh/h)	327	351	704			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	130	82	65	473	707	
Volume Left	130	0	65	0	0	
Volume Right	0	82	0	0	125	
cSH	327	351	704	1700	1700	
Volume to Capacity	0.40	0.23	0.09	0.28	0.42	
Queue Length 95th (m)	14.7	7.1	2.4	0.0	0.0	
Control Delay (s)	23.0	18.4	10.6	0.0	0.0	
Lane LOS	C	C	B			
Approach Delay (s)	21.2		1.3		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			56.3%	ICU Level of Service		B
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

2: Wentworth Road & Empire Lane

Page C-11
Scenario 2 - 2030 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	35	52	771	598	91
Future Volume (Veh/h)	37	35	52	771	598	91
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	38	57	838	650	99
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage (veh)					2	
Upstream signal (m)				327		
pX, platoon unblocked						
vC, conflicting volume	1656	704	754			
vC1, stage 1 conf vol	704					
vC2, stage 2 conf vol	952					
vCu, unblocked vol	1656	704	754			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	91	93			
cM capacity (veh/h)	292	435	853			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	40	38	57	838	749	
Volume Left	40	0	57	0	0	
Volume Right	0	38	0	0	99	
cSH	292	435	853	1700	1700	
Volume to Capacity	0.14	0.09	0.07	0.49	0.44	
Queue Length 95th (m)	3.7	2.3	1.7	0.0	0.0	
Control Delay (s)	19.2	14.1	9.5	0.0	0.0	
Lane LOS	C	B	A			
Approach Delay (s)	16.7		0.6		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			53.2%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

2: Wentworth Road & Empire Lane

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Scenario 2 - 2030 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	137	88	75	671	722	132
Future Volume (Veh/h)	137	88	75	671	722	132
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	149	96	82	729	785	143
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage (veh)					2	
Upstream signal (m)				327		
pX, platoon unblocked						
vC, conflicting volume	1754	862	933			
vC1, stage 1 conf vol	862					
vC2, stage 2 conf vol	893					
vCu, unblocked vol	1754	862	933			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	46	73	89			
cM capacity (veh/h)	274	353	731			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	149	96	82	729	928	
Volume Left	149	0	82	0	0	
Volume Right	0	96	0	0	143	
cSH	274	353	731	1700	1700	
Volume to Capacity	0.54	0.27	0.11	0.43	0.55	
Queue Length 95th (m)	24.0	8.7	3.0	0.0	0.0	
Control Delay (s)	32.7	18.9	10.5	0.0	0.0	
Lane LOS	D	C	B			
Approach Delay (s)	27.3		1.1		0.0	
Approach LOS	D					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			67.8%	ICU Level of Service		C
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

2: Wentworth Road & Empire Lane

Page C-13
Scenario 3 - 2030 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	35	52	655	478	91
Future Volume (Veh/h)	37	35	52	655	478	91
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	38	57	712	520	99
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage (veh)					2	
Upstream signal (m)				327		
pX, platoon unblocked						
vC, conflicting volume	1400	574	624			
vC1, stage 1 conf vol	574					
vC2, stage 2 conf vol	826					
vCu, unblocked vol	1400	574	624			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	93	94			
cM capacity (veh/h)	346	516	953			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	40	38	57	712	619	
Volume Left	40	0	57	0	0	
Volume Right	0	38	0	0	99	
cSH	346	516	953	1700	1700	
Volume to Capacity	0.12	0.07	0.06	0.42	0.36	
Queue Length 95th (m)	3.1	1.9	1.5	0.0	0.0	
Control Delay (s)	16.8	12.5	9.0	0.0	0.0	
Lane LOS	C	B	A			
Approach Delay (s)	14.7		0.7		0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			47.4%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

2: Wentworth Road & Empire Lane

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Scenario 3 - 2030 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	137	88	75	563	567	132
Future Volume (Veh/h)	137	88	75	563	567	132
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	149	96	82	612	616	143
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage (veh)					2	
Upstream signal (m)				327		
pX, platoon unblocked						
vC, conflicting volume	1468	692	764			
vC1, stage 1 conf vol	692					
vC2, stage 2 conf vol	776					
vCu, unblocked vol	1468	692	764			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	55	78	90			
cM capacity (veh/h)	331	442	845			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	149	96	82	612	759	
Volume Left	149	0	82	0	0	
Volume Right	0	96	0	0	143	
cSH	331	442	845	1700	1700	
Volume to Capacity	0.45	0.22	0.10	0.36	0.45	
Queue Length 95th (m)	17.9	6.5	2.6	0.0	0.0	
Control Delay (s)	24.5	15.4	9.7	0.0	0.0	
Lane LOS	C	C	A			
Approach Delay (s)	20.9		1.1		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			59.7%	ICU Level of Service		B
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
3: King Street & College Road

Page C-15
Scenario 1 - 2021 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	30	50	410	245	20
Future Volume (Veh/h)	25	30	50	410	245	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	33	54	446	266	22
Pedestrians				5		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	831	282	288			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	831	282	288			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	96	96			
cM capacity (veh/h)	325	754	1274			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	60	500	288			
Volume Left	27	54	0			
Volume Right	33	0	22			
cSH	473	1274	1700			
Volume to Capacity	0.13	0.04	0.17			
Queue Length 95th (m)	3.5	1.1	0.0			
Control Delay (s)	13.7	1.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.7	1.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			53.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

3: King Street & College Road

Page C-16
Scenario 1 - 2021 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	25	35	410	500	35
Future Volume (Veh/h)	25	25	35	410	500	35
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	27	38	446	543	38
Pedestrians				5		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1084	567	581			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1084	567	581			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	95	96			
cM capacity (veh/h)	231	521	993			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	54	484	581			
Volume Left	27	38	0			
Volume Right	27	0	38			
cSH	320	993	1700			
Volume to Capacity	0.17	0.04	0.34			
Queue Length 95th (m)	4.8	1.0	0.0			
Control Delay (s)	18.5	1.1	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.5	1.1	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			62.1%	ICU Level of Service		B
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

3: King Street & College Road

Page C-17
Scenario 2 - 2030 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	39	61	492	349	38
Future Volume (Veh/h)	38	39	61	492	349	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	42	66	535	379	41
Pedestrians				5		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1066	404	420			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1066	404	420			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	93	94			
cM capacity (veh/h)	232	643	1139			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	83	601	420			
Volume Left	41	66	0			
Volume Right	42	0	41			
cSH	343	1139	1700			
Volume to Capacity	0.24	0.06	0.25			
Queue Length 95th (m)	7.5	1.5	0.0			
Control Delay (s)	18.8	1.5	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.8	1.5	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			66.0%	ICU Level of Service		C
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

3: King Street & College Road

Page C-18
Scenario 2 - 2030 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	38	45	543	622	53
Future Volume (Veh/h)	48	38	45	543	622	53
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	41	49	590	676	58
Pedestrians				5		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1393	710	734			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1393	710	734			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	65	91	94			
cM capacity (veh/h)	147	432	871			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	93	639	734			
Volume Left	52	49	0			
Volume Right	41	0	58			
cSH	208	871	1700			
Volume to Capacity	0.45	0.06	0.43			
Queue Length 95th (m)	16.9	1.4	0.0			
Control Delay (s)	35.7	1.5	0.0			
Lane LOS	E	A				
Approach Delay (s)	35.7	1.5	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay			2.9			
Intersection Capacity Utilization			78.9%	ICU Level of Service		D
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
3: King Street & College Road

Page C-19
Scenario 3 - 2030 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	39	61	411	238	38
Future Volume (Veh/h)	38	39	61	411	238	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	42	66	447	259	41
Pedestrians				5		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	858	284	300			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	858	284	300			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	94	95			
cM capacity (veh/h)	310	751	1261			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	83	513	300			
Volume Left	41	66	0			
Volume Right	42	0	41			
cSH	441	1261	1700			
Volume to Capacity	0.19	0.05	0.18			
Queue Length 95th (m)	5.5	1.3	0.0			
Control Delay (s)	15.0	1.5	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.0	1.5	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			55.9%	ICU Level of Service		B
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

3: King Street & College Road

Page C-20
Scenario 3 - 2030 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	38	45	482	496	53
Future Volume (Veh/h)	48	38	45	482	496	53
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	41	49	524	539	58
Pedestrians				5		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1190	573	597			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1190	573	597			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	92	95			
cM capacity (veh/h)	197	517	980			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	93	573	597			
Volume Left	52	49	0			
Volume Right	41	0	58			
cSH	271	980	1700			
Volume to Capacity	0.34	0.05	0.35			
Queue Length 95th (m)	11.8	1.3	0.0			
Control Delay (s)	25.1	1.3	0.0			
Lane LOS	D	A				
Approach Delay (s)	25.1	1.3	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			73.6%	ICU Level of Service		D
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
4: King Street & Chester Road

Page C-21
Scenario 1 - 2021 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	55	80	290	175	65
Future Volume (Veh/h)	190	55	80	290	175	65
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	207	60	87	315	190	71
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	720	230	266			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	720	230	266			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	44	93	93			
cM capacity (veh/h)	367	805	1292			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	267	402	261			
Volume Left	207	87	0			
Volume Right	60	0	71			
cSH	418	1292	1700			
Volume to Capacity	0.64	0.07	0.15			
Queue Length 95th (m)	34.5	1.7	0.0			
Control Delay (s)	27.6	2.2	0.0			
Lane LOS	D	A				
Approach Delay (s)	27.6	2.2	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			8.9			
Intersection Capacity Utilization			56.9%	ICU Level of Service		B
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
4: King Street & Chester Road

Page C-22
Scenario 1 - 2021 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	135	75	145	265	315	235
Future Volume (Veh/h)	135	75	145	265	315	235
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	147	82	158	288	342	255
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1078	474	602			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1078	474	602			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	27	86	84			
cM capacity (veh/h)	202	588	971			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	229	446	597			
Volume Left	147	158	0			
Volume Right	82	0	255			
cSH	264	971	1700			
Volume to Capacity	0.87	0.16	0.35			
Queue Length 95th (m)	58.8	4.6	0.0			
Control Delay (s)	67.8	4.5	0.0			
Lane LOS	F	A				
Approach Delay (s)	67.8	4.5	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			13.8			
Intersection Capacity Utilization			75.2%	ICU Level of Service		D
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
4: King Street & Chester Road

Page C-23
Scenario 2 - 2030 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	216	60	90	362	272	76
Future Volume (Veh/h)	216	60	90	362	272	76
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	235	65	98	393	296	83
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	932	342	384			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	932	342	384			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	13	91	92			
cM capacity (veh/h)	270	697	1170			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	235	65	98	393	379	
Volume Left	235	0	98	0	0	
Volume Right	0	65	0	0	83	
cSH	270	697	1170	1700	1700	
Volume to Capacity	0.87	0.09	0.08	0.23	0.22	
Queue Length 95th (m)	59.6	2.5	2.2	0.0	0.0	
Control Delay (s)	67.0	10.7	8.4	0.0	0.0	
Lane LOS	F	B	A			
Approach Delay (s)	54.8		1.7		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			14.8			
Intersection Capacity Utilization			46.0%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

4: King Street & Chester Road

Page C-24
Scenario 2 - 2030 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	85	165	381	418	267
Future Volume (Veh/h)	157	85	165	381	418	267
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	171	92	179	414	454	290
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1376	604	749			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1376	604	749			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	81	79			
cM capacity (veh/h)	126	496	856			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	171	92	179	414	744	
Volume Left	171	0	179	0	0	
Volume Right	0	92	0	0	290	
cSH	126	496	856	1700	1700	
Volume to Capacity	1.36	0.19	0.21	0.24	0.44	
Queue Length 95th (m)	90.4	5.4	6.3	0.0	0.0	
Control Delay (s)	268.5	13.9	10.3	0.0	0.0	
Lane LOS	F	B	B			
Approach Delay (s)	179.4		3.1		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			30.7			
Intersection Capacity Utilization			66.3%	ICU Level of Service		C
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

4: King Street & Chester Road

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Scenario 2 - 2030 AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	216	60	90	362	272	76
Future Volume (vph)	216	60	90	362	272	76
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.440			
Satd. Flow (perm)	1770	1583	820	1863	1863	1542
Satd. Flow (RTOR)		65				69
Lane Group Flow (vph)	235	65	98	393	296	83
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Total Split (s)	40.0	40.0	14.0	60.0	46.0	46.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Act Effct Green (s)	13.0	13.0	28.0	25.9	16.6	16.6
Actuated g/C Ratio	0.25	0.25	0.54	0.50	0.32	0.32
v/c Ratio	0.52	0.14	0.17	0.42	0.49	0.15
Control Delay	22.7	6.3	6.6	9.7	19.4	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	6.3	6.6	9.7	19.4	6.8
LOS	C	A	A	A	B	A
Approach Delay	19.1			9.1	16.6	
Approach LOS	B			A	B	
Queue Length 50th (m)	19.8	0.0	3.7	20.1	23.5	1.0
Queue Length 95th (m)	43.8	7.8	11.2	45.2	51.7	9.8
Internal Link Dist (m)	419.3			270.6	481.7	
Turn Bay Length (m)	45.0		25.0			25.0
Base Capacity (vph)	1212	1104	638	1788	1471	1232
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.06	0.15	0.22	0.20	0.07

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 51.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 14.1

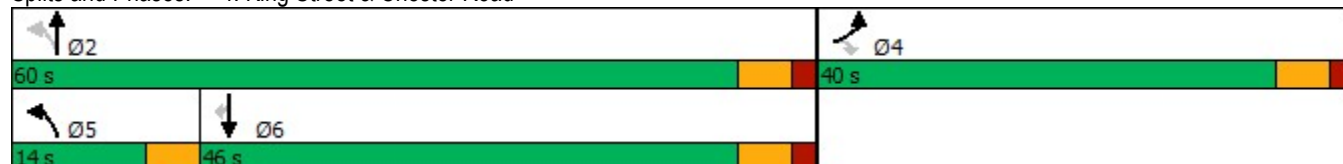
Intersection Capacity Utilization 44.6%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 4: King Street & Chester Road



Windsor Intersection Needs Assessment

4: King Street & Chester Road

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Scenario 2 - 2030 PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	157	85	165	381	418	267
Future Volume (vph)	157	85	165	381	418	267
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.283			
Satd. Flow (perm)	1770	1583	527	1863	1863	1544
Satd. Flow (RTOR)		92				186
Lane Group Flow (vph)	171	92	179	414	454	290
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Total Split (s)	29.0	29.0	16.0	71.0	55.0	55.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Act Effct Green (s)	12.2	12.2	37.1	35.0	20.9	20.9
Actuated g/C Ratio	0.20	0.20	0.62	0.59	0.35	0.35
v/c Ratio	0.47	0.23	0.33	0.38	0.70	0.44
Control Delay	27.8	7.8	6.5	7.6	23.2	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	7.8	6.5	7.6	23.2	8.1
LOS	C	A	A	A	C	A
Approach Delay	20.8			7.3	17.3	
Approach LOS	C			A	B	
Queue Length 50th (m)	17.1	0.0	6.6	20.0	42.0	7.8
Queue Length 95th (m)	41.2	11.2	16.7	43.1	81.6	26.4
Internal Link Dist (m)	419.3			270.6	28.3	
Turn Bay Length (m)	45.0		25.0			25.0
Base Capacity (vph)	704	685	586	1803	1571	1331
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.13	0.31	0.23	0.29	0.22

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 59.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 14.2

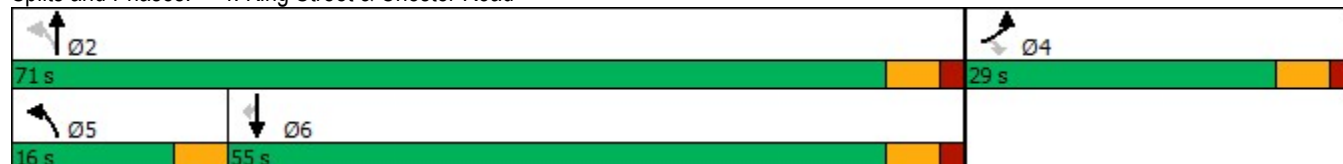
Intersection Capacity Utilization 53.2%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 4: King Street & Chester Road



Windsor Intersection Needs Assessment
4: King Street & Chester Road

Page C-27
Scenario 3 - 2030 AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	160	116	110	337	181	56
Future Volume (Veh/h)	160	116	110	337	181	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	174	126	120	366	197	61
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	838	232	263			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	838	232	263			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	43	84	91			
cM capacity (veh/h)	304	803	1296			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	174	126	120	366	258	
Volume Left	174	0	120	0	0	
Volume Right	0	126	0	0	61	
cSH	304	803	1296	1700	1700	
Volume to Capacity	0.57	0.16	0.09	0.22	0.15	
Queue Length 95th (m)	26.7	4.4	2.4	0.0	0.0	
Control Delay (s)	31.6	10.3	8.1	0.0	0.0	
Lane LOS	D	B	A			
Approach Delay (s)	22.7		2.0		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			7.4			
Intersection Capacity Utilization			38.1%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
4: King Street & Chester Road

Page C-28
Scenario 3 - 2030 PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	127	235	362	362	197
Future Volume (Veh/h)	115	127	235	362	362	197
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	125	138	255	393	393	214
Pedestrians	5					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1408	505	612			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1408	505	612			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	76	74			
cM capacity (veh/h)	112	565	963			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	125	138	255	393	607	
Volume Left	125	0	255	0	0	
Volume Right	0	138	0	0	214	
cSH	112	565	963	1700	1700	
Volume to Capacity	1.12	0.24	0.26	0.23	0.36	
Queue Length 95th (m)	61.7	7.6	8.5	0.0	0.0	
Control Delay (s)	193.0	13.4	10.1	0.0	0.0	
Lane LOS	F	B	B			
Approach Delay (s)	98.8		4.0		0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			18.8			
Intersection Capacity Utilization			60.6%	ICU Level of Service		B
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

4: King Street & Chester Road

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Scenario 3 - 2030 AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	116	110	337	181	56
Future Volume (vph)	160	116	110	337	181	56
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.481			
Satd. Flow (perm)	1770	1583	896	1863	1863	1542
Satd. Flow (RTOR)		126				61
Lane Group Flow (vph)	174	126	120	366	197	61
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Total Split (s)	39.0	39.0	16.0	61.0	45.0	45.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Act Effct Green (s)	10.0	10.0	24.4	22.4	12.6	12.6
Actuated g/C Ratio	0.22	0.22	0.55	0.50	0.28	0.28
v/c Ratio	0.44	0.28	0.18	0.39	0.38	0.13
Control Delay	20.0	5.9	6.0	8.6	18.0	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	5.9	6.0	8.6	18.0	6.1
LOS	C	A	A	A	B	A
Approach Delay	14.1			7.9	15.2	
Approach LOS	B			A	B	
Queue Length 50th (m)	12.2	0.0	4.0	16.1	13.7	0.0
Queue Length 95th (m)	30.4	10.4	11.1	35.7	33.1	7.3
Internal Link Dist (m)	419.3			270.6	481.7	
Turn Bay Length (m)	35.0		55.0			25.0
Base Capacity (vph)	1343	1232	730	1856	1621	1349
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.10	0.16	0.20	0.12	0.05

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 44.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 11.5

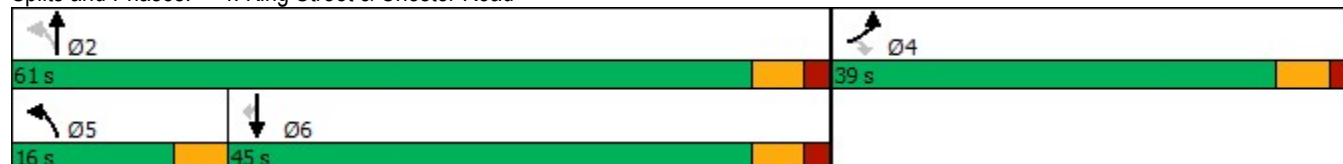
Intersection Capacity Utilization 37.8%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 4: King Street & Chester Road



Windsor Intersection Needs Assessment

4: King Street & Chester Road

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Scenario 3 - 2030 PM Peak Hour

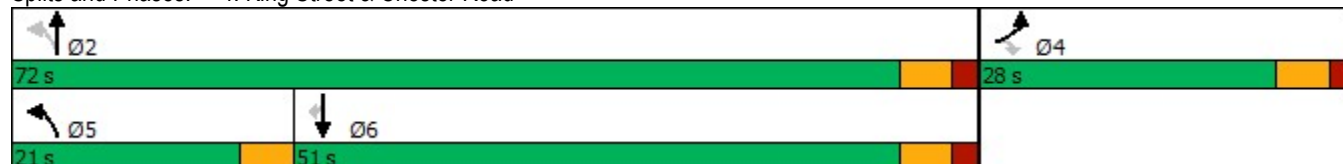
						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	115	127	235	362	362	197
Future Volume (vph)	115	127	235	362	362	197
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.950		0.314			
Satd. Flow (perm)	1770	1583	585	1863	1863	1543
Satd. Flow (RTOR)		138				147
Lane Group Flow (vph)	125	138	255	393	393	214
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Total Split (s)	28.0	28.0	21.0	72.0	51.0	51.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Act Effect Green (s)	9.6	9.6	36.3	34.2	17.2	17.2
Actuated g/C Ratio	0.17	0.17	0.64	0.61	0.31	0.31
v/c Ratio	0.42	0.36	0.39	0.35	0.69	0.37
Control Delay	28.0	8.4	6.1	6.4	25.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	8.4	6.1	6.4	25.0	8.1
LOS	C	A	A	A	C	A
Approach Delay	17.7			6.3	19.1	
Approach LOS	B			A	B	
Queue Length 50th (m)	11.8	0.0	8.8	16.9	35.8	5.0
Queue Length 95th (m)	31.4	13.8	20.2	35.5	72.7	20.6
Internal Link Dist (m)	419.3			270.6	481.7	
Turn Bay Length (m)	45.0		25.0			25.0
Base Capacity (vph)	721	726	750	1824	1517	1284
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.19	0.34	0.22	0.26	0.17

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 56.3
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 13.4
 Intersection Capacity Utilization 51.8%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 4: King Street & Chester Road



Windsor Intersection Needs Assessment
6: King Street & Cottage Street

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Scenario 2 - 2030 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	15	558	20	25	348
Future Volume (Veh/h)	5	15	558	20	25	348
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	16	607	22	27	378
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1050	618			629	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1050	618			629	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	244	489			953	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	21	629	405			
Volume Left	5	0	27			
Volume Right	16	22	0			
cSH	395	1700	953			
Volume to Capacity	0.05	0.37	0.03			
Queue Length 95th (m)	1.3	0.0	0.7			
Control Delay (s)	14.6	0.0	0.9			
Lane LOS	B		A			
Approach Delay (s)	14.6	0.0	0.9			
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			48.9%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
6: King Street & Cottage Street

Page C-32
Scenario 2 - 2030 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	30	533	5	10	645
Future Volume (Veh/h)	30	30	533	5	10	645
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	33	579	5	11	701
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1304	582			584	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1304	582			584	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	94			99	
cM capacity (veh/h)	175	513			991	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	66	584	712			
Volume Left	33	0	11			
Volume Right	33	5	0			
cSH	261	1700	991			
Volume to Capacity	0.25	0.34	0.01			
Queue Length 95th (m)	7.8	0.0	0.3			
Control Delay (s)	23.4	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	23.4	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			52.1%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
6: King Street & Cottage Street

Page C-33
Scenario 2 - 2030 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	15	558	20	25	343
Future Volume (Veh/h)	5	15	558	20	25	343
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	16	607	22	27	373
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			52			
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1045	618			629	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977	485			498	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	235	506			927	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	21	629	400			
Volume Left	5	0	27			
Volume Right	16	22	0			
cSH	397	1700	927			
Volume to Capacity	0.05	0.37	0.03			
Queue Length 95th (m)	1.3	0.0	0.7			
Control Delay (s)	14.6	0.0	0.9			
Lane LOS	B		A			
Approach Delay (s)	14.6	0.0	0.9			
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			48.6%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
6: King Street & Cottage Street

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Scenario 2 - 2030 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	30	533	5	10	665
Future Volume (Veh/h)	20	30	533	5	10	665
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	33	579	5	11	723
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			52			
pX, platoon unblocked	0.88	0.88			0.88	
vC, conflicting volume	1326	582			584	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1303	456			458	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	94			99	
cM capacity (veh/h)	154	532			970	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	55	584	734			
Volume Left	22	0	11			
Volume Right	33	5	0			
cSH	269	1700	970			
Volume to Capacity	0.20	0.34	0.01			
Queue Length 95th (m)	6.0	0.0	0.3			
Control Delay (s)	21.8	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	21.8	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			53.0%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment

4: King Street & Chester Road/Cottage Street

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Scenario 2 - 2030 AM Peak Hour

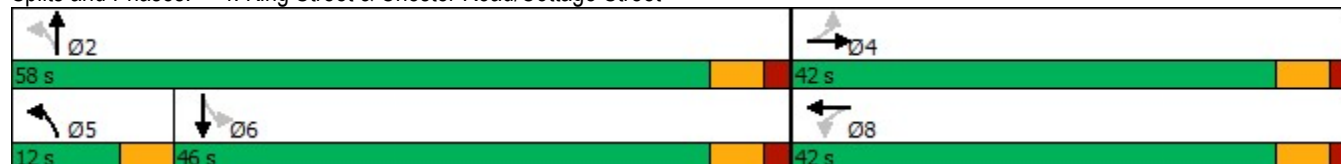
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	5	60	5	1	15	90	342	15	15	267	76
Future Volume (vph)	216	5	60	5	1	15	90	342	15	15	267	76
Satd. Flow (prot)	1770	1604	0	0	1662	0	1770	1852	0	1770	1791	0
Flt Permitted	0.743				0.947		0.356			0.532		
Satd. Flow (perm)	1384	1604	0	0	1591	0	663	1852	0	991	1791	0
Satd. Flow (RTOR)		65			16			3			17	
Lane Group Flow (vph)	235	70	0	0	22	0	98	388	0	16	373	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	42.0	42.0		42.0	42.0		12.0	58.0		46.0	46.0	
Total Lost Time (s)	6.0	6.0			6.0		4.0	6.0		6.0	6.0	
Act Effct Green (s)	15.9	15.9			15.9		30.0	27.9		19.1	19.1	
Actuated g/C Ratio	0.28	0.28			0.28		0.53	0.49		0.34	0.34	
v/c Ratio	0.60	0.14			0.05		0.20	0.42		0.05	0.61	
Control Delay	26.5	6.6			10.6		8.2	11.1		15.9	21.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	26.5	6.6			10.6		8.2	11.1		15.9	21.6	
LOS	C	A			B		A	B		B	C	
Approach Delay		22.0			10.6			10.5			21.4	
Approach LOS		C			B			B			C	
Queue Length 50th (m)	22.0	0.4			0.5		4.4	22.9		1.2	32.9	
Queue Length 95th (m)	50.2	8.9			5.4		13.6	53.5		5.6	69.8	
Internal Link Dist (m)		419.3			114.8			270.6			481.7	
Turn Bay Length (m)	45.0						35.0			15.0		
Base Capacity (vph)	933	1103			1078		518	1642		727	1318	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.25	0.06			0.02		0.19	0.24		0.02	0.28	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 56.5
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 16.9
Intersection Capacity Utilization 65.0%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service C

Splits and Phases: 4: King Street & Chester Road/Cottage Street



Windsor Intersection Needs Assessment

4: King Street & Chester Road/Cottage Street

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Scenario 2 - 2030 PM Peak Hour

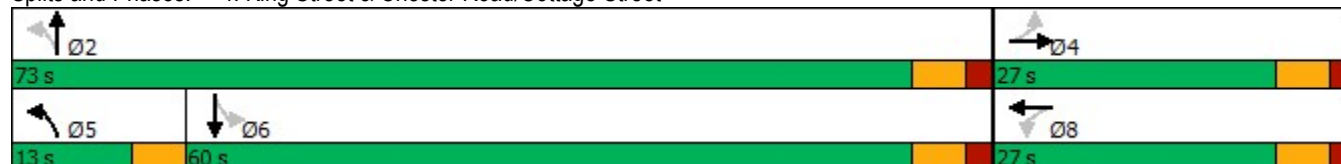
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	1	85	25	5	25	165	376	5	10	398	262
Future Volume (vph)	157	1	85	25	5	25	165	376	5	10	398	262
Satd. Flow (prot)	1770	1587	0	0	1709	0	1770	1859	0	1770	1734	0
Flt Permitted	0.719				0.838		0.146			0.520		
Satd. Flow (perm)	1339	1587	0	0	1464	0	272	1859	0	969	1734	0
Satd. Flow (RTOR)		92			27			1			52	
Lane Group Flow (vph)	171	93	0	0	59	0	179	414	0	11	718	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	27.0	27.0		27.0	27.0		13.0	73.0		60.0	60.0	
Total Lost Time (s)	6.0	6.0			6.0		4.0	6.0		6.0	6.0	
Act Effct Green (s)	15.2	15.2			15.2		50.4	48.3		35.1	35.1	
Actuated g/C Ratio	0.20	0.20			0.20		0.66	0.63		0.46	0.46	
v/c Ratio	0.64	0.24			0.19		0.50	0.35		0.02	0.87	
Control Delay	43.1	9.2			20.4		10.6	7.5		11.1	29.2	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	43.1	9.2			20.4		10.6	7.5		11.1	29.2	
LOS	D	A			C		B	A		B	C	
Approach Delay		31.2			20.4			8.4			28.9	
Approach LOS		C			C			A			C	
Queue Length 50th (m)	23.9	0.1			4.0		8.5	24.9		0.9	85.0	
Queue Length 95th (m)	54.9	13.1			16.5		19.8	47.3		3.7	149.6	
Internal Link Dist (m)		419.3			114.8			270.6			481.7	
Turn Bay Length (m)	45.0						35.0			15.0		
Base Capacity (vph)	389	526			445		366	1599		717	1297	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.44	0.18			0.13		0.49	0.26		0.02	0.55	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 76.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 21.6
Intersection Capacity Utilization 75.0%
Analysis Period (min) 15

Intersection LOS: C
ICU Level of Service D

Splits and Phases: 4: King Street & Chester Road/Cottage Street



Windsor Intersection Needs Assessment

4: King Street & Chester Road/Cottage Street

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Scenario 3 - 2030 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	5	116	5	1	15	110	317	15	15	176	56
Future Volume (vph)	160	5	116	5	1	15	110	317	15	15	176	56
Satd. Flow (prot)	1770	1595	0	0	1662	0	1770	1850	0	1770	1784	0
Flt Permitted	0.743				0.927		0.482			0.546		
Satd. Flow (perm)	1384	1595	0	0	1558	0	898	1850	0	1017	1784	0
Satd. Flow (RTOR)		126			16			4			19	
Lane Group Flow (vph)	174	131	0	0	22	0	120	361	0	16	252	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	41.0	41.0		41.0	41.0		14.0	59.0		45.0	45.0	
Total Lost Time (s)	6.0	6.0			6.0		4.0	6.0		6.0	6.0	
Act Effct Green (s)	12.6	12.6			12.6		27.6	25.6		16.0	16.0	
Actuated g/C Ratio	0.25	0.25			0.25		0.55	0.51		0.32	0.32	
v/c Ratio	0.50	0.27			0.06		0.19	0.38		0.05	0.44	
Control Delay	23.6	6.0			10.3		6.6	9.1		15.6	17.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	23.6	6.0			10.3		6.6	9.1		15.6	17.6	
LOS	C	A			B		A	A		B	B	
Approach Delay		16.0			10.3			8.5			17.5	
Approach LOS		B			B			A			B	
Queue Length 50th (m)	14.7	0.4			0.5		4.4	17.3		1.1	17.8	
Queue Length 95th (m)	33.2	11.1			5.0		12.9	39.8		5.3	41.9	
Internal Link Dist (m)		419.3			114.8			270.6			481.7	
Turn Bay Length (m)	45.0						35.0			15.0		
Base Capacity (vph)	987	1174			1116		668	1785		797	1403	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.18	0.11			0.02		0.18	0.20		0.02	0.18	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 50.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 12.9

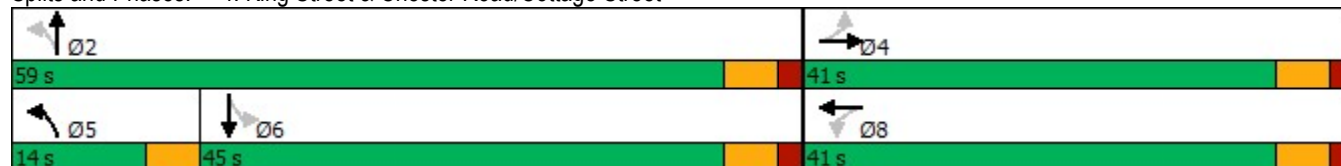
Intersection Capacity Utilization 60.6%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B

Splits and Phases: 4: King Street & Chester Road/Cottage Street



Windsor Intersection Needs Assessment

4: King Street & Chester Road/Cottage Street

Page C-38
Scenario 3 - 2030 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1	127	25	5	25	233	357	5	10	342	194
Future Volume (vph)	115	1	127	25	5	25	233	357	5	10	342	194
Satd. Flow (prot)	1770	1585	0	0	1709	0	1770	1859	0	1770	1746	0
Flt Permitted	0.719				0.807		0.186			0.530		
Satd. Flow (perm)	1339	1585	0	0	1410	0	346	1859	0	987	1746	0
Satd. Flow (RTOR)		138			27			2			42	
Lane Group Flow (vph)	125	139	0	0	59	0	253	393	0	11	583	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	24.0	24.0		24.0	24.0		19.0	76.0		57.0	57.0	
Total Lost Time (s)	6.0	6.0			6.0		4.0	6.0		6.0	6.0	
Act Effct Green (s)	12.7	12.7			12.7		45.6	43.5		26.5	26.5	
Actuated g/C Ratio	0.18	0.18			0.18		0.66	0.63		0.39	0.39	
v/c Ratio	0.51	0.34			0.21		0.51	0.33		0.03	0.84	
Control Delay	36.9	8.8			20.0		9.3	6.6		13.5	29.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	36.9	8.8			20.0		9.3	6.6		13.5	29.5	
LOS	D	A			B		A	A		B	C	
Approach Delay		22.1			20.0			7.6			29.2	
Approach LOS		C			B			A			C	
Queue Length 50th (m)	15.2	0.1			3.6		10.1	19.2		0.9	63.4	
Queue Length 95th (m)	39.1	15.5			15.8		27.1	40.1		4.1	117.0	
Internal Link Dist (m)		419.3			114.8			270.6			481.7	
Turn Bay Length (m)	45.0						35.0			15.0		
Base Capacity (vph)	367	535			406		555	1730		761	1356	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.34	0.26			0.15		0.46	0.23		0.01	0.43	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 68.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 18.7

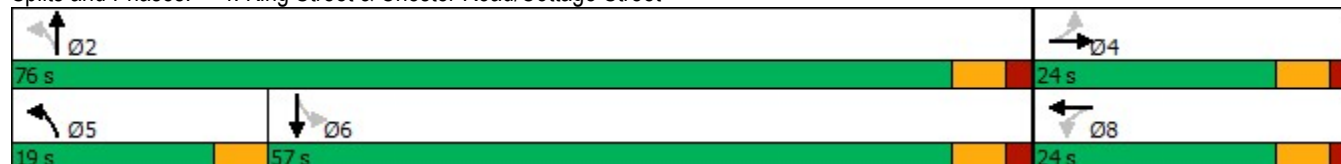
Intersection Capacity Utilization 77.9%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service D

Splits and Phases: 4: King Street & Chester Road/Cottage Street



Windsor Intersection Needs Assessment

6: King Street & Cottage Street

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Scenario 2 - 2030 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	15	558	20	25	343
Future Volume (Veh/h)	5	15	558	20	25	343
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	16	607	22	27	373
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			52			
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1045	618			629	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977	485			498	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			97	
cM capacity (veh/h)	235	506			927	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	21	629	27	373		
Volume Left	5	0	27	0		
Volume Right	16	22	0	0		
cSH	397	1700	927	1700		
Volume to Capacity	0.05	0.37	0.03	0.22		
Queue Length 95th (m)	1.3	0.0	0.7	0.0		
Control Delay (s)	14.6	0.0	9.0	0.0		
Lane LOS	B		A			
Approach Delay (s)	14.6	0.0	0.6			
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			40.6%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
6: King Street & Cottage Street

Page C-40
Scenario 2 - 2030 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	30	533	5	10	665
Future Volume (Veh/h)	20	30	533	5	10	665
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	33	579	5	11	723
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			52			
pX, platoon unblocked	0.88	0.88			0.88	
vC, conflicting volume	1326	582			584	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1303	456			458	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	94			99	
cM capacity (veh/h)	154	532			970	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	55	584	11	723		
Volume Left	22	0	11	0		
Volume Right	33	5	0	0		
cSH	269	1700	970	1700		
Volume to Capacity	0.20	0.34	0.01	0.43		
Queue Length 95th (m)	6.0	0.0	0.3	0.0		
Control Delay (s)	21.8	0.0	8.8	0.0		
Lane LOS	C		A			
Approach Delay (s)	21.8	0.0	0.1			
Approach LOS	C					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			45.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
5: King Street & Payzant Drive Connector

Page C-41
Scenario 3 - 2030 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	98	78	448	90	112	264
Future Volume (Veh/h)	98	78	448	90	112	264
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	85	487	98	122	287
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1067	536			585	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1067	536			585	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	50	84			88	
cM capacity (veh/h)	215	545			990	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	107	85	585	122	287	
Volume Left	107	0	0	122	0	
Volume Right	0	85	98	0	0	
cSH	215	545	1700	990	1700	
Volume to Capacity	0.50	0.16	0.34	0.12	0.17	
Queue Length 95th (m)	20.0	4.4	0.0	3.4	0.0	
Control Delay (s)	37.1	12.8	0.0	9.1	0.0	
Lane LOS	E	B		A		
Approach Delay (s)	26.4		0.0	2.7		
Approach LOS	D					
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			50.7%	ICU Level of Service		A
Analysis Period (min)			15			

Windsor Intersection Needs Assessment
5: King Street & Payzant Drive Connector

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Scenario 3 - 2030 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	82	122	542	83	104	452
Future Volume (Veh/h)	82	122	542	83	104	452
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	89	133	589	90	113	491
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1351	634			679	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1351	634			679	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	39	72			88	
cM capacity (veh/h)	145	479			913	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	89	133	679	113	491	
Volume Left	89	0	0	113	0	
Volume Right	0	133	90	0	0	
cSH	145	479	1700	913	1700	
Volume to Capacity	0.61	0.28	0.40	0.12	0.29	
Queue Length 95th (m)	26.0	9.0	0.0	3.4	0.0	
Control Delay (s)	62.8	15.4	0.0	9.5	0.0	
Lane LOS	F	C		A		
Approach Delay (s)	34.4		0.0	1.8		
Approach LOS	D					
Intersection Summary						
Average Delay			5.8			
Intersection Capacity Utilization			53.9%	ICU Level of Service		A
Analysis Period (min)			15			

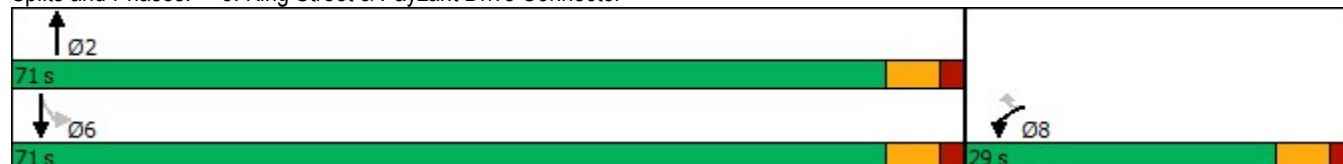
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	86	78	443	92	112	264
Future Volume (vph)	86	78	443	92	112	264
Satd. Flow (prot)	1770	1583	1820	0	1770	1863
Flt Permitted	0.950				0.373	
Satd. Flow (perm)	1770	1583	1820	0	695	1863
Satd. Flow (RTOR)		85	21			
Lane Group Flow (vph)	93	85	582	0	122	287
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Total Split (s)	29.0	29.0	71.0		71.0	71.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Act Effct Green (s)	10.2	10.2	23.0		23.0	23.0
Actuated g/C Ratio	0.25	0.25	0.57		0.57	0.57
v/c Ratio	0.21	0.18	0.56		0.31	0.27
Control Delay	15.1	5.9	10.2		9.7	7.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	15.1	5.9	10.2		9.7	7.4
LOS	B	A	B		A	A
Approach Delay	10.7		10.2			8.1
Approach LOS	B		B			A
Queue Length 50th (m)	4.9	0.0	28.9		5.3	12.1
Queue Length 95th (m)	16.8	8.5	53.9		14.3	23.2
Internal Link Dist (m)	175.3		96.2			92.2
Turn Bay Length (m)	15.0				25.0	
Base Capacity (vph)	1019	947	1820		695	1863
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.09	0.09	0.32		0.18	0.15

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 40.4
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 9.5
 Intersection Capacity Utilization 64.7%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service C

Splits and Phases: 5: King Street & Payzant Drive Connector



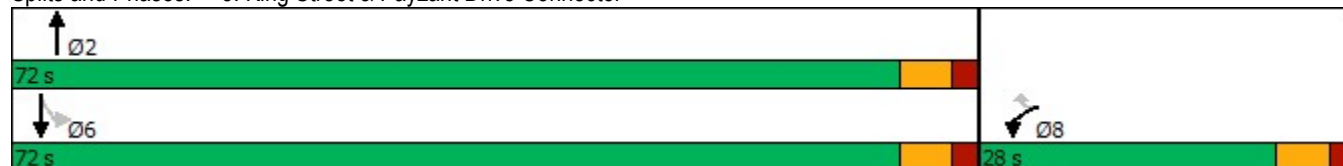
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	90	120	542	85	104	457
Future Volume (vph)	90	120	542	85	104	457
Satd. Flow (prot)	1770	1583	1829	0	1770	1863
Flt Permitted	0.950				0.281	
Satd. Flow (perm)	1770	1583	1829	0	523	1863
Satd. Flow (RTOR)		130	17			
Lane Group Flow (vph)	98	130	681	0	113	497
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Total Split (s)	28.0	28.0	72.0		72.0	72.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Act Effct Green (s)	10.4	10.4	24.7		24.7	24.7
Actuated g/C Ratio	0.22	0.22	0.52		0.52	0.52
v/c Ratio	0.25	0.29	0.71		0.42	0.51
Control Delay	18.1	6.4	13.0		12.4	9.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	18.1	6.4	13.0		12.4	9.5
LOS	B	A	B		B	A
Approach Delay	11.4		13.0			10.0
Approach LOS	B		B			A
Queue Length 50th (m)	6.2	0.0	37.4		5.1	24.1
Queue Length 95th (m)	19.9	11.4	70.4		15.6	44.7
Internal Link Dist (m)	175.3		96.2			92.2
Turn Bay Length (m)	15.0				25.0	
Base Capacity (vph)	836	816	1829		523	1863
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.12	0.16	0.37		0.22	0.27

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 47.3
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 11.6
 Intersection Capacity Utilization 69.5%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

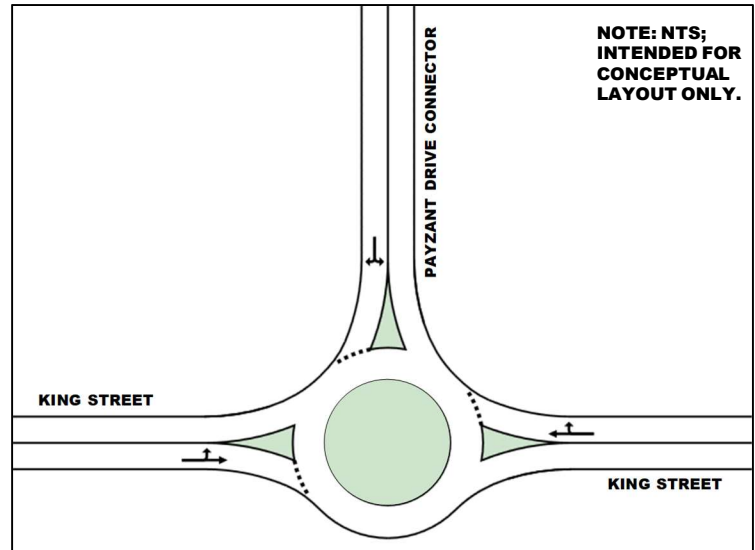
Splits and Phases: 5: King Street & Payzant Drive Connector



ARCADY ANALYSIS – 2030 AM & PM PEAK HOUR

Scenario 3

King Street at Payzant Drive



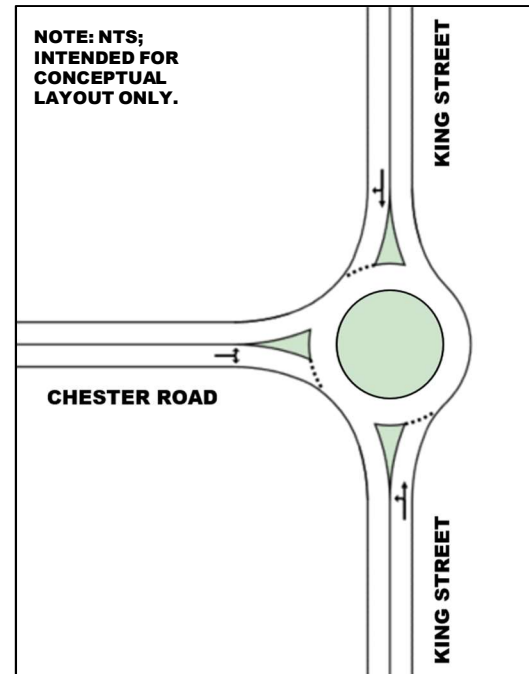
Arm	V- Approach Road half- width (m)	E-Entry Width (m)	I'- Effective flare length (m)	R – Entry Radius (m)	D – Inscribed circle diameter (m)	PHI – Conflict (entry) angle (deg)
King Street SB	3.5	3.5	0	30	50	20
King Street NB	3.5	3.5	0	30	50	20
Payzant Drive EB	3.5	3.5	0	30	50	20

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement			Overall Intersection	
	Payzant Drive Connector	King Street			
	EB	NB	SB	Delay	LOS
Scenario 3 - 2030 AM Peak Hour <i>with</i> Payzant Drive Connection					
Delay	5.4	5.7	8.2	6.9	A
LOS	A	A	A		
v/c	0.21	0.40	0.57		
Queue	8.4	18.9	10.5		
Scenario 3 - 2030 PM Peak Hour <i>with</i> Payzant Drive Connection					
Delay	6.5	8.5	10.5	9.1	A
LOS	A	A	B		
v/c	0.29	0.59	0.67		
Queue	11.2	11.9	33.6		

ARCADY ANALYSIS – 2030 AM & PM PEAK HOUR

Scenario 2

King Street at Chester Road



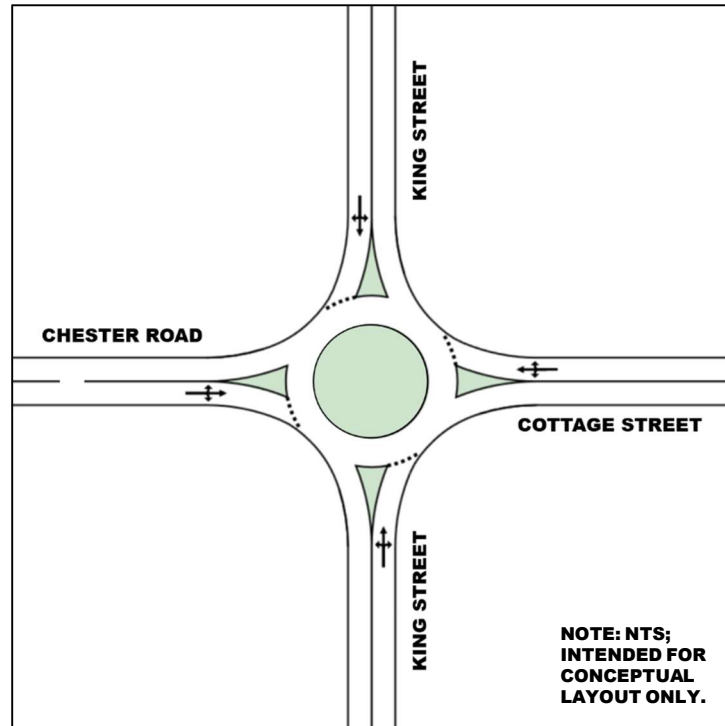
Arm	V- Approach Road half- width (m)	E-Entry Width (m)	l'- Effective flare length (m)	R – Entry Radius (m)	D – Inscribed circle diameter (m)	PHI – Conflict (entry) angle (deg)
King Street SB	3.5	3.5	0	30	50	20
King Street NB	3.5	3.5	0	30	50	20
Payzant Drive EB	3.5	3.5	0	30	50	20

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement			Overall Intersection	
	Chester Road	King Street			
	EB	NB	SB	Delay	LOS
Scenario 2 - 2030 AM Peak Hour <i>without Payzant Drive Connection</i>					
Delay	5.2	7.1	4.7	6.0	A
LOS	A	A	A		
v/c	0.31	0.49	0.25		
Queue	13.3	14.0	9.8		
Scenario 2 - 2030 PM Peak Hour <i>without Payzant Drive Connection</i>					
Delay	5.8	9.7	10.4	9.3	A
LOS	A	A	B		
v/c	0.30	0.64	0.64		
Queue	12.6	20.3	24.5		

ARCADY ANALYSIS – 2030 AM & PM PEAK HOUR

Scenario 2

King Street at Chester Road/ Cottage Street *Without* Payzant Drive Connector



Arm	V- Approach Road half- width (m)	E-Entry Width (m)	I'- Effective flare length (m)	R – Entry Radius (m)	D – Inscribed circle diameter (m)	PHI – Conflict (entry) angle (deg)
Wentworth Rd SB	3.5	3.5	0	30	50	20
Wentworth Rd NB	3.5	3.5	0	30	50	20
Payzant Dr WB	3.5	3.5	0	30	50	20
Payzant Dr EB	3.5	3.5	0	30	50	20

LOS Criteria	Control Delay (sec/veh), Level of Service (LOS), v/c Ratio, and 95 th %ile Queue (m) by Intersection Movement				Overall Intersection	
	Chester Road	Cottage Street	King Street			
	EB	WB	NB	SB	Delay	LOS
Scenario 2 - 2030 AM Peak Hour <i>without</i> Payzant Drive Connection						
Delay	5.4	4.9	7.1	4.8	6.0	A
LOS	A	A	A	A		
v/c	0.32	0.03	0.49	0.26		
Queue	14.0	3.5	14.7	7.7		
Scenario 2 - 2030 PM Peak Hour <i>without</i> Payzant Drive Connection						
Delay	5.9	5.7	9.8	10.5	9.2	A
LOS	A	A	A	B		
v/c	0.30	0.09	0.64	0.64		
Queue	12.6	3.5	21.7	23.1		

**MUNICIPALITY OF THE
DISTRICT OF WEST HANTS
SUBDIVISION BY-LAW**

**FUTURE STREETS
CONCEPTUAL PLAN**

Garlands Crossing

- — — Proposed Collector Streets
- Local Streets
- - - Proposed Local Streets
- ▭ Windsor Boundary

0 100
Metres
Scale: 1:3,100



Photo: Google Earth

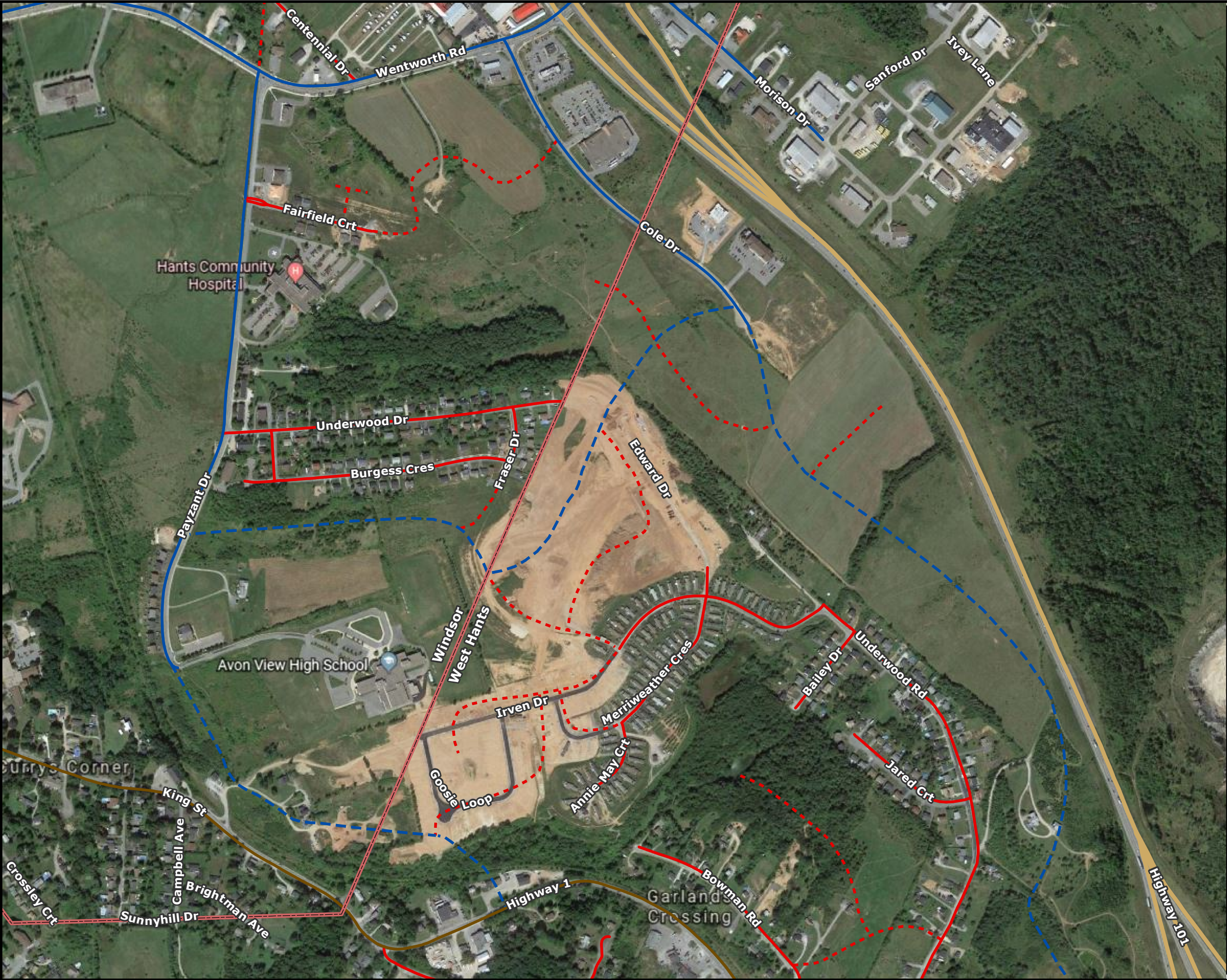
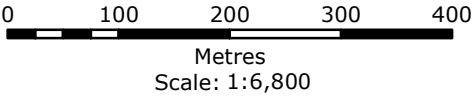


**MUNICIPALITY OF THE
DISTRICT OF WEST HANTS
SUBDIVISION BY-LAW**

**FUTURE STREETS
CONCEPTUAL PLAN**

Garlands Crossing

- Major Arterial
- Trunk Highway
- Collector Streets
- Proposed Collector Streets
- Local Streets
- Proposed Local Streets
- Windsor Boundary



MUNICIPALITY OF THE
DISTRICT OF WEST HANTS
SUBDIVISION BY-LAW

MAP A
FUTURE STREETS
CONCEPTUAL PLAN

Transportation Network

- Major Arterial
- Trunk Highway
- Collector Streets
- Proposed Collector Streets
- Local Streets
- Proposed Local Streets
- Proposed Active Transportation Route
- Municipal Boundary

Approved: April 4, 2014, As amended to _____.

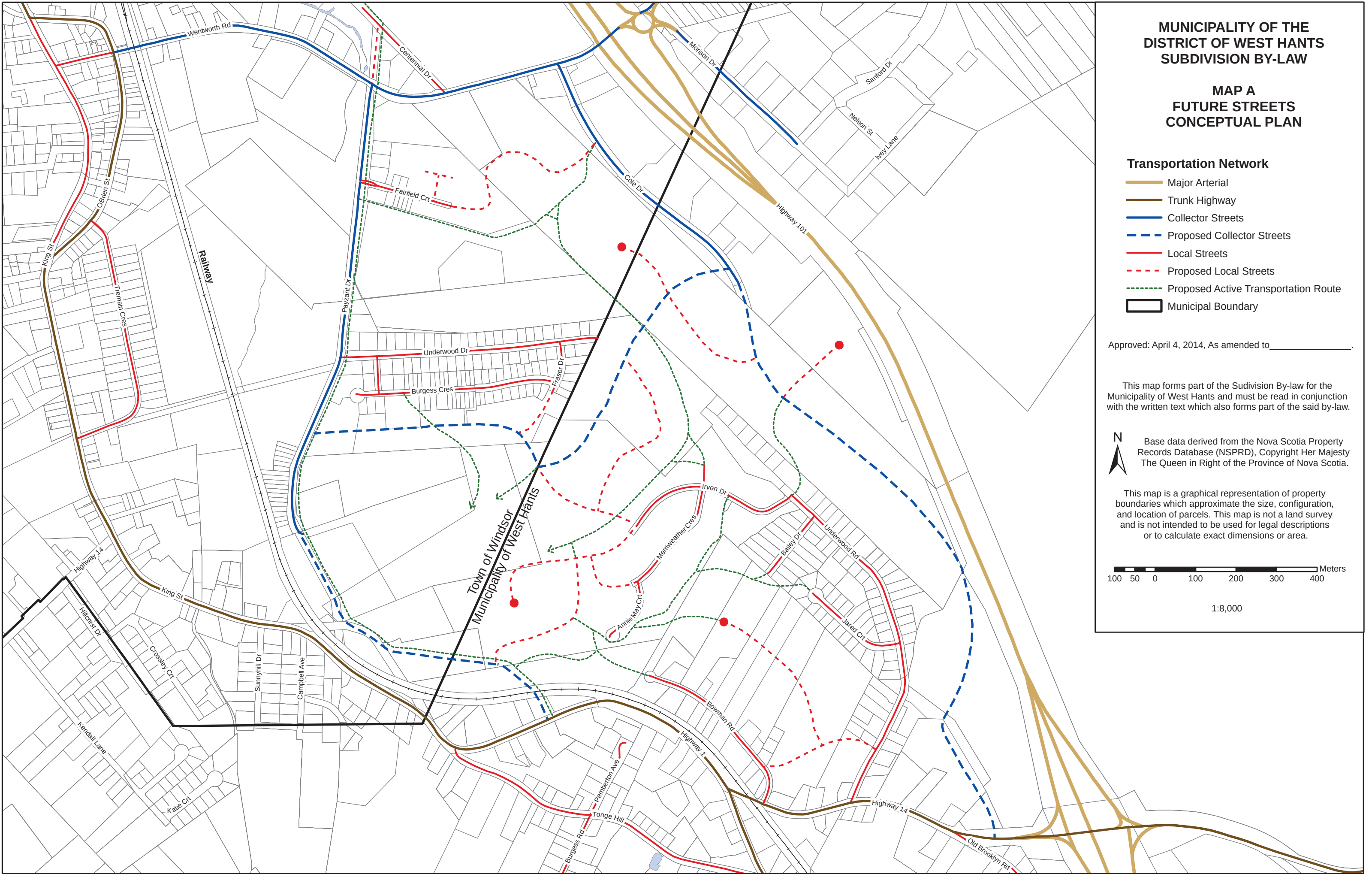
This map forms part of the Sudivision By-law for the Municipality of West Hants and must be read in conjunction with the written text which also forms part of the said by-law.

 Base data derived from the Nova Scotia Property Records Database (NSPRD), Copyright Her Majesty The Queen in Right of the Province of Nova Scotia.

This map is a graphical representation of property boundaries which approximate the size, configuration, and location of parcels. This map is not a land survey and is not intended to be used for legal descriptions or to calculate exact dimensions or area.

 Meters

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TOWN OF WINDSOR SUBDIVISION BY-LAW

Approved by Council on January 24, 2012
Effective Date – March 21, 2012
Future Streets Map Amended – March 13, 2014

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PART 1: TITLE

1. This By-law may be cited as the Town of Windsor Subdivision By-law and shall apply to the subdivision of all land within the Town of Windsor, hereinafter referred to as the "Town".

PART 2: INTERPRETATION

2. In this By-law, the word "shall" is mandatory and not permissive. Words used in the present tense shall include the future. Words used in the singular shall include the plural except where otherwise indicated, and words used in the plural number shall include the singular. Words used in the masculine gender shall include the feminine gender. All other words shall carry their customary meaning except those defined hereinafter.

PART 3: DEFINITIONS

3. (a) **Act** means the *Municipal Government Act*, Chapter 18 of the Acts of 1998, and amendments thereto.
- (b) **Agreement** means a contract between the subdivider and the Town which describes the responsibilities of each party with respect to the subdivision and servicing of land.
- (c) **Area of land** means any existing lot or parcel as described by its boundaries.
- (d) **Capital costs** means the cost of the oversized (e.g., trunk or transmission lines, collector roads) infrastructure systems needed to service the charge area. Capital costs may include necessary infrastructure external to the charge area. Cost estimates may be used. Costs may include design, construction, materials and cost escalators, interest during construction, financial costs, legal surveying, administration and land costs.
- (e) **Central sanitary sewer system** (central sewer) means an assembly of pipes, conduits and appurtenances (including manholes and lift stations) owned by the Town of Windsor which carries sanitary sewer to a treatment plant.
- (f) **Central water distribution system** (central water) means an assembly of pipes, conduits and appurtenances which is designed to carry and distributes potable water for consumption and fire protection owned by the Town of Windsor.
- (g) **Charge area** means an area in which infrastructure charges are to be levied which has been designated by this by-law.
- (h) **Council** means the Council of the Town of Windsor.
- (i) **Department of Environment** means the Nova Scotia Department of Environment.
- (j) **Department of Transportation** means the Nova Scotia Department of Transportation and Infrastructure Renewal.
- (k) **Development Officer** means that person appointed by Council pursuant to the Municipal Government Act and having the power and duty to administer this By-law.
- (l) **Drainage plan** means a detailed plan of storm water runoff and the courses and channels of it, including floodplains, for one or more parts of an area of drainage for all lands tributary to, or carrying drainage from, land that is proposed to be subdivided.
- (m) **Engineer** means the engineer of the Town and includes a person acting under the supervision and direction of the engineer.
- (n) **Equivalent value** means cash or facilities, services or other value in kind related to parks, playgrounds, and similar public purposes or any combination thereof, determined by the Town to be equal to the value, as determined by an assessor, of the land required to be transferred to the Town for parkland purposes.
- (o) **Frontage** means the lot frontage and shall be measured the same as required in the *Land Use By-law*.
- (p) **Infrastructure charge** means a charge levied on a subdivider as a condition of subdivision approval within a charge area for the purpose of recovering capital costs associated with new or expanded infrastructure related to central water, wastewater and storm water systems, streets

and intersections, traffic signs, signals and bus bays required to service the charge area, along with any costs associated with land acquisition, surveying, studies and legal services.

- (q) **Land Use By-law** means the *Town of Windsor Land Use By-law*.
- (r) **Lot** means any parcel to be created by the filing of a plan of subdivision.
- (s) **Municipal Planning Strategy** means the *Town of Windsor Municipal Planning Strategy*.
- (t) **Municipal Specifications** means the *Town of Windsor Municipal Services Standards and Specifications* and the current issue of the Nova Scotia Road Builders Association, Consulting Engineers of Nova Scotia Joint Committee on Contract Documents' *Standard Specifications for Municipal Services*.
- (u) **Professional Engineer** means a registered member, in good standing, of the Association of Professional Engineers of Nova Scotia who holds appropriate professional liability insurance.
- (v) **Proposed lot** means any lot being proposed to be created by a plan, including a remainder lot.
- (w) **Province** means Her Majesty the Queen in right of the Province of Nova Scotia.
- (x) **Public street** includes any street or road owned and maintained by the Town or the Province; and
 - (i) **town public street** means any street or road owned and maintained by the Town; and
 - (ii) **provincial public street** means any street or road owned and maintained by the Department of Transportation excluding designated controlled access highways pursuant to Section 21 of the *Public Highways Act*.
- (y) **Remainder lot** means a lot for which subdivision approval is not requested or granted but which results from the approval of lots shown on a plan of subdivision.
- (z) **Registry of Deeds** means the office of the Registrar of Deeds for the County of Hants.
- (aa) **Sanitary sewer** means a pipe or conduit receiving and carrying liquid and water-carried wastes and to which storm, surface or ground waters are not intentionally admitted.
- (bb) **Storm water system** means the courses and channels, including floodplains, which receive, carry and regulate flows in response to rain and snow including overland flows, sub-surface flows, groundwater flows and snow melt.
- (cc) **Subdivider** means the owner of the area of land proposed to be subdivided and includes anyone acting with the owner's written consent.
- (dd) **Subdivision** means the division of any area of land into two or more parcels, and includes a resubdivision or a consolidation of two or more parcels.
- (ee) **Surveyor** means a registered member, in good standing, of the Association of Nova Scotia Land Surveyors.
- (ff) **Town** means the Town of Windsor.

PART 4: GENERAL PROVISIONS

A - Procedure

- | | | |
|--------------------|-----------|--|
| Application form | 4. | Application for approval of a plan a subdivision shall be made to the Development Officer in the form specified in Schedule "A" of this By-law. |
| Comply with Act | 5. | The Development Officer shall comply with the notification and approval provisions of the Act. |
| Review by agencies | 6. | The Development Officer shall forward a copy of the preliminary, tentative or final plan of subdivision to: <ul style="list-style-type: none"> (a) in areas served by a central sewer, the authority having |

- jurisdiction for central sewers;
- (b) in areas not served by a central sewer, the Department of Environment to determine compliance with the *On-site Sewage Disposal Systems Regulations*, except where the proposed lot
 - (i) is greater than 9,000 square metres (96,878.36 square feet), has a width of 76 metres (249.34 feet) or more, and the applicant has certified on the application that the proposed lot is not intended for a purpose requiring an on-site sewage disposal system; or
 - (ii) contains an on-site sewage disposal system and is being increased in size, provided all other proposed lots shown on the plan meet the requirements listed in subsection (i).
 - (c) any authority having jurisdiction for public streets within 500 metres (1,640.42 feet) of the limits of the proposed lots; and
 - (d) any other agency of the Province or the Town which the Development Officer deems necessary.
- 7.** The Development Officer shall forward a copy of the concept plan and any supplementary information to appropriate agencies in order to evaluate the concept plan in terms of:
- (a) the design's consideration of topography, natural features, and other site constraints and restrictions;
 - (b) the street layout, pedestrian routes, phasing sequence, and connections with existing and proposed transportation links on a local and regional scale;
 - (c) the feasibility of servicing with applicable services, and the effect of the development on existing municipal services and the provision of future municipal services where applicable;
 - (d) the new or expanded infrastructure which may be required by the subdivision;
 - (e) public open space; and
 - (f) any proposed community and commercial uses.
- Vacant lots not intended for development **8.** A plan of subdivision that shows a proposed lot referred to in Subsection 40(d) shall be forwarded to the Department of Environment for confirmation that the Department is in agreement that the proposed lot does not require an on-site sewage disposal system.
- Report by agencies **9.** Any agency to whom a copy of a plan of subdivision has been forwarded pursuant to Sections 6, 7 or 8 shall forward a written report of their assessments or recommendations to the Development Officer.
- Plan not to be refused based on agencies' report **10.** Approval of a plan of subdivision may not be refused or withheld as a result of the assessment or recommendations made by the Department of Environment, the Department of Transportation or of any other agency of the Province or the Town unless the final plan of subdivision is clearly contrary to a law of the Province or regulation made pursuant to a law of the Province, including any applicable requirements contained in a land use by-law of the Town.
- Fees **11.** (a) The subdivider shall pay:
 - (i) the fees contained in the *Costs and Fees Act* and its regulations for filing the approved final plan of subdivision,

		certifying a copy of the plan, and registering a notice of approval of the plan; and
		(ii) for review and approval of a tentative plan of subdivision, a processing fee of \$25.00; and
		(iii) for review and approval of a final plan of subdivision, a processing fee of \$75.00 plus \$4.00 for each lot for which approval is being requested; and
		(iv) where a final plan of subdivision shows proposed public streets, an additional processing fee of \$200.00.
	(b)	The fees referred to in Clause (a)(i) shall be paid at the time of application for approval of the plan of subdivision by cheque or money order made payable to the "Registry of Deeds".
	(c)	The fees referred to in Clauses (a)(ii) and (iii) shall be paid at the time of application for approval of the plan of subdivision by cheque or money order made payable to the "Town of Windsor".
	(d)	The fee referred to in Clause (a)(iv) is a one-time fee which shall be paid prior to acceptance of the public street by the Town, by cheque or money order made payable to the "Town of Windsor".
	(e)	Where the Development Officer refuses to approve a final plan of subdivision, the Development Officer shall return the fees referred to in Clause (a)(i) to the subdivider.
Copy of approved plan to subdivider and surveyor	12.	(a) The Development Officer shall forward a copy of the approved tentative or final plan of subdivision to the subdivider and the surveyor.
		(b) The Development Officer shall forward a copy of the approved concept plan to the subdivider.
Subdivision that adds or consolidates	13.	Before approving a final plan of subdivision that adds or consolidates parcels or areas of land in different ownerships, the Development Officer shall be provided with:
		(a) the executed deeds suitable for registering to effect the addition or consolidation;
		(b) the fees for registering the deeds;
		(c) the affidavit of value including particulars of any exemption, if any, pursuant to Part V of the Act;
		(d) where applicable, the deed transfer tax; and
		(e) all completed forms required under the <i>Land Registration Act</i> to record documents at the Registry of Deeds.
Notice of refusal to agencies	14.	Where the Development Officer refuses to approve a concept, tentative or final plan of subdivision, the Development Officer shall give notice of the refusal to all agencies to whom a plan was forwarded pursuant to Sections 6, 7 or 8.
Notice of refusal to subdivider	15.	Where the Development Officer refuses to approve a concept, tentative or final plan of subdivision, the Development Officer shall inform the subdivider of the reasons for the refusal in writing and advise the subdivider of the appeal provisions of Section 284 of the <i>Act</i> .
Section 287(3) approval	16.	A final plan of subdivision showing lots to be approved under circumstances described in Subsection 287(3) of the <i>Act</i> shall, by special

note on the plan:

- (a) identify such lots;
- (b) state the names of the grantor and the grantee of such lots; and
- (c) state the date, book and page number of the conveyance of such lots as recorded in the Registry of Deeds.

B - Lot Requirements

- | | | |
|---------------------------------|------------|---|
| Lots shall abut public street | 17. | All lots to be approved on a plan of subdivision shall abut a public street. |
| Land Use By-law | 18. | All lots for which approval is requested and the remainder lot, if any, for which no approval is requested, shall meet the applicable requirements contained in the <i>Land Use By-law</i> . |
| | 19. | Sections 20, 21, 22 and 23, do not apply unless the <i>Land Use By-law</i> permits development on any lot created pursuant to these sections and the <i>Municipal Planning Strategy</i> provides for both the subdivision and development of such lots. |
| Section 279 variance | 20. | <ul style="list-style-type: none"> (a) Notwithstanding the lot area and frontage requirements of Section 18, the Development Officer may approve a maximum of two lots, shown on a plan of subdivision, in accordance with Section 279 of the <i>Act</i>, provided all other requirements of this By-law are met. (b) Subsection (a) does not apply if the area requirements established by the Department of the Environment for the construction or installation of an on-site sewage disposal system are not met. |
| Subdivision altering boundaries | 21. | <ul style="list-style-type: none"> (a) Notwithstanding Section 17 and the lot area and frontage requirements of Section 18, the Development Officer may approve a subdivision altering the boundaries of two or more areas of land where: <ul style="list-style-type: none"> (i) no additional lots are created; and (ii) each resulting lot <ul style="list-style-type: none"> (1) meets the minimum dimensions for lot frontage of the <i>Land Use By-law</i>; or (2) has not had its frontage, if any, reduced; and (iii) each resulting lot <ul style="list-style-type: none"> (1) meets the minimum requirement for lot area of the <i>Land Use By-law</i>; or (2) has not had its area reduced. (b) Where the proposed lot is not surveyed, the final plan of subdivision prepared pursuant to Subsection (a) shall: <ul style="list-style-type: none"> (i) be certified and stamped by a Nova Scotia Land Surveyor that the boundaries of the parcel or area of land proposed to be added to the existing area of land have been surveyed and shown as a heavy solid line, except the common boundary between the existing areas of land, which is surveyed and certified as being the common boundary and shown as a heavy broken line; and (ii) notwithstanding Clause 56(a)(ii), other than the new boundaries which have been surveyed pursuant to Clause |

- (b)(i), show the remaining boundaries of the resulting lot for which approval is requested described graphically as a lighter solid line; and
- (iii) have the following notation, completed and signed by the surveyor, affixed to the plan adjacent to the certification required by the *Land Surveyors Act* and the regulations made thereunder:
- “NOTE:** The only boundaries shown on this plan which have been surveyed are the boundaries of _____. The common boundary between the existing areas of land identified by _____ and _____, which is shown by a heavy broken line, is hereby certified as having been the common boundary.
- The remaining boundaries of resulting Lot _____ shown on this plan are a graphic representation only and do not represent the accurate shape or position of the lot boundaries which are subject to a field survey.”
- Encroachments **22.** (a) Notwithstanding the lot area and frontage requirements of Section 18, where a development component of a permanent nature such as a structure, driveway, well, or on-site sewage disposal system is encroaching in or upon an immediately adjacent area of land, the Development Officer may approve a plan of subdivision to the extent necessary and practical to remove the encroachment.
- (b) Where a lot created pursuant to Subsection (a) is not surveyed, the provisions of Subsection 21(b) shall apply.
- Main buildings on lot before Nov. 7, 1974 **23.** (a) For purposes of Subsection (b), “main building” is a building which is not an accessory building to another building on the area of land.
- (b) Notwithstanding the lot area and frontage requirements of Section 18, where an area of land contains more than one main building built or placed on the land prior to November 7, 1974, the Development Officer may approve a final plan of subdivision creating the same number of lots or fewer as there are main buildings provided that:
- (i) each proposed lot has minimum lot frontage of 6 metres (19.68 feet), and
- (ii) each proposed lot:
- (a) is served by a central sewage system and meets the lot area requirements of Section 18, or
- (b) meets the requirements of the Department of Environment for the installation of an on-site sewage disposal system, and
- (iii) the remainder lot, if any, meets the lot area and lot frontage requirements of Section 18.
- Minimum lot width and depth **24.** Lots shall not be subdivided to create a width or depth of less than 6 metres (19.68 feet).
- Rear lot lines **25.** Wherever possible, the rear lot lines of a series of adjoining lots shall be continuous, not stepped or jogged.

- Side lot lines to be at right angles
- 26.** Wherever possible, side lot lines shall be substantially at right angles to a public street, or radial to a curved public street.

PART 5: PUBLIC STREETS

A - General

- | | | |
|---|------------|--|
| Maximum four approaches | 27. | There shall be not more than four public street approaches in an intersection. |
| Connection to streets in adjoining subdivisions | 28. | <p>(a) Where an area of land being subdivided abuts an existing or approved subdivision, the street layout in the proposed subdivision must be designed to connect to all existing or approved stub streets, dead end streets and road reserves that abut the boundary of the land being subdivided, except where deemed not feasible by the Development Officer.</p> <p>(b) Where an area of land being subdivided abuts a vacant parcel, undeveloped remainder parcel or a parcel with a high likelihood for future infill development, redevelopment or intensification, the street layout in the proposed subdivision must provide for adequate future street and pedestrian connections to adjacent undeveloped or underdeveloped lands.</p> <p>(c) Where an area of land being subdivided includes or abuts land that contains a Required Street Connection as identified on the Future Streets Map (Map 1), the general layout of new streets in the proposed subdivision shall conform to the Future Streets Map. The location of such new streets is not required to be an exact match of the Future Streets Map, but must allow for, in the opinion of the Development Officer, the future continuation and completion of any Required Street Connection.</p> |
| Connection to adjoining undeveloped land | | |
| Future Streets Map (Map 1) | | |
| Shown on a plan | 29. | <p>(a) All proposed Town public streets shall be:</p> <p>(i) shown on a final plan of subdivision;</p> <p>(ii) designed in accordance with the Municipal Specifications and the requirements of this section;</p> <p>(iii) constructed and paved in accordance with the Municipal Specifications prior to approval of the final plan of subdivision by the Development Officer; and</p> <p>(iv) approved by the Engineer prior to approval of the final plan of subdivision by the Development Officer.</p> <p>(b) Where a proposed Town public street intersects a provincial public street, that intersection shall be approved by the Department of Transportation.</p> <p>(c) A proposed lot which abuts a public street shall have any access approved by the authority having jurisdiction for the public street which will be accessed, based on adequate stopping sight distance, as determined by the authority having jurisdiction.</p> <p>(d) Where a plan of subdivision shows a proposed lot abutting an existing public street, the authority having jurisdiction shall verify that the street is a public street.</p> <p>(e) A right-of-way access to adjacent property must be provided and</p> |
| Design | | |
| Construction | | |
| Approval by engineer | | |
| Approval of intersection by DOT | | |
| Lot access to be approved | | |
| Existing street | | |

Right-of-way to adjacent property		conveyed to the Town. Where practical, these accesses shall be no greater than 400 metres (1,312.34 feet) apart, except where this requirement would prejudice the proper subdivision of the land proposed to be subdivided or the adjacent land.
Pedestrian walkway	(f)	Where continuous street frontage exceeds 300 metres (984.25 feet), a pedestrian walkway in accordance with the Municipal Specifications shall be provided through and near the centre of the block to give access to adjacent streets.
Engineer's certificate of compliance	30.	Prior to approval of the final plan of subdivision by the Development Officer, the subdivider shall provide a certificate from a professional engineer which certifies that the public street has been constructed in compliance with the design and construction requirements of Section 29.
Testing	31.	The subdivider shall be responsible for the following: (a) arranging for complete testing of the installation of a street at various stages as required by the Municipal Specifications; and (b) giving reasonable notice to the Engineer of the proposed test date, site, and time; and (c) allowing the Engineer to inspect the installation at any stage or to verify or confirm any required test.
Alternative to complete construction	32.	As an alternative to the complete construction and acceptance of a Town public street as required by Sections 29, 30, 31 and 39, the subdivider may, before approval of the final plan is given, enter into a written agreement with the Town in accordance with Part 7, and post a performance surety in accordance with Part 8.

PART 6: WATER AND SEWER SYSTEMS

Central sanitary sewer and water systems	33.	(a) Where a proposed subdivision is in an area or immediately adjacent to an area serviced by a municipal sewer and water, and where a new public street is proposed, the subdivider shall, prior to approval of the final plan of subdivision by the Development Officer: (i) construct a sanitary sewer system including collectors and laterals to the boundary of the proposed lots and connect to the existing central sanitary sewer system; (ii) construct a water system including mains and laterals to the boundary of the proposed lots and connect to the central water system; and (iii) all sanitary sewer systems and water systems required by Clauses (a)(i) and (ii) shall be designed by a professional engineer and shall comply with the Municipal Specifications.
Storm drainage	(b)	The subdivider shall install a storm water system in conformance with a drainage plan, properly designed by a professional engineer, to remove any surface drainage that may enter the area being subdivided or be generated within the proposed subdivision, and to adequately dispose of the waters so as not to negatively affect any downstream properties. All drainage plans and storm drainage systems shall comply with the Municipal Specifications.
	(c)	The specifications referred to in Clause (a)(iii) and Subsection (b)

Accepted engineering practice		herein may be waived or varied by the Engineer in accordance with accepted engineering practice.
Engineer's certificate of compliance	34.	Prior to approval of the final plan of subdivision by the Development Officer, the subdivider shall provide a certificate to the Development Officer from a professional engineer which certifies that the developer has complied with the design and construction requirements of Clause 33(a)(iii) and Subsections (b) and (c).
Testing of services	35.	The subdivider shall be responsible for the following: (a) arranging for complete testing of the installation of the water, sewer, and storm drainage systems at various stages as required by the Municipal Specifications; and (b) giving reasonable notice to the Engineer of the proposed test date, site, and time; and (c) allowing the Engineer to inspect the installation at any stage or to verify or confirm any required test.
Alternative to complete construction	36.	As an alternative to the complete construction and acceptance requirements for water, sewer and storm drainage systems, as contained in Sections 33, 34, 35 and 39, the subdivider may, before endorsement of approval of the final plan is given, enter into a written agreement with the Town as provided for in Part 7, and post a performance surety as provided for in Part 8.

PART 7: SERVICING AGREEMENT

Contents of agreement	37.	Where an agreement is entered into between the subdivider and the Town pursuant to Sections 32 or 36, the agreement shall contain provisions satisfactory to the Town with respect to any or all of the following: (a) the time within which any construction of streets and services shall be commenced and completed; (b) the phasing of any construction of streets and services; (c) the acceptance of any streets and services by the Town; (d) the provision and acceptance of easements and rights-of-way; and (e) any other matter related to the requirements of this By-law and Municipal Planning Strategy and Land Use By-law relative to the subdivision and servicing of land.
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PART 8: PERFORMANCE SURETY

	38.	Where a subdivider proposes to complete construction of any streets, sewer, or water services after receiving approval of any final plan of subdivision, the following shall be required: (a) the subdivider shall post a performance surety, satisfactory to the Town, in the amount of one hundred twenty-five percent (125%) of the estimated cost to complete the streets and services; (b) the subdivider shall submit to the Development Officer for approval an estimate of costs to complete the construction of the streets and services and the Development Officer may revise the estimate if it is, in the opinion of the Engineer, inadequate, and the
125% of cost to complete		
Cost estimate		

Surety posted before plan approval	decision of the Engineer shall be final. Such estimates shall include all construction related costs including but not limited to professional engineering contract management and site supervision and inspection of all construction and work;
Form of surety	(c) the performance surety shall be posted before approval of any final plan of subdivision is given by the Development Officer; (d) the performance surety shall be in favour of the Town and may be in the form of cash, certified cheque or letter of credit, or bond issued by a bank, surety, or guarantee company licensed by the Province of Nova Scotia and conditional on the execution and completion of the agreement in accordance with terms of the agreement and the requirements of this By-law and shall not be subject to cancellation, termination, or expiration during the period of time for completion of the work;
Cash held without interest	(e) where the performance surety is paid in cash or by certified cheque, the cheque will be cashed and all monies paid in cash will be held by the Town and returned without interest to the subdivider upon completion of the work;
Portion of surety may be returned less holdback for deficiencies	(f) where the Engineer determines that the work is substantially complete, the Town may, in its sole discretion, return a portion of the performance surety, less any amount held back for deficiencies, prior to complete construction and acceptance by the Town; and
Forfeit of surety	(g) where construction of the proposed streets and services does not commence within twelve (12) months of the date of approval of the final plan of subdivision and according to the approved time schedule, the subdivider shall forfeit the performance surety.

PART 9: ACCEPTANCE REQUIREMENTS

Prior to acceptance	39. Within thirty (30) days following completion of any public streets and services and prior to acceptance by the Town of any streets and services, the subdivider shall:
Maintenance bond	(a) post a maintenance bond, satisfactory to the Town, in the amount of ten percent (10%) of the actual cost of construction of the streets and services. The maintenance bond shall be in favour of the Town and may be in the form of cash, certified cheque, irrevocable letter of credit, or bond issued by a bank, surety, or guarantee company licensed by the Province of Nova Scotia. The bond shall be for a period of twelve (12) months and shall state that it is a guarantee against deficiencies in the construction and installation of streets and services. Where the maintenance bond is paid in cash or by certified cheque, the cheque will be cashed and all monies paid in cash will be held by the Town and returned without interest to the subdivider;
Record drawings for services	(b) provide the reproducible record drawings of engineering design showing all the actual constructed systems including sanitary sewers, water systems, and storm drainage;
As built drawings for	(c) provide “as built” digital and reproducible engineering design drawings for the street including plan and profile of streets drawn

street		to the required scale and certified by a professional engineer;
Manuals and test results	(d)	provide the results of all test reports, and all operating and procedural manuals for each public water or public sewer system, demonstrating that the required streets and systems have been constructed and are operating according to the standards set out in this By-law and the Municipal Specifications;
Plan of streets, drainage ROW, road reserves, easements	(e)	provide four (4) copies of the final plan of subdivision showing the Town public streets and all drainage rights-of-way outlined in red, road reserves outlined in yellow, and easements outlined in green;
Conveyance	(f)	provide deeds, easements, or bills of sale to the Town, free of encumbrances, for streets, rights-of-way, easements, and services. All conveyances of real property and easements shall be by warranty deed or warranty easement, conveyances of services shall be by warranty bill of sale, and the subdivider shall provide to the Town from his or her legal counsel a solicitor's certificate of title certifying that all property conveyed is free from all encumbrances. In the event that the conveyance is not free from encumbrances, an unqualified undertaking from the subdivider's solicitor to release the encumbrances may be accepted by the Town;
Registration costs	(g)	pay all document registration and other costs associated with the requirements of this section; and
Completed Forms	(e)	provide all completed forms required under the <i>Land Registration Act</i> to record documents at the Registry of Deeds.

PART 10: PRELIMINARY PLANS OF SUBDIVISION (Optional)

A - Requirements

Ten copies of plan	40.	(a)	A person proposing to subdivide an area of land may submit to the Development Officer an application in the form specified in Schedule "A", together with ten (10) copies of the preliminary plan of subdivision drawn to scale showing: (i) the name of the owner of the area of land being subdivided; (ii) if applicable, the book and page number of the deed to the area of land as recorded in the name of the owner in the Registry of Deeds for this Municipality; (iii) the names of all owners of all properties abutting the area of land being subdivided; (iv) the unique parcel identifier (PID) of all areas of land being subdivided; (v) the civic number of main buildings on the area of land being subdivided; (vi) a location plan showing the approximate distance between the area of land being subdivided and the nearest prominent landmark; (vii) the shape, dimensions, and area of the proposed lots;
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DOE
requirements

- (viii) each proposed lot identified by a number except in cases where a parcel is being added to or subtracted from an existing area of land, in which case the parcel shall be identified by a letter and the new lot identified by the existing area of land identifier, where available, and the letter;
 - (ix) no duplication of lot identifiers;
 - (x) the approximate location of railways and railway rights-of-way;
 - (xi) the location of existing and proposed public streets;
 - (xii) the name of existing and proposed public streets (and the public street number), as issued pursuant to the civic addressing system;
 - (xiii) the graphic representation of proposed lots shown by solid lines, and the vanishing boundaries of existing areas of land being resubdivided, consolidated, or both, shown as broken lines;
 - (xi) the location of existing buildings within 10 metres (32.81 feet) of a property line;
 - (xii) the general location of watercourses and wetlands;
 - (xiii) the north point;
 - (xiv) the scale; and
 - (xv) any other information which the Development Officer deems necessary to determine whether the preliminary plan conforms to this By-law.
- (b) Where the preliminary plan of subdivision is to be forwarded to the Department of Environment, the following additional information, if required by the Department of Environment, shall be part of, or included with, the preliminary plan:
- (i) the lot layout including any existing and proposed building, on-site sewage disposal system, driveway, and water well;
 - (ii) the location of any watercourse, wetland, marine body, and other features that may influence the design of the on-site sewage disposal system, including any ditch, road, driveway, or easement;
 - (iii) the surface slopes and directions;
 - (iv) the location of any test pit;
 - (v) the proposed on-site sewage disposal system, selected or designed;
 - (vi) an explanation of the extent, volume, and type of usage to which the on-site sewage disposal system will be subjected;
 - (vii) an assessment report of the lot respecting its suitability to support an on-site sewage disposal system including the results of a soil evaluation test;
 - (viii) any other information necessary to determine whether the subdivision meets the *On-site Sewage Disposal Systems*

Regulations.

- (c) For a proposed lot that is being divided from an existing area of land, contains an existing on-site sewage disposal system, and is more that 9,000 square metres (96,878.36 square feet) in area with a width of 76 metres (249.34 feet) or more, the lot layout including buildings, driveway, on-site sewage disposal system and well shall be provided.
- (d) For a proposed lot 9,000 square metres (96,878.36 square feet) or less in area or with a width of less than 76 metres (249.34 feet) that is being created for a purpose that will not require the construction of an on-site sewage disposal system, the certification section of the application form must be completed.

B - Procedure

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|---------------------|------------|---|
| Processing | 41. | The procedure for processing preliminary plans of subdivision is contained in PART 4: General Provisions. |
| Report to applicant | 42. | Upon receipt of all written reports from the review agencies to whom plans were forwarded pursuant to Sections 6 or 8, the Development Officer shall inform the applicant in writing of the results of the evaluation of the preliminary plan of subdivision. |

PART 11: CONCEPT PLANS**A - Requirements**

- | | | |
|--------------------|------------|--|
| Ten copies of plan | 43. | Where an area of land is being subdivided in phases or will contain new public streets, a person shall submit to the Development Officer for approval an application in the form specified in Schedule "A", together with ten (10) copies of a concept plan of the entire area of land. |
| Contents | 44. | <p>Concept plans shall be at a scale sufficient for clarity of all particulars of the plan and shall show the following:</p> <ul style="list-style-type: none"> (a) the words "Concept Plan" located in the title block, along with an estimated lot yield figure, based on the requirements of the <i>Land Use By-law</i> and the Department of the Environment, as applicable; (b) name of the property owner(s) and names of all abutting land owners; (c) the unique parcel identifier (PID) for all areas of land being subdivided; (d) the proposed internal street system with connections to existing streets; (e) the location of all watercourses and wetlands within and adjacent to the area of land, any prominent rock formation, wooded area, area subject to flooding and any other prominent natural feature which might affect the provision or layout of central sanitary sewer systems, storm water systems, central water distribution systems, or public streets; (f) the proposed location of public open space; (g) the location of existing development, if any; (h) the location of any Town service boundary; |

- (i) the north point;
 - (j) contours at 5 metre (16.40 foot) intervals; and
 - (k) any other information the Development Officer deems necessary to determine if the subdivision meets with Town standards and accepted engineering practice as determined by the Engineer.
- Traffic study **45.** The concept plan shall be accompanied by a traffic impact analysis, prepared by a professional engineer, the level of detail of which shall be relative to the scope of the development.
- Approval lapses within 2 years **46.** Approval of a concept plan lapses if a complete application for tentative or final subdivision plan approval is not received within two (2) years of the date of approval of the concept plan.
- Approval for concept prior to tentative or final **47.** Where a concept plan is required under this By-law:
- (a) no tentative or final plan of subdivision shall be considered for approval unless the Development Officer has granted approval of the concept plan; and
 - (b) no tentative or final plan of subdivision shall be approved that is inconsistent with the approved concept plan.
- Tentative or final to be consistent with concept

B - Procedure

- Processing **48.** The procedure for processing concept plans of subdivision is contained in PART 4: General Provisions.
- Stamps **49.** The following information shall be stamped or written and completed by the Development Officer on any concept plan which is approved:
- (a) "This concept plan is approved. Such approval lapses if a tentative or final subdivision plan is not submitted for approval within two years of the date of approval of the concept plan."
 - (b) the date of the approval of the concept plan; and
 - (c) "This concept plan shall not be filed in the Registry of Deeds as no subdivision takes effect until a final plan of subdivision is approved by the Development Officer and filed in the Registry of Deeds."

PART 12: TENTATIVE PLANS OF SUBDIVISION

A - Requirements

- Ten copies of plan **50.** Where an area of land is being subdivided in phases or will contain new public streets, a person shall submit to the Development Officer for approval an application in the form specified in Schedule "A", together with ten (10) copies of the tentative plan of the proposed subdivision meeting the requirements of Section 51 of this By-law.
- Contents **51.** (a) Tentative plans of subdivision submitted to the Development Officer shall be:
- (i) drawn to a scale or scales sufficient for clarity of all particulars on the tentative plan of subdivision;
 - (ii) based on a deed description of the area of land to be subdivided, preferably but not necessarily as surveyed; and
 - (iii) folded to approximately 20 x 30 centimetres (8 x 12 inches) with the face of the folded print being the title block which

is located in the lower right-hand corner of the tentative plan of subdivision.

- (b) Tentative plans of subdivision shall show the following:
- (i) the words "PLAN OF SUBDIVISION" located in the title block;
 - (ii) the words "TENTATIVE PLAN" located above the title block;
 - (iii) a clear space for stamping being a minimum of 225 square centimetres (36 square inches) with a minimum width of 8 centimetres (3 inches);
 - (iv) the name of the subdivision, if any, and the name of the owner of the area of land;
 - (v) if applicable, the book and page number of the deed to the area of land as recorded in the name of the owner in the Registry of Deeds for this Town;
 - (vi) the unique parcel identifier (PID) of all areas of land being subdivided;
 - (vii) the civic number of main buildings on the area of land being subdivided;
 - (viii) the names of all owners or the identifiers of all properties abutting the proposed subdivision;
 - (ix) a location map, drawn to a scale not smaller than 1:50,000 (such scale to be shown on the map), preferably with the same orientation as the area of land and, if possible, showing the location of the closest community to the area of land proposed to be subdivided;
 - (x) the shape, dimensions, and area of the proposed lots;
 - (xi) each proposed lot identified by a number, except in cases where a parcel is being added to or subtracted from an existing area of land, in which case the parcel shall be identified by a letter and the new lot identified by the existing area of land identifier, where applicable, and the letter;
 - (xii) no duplication of lot identifiers;
 - (xiii) the boundaries of proposed lots shown by solid lines, and the vanishing boundaries of existing areas of land being resubdivided, consolidated, or both, shown as broken lines;
 - (xiv) the location of existing buildings within 10 metres (32.81 feet) of a property boundary;
 - (xv) the location of existing and proposed public streets;
 - (xvi) the name of existing and proposed public streets (and the public street number), as issued pursuant to the civic addressing system;
 - (xvii) the width and location of railroads and railway rights-of-way;
 - (xviii) the general location of watercourses, wetlands, or

- prominent rock formations;
- (xix) the width, location, and nature of any easements on or affecting the area of land proposed to be subdivided;
 - (xx) where applicable, a notation stating the lots are serviced by a municipal sewer and/or water system;
 - (xxi) the north point;
 - (xxii) the scale to which the plan of subdivision is drawn;
 - (xxiii) the date on which the plan of subdivision was drawn and the date of any revisions; and
 - (xxiv) any other information which the Development Officer deems necessary to determine whether or not the plan of subdivision conforms to this By-law.
- (c) Where the tentative plan of subdivision is to be forwarded to the Department of Environment, the plan shall meet the requirements of Subsections 40(b), (c) and (d) and the proposed on-site sewage disposal system selected or designed shall be identified.
- 52.** In addition to meeting the requirements of Section 51, where the proposed lots front on a proposed public street, a tentative plan of subdivision shall:
- (a) show a boundary survey of the area of land proposed to be subdivided, excluding the remainder lot, certified and stamped by a Nova Scotia Land Surveyor in the manner required by the *Land Surveyors Act* and its regulations;
 - (b) be accompanied by four (4) copies of a plan showing
 - (i) contours at 2 metre (6.56 foot) intervals and drainage patterns;
 - (ii) the width and location of proposed public streets and their intersection with existing public streets; and
 - (iii) the location of existing and proposed central sewer and water systems and proposed connections thereto; and
 - (c) be accompanied by four (4) copies of centerline profiles of proposed public streets;
 - (d) be accompanied by four (4) copies of a storm drainage plan applying acceptable engineering practices for the proper removal of surface drainage from the proposed subdivision and in compliance with Subsection 33(b);
 - (e) be accompanied by any other information which the Development Officer deems necessary to determine whether the plans referred to in Subsections (b), (c), and (d) conform to this By-law.
 - (f) Where plans or drawings or centerline profiles are prepared by or under the supervision of a professional engineer, they shall be signed and sealed by the professional engineer in accordance with the *Engineering Profession Act*.

DOE
requirements

Requirements
where lots front
on proposed
street

B - Procedure

- Processing **53.** The procedure for processing tentative plans of subdivision is contained in PART 4: General Provisions.
- Stamps **54.** The following information shall be stamped or written and completed by

the Development Officer on any tentative plan of subdivision which is approved together with any other information, including conditions, necessary for the tentative plan to proceed to the final plan stage:

- (a) "This tentative plan of subdivision is approved for Lots _____. Such approval lapses if the lots are not shown on a final plan of subdivision approved within two years of the date of the approval of the tentative plan.";
- (b) the date of the approval of the tentative plan; and
- (c) "This tentative plan of subdivision shall not be filed in the Registry of Deeds as no subdivision takes effect until a final plan of subdivision is approved by the Development Officer and filed in the Registry of Deeds."

PART 13: FINAL PLANS OF SUBDIVISION

A - Requirements

Fourteen
copies of plan

- 55.** (a) A subdivider proposing to subdivide an area of land shall submit to the Development Officer for approval an application in the form specified in Schedule "A" of this By-law, together with fourteen (14) copies of the final plan of subdivision meeting the requirements of Section 56 of this By-law.

Security

- (b) A final plan of subdivision submitted for approval shall be accompanied by any security or bonds required to be posted under this By-law.

Contents

- 56.** (a) Final plans of subdivision submitted to the Development Officer shall be:
- (i) drawn to a scale or scales sufficient for clarity of all particulars of the final plan of subdivision;
 - (ii) certified and stamped by a Nova Scotia Land Surveyor that the lots for which approval is requested and any proposed street and road have been surveyed in the manner required by the *Land Surveyors Act* and its regulations, except for a final plan of subdivision prepared pursuant to Subsection 21(b) of this By-law; and
 - (iii) folded to approximately 20 x 30 centimetres (8 x 12 inches) with the face of the folded print being the title block which is located in the lower right-hand corner of the final plan of subdivision.
- (b) Final plans of subdivision shall meet the requirements of Subsections 51(b) and (c) and Section 52, except that:
- (i) Clause 51(b)(ii) does not apply;
 - (ii) proposed streets and roads shall be surveyed; and
 - (iii) the geographical and mathematical location of all buildings within 3 metres (9.8 ft) of a proposed boundary shall be shown.

Stopping sight
distances

- 57.** For a proposed lot that will have access to a provincial public highway, the final plan of subdivision may be accompanied by or show stopping sight distance information in the form specified in Schedule "E" completed by a Nova Scotia Land Surveyor or the authority having jurisdiction for

public streets.

B - Procedure

Processing

58. The procedure for processing final plans of subdivision is contained in PART 4: General Provisions.

Stamps

59. The following information shall be stamped or written and completed by the Development Officer on any final plan of subdivision which is approved:

- (a) "This final plan of subdivision is approved for Lots _____";
- (b) where applicable,
 - (i) "_____ (is,are) suitable for the
(lot(s) approved and/or remainder)
construction or installation of an on-site sewage disposal
system for _____ and any conditions
(proposed use)
which apply are contained in a report dated _____
and available from the Department of the Environment.", or
 - (ii) "IMPORTANT NOTICE
_____ (has, have) been created for a
(lot(s) approved and/or remainder)
purpose which does not require an on-site sewage
disposal system and will not be eligible for a permit to
install a system unless the requirements of the Department
of the Environment are met."; or
 - (iii) _____ (is,are) served by an existing
(lot(s) approved and/or remainder)
on-site system and should a replacement system become
necessary in future, approval of the replacement system
from the Department of the Environment is required".
- (c) where applicable,
 - (i) a notation stating that access to the public street as shown
has been approved for the lots created by this final plan
and any conditions which apply are listed on the plan or
are contained in a report dated _____, available
from the authority having jurisdiction for public streets; and
 - (ii) where a lot which abuts a public street does not have an
approved access point along the street, a notation stating
that direct access to the street is not permitted;

Registry of
Deeds

60. Within seven days of approving the plan, the Development Officer shall forward to the Registry of Deeds:

- (a) five (5) approved copies of the final plan of subdivision and a
notice of approval in the form specified in Schedule "B" of this By-
law; and
- (b) if applicable, the items required by Section 13 of this By-law.

PART 14: PARKLAND DEDICATION

61. Prior to approval by the Development Officer of the final plan of

		subdivision, the subdivider shall either:
Transfer of land	(a)	transfer to the Town, free of encumbrances, for parks, playgrounds, and similar public purposes, an area of useable land within the area being subdivided equal to five percent (5%) of the area of the lots to be approved, as shown on the final plan of subdivision, exclusive of streets, easements, and the residue of the land of the subdivider; or
Cash in lieu	(b)	provide to the Town a sum of money equivalent to five percent (5%) of the market value, as determined by an assessor, of the lots to be approved, as shown on the final plan of subdivision, exclusive of streets, easements, and the residue of the land of the subdivider; or
Equivalent value	(c)	where the Council agrees, provide to the Town equivalent value, in any combination as determined by the Town; or
Transfer of land outside area being subdivided	(d)	where the Council agrees, transfer to the Town, free of encumbrances, an area of useable land of equal value outside the area being subdivided but within the boundaries of the Town, in lieu of the land in the subdivision required to be transferred under Subsection (a).
Land with water frontage	62.	Where the area of land being subdivided has frontage on a river or a lake, any land transferred in accordance with Subsection 61(a) shall include either useable land with frontage on the river or lake, or land suitable for public access to the river or lake.
Useable land	63.	(a) For the purposes of Sections 61 and 62, useable land shall be defined as land that: (i) has an average slope over the entire parcel of not more than fifteen percent (15%), provided that any part of the parcel with a slope of fifteen percent (15%) or more shall not exceed one-quarter ($\frac{1}{4}$) of the area of the entire parcel; (ii) consists of a parcel having an area of one-half ($\frac{1}{2}$) acre or more; (iii) is serviced by central water and sewer systems, or is capable of supporting an on-site sewage disposal system, unless the parcel is intended for recreational purposes, such as linear walking or cycling trails, which do not require an on-site sewage disposal system or services; (iv) is not a clearing and grubbing disposal area; (v) is not subject to flooding or classified as wetland; (vi) is not an electrical transmission corridor; and (vii) where applicable, is able to meet the requirements for lot area and lot frontage contained in the Land Use By-law.
Useable land criteria may be waived	(b)	The criteria in Subsection (a) may be waived if the land to be transferred is considered unique by the Development Officer in that the parcel is: (i) land suitable for preservation as an interpretive natural reserve area based on the opinion of a qualified professional; (ii) land of significant historical or archaeological value to the

		Town;
		(iii) land adjacent to parkland or open space owned by the Town; or
		(iv) land deemed by the Town's Recreation Department to be required for recreational purposes.
Land to be accessible		(c) Any land to be conveyed to the Town other than that meeting the requirements of Subsection (b) shall abut a public street. Land to be conveyed to the Town pursuant to the requirements of Subsection (b) shall be accessible by a public street or by a public easement a minimum of 6 metres (19.68 ft) in width and providing a connection to a public street.
Bond	64.	(a) The subdivider may, with the approval of the Council, provide a bond or other security acceptable to the Council for the conveyance to the Town of land in a future phase of the subdivision rather than conveying land from the approved phase of the subdivision or equivalent value.
Agreement		(b) Where Council approves the use of a bond or other security under Subsection (a), the subdivider shall enter into a written agreement with the Town, which agreement may contain provisions satisfactory to the Town with respect to the time within which any land or equivalent value shall be transferred to the Town, the land which may be used to satisfy the requirements of this Part, and any other matter related to the parkland dedication requirements of this By-law.
Certification of title	65.	Any conveyance of land to the Town under this Part shall be by warranty deed, and the subdivider shall provide to the Town from his or her legal counsel a solicitor's certificate of title certifying that all property conveyed is free from all encumbrances. In the event that the conveyance is not free from encumbrances, an unqualified undertaking from the subdivider's solicitor to release the encumbrances may be accepted by the Town.
Subdivider responsible for costs	66.	The subdivider shall be responsible for all document registration and other costs associated with the requirements of this Part.
Section 61 shall not apply	67.	Section 61 shall not apply:
		(a) to the consolidation or re-subdivision of land where no additional lots are created;
		(b) to the subdivision of land owned by the Town; or
		(c) where the lot is being created pursuant to Section 23.

PART 15: INFRASTRUCTURE CHARGES

Approval of lots in a charge area	68.	(a) Pursuant to the provisions of the Municipal Government Act, Council may identify areas within which infrastructure charges shall apply. A Map clearly identifying the infrastructure charge area(s) as well as a Schedule of Fees clearly outlining the purposes for which infrastructure charges shall be levied and the amount or method of calculating each infrastructure charge shall be included as part of this Bylaw.
	(b)	Before a final plan of subdivision is approved in any infrastructure charge area, the subdivider shall pay an infrastructure charge to Council

		pursuant to the Schedule of Fees.
Payment of charges	69.	Final subdivision approval shall not be granted unless the infrastructure charge established under this By-law is paid or the subdivider has entered into an agreement with the Town deferring the payment of the infrastructure charge.
Infrastructure charges agreement	70.	The Town and the subdivider may enter into an infrastructure charges agreement which may contain reasonable provisions with respect to any or all of the following: (a) the payment of infrastructure charges in instalments; (b) the provision of security to ensure that the infrastructure charges are paid when due; or (c) any other matter necessary or desirable to effect the agreement.
Additional costs to the Town	71.	Infrastructure charges shall not be payable if an infrastructure charge has been paid with respect to the area of land, unless further subdivision of the land will impose additional costs on the Town.
Use of charges	72.	A charge paid pursuant to this By-law shall only be used for the purpose for which it has been collected.
Lien on property	73.	A charge imposed pursuant to this By-law constitutes a lien upon the property with respect to which the charge has been levied in the same manner and with the same effect as rates and taxes under the <i>Assessment Act</i> .

PART 16: REPEAL OF A PLAN OF SUBDIVISION

Repeal of lots approved	74.	Where a plan of subdivision has been approved, the approval may be repealed for any or all of the lots created by the plan of subdivision.
Application	75.	Any person requesting the repeal of a plan of subdivision shall submit to the Development Officer an application in the form specified in Schedule "C".
Notification & approval	76.	(a) The notification and approval provisions of the Act which apply to the approval of a plan of subdivision shall also apply to a repeal. (b) Notwithstanding subsection (a), the notification and approval provisions of the Act do not apply to a repeal of a plan of subdivision that consolidates two or more parcels and for which no deed to effect the consolidation has been registered in the Registry of Deeds or Land Registration Office if the applicant certifies that to the applicant's knowledge, no deed to effect the consolidation exists.
Application to review agencies	77.	When the Development Officer is satisfied that an application for repeal is complete, the Development Officer may forward a copy to any agency which provided an assessment or recommendations on the original plan of subdivision.
Buildings on subject lands	78.	Where buildings have been erected on the subject lands after the date of the subdivision approval sought to be repealed, no repeal shall be granted which would cause these buildings to be in violation of any building code regulations, land use by-law, or sewage disposal regulations unless the violation can be rectified by the approval of a new plan of subdivision filed at the Registry of Deeds on the same day as the repeal is filed.

Sections do not apply	79.	Sections 4 to 73 inclusive of this By-law do not apply to the repeal of a plan of subdivision.
Repeal to Registry of Deeds	80.	The Development Officer shall forward to the Registry of Deeds the repeal in the form specified in Schedule "D".
Copy to subdivider, review agencies	81.	The Development Officer shall forward a copy of the repeal referred to in Section 80 to: (a) the subdivider; and (b) any agency which provided an assessment or recommendations on the original plan of subdivision.
Fees	82.	(a) At the time of application for the repeal of a subdivision, the subdivider shall submit to the Development Officer: (i) the fees contained in the <i>Costs and Fees Act</i>, and its regulations for registering a repeal of a plan of subdivision; and (ii) a processing fee of \$50.00 per final application for repeal of a subdivision. (b) Where the Development Officer refuses to repeal a subdivision, the Development Officer shall return the fees referred to in Clause (a)(i) to the subdivider.
Notice of refusal to review agencies	83.	Where the Development Officer refuses to repeal a plan of subdivision, the Development Officer shall give notice of the refusal to the subdivider and to all agencies to whom the application for repeal was forwarded pursuant to Section 77.

PART 17: REPEAL OF BY-LAW

- 84.** The Subdivision By-law approved by the Minister of Municipal Affairs on June 24, 1993 and any amendments thereto are repealed.

Schedule “B” – Notice of Approval

NOTICE OF APPROVAL IN ACCORDANCE WITH SECTION 285(1)(3) OF THE *MUNICIPAL GOVERNMENT ACT*

Name of Owner(s): _____

Windsor Plan #: _____

Name of Subdivision: _____

Location: _____

Date of Approval: _____ For: _____

Surveyor: _____ Date of Plan: _____

Dated this _____ day of _____, _____.

Development Officer

Plan of subdivision filed in the Registry of Deeds as Plan # _____

Dated this _____ day of _____, _____.

This plan of subdivision also contains information regarding the lots approved on the plan with respect to one or more of the following:

1. The lots' eligibility for on-site sewage disposal systems.
2. The availability of public sewer and water systems.
3. Information indicating whether or not the lots abut a public street or private road.

Schedule "C" – Application for Repeal of a Subdivision

APPLICATION FOR REPEAL OF A SUBDIVISION

Plan of Subdivision ☐	File Number: _____
--	--------------------

APPLICANT INFORMATION

Name of Land Owner(s): _____ Phone: _____

Address of Land Owner(s): _____ Postal Code: _____

Documents to be returned to: _____

Correspondence to be directed to: _____

INFORMATION ON THE SUBDIVISION SOUGHT TO BE REPEALED

Name of applicant for subdivision approval: _____

Location: _____ Municipality: _____

The subdivision was approved on the _____ day of _____, _____

and is filed in the Registry of Deeds at _____ in the Municipality of

_____ the County of _____ As # _____

Lot(s) # _____ was/were approved and

repeal is sought for approval of Lot(s) # _____.

☐ Registration fee submitted.

CERTIFICATION OF FACTS (Reasons For Repeal) (If more space is required, attach additional sheet)

OWNER'S CERTIFICATE

I certify that the information in this application is true and complete, that I am applying for repeal of this subdivision with full knowledge and consent of all persons with legal interest, including mortgagees, in the lands affected by the repeal and that these persons have co-signed this application.

Signature of owner/agent

Date

Co-Signer

Date

Schedule “D” – Repeal of a Subdivision

REPEAL OF A SUBDIVISION

Plan of Subdivision 9

Name of Owner(s): _____

Name of Subdivision: _____

Location: _____

Date of Approval of the Subdivision: _____

Being Registration #: _____ at the Registry of Deeds.

THIS SUBDIVISION IS REPEALED

Entire Plan ☐ or Only Lots #: _____

Dated at _____ in the _____, Province of Nova Scotia,

this _____ day of _____, _____.

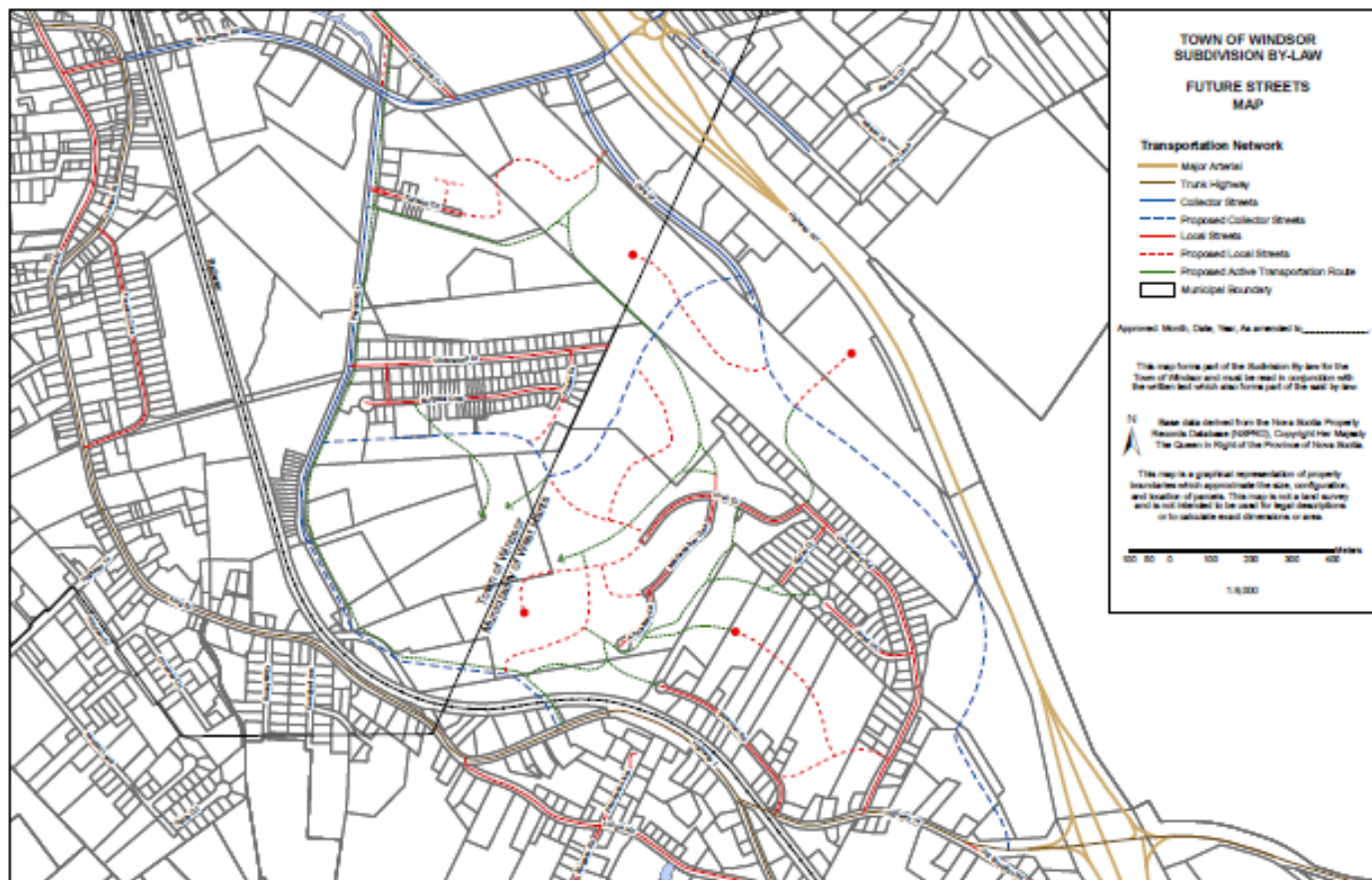
Development Officer

Please note: Any lots or parcel created by this repeal may not be eligible for development.

Schedule “E” – Stopping Sight Distances

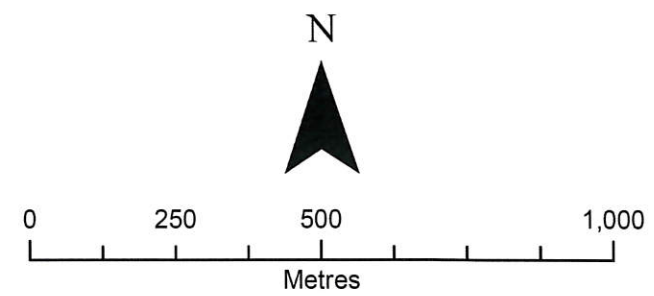
STOPPING SIGHT DISTANCES

STOPPING SIGHT DISTANCES								
Lot No.	Distance From Lot Corner Left/Right	Speed Zone	Left		Right		Pass Or Fail	Comment
			Grade	Distance	Grade	Distance		

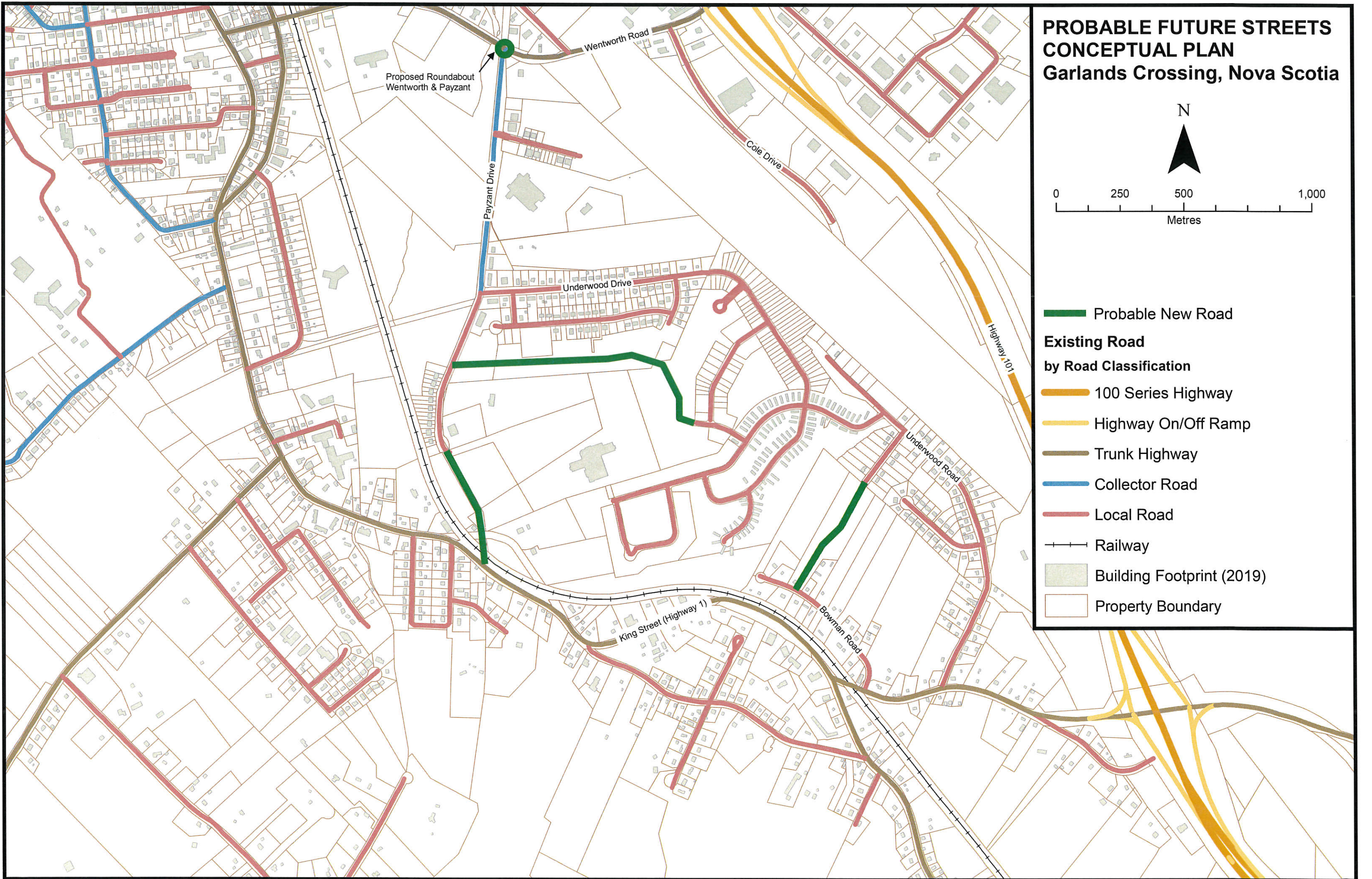


Future Streets Map approved by Council on February 25, 2014, effective on March 13, 2014

**PROBABLE FUTURE STREETS
CONCEPTUAL PLAN
Garlands Crossing, Nova Scotia**



- Probable New Road
- Existing Road
by Road Classification
 - 100 Series Highway
 - Highway On/Off Ramp
 - Trunk Highway
 - Collector Road
 - Local Road
 - Railway
 - Building Footprint (2019)
 - Property Boundary



West Hants Regional Municipality
December 7, 2021
Chief Administrative Officer Report



The following report captures activities and events between November COTW and the date of the report.

Governance

- The Council meeting environment has been adjusted as of December 7th to allow for more people to meet in-person within Chambers while still requiring that attendees wear masks. We will continue to adjust Covid protocols pending changes from the Province.

Administration

- Martock Fresh Water Project – The project is moving towards the final stages including the installation of the riffles, the repositioning of the pumphouse, inlet booms, pumps and testing. The dedicated contractors onsite have worked through the weather conditions and fluctuating river levels to carry out the work. The ski season is fast approaching with the remaining work scheduled for completion to accommodate the season. Project costs are within the allocated funding for the project. There remains no financial obligation by the Municipality towards the project.
- Human Rights Training – Training with the Human Rights Commission is confirmed in January and February of 2022 for staff and Council.
- Accessibility Advisory Committee – The committee met on December 2nd at the Three Mile Plains Community Center. The committee is really starting to gel now that all members are present and with the dedicated presence of Bekah Craik, Active Living Coordinator. The consultant has started the process of creating the plan and we look forward to stakeholder engagement and outcomes from the report.
- Staff Retirement Recognition – Was held late afternoon on Dec. 2nd at the King Street Council Chambers. Darrell Barker, Steve Benjamin, Dianne Levy, Ricky Sanford, Rick Sherrard, and Barry Boyd were all recognized for their dedication to the Municipality.

Finance

- Financial Condition Index (FCI) – Municipal profile and financial condition indicators reports provide municipalities with a common set of indicators. Indicators provide an indication of strengths, trends and risk areas where a municipality should focus.

Measures and thresholds can change over time, and the reports help show how a municipality is changing and its ability to meet current and future financial obligations. The 2020 indicators have been posted on the provincial website. It should be noted that the 2020 indicators are the final reflection of the former Town of Windsor and Municipality of the District of West Hants. 2021 will reflect the Regional Municipality as a whole. Click the following link to review the indicators :

<https://beta.novascotia.ca/programs-and-services/municipal-finance-and-statistics>

- 2022/23 Budget Deliberations – Director Rochon is starting the internal budget process and will be releasing budget templates to departments for their review and input. Meetings with Council will be scheduled in the new year with an earlier budget deliberations planned for this year.

Community Development

- Vacant Facility Positions – Manager and supervisor level positions have been advertised and the interview and selection process are being carried out. Congratulations to Ricky Sanford and Dianne Levy on their up and coming retirements.

Planning and Development

- Planning Advisory Committee / Heritage Advisory Committee (PAC/HAC) Meeting – The committee met on December 2nd.
- Wind Farms - Several windfarm projects have been presented to municipal staff as potential projects. They are both conceptual at this time as they anticipate the Province will soon release an RFP for new wind energy in the coming month(s). The Ellershouse Wind Farm expansion group held an open house in Ellershouse on November 10th. The event was well attended and members of the community continue to be supportive of the existing operation and potential expansion.
- Dial-A-Ride Strategic Planning Session – Staff participated in a second stakeholder session with consultants tasked to create a strategic plan for Dial-A-Ride.
- 36 and 65 Fort Edward Street Lands – The rezoning process for the 65 Fort Edward property continues through the planning process. I am working with the selected developer to finalize the purchase and sale agreement as directed by Council for the redevelopment of the sites. Members of the general public, and specifically the West Hants Historical Society, have increased their correspondence requesting that the two parcels be retained for the benefit of the community. They have further expressed the need to explore a multi-use, built project plan toward creating a centre that provides for historical and cultural interpretation, commerce, amenities, and public gatherings. Council will continue to have the opportunity to review this correspondence and feedback as the rezoning process continues towards First Reading as well as the pending public processes associated with the potential development plan for the site is shared with the public.

Economic Development

- Seasonal decorations are nearly complete. A special thanks to all staff and volunteers working on these initiatives throughout the weather conditions we have experienced this fall. Our communities are looking very festive.
- Community Events
 - Remembrance Day Ceremonies – November 11th
 - Pie in the Face Fundraisers – November 22nd
 - Windsor Parade of Lights – November 27th
 - Hantsport Festoon Event – December 2nd

Public Works and Infrastructure

- Hantsport Fire Station – The HFD Station continues to be constructed.
- Traffic Calming Report – The traffic calming report that was expected for the December COTW meeting is delayed and anticipated in January. Engineering Firm WSP, is currently working on the report.

Protective Services

- Fire Chiefs Meeting – A meeting was held on November 10th. Standing agenda items such as training, apparatus replacement, polices, etc. are reviewed. A review of the existing departmental honorarium polices are being reviewed at the current time in alignment with the 2019 Fire Study.
- REMO – Covid meetings occur monthly with the following stakeholders and representatives; Incident Commander, REMO Coordinator, Nova Scotia EMO, Finance, Community Development, Planning, Public Works, NSTIR, Fire, RCMP, IT, Department of Community Services, Hants Community Hospital, Glooscap 1st Nations, Communications, Safety and Logistics.
- Covid – The municipality continues to adapt in response to changing Covid protocols. As reported through emails, operations have been modified to respond to Covid impacts. Masks will continue to be required as well as social distancing as added measures. A Covid Workplace Screening Program has been initiated for staff.
 - <https://novascotia.ca/coronavirus/workplace-testing-resources/>

Sincerely,

Mark Phillips

Mark Phillips
Chief Administrative Officer
West Hants Regional Municipality

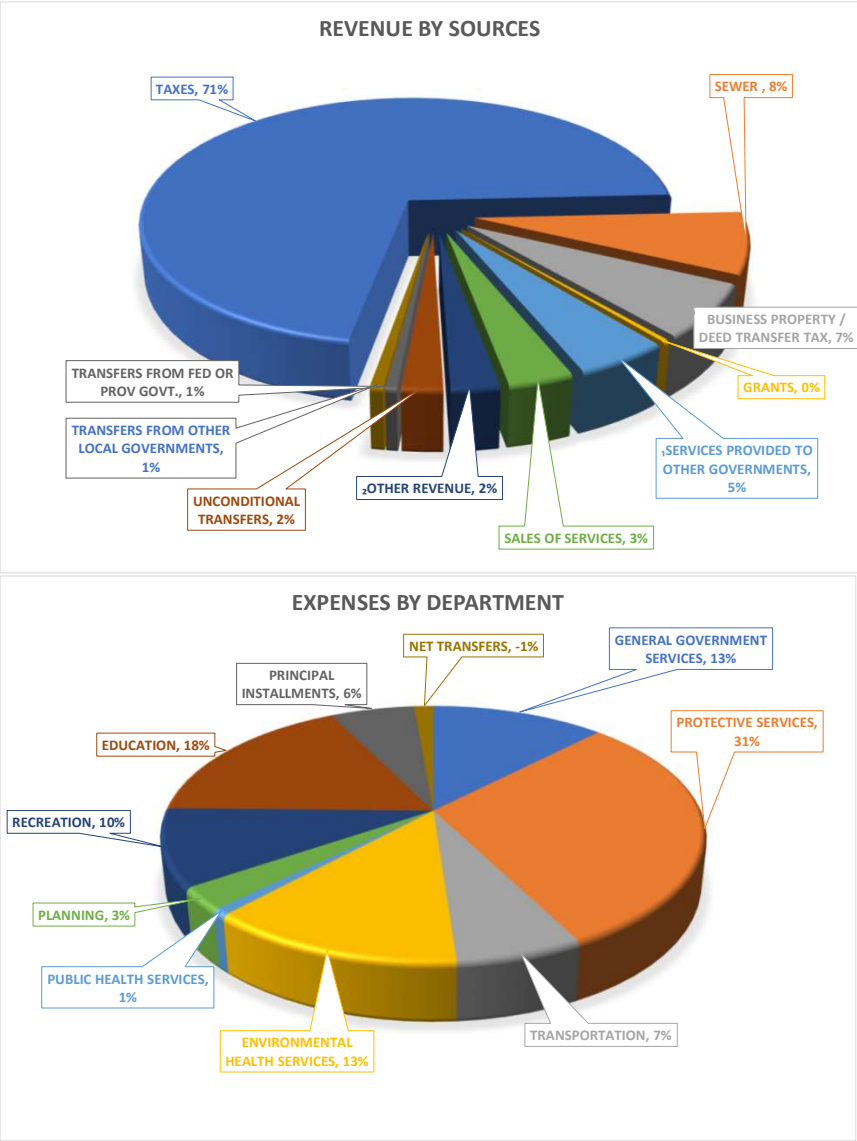
2021-22 WEST HANTS REGIONAL OPERATING BUDGET UPDATE
SEVENTH MONTH ENDING OCTOBER 31, 2021

REVENUE	2021-22 BUDGET	% OF THE BUDGET	FORECAST MARCH 31, 2022	% OF FORECAST VARIANCE	VARIANCE (Budget Vs. Forecast)	Actuals October 31, 2021	% OF BUDGET REMAINING
TAXES	\$ 19,447,857	71%	\$ 19,309,696	-0.7%	\$ (138,161.00)	\$ 19,309,696	0.7%
SEWER	\$ 2,123,977	8%	\$ 2,163,134	1.8%	\$ 39,156.85	\$ 1,094,185	48.5%
BUSINESS PROPERTY / DEED TRANSFER TAX	\$ 1,823,157	7%	\$ 2,381,910	30.6%	\$ 558,753.00	\$ 1,779,390	2.4%
GRANTS	\$ 85,521	0%	\$ 85,521	0.0%	\$ -	\$ 13	100.0%
1SERVICES PROVIDED TO OTHER GOVERNMENTS	\$ 1,289,847	5%	\$ 1,241,150	-3.8%	\$ (48,696.64)	\$ 269,050	79.1%
SALES OF SERVICES	\$ 892,617	3%	\$ 660,094	-26.0%	\$ (232,522.64)	\$ 299,461	66.5%
2OTHER REVENUE	\$ 662,484	2%	\$ 861,210	30.0%	\$ 198,726.18	\$ 418,865	36.8%
UNCONDITIONAL TRANSFERS	\$ 558,915	2%	\$ 1,121,623	100.7%	\$ 562,708.00	\$ 933,201	-67.0%
TRANSFERS FROM FED OR PROV GOVT.	\$ 156,502	1%	\$ 156,502	0.0%	\$ -	\$ 152,469	2.6%
TRANSFERS FROM OTHER LOCAL GOVERNMENTS	\$ 180,036	1%	\$ 124,435	-30.9%	\$ (55,601.50)	\$ 68,788	61.8%
TOTAL	\$ 27,220,913	100%	\$ 28,105,275	3.2%	\$ 884,362.25	\$ 24,325,118	10.6%
EXPENSES							
3GENERAL GOVERNMENT SERVICES	\$ 3,443,035	13%	\$ 3,598,136	4.5%	\$ 155,101.19	\$ 2,206,462	35.9%
4PROTECTIVE SERVICES	\$ 8,423,017	31%	\$ 9,173,017	8.9%	\$ 750,000.00	\$ 3,305,693	60.8%
TRANSPORTATION	\$ 1,803,835	7%	\$ 1,803,835	0.0%	\$ -	\$ 678,362	62.4%
5ENVIRONMENTAL HEALTH SERVICES	\$ 3,647,580	13%	\$ 3,359,559	-7.9%	\$ (288,020.82)	\$ 1,401,362	61.6%
6PUBLIC HEALTH SERVICES	\$ 214,993	1%	\$ 226,081	5.2%	\$ 11,088.00	\$ 128,139	40.4%
PLANNING	\$ 799,375	3%	\$ 778,778	-2.6%	\$ (20,597.00)	\$ 361,252	54.8%
RECREATION	\$ 2,739,956	10%	\$ 2,647,505	-3.4%	\$ (92,450.64)	\$ 1,441,648	47.4%
EDUCATION	\$ 4,855,570	18%	\$ 4,623,046	-4.8%	\$ (232,524.00)	\$ 2,696,778	44.5%
PRINCIPAL INSTALLMENTS	\$ 1,673,452	6%	\$ 1,688,117	0.9%	\$ 14,665.00	\$ 656,295	60.8%
NET TRANSFERS*	-\$ 381,434	-1%	\$ (964,122)	152.8%	\$ (582,688.00)	\$ -	100.0%
TOTAL	\$ 27,219,379	100%	\$ 26,933,953	-1.0%	\$ (285,426.27)	\$ 12,875,991	52.7%
SURPLUS / DEFICIT	\$ 1,534		\$ 1,171,323			\$ 11,449,127	
DOUBLE EQUALIZATION TO OPS RESERVE			(562,708)				
SURPLUS / DEFICIT			608,615				

Please note that if revenue and expenditures were incurred evenly over the year approximately 58.3% of the budget would be used. This percentage provides a guideline when reviewing the attached. However, it is important to keep in mind that account variances (up or down) will occur throughout the fiscal year. For example, seasonal activities such as summer programs and facility maintenance as well as winter snow removal will influence the budget in a non-uniform manner throughout the year. Items such as transfers from reserves, will also impact budget to actuals throughout the year as they occur at fiscal year end.

The overall projected surplus based on the variance analysis for the general fund is \$608,615. These remaining funds will be moved to the Operating Reserve as per the Reserves policy.

LEGEND:
1 SERVICES PROVIDED TO OTHER GOVERNMENTS INCLUDES: RECYCLING/ENFORCMENT, HOST COMMUNITY FEES, ADMINISTRATION FEES, COURTHOUSE
2 OTHER REVENUE INCLUDES: INTEREST & PENALTIES, RETURN ON INVESTMENTS, ADMINISTRATIVE RENTALS AND LEASES, FINES, LICENSES & PERMITS
3 GENERAL GOVERNMENT SERVICE INCLUDES: LEGISLATIVE, ADMINISTRATION, FINANCIAL SERVICES, FACILITIES, LIBRARIES
4 PROTECTIVE SERVICES INCLUDES: RCMP, FIRE, REMO, BY-LAW, COURTHOUSE, BUILDING INSPECTION
5 ENVIRONMENTAL HEALTH SERVICES INCLUDES: SEWER, WASTE COLLECTION, WASTE DIVERSION, LANDFILL
6 PUBLIC HEALTH SERVICES INCLUDES: CEMENTERIES, PUBLIC HOUSING



Avon River Causeway Correspondence
(aka Hwy. 101 Twinning, Aboiteau, Causeway, Lake Pisiquid)

<u>First Name</u>	<u>Last Name</u>	<u>Correspondence Date</u>	<u>Meeting / logged</u>
Danny	Dill	2020-06-30	2020-07-14 COTW
Quentin	Davison	2020-07-06	2020-07-14 COTW
Alyson	Bremner	2020-07-07	2020-07-14 COTW
Cecil	Rolfe	2020-07-13	2020-07-14 COTW
Pat	Porter	2020-07-13	2020-07-14 COTW
Nikki-Marie	Lloyd	2020-08-02	2020-09-08 COTW
Heather	Boylan (Martock)	2020-09-01	2020-09-08 COTW
Greg	O'Leary	2020-09-03	2020-09-08 COTW
Dr. Abby	Kirumira	2020-09-02	2020-09-08 COTW
Dean	Manning	2020-09-08	2020-09-08 COTW
David & Michelle	Rideout	2020-09-08	2020-09-08 COTW
Colleen	Walsh-Bouman	2020-09-08	2020-09-08 COTW
Nicholas & Alyson	Juurlink/Bremner (Linked Farms)	2020-09-08	2020-09-22 Council
Tasha	Rogers	2020-09-08	2020-09-22 Council
Brad	Carrigan	2020-09-23	2020-10-13 COTW
Karen	Carrigan	2020-09-23	2020-10-13 COTW
Elaine	Morehouse	2020-09-24	2020-10-13 COTW
Gary	Morehouse	2020-09-24	2020-10-13 COTW
Dr. A	Kirumira	2020-09-24	2020-10-13 COTW
Blake	Sarsfield	undated	2020-10-13 COTW
Greg	Webster	2020-10-01	2020-10-13 COTW
Bobby	Kidston	2020-10-02	2020-10-13 COTW
NSTIR	(Province of NS)	2021-01-13	2021-01-26 Council
Darren	Porter	2021-03-19	2021-03-23 Council
Rylan	Carrigan	2021-03-29	2021-04-13 COTW
Robin	Bremner-Popma (Hants Co Fed of Agri)	2021-03-29	2021-04-13 COTW
Roslyn	MacDuff	2021-03-29	2021-04-13 COTW
Darlene	Taylor	2021-03-23	2021-04-13 COTW
Daniel	Oulton	2021-03-26	2021-04-13 COTW
Karen	Carrigan	2021-03-26	2021-04-13 COTW
Marie & Andrew	Connolly	2021-03-26	2021-04-13 COTW
Robin	Thomson (Atlantic Division Canoe Kayak Canada)	2021-03-30	2021-04-13 COTW
Barbara	Hughes	2021-03-29	2021-04-13 COTW
Laura	Fisher	2021-04-01	2021-04-13 COTW

Avon River Causeway Correspondence
(aka Hwy. 101 Twinning, Aboiteau, Causeway, Lake Pisiquid)

<u>First Name</u>	<u>Last Name</u>	<u>Correspondence Date</u>	<u>Meeting / logged</u>
Nikki-Marie	Lloyd	2021-04-06	2021-04-13 COTW
Ken	Donnelly (Hwy 101 Twinning CLC)	2021-04-01	2021-04-13 COTW
Darren	Porter	2021-04-06	2021-04-13 COTW
Karen	Lynch	2021-04-09	2021-04-13 COTW
Carilee	Eddy	2021-04-15	2021-04-27 Council
Nikki-Marie	Lloyd	2021-04-19	2021-04-27 Council
Sheldon	Hope	2021-04-19	2021-04-27 Council
Adrienne	Wood	2021-04-22	2021-04-27 Council
Magda	Montgomery	2021-04-22	2021-04-27 Council
Sheldon	Hope	2021-04-26	2021-04-27 Council
Andrew	Smiley	2021-05-02	2021-05-11 COTW
Carrilee	Eddy	2021-05-03	2021-05-11 COTW
Denise	Forand	2021-04-27	2021-05-11 COTW
Erin	Naugler	2021-05-02	2021-05-11 COTW
Janet	Comeau	2021-05-02	2021-05-11 COTW
Kristyn	Anderson	2021-05-02	2021-05-11 COTW
Laura	Fisher	2021-04-01	2021-05-11 COTW
Nick	Rafuse	2021-05-03	2021-05-11 COTW
Nicole	McLeod	2021-05-02	2021-05-11 COTW
Robyn	Cook	2021-05-02	2021-05-11 COTW
Sheldon	Hope	2021-05-02	2021-05-11 COTW
Tammy	Hilden	2021-05-02	2021-05-11 COTW
Tracey	Sexton	2021-05-03	2021-05-11 COTW
Ginette	Pitcher	2021-05-03	2021-05-11 COTW
Greg	Miller	2021-05-05	2021-05-11 COTW
David & Michelle	Rideout	2021-05-05	2021-05-11 COTW
Sylvia & Vince	Burgess	2021-05-05	2021-05-11 COTW
Scott (Adrienne)	Miniau (Wood)	2021-05-03	2021-05-11 COTW
Barbara	Sullivan	2021-05-06	2021-05-11 COTW
Sandra & Skip	Hogan	2021-05-06	2021-05-11 COTW
Marie & Andrew	Connolly	2021-05-06	2021-05-11 COTW
Karen	Carrigan	2021-05-07	2021-05-11 COTW
Adrienne	Wood (Petition)	2021-05-07	2021-05-11 COTW
Lisa	Hines	2021-05-07	2021-05-11 COTW

Avon River Causeway Correspondence
(aka Hwy. 101 Twinning, Aboiteau, Causeway, Lake Pisiquid)

<u>First Name</u>	<u>Last Name</u>	<u>Correspondence Date</u>	<u>Meeting / logged</u>
Cam	Hartley	2021-05-07	2021-05-11 COTW
Troy & Vicki	Harvie	2021-05-07	2021-05-11 COTW
Jenn	McDermott	2021-05-08	2021-05-11 COTW
Jennifer	Daniels	2021-05-09	2021-05-11 COTW
Krista & Colin	Duncan	2021-05-09	2021-05-11 COTW
Robin	Bremner-Popma	2021-05-07	2021-05-11 COTW
Roslyn (Darlene) [Barb]	MacDuff (Taylor) [Hughes]	2021-05-08	2021-05-11 COTW
Wayne & Dianne	Hines	2021-05-09	2021-05-11 COTW
Bob & Sandra	Langdon	2021-05-10	2021-05-11 COTW
Brad	Hood	2021-05-10	2021-05-11 COTW
Ed & Cathy	Kerr	2021-05-10	2021-05-11 COTW
Ann	MacArthur	2021-05-10	2021-05-11 COTW
Carole Anne	Casey	2021-05-10	2021-05-11 COTW
Sarah	MacDonald	2021-05-10	2021-05-11 COTW
Andre & Donna	Arsenault	2021-05-11	2021-05-11 COTW
Aaron	Leblanc	2021-05-12	2021-05-25 Council
Adrian	Rooney	2021-05-19	2021-05-25 Council
Adrienne	Wood	2021-05-12	2021-05-25 Council
Barb	Sullivan	2021-05-16	2021-05-25 Council
Barbara	Beck	2021-05-15	2021-05-25 Council
Bethany	Rozee	2021-05-12	2021-05-25 Council
Carl	Siler	2021-05-12	2021-05-25 Council
Carol	Bradley	2021-05-16	2021-05-25 Council
Carol	McKinley	2021-05-12	2021-05-25 Council
Chad	Pothier	2021-05-18	2021-05-25 Council
Chris	Cann	2021-05-21	2021-05-25 Council
Connie	Shay	2021-05-15	2021-05-25 Council
Conrad	Mullins	2021-05-18	2021-05-25 Council
Darlene	Taylor	2021-05-15	2021-05-25 Council
Darren	Porter	2021-05-12	2021-05-25 Council
Darren	Woods	2021-05-13	2021-05-25 Council
Dawson	Sheehy	2021-05-16	2021-05-25 Council
Deanna	Hamilton	2021-05-15	2021-05-25 Council
Debbie	Porter-Wood	2021-05-13	2021-05-25 Council
Debbie	Siler	2021-05-15	2021-05-25 Council
Denise	Forand	2021-05-13	2021-05-25 Council

Avon River Causeway Correspondence
(aka Hwy. 101 Twinning, Aboiteau, Causeway, Lake Pisiquid)

<u>First Name</u>	<u>Last Name</u>	<u>Correspondence Date</u>	<u>Meeting / logged</u>
Devan	Archibald	2021-05-18	2021-05-25 Council
Diane	Ogilvie	2021-05-13	2021-05-25 Council
Erin	Naugler	2021-05-13	2021-05-25 Council
Ernest	Eddy	2021-05-15	2021-05-25 Council
Gerry	Young	2021-05-15	2021-05-25 Council
Gina	Cochrane	2021-05-12	2021-05-25 Council
Harry	Ullock	2021-05-15	2021-05-25 Council
Hope	Moon	2021-05-12	2021-05-25 Council
Ian	Shaw	2021-05-16	2021-05-25 Council
J	Davis (and J Griffith)	2021-05-17	2021-05-25 Council
Jacqueline	Farvacque	2021-05-12	2021-05-25 Council
Jayne	Murray	2021-05-16	2021-05-25 Council
Jeff	Redden	2021-05-17	2021-05-25 Council
Jennifer	Shaw	2021-05-16	2021-05-25 Council
Jocelyne	Marchand	2021-05-12	2021-05-25 Council
John & Sarah	Monette	2021-05-19	2021-05-25 Council
Jordan	Macumber	2021-05-12	2021-05-25 Council
Josette	Dugue	2021-05-12	2021-05-25 Council
Judy	Lynch	2021-05-13	2021-05-25 Council
June	Pedersen-LaPierre	2021-05-15	2021-05-25 Council
Justin	Cochrane	2021-05-12	2021-05-25 Council
Karen	Lynch	2021-05-18	2021-05-25 Council
Kathryn	Bergeron	2021-05-16	2021-05-25 Council
Kathy	Veinot	2021-05-15	2021-05-25 Council
Kyle	Pellegrini	2021-05-12	2021-05-25 Council
Lachlan	Riehl	2021-05-12	2021-05-25 Council
Laura	Stewart	2021-05-19	2021-05-25 Council
Lee	Billington	2021-05-12	2021-05-25 Council
Lee	Millett	2021-05-12	2021-05-25 Council
Lexie	Barkhouse	2021-05-12	2021-05-25 Council
Linda	Card	2021-05-11	2021-05-25 Council
Monique	Wood	2021-05-16	2021-05-25 Council
Nancy	Sheehy	2021-05-16	2021-05-25 Council
Nancy	Sheehy	2021-05-18	2021-05-25 Council
Nikki-Marie	Lloyd	2021-05-12	2021-05-25 Council
Nikki-Marie	Lloyd	2021-05-17	2021-05-25 Council

Avon River Causeway Correspondence
(aka Hwy. 101 Twinning, Aboiteau, Causeway, Lake Pisiquid)

<u>First Name</u>	<u>Last Name</u>	<u>Correspondence Date</u>	<u>Meeting / logged</u>
Olena	Kharytonova	2021-05-15	2021-05-25 Council
Pat	Porter	2021-05-12	2021-05-25 Council
Paula	Lake	2021-05-12	2021-05-25 Council
Robert	Bowkett	2021-05-18	2021-05-25 Council
Roslyn	MacDuff	2021-05-15	2021-05-25 Council
Ruth	Angevine	2021-05-13	2021-05-25 Council
Scotch Village	Farm	2021-05-19	2021-05-25 Council
Shirley	Pineo	2021-05-12	2021-05-25 Council
Stephen	Brooks	2021-05-12	2021-05-25 Council
Trudy	Sheehy	2021-05-17	2021-05-25 Council
Steven	Bouman	2021-05-17	2021-05-25 Council
Sue	Sheehy	2021-05-14	2021-05-25 Council
Susie	Smith	2021-05-12	2021-05-25 Council
Tasha	Rogers	2021-05-12	2021-05-25 Council
Tera	Brommit	2021-05-17	2021-05-25 Council
Toni-Lee	Burns	2021-05-12	2021-05-25 Council
Tony	Wood	2021-05-18	2021-05-25 Council
Tracey	Sexton	2021-05-16	2021-05-25 Council
Trevor	Levy	2021-05-12	2021-05-25 Council
Tricia	Brommit	2021-05-17	2021-05-25 Council
Vince & Sylvia	Burgess	2021-05-16	2021-05-25 Council
Loretta	MacEachern	2021-05-20	2021-05-25 Council
Tim & Jennifer	Bayers	2021-05-21	2021-05-25 Council
Darlene	Taylor	2021-05-25	2021-06-08 COTW
Darlene	Taylor	2021-05-25	2021-06-08 COTW
Darren	Porter (forwarded email from/to another source)	2021-05-27	2021-06-08 COTW
Dawn	Allen	2021-05-25	2021-06-08 COTW
John	Monette	2021-05-25	2021-06-08 COTW
Richard	Dunham	2021-05-25	2021-06-08 COTW
Carrilee	Eddy	2021-06-06	2021-06-22 Council
Darlene	Taylor	2021-06-09	2021-06-22 Council
Darren	Porter	2021-06-06	2021-06-22 Council
Lisa	Bland	2021-06-08	2021-06-22 Council
Krista & Scott	Lloy	2021-06-07	2021-06-22 Council
Nancy	Sheehy	2021-06-06	2021-06-22 Council
Karen	Beazley	2021-07-06	2021-07-13 COTW

Avon River Causeway Correspondence

(aka Hwy. 101 Twinning, Aboiteau, Causeway, Lake Pisiquid)

[illegible]



HANTS COUNTY BRANCH No. 9
The Royal Canadian Legion

PO BOX 28
WINDSOR, NS
B0N 2T0
PHONE: (902) 798-2031
FAX: (902) 798-1126

November 2021

Mayor Zebian, Councillors and Employees of the Municipality of Windsor West Hants

Greetings,

On behalf of the members of Hants County Branch 009 of the Royal Canadian Legion, I would like to THANK you and express our gratitude to your maintenance staff for the great amount of work put into Victoria Park in preparation for this years Remembrance Day Service. The rework of the base of the Cenotaph was greatly appreciated. As well, the raking of the leaves in the park by the grounds crew and the gentlemen at the community center are always helpful with our Wreath and Cross preparations. The crews that hung the Veterans banners gave an added touch to the Weeks of Remembrance of our local veteran heroes. They all contribute to a successful Remembrance Day Service.

I would be remiss if I did not mention the County Firefighters. As always, the Firefighters looked sharp in their uniforms and are welcomed to participate in our Remembrance Day Parade each year.

The Royal Canadian Legion Hants Co Br 009 and the Windsor West Hants Municipality working together as a team shows the residents that Windsor West Hants does have "The Best of Everything".

Once again, Thank You for your support and looking forward to a better prosperous future.

**AT THE GOING DOWN OF THE SUN,
WE WILL REMEMBER THEM**

Darrell Leighton
President
Hants County Branch 009



Municipal Affairs and Housing Office of the Minister

PO Box 216, Halifax, Nova Scotia, Canada B3J 2M4 • Telephone 902-424-5550 Fax 902-424-0581 • novascotia.ca

November 30, 2021

Work Commencing on Municipal and Village Code of Conduct Regulations

Municipal Elected Officials and Municipal Administrators:

I recognize that many of you have been waiting patiently on updates related to municipal codes of conduct regulations. Today, I am pleased to be sharing the most recent status of the project and what we hope to achieve in the next year.

As you may be aware, in 2017 the *Municipal Government Act* (MGA) and the *Halifax Regional Municipality Charter* (HRMC) were amended to add a requirement for municipalities and villages to establish a code of conduct for elected officials. The MGA and HRMC were further amended in 2021 to add additional provisions regarding codes of conduct, including the requirement for municipalities to hire a third-party investigator to investigate alleged breaches and to enable councils to discuss alleged breaches in-camera. Neither the 2017 nor the 2021 amendments have been proclaimed as regulations are required to support their implementation.

In order to develop the regulations related to municipal codes of conduct in a thoughtful and collaborative manner, we have chosen to establish a Code of Conduct Working Group (CCWG). This working group has a mandate of developing recommendations on the content to be included in the municipal codes of conduct regulations. These recommendations will focus on the content to be included in a municipal code of conduct as well as possible sanctions for a breach. The CCWG has representation from the Department of Municipal Affairs and Housing (DMAH), the Nova Scotia Federation of Municipalities (NSFM), the Association of Municipal Administrators, Nova Scotia (AMANS), and the Association of Nova Scotia Villages (ANSV) and will function similarly to the Joint Municipal Accountability and Transparency Committee (JMAT). The representatives will be from a regional, a rural, a town and a village to ensure accurate representation across Nova Scotia's municipalities which assures various sizes and unique needs are captured. The NSFM, AMANS and ANSV have already determined the individuals they will be appointing to the CCWG. We will work closely with the NSFM, AMANS and ANSV to set up an initial meeting to begin this important work soon.

It is important the recommendations developed by the CCWG are supported by municipalities and villages in Nova Scotia. Therefore, once the CCWG has developed their recommendations on the content, DMAH will consult with all municipalities and villages on the proposal. It is difficult to predict when the recommendations will be finalized by the CCWG. However, we will keep you apprised of their progress and look forward to your participation during consultations.

Page Two
Municipal Officials and Administrators

I recognize how important this work is to all municipalities and villages in Nova Scotia and would like to thank you for your patience while we determine the most appropriate path forward to complete this work in a collaborative and thoughtful manner. I look forward to reviewing the proposed recommendations from the CCWG and associated consultation feedback.

If you have any questions, please do not hesitate to reach out to our Department.

Sincerely,



Minister
Honourable John A. Lohr

- c. Nova Scotia Federation of Municipalities
 - Association of Municipal Administrators of Nova Scotia
 - Association of Nova Scotia Villages
- aj



Melissa Sheehy-Richard, MLA
Hants West

November 16, 2021

Hon. Kim Masland
Department of Public Works
2nd Floor, Johnston Building
1672 Granville Street
P.O. Box 186
Halifax, NS. B3J 2N2

Dear Ms. Masland:

Our letter today is on behalf of the Uniacke Trails Association, the Sackville Lakes Park and Trails Association and other trail groups in the Sackville, Mount Uniacke and Hants West areas. It concerns the status of Bill 236 - The Railways Act.

It is our clear understanding this legislation passed third reading and given Royal Assent in March 2020 under the former government but has yet to receive proclamation until regulations are formulated for the Bill. We are fully cognizant the Nova Scotia Utility and Review Board turned down an application by the Uniacke Trails Association with considerable assistance from Paul Smith from Sackville Lakes Park and Trails Association to revoke the license of Windsor and Hantsport Railway Company.

The Utility and Review Board believes despite Nova Scotia Transportation and Infrastructure Renewal as it was known then, having intervenor status along with the Municipality of West Hants and East Hants, that the Department should have filed the complaint which they outline in considerable detail in their decision handed down December 23, 2020.

Windsor and Hantsport Railway are clearly not following terms and conditions of their operating license nor are they following legislation known as the Railways Act even prior to the introduction of Bill 236 and the awaited approval of regulations. Confusion also exists with Bill 236 as it stands now with the true definition of a non-operating railway. If this could be better explained, the trails groups would be truly appreciative.

In summation today, we are asking for one of two things, an expeditious proclamation of Bill 236 or if this is not feasible, is the Department of Public Works prepared to overrule the decision of the Nova Scotia Utility and Review Board and put into legislation the fact the Windsor and Hantsport Railway be removed from controlling the tracks which would support the vision of an Active Transportation Trail that completes access to the Valley for The Great Trail (TransCanada Trail) and continues around to the south and western sides of the Province. This plan has the potential to provide



Melissa Sheehy-Richard, MLA
Hants West

economic benefits to rural communities along the route, as well as health benefits and provision of recreational, educational, and active transportation opportunities.

Thank you for your consideration and we look forward to a reply at your earliest convenience.

Yours truly,

Melissa Sheehy-Richard, MLA
Hants West

Yours truly,

John MacDonald, MLA
Hants East

Yours truly,

Steve Craig, MLA
Sackville-Cobequid

Yours truly,

Brad Johns, MLA
Sackville-Uniacke

cc. Nicole Lafosse-Parker, Chief of Staff to the Premier of Nova Scotia
cc. Kody Blois, MP
cc. Municipality of West Hants
cc. Municipality of East Hants
cc. (to all the trail associations listed)

From: [MacLeod, Katherine M](#)
To: [Todd Richard](#)
Subject: RE: Action Plan - Combined Sewer Overflows
Date: Thursday, October 28, 2021 8:05:03 AM

Caution

This email comes from an outside sender. Verify the sender and use caution with any requests, links or attachments.

Thanks for the info Todd.

Best regards,
Katherine

From: Todd Richard <trichard@westhants.ca>
Sent: October 27, 2021 4:56 PM
To: MacLeod, Katherine M <Katherine.MacLeod@novascotia.ca>
Cc: Mark Phillips <MPhillips@westhants.ca>; Troy Burgess <tburgess@westhants.ca>; Karrie Ritchie <KRitchie@westhants.ca>; Shelleena Thornton <SThornton@westhants.ca>; Martin Kehoe <MKehoe@westhants.ca>; Ashley Smith <ASmith@westhants.ca>
Subject: Action Plan - Combined Sewer Overflows
Importance: High

**** EXTERNAL EMAIL / COURRIEL EXTERNE ****

Exercise caution when opening attachments or clicking on links / Faites preuve de prudence si vous ouvrez une pièce jointe ou cliquez sur un lien

Hi Katherine,

Please see attached letter and information report for notification to a change in our standard operating procedure related to combined sewer overflows (CSO's) for the Windsor Cunnabel Creek system.

As always please reach out if you require more information or if you would like to discuss.

Regards,

Todd



November 23, 2021

Dear Ms. Homans,

RE: Designated Bicycling Route – Bog Road

Please accept the following letter on behalf of the West Hants Regional Municipal Council in response to the email received on 2021-11-05 from your office.

At the 2021-11-23 Council meeting the following motion was approved **“FOR COUNCIL TO SEND A LETTER TO NOVA SCOTIA DEPARTMENT OF PUBLIC WORKS AREA MANAGER, ROBYN HOMANS TO BEGIN THE PROCESS TO DESIGNATE THE BOG ROAD AS A BICYCLE ROUTE.”**

With the direction given by Council we thank you for your time, consideration, and support with this matter. Having this area be assessed and possibly designated as a bicycling route, will have enormous positive impacts for our community and residents. Designated cycling routes and creating roads that are conducive for recreation and/or active transportation will aid in ensuring our communities are safe for cyclists and drivers alike.

West Hants Regional Municipality thanks you for your attention to this matter.

We appreciate your support.

Respectfully,



Abraham Zebian, Mayor

ds/az

CC: WHRM Council
Mark Philips, Chief Administrative Officer
Hon. Melissa Sheehy-Richard, MLA
Bekah Craik, Active Transportation Coordinator



October 27, 2021

Katherine MacLeod, P.Eng.
Regional Engineer
Department of Environment & Climate Change
136 Exhibition Street
Kentville, NS B4N 4E5

Katherine,

Re: Increased Pumping Capacity – Windsor Lift Station #1

Please be advised of the following information related to storm surcharges in the combined sanitary / storm water system for Windsor along with our **short-term plan of action** to address and or mitigate major surcharges in our system that result in combined storm overflows (CSO's) in low lying areas of Windsor. One such event took place on July 27, 2021, the extreme localized weather event presented the Windsor area with reports in excess of 70-100mm of rain in a short duration. Low-lying areas of Windsor's combined storm water system experienced a heavy surcharge, backups, flooded basements, along with street and overland flooding on many private / public properties.

West Hants Council met on September 14th, during that meeting direction was given to staff to prepare an information report on the Windsor storm water drainage issues during heavy rain events, along with options to help prevent issues. I have attached a copy of the information report for your files and review.

The outcome of the meeting after discussion on the information report was staff recommending a short-term emergency measure to purchase a stand-by portable pump to increase the pumping capacity for a mitigating action to reduce and or eliminate the surcharge of the combined storm system that results in combined sewer overflows into public streets, low lying areas or in areas of high convergence. The increased pumping capacity objective is to discharge surplus storm water to an established pre-existing CSO and away from populated areas. This CSO is located at Windsor LS#1, Water St.

This emergency response plan would only be put into action during times of major precipitation events and is not meant to become a normal operation procedure. As indicated in the attached report, West

Hants Regional Municipality has recently released an RFP for a Flood Risk Assessment Study for the Windsor area. The high-level purpose of the study will be the following:

- Identify storm water management issues and solutions for the community of Windsor;
- Managing stormwater runoff in the most cost-effective and ecologically manner;
- Protecting citizens from the dangers of flash flooding;
- Mitigating damage to infrastructure and private property;
- Protecting the quality and quantity of groundwater resources;
- Protecting and enhancing the quality of surface water;
- Providing stormwater information for future development in the community.

After the Flood Risk Assessment has been completed a master storm water plan can be designed and ultimately construction of a vastly improved separated sewer collection and storm water system being the long-term objective.

Please reach out if you have any questions or provided additional information.

Sincerely,

A handwritten signature in blue ink that reads "J. Richard". The signature is fluid and cursive, with the first name "J." and the last name "Richard" clearly visible.

Todd Richard, Director of Public Works
West Hants Regional Municipality
trichard@westhants.ca
902 798-8391 ext. 208

c. Mark Phillips, CAO
Troy Burgess, Operations Manager



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Committee of the Whole

Submitted by: Carlee Rochon
Carlee Rochon, Director, Financial Services

Date: December 7th, 2021

Subject: Audit Committee Appointments

LEGISLATIVE AUTHORITY

Municipal Government Act, Section 44, Subsection 4 and 5

WHRM Meeting and Committee Procedural Policy RCOGE-003.00 – Appendix E

RECOMMENDATION or DECISION REQUEST

It is recommended for Committee of the Whole to recommend to Council that:

Council approve the reappointment of Jane Davis, to the Audit Committee for the period of January 1, 2022 to December 31, 2022.

And

Council nominate and appoint two Council members to the Audit Committee for the period of January 1, 2022 to December 31, 2022.

BACKGROUND

Property ☐	Public Opinion ☐	Environment ☐	Social ☐	Economic ☒	Councillor Activity ☐
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The 2020-21 Audit period has concluded and following the guidelines in Council's Meeting and Committee Procedural Policy, RCOGE-003.00 - Appendix E, annual appointments of eligible

candidates are required for the Resident and Council members. Members of the committee serve a one-year term and are eligible for reappointment to serve up to two – one-year terms. Of the previous committee members, the following are eligible for reappointment.

- Councillor Sherman*
- Councillor Mark McLean*
- Resident Member, Jane Davis

*Requires being nominated.

The Audit Committee had one resident member ineligible for reappointment, so the vacancy was advertised.

DISCUSSION

An advertisement for the one resident member vacancy for the Audit Committee was placed in the Valley Journal Advertiser, as well as on the Municipal website and Facebook page. The ad invited individuals meeting the criteria to participate on this committee. Interested residents were asked to submit a letter of interest to the Director of Financial Services by November 22, 2021. There were no responses to the advertisement. As per the Council's Meeting and Committee Procedural Policy, RCOGE-003.00 - Appendix E, the vacancy will be advertised every six months until this requirement is met (this also meets the Municipal Government Act requirements).

If appointed to the Audit Committee, Council and Resident members will serve a one-year term to expire in December 2022. This service term is in direct correlation with the scheduling of 2021-22 audit. Annual appointments will occur for the Audit Committee each December.

NEXT STEPS

- Notify appointed members and begin training.
- Readvertise the vacancy in May 2022.

FINANCIAL IMPLICATIONS

In accordance with the Council Remuneration Policy, Resident Committee Members are provided a meeting honorarium. The associated costs are included in the annual operating budget.

ALTERNATIVES

N/A

ATTACHMENTS

Meeting and Committee Procedural Policy, RCOGE-003.00 - Appendix E

CHIEF ADMINISTRATIVE OFFICER REVIEW

I support the recommendation.

Report Prepared by: 
Carlee Rochon, Director, Financial Services

Report Reviewed by: _____
Shelleena Thornton, Municipal Operations Supervisor

Report Approved by: 
Mark Phillips, Chief Administrative Officer

APPENDIX E
Audit Committee

1. PURPOSE

- 1.1. The primary purpose of the Audit Committee (the "Committee") is to provide advice to Council on all matters relating to audit and finance. The objective of the Committee is to:
- a) fulfil the requirements outlined in Section 44 of the *Municipal Government Act*; and
 - b) assist Council in meeting its oversight responsibilities by ensuring the adequacy and effectiveness of financial report, risk management and internal controls.

2. SCOPE

- 2.1. This Policy is applicable to all serving members Audit Committee.

3. DEFINITIONS

- 3.1. In Appendix E,
- a) "Auditor" means the External Auditor conducting the audit of the Municipality;
 - b) "CAO" means the Chief Administrative Officer for the Municipality;
 - c) "Director of Finance" means the Director of Financial Services for the Municipality;
 - d) "Municipality" means the West Hants Regional Municipality.

4. COMMITTEE COMPOSITION

- 4.1. Council will annually appoint members to an Audit Committee.
- 4.2. The Audit Committee will consist of five (5) members: the Mayor, two Council members, and two resident members who are not members of Council or Municipal Staff.
- a) Resident members should be sufficiently versed in financial matters to understand the Municipality's account practices and policies and the major judgements involved in preparing the financial statements.
 - b) Where an audit committee does not include any resident members, the audit committee will continue to meet and perform its duties and may exercise its powers. The Municipality will advertise to recruit resident members at least once every six months until the requirement is met.
 - c) The Mayor will chair the Audit Committee meetings, and in their absence, another appointed Council member will chair.
 - d) The CAO and/or Director of Financial Services will provide staff support to the Committee. They are not voting members of the Committee.

- e) The Council Remuneration Policy will be followed regarding any remuneration for the two resident members.
- f) All members must abide by the Administrative Terms of Reference set out by the Committee and reviewed the by CAO.

5. DUTIES AND RESPONSIBILITIES

5.1. Audit:

- a) Review the qualifications, independence, quality of service, performance, and fees of the auditors and recommend the appointment of an auditor to Council.
- b) Carry out the responsibilities of the Audit Committee contained in Section 44 of the *Municipal Government Act*, in consultation with Management.

5.2. Finance and Risk Management

- a) Review with Management the quarterly financial updates and recommend to Council to be received.
- b) Management will give a presentation on all financial policies used in the preparation of the external financial statements; at the first annually meeting of the year.
- c) Review with Management the adequacy of internal controls.
- d) Review with Management annually risk management practices including insurance coverage.

6. ADMINISTRATION

- 6.1. Meetings of the Audit Committee will be held at least quarterly. Additional meetings may be necessary to review items relating to the audit and will be called by the Chair.



West Hants
something inspiring awaits

WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Members of Council

Submitted by: 
Todd Richard

Date: November 23, 2021

Subject: Panuke Road Water Booster Station Construction

LEGISLATIVE AUTHORITY

Nova Scotia Municipal Government Act, Section 65 authorizes Council to expend funds for municipal purposes.

RECOMMENDATION or DECISION REQUEST

It is recommended that:

Council approve the award of tender WHPW21-15 for a construction contract for the replacement Panuke Road Water Booster Station to the low compliant bidder, Greytop Commercial Construction, for the tendered price of \$430,562 plus 20% contingency, plus applicable taxes, to be funded from the West Hants Canada Community Building Fund reserve

And, Council approve the Option of adding the provisional back-up generator, for the additional contract cost of \$46,500, plus applicable taxes, to be funded from the West Hants Canada Community Building Fund reserve

BACKGROUND

Property ☒	Public Opinion ☐	Environment ☐	Social ☐	Economic ☐	Councillor Activity ☐
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The existing Panuke Road Water Booster Station is currently in “very poor” condition, with multiple repairs in the past 4 years, and has been identified for immediate replacement since 2017.

The current Panuke Road Booster Station is a single domestic water booster station (with zero pump redundancy) that provides water services along Panuke Road to approximately 84 individual properties. The station was constructed with the Three Mile Plains distribution system in 1977 and is located at 86 Panuke Road. Pumps and piping are located under the existing road within a confined space manhole structure, with electrical located within an electrical panel mounted on a power pole above grade.

Water is supplied to the booster station via the West Hants water distribution system from the Windsor Water Treatment Plant supply. The pump station is located at an elevation of 32.9m and services lands to a maximum elevation of 75.5m. The watermain terminates at 398 Panuke Road at an elevation of 65.5m. A single booster pump services the domestic water demand, with a larger pump intended to service the fire water system along the road. There is currently no backup generator in the event of a power outage, resulting in minimal water pressure and zero fire water supply.

In April 2017, the domestic pump system failed causing a major disruption to service. The cause of the failure is suspected to be a result of age. During the repair of the domestic pump, the fire pump was utilized to provide water service. However, the capacity of the fire pump exceeds domestic requirements, and in order to maintain adequate pressure and flow, hydrants were opened along Panuke Road, resulting in a large consumption and waste of treated water.

The existing station is classified as a confined space which makes routine maintenance extremely difficult with the truck traffic along Panuke Road. As well, the station is aged significantly and with recent servicing issues, West Hants has identified an urgent requirement replace this station with a modern and more reliable booster station.

In July 2018, the Municipality of the District of West Hants Public Works Department proceeded with a proposal from ABLE Engineering to provide system design and project management services, for the necessary replacement of the existing Panuke Road Booster Station, in order to provide both reliable domestic and fire water coverage.

Council approved the pre-purchase of the Grundfos industrial pump packages direct from the Flowstar Industries for \$160,000 plus applicable taxes, with anticipated delivery of this equipment near the end of January 2022.

DISCUSSION

On October 10, 2021, Public Works staff tendered the replacement booster station project for Lot WU, Panuke Road (PID 56523339) for construction. The bid sheet included lump sum pricing for the following items:

1. Administrative Services and Permitting
2. Site Development
3. Foundation and Base Building Construction
4. Piping, Heating and Mechanical
5. Crane / Lifting Apparatus
6. Electrical, Building Controls and Communications
7. Commissioning and Systems Start-up
8. Driveway / Parking Area / Landscaping
9. Furniture, Fixtures and Misc. Equipment
10. Decommissioning of Existing Booster Station

The bid sheet also included the following provisional considerations, as value-added options for consideration by the Municipality:

- A. Supply, Install and Commission Back-up Generator

The responses for Fixed Sum Bid quotations were received on Thursday, November 19, with a total of three (3) proposals received. Proposals were reviewed for both compliancy and pricing evaluation by Municipality staff.

General Contractor	Review	Bid Value	Provisional
Greytop Commercial Construction	Compliant	\$ 430,562.	\$ 46,500.
Lindsay Construction Limited	Compliant	\$ 542,200.	Not Quoted
Mid-Valley Construction (1997) Limited	Compliant	\$ 793,870.	\$ 70,250.

Greypoint Commercial Construction was deemed to be the low compliant bidder; as such has been recommended to Council for award of this contract. A 20% contingency was deemed appropriate for this project due to the nature of the winter construction work to be expected.

It should be noted that in the event of a power failure, this water booster station would not be operable without a back-up generator, limiting water and water pressure to the residents of

Panuke Road, and would also render the fire hydrants ineffective. Although the Municipality has other portable generators; these will be required to maintain the network of sanitary sewer systems throughout the Regional Municipality.

NEXT STEPS

Pending approval of Council; staff will award formal contract to Greytop Commercial Construction to proceed with construction work as soon as possible, in accordance with their contract.

FINANCIAL IMPLICATIONS

Original budgeted amount for this project back in 2018 was \$450,000 for design and construction. This project design approved \$36,900 plus applicable taxes for ABLE Engineering coming from West Hants Gas Tax Reserve. Remaining construction costs were originally proposed to come from the West Hants Gas Tax Reserve.

The updated cost projections relating to construction and capital equipment for this project in 2021 was \$500,000, as detailed in the 2021/22 capital budget.

TMP Booster Station Replacement Project	
Pumping Equipment	\$160,000.
General Construction	\$300,000.
Emergency Generator	\$40,000.
Total Construction (Estimated):	\$500,000.
<i>Engineering & Design (previously approved by MDOWH, 2018)</i>	<i>\$50,000.</i>

The pumping equipment and control panels has been approved at a cost of \$160,000 plus applicable taxes, this included an approximate 10% contingency of \$14,751, for unforeseen costs.

Costs for construction projects has risen considerably in 2021 due to effects of the Covid-19 pandemic and resulting supply chain demands (commercial inflation rate of +17.5% for Halifax, NS reported for Q3-2021 according to Statistics Canada). In addition, this work is being requested late in the season, causing additional construction costs due to “winter work”. Due to state of the failing critical infrastructure, Public Works feels that this work cannot be deferred until next spring or summer, or the work may need to be executed under “emergency conditions” which would significantly raise the project costs and jeopardize the community with the possibility of complete loss of a critical water supply service.

	Pumping Equipment & Control Panels (approved)	Construction Proposal	Back-up Generator Proposal	Total Proposed Construction Cost
Proposal/Contract	\$145,249	\$430,562	\$46,500	\$622,311
Contingency	\$14,751	\$86,112	-	\$100,873
Applicable Taxes	\$6,864	\$22,165	\$1,994	\$31,023
Total	\$166,864	\$538,840*	\$48,495*	\$754,207

**Rounding to the nearest dollar.*

The 2021/22 Capital Budget approved \$500,000 to come from the West Hants Canada Community Building Fund (CCFB) reserve, which has a proposed balance of \$2,491,395 on March 31, 2022. Variance of between the proposal and approved budget is \$254,207. Should Council proceed, the West Hants CCFB reserve proposed balance on March 31, 2022, will be \$2,237,188.

ALTERNATIVES

1. Council may choose not to include the Optional Back-up Generator in the award of contract.
2. Council may choose to not to proceed with this capital project.

ATTACHMENTS

None

CHIEF ADMINISTRATIVE OFFICER REVIEW

The report highlights the conditions of the noted infrastructure and the need for replacement. Staff have highlighted the procurement process undertaken and the improved water supply conditions that will result from this work being carried out. There have been delays in the project primarily due to land negotiations. Staff are recommending that the construction phase begin immediately to mitigate current concerns and to add a generator to the system ensuring adequate flow and pressure of water during power outages.

The financial section of the report highlights the financial capacity of the municipality to carry out this work, utilizing reserves to cover the added costs.

I support the recommendation.

Report Prepared by:


 Brad Carrigan, P.Eng., Capital Projects Engineer

Report Reviewed by:



Todd Richard, Director of Public Works

Report Approved by:



Mark Phillips, Chief Administrative Officer



West Hants
something inspiring awaits

WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Members of Council

Submitted by: 
Todd Richard

Date: December 7, 2021

Subject: Riverview Road Hantsport Infrastructure Renewal Design

LEGISLATIVE AUTHORITY

Nova Scotia Municipal Government Act, Section 65 authorizes Council to expend funds for municipal purposes.

RECOMMENDATION or DECISION REQUEST

It is recommended for Committee of the Whole to recommend to Council that:

Council approve the award of tender WWHPW21-19 for engineering and design work for Riverview Road Infrastructure Renewal Design to the low compliant bidder, EXP, for the tendered price of \$46,166, plus applicable taxes.

BACKGROUND

Property ☐	Public Opinion ☐	Environment ☐	Social ☒	Economic ☐	Councillor Activity ☐
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Public Works intends to replace underground sanitary sewer, storm and water services and roadway surface structures on Riverview Road in Hantsport, approximately 570 meters in length.

In October 2021, Public Works requested proposals from pre-qualified engineering consultants to support this project from design through final construction.

1. Provide engineering and design services to meet all provincial and municipal specification standards;
2. Include design services for replacement water, sanitary sewer, storm water, roadway and sidewalk infrastructure within the project site;
3. Include environmental planning and permitting required for the execution of all work;
4. Include transportation (NSTAT) planning and permitting required for the execution of all work;
5. Include quality control field and geotechnical laboratory testing services; and
6. Include overall project management, construction site monitoring and providing final close-out report with record drawings.

DISCUSSION



The design contract provides for the engagement of a pre-qualified professional engineering consultant to support the project from design through final construction. Inspection services during the key phases of construction will be carried out by the engineering consultant, with available support of municipal staff.

Request for pricing and proposal includes provision of the following:

- Initial site visits to evaluate the site conditions and existing infrastructure;
- Start-up meeting with municipal staff to review the project and confirm the consultants understanding of the project;
- Obtain and submit any required approvals and/or permits for necessary work;
- Preliminary design to include 50% design;
- Detailed design will include advancing the 50% design based on discussions with municipal staff and comments during the preliminary design review;
- 95% review for comments and a “Class A” cost estimate c/w detailed quantity take off;
- 100% design package for Tender;
- Tender package to include contract documents, design drawings and technical specifications based on applicable municipal and provincial Municipal Standard Specifications;
- Review of all tenders submitted together with all accompanying documentation along with written recommendation letter to municipality to support award of tender;
- Approval of shop drawings;
- Inspection support during keys phases of construction;
- Review and final approval of project close-out documents;
- Provision of geotechnical services during construction; and
- Issuance of record drawings.

The municipality would like to be prepared to call for tenders for a summer construction start, with project completion within the 2022/23 fiscal period. Design and tender documents are to be prepared by the successful consultant in accordance with the latest edition of the Municipal Standard Specifications.

On October 29, staff issued an Invitation for Proposal (RFP) for Design Services for this project to prequalified engineering consultants, closing on November 18. The call for proposals resulted in three proposals being submitted for evaluation. The proposals were evaluated for completeness and technical ability to execute the scope of work.

The three (3) bid prices received included:

- EXP \$ 46,166.⁰⁰.
- DesignPoint \$ 51,148.⁰⁰.
- WSP \$ 99,948.⁹⁰.

EXP was deemed to be the low compliant bidder and has previous experience and qualification with the engineering and design of similar projects in West Hants and throughout Nova Scotia; as such has been recommended to Council for award of this contract.

NEXT STEPS

Pending approval of Council; staff will award formal contract to EXP to proceed with engineering and design work in accordance with their proposal.

FINANCIAL IMPLICATIONS

Council has previously approved \$431,304 in the capital budget for Hantsport Road Rehabilitation, to be funded through the Hantsport Infrastructure Reserve, which has a proposed balance of \$401,607.88 on March 31, 2022.

It is recommended to proceed with design for upcoming infrastructure projects to ensure the Municipality has shovel-ready projects for 2022/23 construction.

With applicable taxes, Riverview Road's design will cost \$48,146.52. Should Council proceed, the Hantsport Infrastructure Reserve proposed balance on March 31, 2022, will be \$353,461.36.

ALTERNATIVES

1. Council may choose to award this project to an alternative proponent.
2. Council may choose to not to proceed with this capital project.

ATTACHMENTS

None

CHIEF ADMINISTRATIVE OFFICER REVIEW

The proposed work is aimed at ensuring infrastructure is renewed in sections of Hantsport where the infrastructure is needing replacement.

There is protection provided to the municipality that the full payment or contract will not be carried out should the construction project phase not be approved by Council during future 2022/23 budget deliberations. The design phase of the award will ensure we are "shovel ready" pending budget process.

I support the recommendation.

Report Prepared by:



Brad Carrigan, P.Eng., Capital Projects Engineer

Report Reviewed by:



Todd Richard, Director of Public Works

Report Approved by:



Mark Phillips, Chief Administrative Officer



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ✓	Recommendation ☐	Decision Request ☐	Councillor Activity ✓
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To: West Hants Regional Municipal Council

Submitted by: Jim Ivey, Councillor, Windsor South, District 11

Date: Nov 23, 2021

Subject: Wastewater Discharge and Transitional Authorizations

LEGISLATIVE AUTHORITY

Department of the Environment and Climate Change - Wastewater System Effluent Regulations ("WSER").

RECOMMENDATION or DECISION REQUEST

Information Report for the purpose of seeking clarity on the Windsor combined stormwater/sewer treatment system for its alignment with Environment Canada and its Wastewater System Effluent Regulations ("WSER").

BACKGROUND

Property ☐	Public Opinion ✓	Environment ✓	Social ✓	Economic ✓	Councillor Activity ✓
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At the West Hants Committee of the Whole ("CoTW") October meeting, the West Hants Council reviewed the staff report regarding flooding in the Windsor area. The focus of the report related to the flash flood on July 27th and the heavy rain events on Sept 2nd, Sept 10th resulting in overland flood in the former Town of Windsor's older area (bounded by Stannus, Gray and Albert Street including segments of Wiley, Victoria and Munroe St).

The staff report identified that heavy / concentrated rain, with convergence in the system caused a surcharge of our combined stormwater and sewer system causing a combined sewer overflow (“CSO”) at pump station #1 (Windsor waterfront).

From the discussion of options identified, Council decided that the use of a mobile diesel pump to draw excess wastewater from the combined system as the best means to mitigate or prevent any future surcharge and overflow events along the Cunnable Creek trunk system. While not a perfect solution, ideally it is one which never has to be utilized.

Discussion

1. **Transitional Authorization:** In our October 12th meeting it was identified that a Transitional Authorization (“TA”) existed for the former Town Windsor, (issued 2014 with an end date of 2030). Since the October meeting it has been determined that with the completion of the former town’s new wastewater treatment plant that the TA was early expired on the plant’s completion mid-year 2016.

Regarding the early retired TA, if staff could provide clarity if the TA was early expired and that it is no longer in place, this would serve to correct the record and prevent future misunderstanding or interpretation of the TA.

2. **Decommissioning of Cunnable Creek:** Review of the WSER’s open data information portal indicates that the former Town of Windsor’s Cunnable Creek system was decommissioned in 2017. The WSER affirmed the decommissioned status advising that the former town sent a notice of decommissioning by email to ECCC in 2017.

Clarity from staff regarding the decommissioning of Cunnable Creek would be appreciated. As we know the Cunnable Creek system is still operating and possibly the records need to be corrected or updated with the WSER.

3. **Reporting and Monitoring:** The WSER reports provide / reflect historical reporting between 2015 and 2019. A summary identification report is attached at the end of this as an Appendix. Additional WSER data reports can be found on their website here: [WSER Reporting](#)).

One report in the WSER list that might be reviewed is the CSO (combined) report which does not include any information for Windsor. The explanation from the WSER is that according to the regulatory reporting requirements the former Town does not have any combined sewers. Clarity on this item would be beneficial in the event it also requires correction or updating.

The clarity sought on these items is to ensure that we are not out of synch with our systems from a short or long-term planning point of view nor from a regulatory requirements

perspective. The importance of this is to be clear that of our future capital needs are correctly defined and to mitigate any future risk or liability with the systems we operate.

NEXT STEPS

To be Determined

FINANCIAL IMPLICATIONS

TBD

ALTERNATIVES

(State any option to the recommendation and implication of the options, if anything)

ATTACHMENTS

(List any attachment to the report, if anything.)

CHIEF ADMINISTRATIVE OFFICER REVIEW

(For use if report is from a Councillor. CAO to provide additional comments on background, department/staff responsible and workload, budget, options, preferred strategy. State “Not Applicable” if report is from staff which already incorporates CAO review.)

DIRECTOR PUBLIC WORKS COMMENTS

In an attempt to clear up any misunderstanding it should be stated that the lift station (LS#1) located behind Water Street in Windsor that contains a Combined Sewer Overflow (CSO) should not be confused with the previously existing Combined Sewer Raw Discharge located at 33 Colonial Drive (near Old Tourist Bureau site) that discharged effluent to the Avon River with no treatment. The raw discharge point was the location to be terminated after completion of the 2016 wastewater treatment project. At no time was LS#1 part of the new project for upgrade or was there any intention to decommission LS#1, or terminate the overflow pipe that has existed since 1968. This CSO will continue to be required until major separation of the combined sewer and storm water system is addressed as identified in the 5 year capital budget.

(Attached are two maps to indicate locations of discharge points and CSO)

1. **Transitional Authorization:** Yes, the TA was expired early due to the construction of the new wastewater treatment facility located at 293 Wentworth Rd. The combined sewer raw discharge was terminated and therefore no requirement to continue the TA.

2. **Decommissioning of Cunnable Creek:** The decommissioning is referring to the raw discharge that previously existed at 33 Colonial Drive not the LS, CSO at the waterfront location. For clarity the e-mail sent on July 20, 2017 addressed to Environment Canada is in reference to the combined sewer raw discharge and read as follows;
Please accept this as notice of decommission. As of June 2016, the “Combined sewer raw discharge (Cunnable Creek)” has been eliminated. This effluent is now redirected to a new WWTF for full treatment located at 293 Wentworth Road.
3. **Reporting and Monitoring:** All our wastewater treatment facilities and collection systems are heavily regulated as we operate under the Nova Scotia Environment (NSE) regulations through our Approval to Operate. The WSER reporting is done on an annual basis for this system, any active flowing CSO’s identified that operators are aware of are reported to NSE and would be part of the annual filing for the WSER. There is no indication that operation of our systems is out of synch from a planning point of view or regulatory requirement perspective. Our systems are well maintained, operated, monitored, and controlled to the best of staff’s ability along with a QA/QC program. As indicated in previous reports steps must be taken to address climate change and increased development and these planning strategies have been and will continue to be captured in our capital and operational planning forecast.

Most of the items raised for clarification would be addressed as part of the approval process in the Approval to Construct and Operate the Wastewater Treatment Facility along with the reference documents included with the submissions as follows:

- Application dated September 22, 2016 and attachments
- Stantec Drawing Set “New Windsor Wastewater Treatment Plant” Re-issued for tender October 24, 2014 – Project Number 134230484
- Original application’s submissions, superseded by above as appropriate
- Application dated December 13, 2011 and attachments
- Stantec Engineering Project #134230484 Drawings dated Jan/12
- Residuals Processing Technical Memo dated Mar/12
- Stantec Submissions
- Town of Windsor Submissions
- Fisheries & Oceans Submission dated Feb 17/12
- Letter dated August 16, 2016 from Kenny MacAulay, NSE to T.Richard, Town of Windsor

Report Prepared by: _____
(Name and Title)

Report Reviewed by: _____
(Name and Title)

Report Approved by: _____
(Name and Title)

Appendix – WSER System Identification Report

Data Point	Location 1	Location 2	Location 3
Facility Identification	25290	25289	29567
Owner Name	Town of Windsor	Town of Windsor	Town of Windsor
System Name	Combined sewer raw discharge (Cunnable Creek)	Windsor Lagoons	Windsor Wastewater Treatment Facility
Average Daily Effluent Volume (m3)	7500	3000	7504
Method of Calculation	Estimate based on generally accepted engineering practices	Continuous measure of effluent volume deposited via the final discharge point	Determined on the basis of the system's average design rate of influent flow
Chlorine Use Indicator	No	Yes	No
System Type	Continuous	Continuous	Continuous
Treatment Types	No treatment	Lagoons - Aerated, Lagoon - Aerobic, Lagoon - Facultative, Disinfection	Grit Removal, Screening, Lagoons - Aerated, Disinfection
Discharge Place Description	Effluent is deposited to water frequented by fish via the final discharge point	Effluent is deposited to water frequented by fish via the final discharge point	Effluent is deposited to water frequented by fish from a place where it was deposited via the final discharge point
Is the hydraulic retention time 5 days or more?	No	Yes	No
Reporting Frequency	Quarterly	Quarterly	Quarterly
Averaging Period	Quarterly	Quarterly	Quarterly
Latitude	44.9939	44.9962	44.9951
Longitude	-64.141	-64.1288	-64.1255
Verification status of the point	Verified	Verified	Estimated
Verification status of the point	Vérifié	Vérifié	Estimé
Type of Point	Final Discharge Point	Final Discharge Point	Final Discharge Point
Name of body of water frequented by fish	Avon River	Saint Croix River	
Name of the water at point of entry	Avon River	Tregothic Creek	Mouth of St. Croix River

Description of use of water	Other recreational (e.g. boating)	Agriculture (e.g. irrigation)	Other
Description of water frequented by fish	Watercourse with bulk flow ratio ≥ 10 and ≤ 100	Watercourse with bulk flow ratio ≥ 10 and ≤ 100	Other
System status	decommissioned	operational	operational

WSER Summary / Overview:

The *Wastewater Systems Effluent Regulations*, made under the Fisheries Act, aim to reduce threats to fish, fish habitat and human use of fish by decreasing the amount of harmful substances released into water through wastewater effluent.

The regulations set national effluent quality standards achievable through secondary-level wastewater treatment. These standards came into force in 2015, except where a transitional authorization issued under the Regulations was in place. In communities where major construction or upgrades to existing wastewater infrastructure were needed to meet the effluent quality standards, extensions beyond 2015 were issued to allow time to plan, finance and build their wastewater system.

Transitional authorizations were issued in 2014 and the duration of the authorization was based on a points system that is outlined in the Regulations. Effluent volume, concentration of total suspended solids (TSS), concentration of carbonaceous biochemical oxygen demand (CBOD), concentration of un-ionized ammonia, chlorine usage, discharge environment and combined sewer overflow (CSO) points were all factored into the points system to determine the deadline to complete upgrades, to the end of 2020, 2030 or 2040.

Reporting Requirements

The information below is an overview of the reporting requirements under the WSER. There are two distinct reporting requirements, monitoring reports of effluent as well as combined sewer overflow reports.

Monitoring Reports

Monitoring reports are required to be submitted by all wastewater systems covered by the WSER. They are submitted on either an annual or quarterly basis, depending of the average daily effluent volume of the system. In their monitoring reports, regulatees are required to submit the following information based on sampling taken from the final discharge point:

- The number of days effluent was deposited
- The total volume of effluent that was deposited
- The average concentration of total suspended solids (TSS)
- The average concentration of carbonaceous biochemical oxygen demand (CBOD)
- Results of acute lethality testing (if any)

Monitoring reports summarize discharges from wastewater treatment systems.

Combined Sewer Overflow (CSO) Reports

Combined sewers are defined as sewers that convey both rainwater and wastewater in one pipe. As combined sewers are susceptible to flooding during periods of heavy rainfall or snowmelt, combined sewer overflow (CSO) points are incorporated into the collection system to ensure wastewater does not back-up in residential homes.

Under the Regulations, CSO reports are required to be submitted by regulatees that have combined sewer overflow points in their collection systems on an annual basis. Regulatees are required to submit the following information for each combined sewer overflow point they have in their collection system as part of their report:

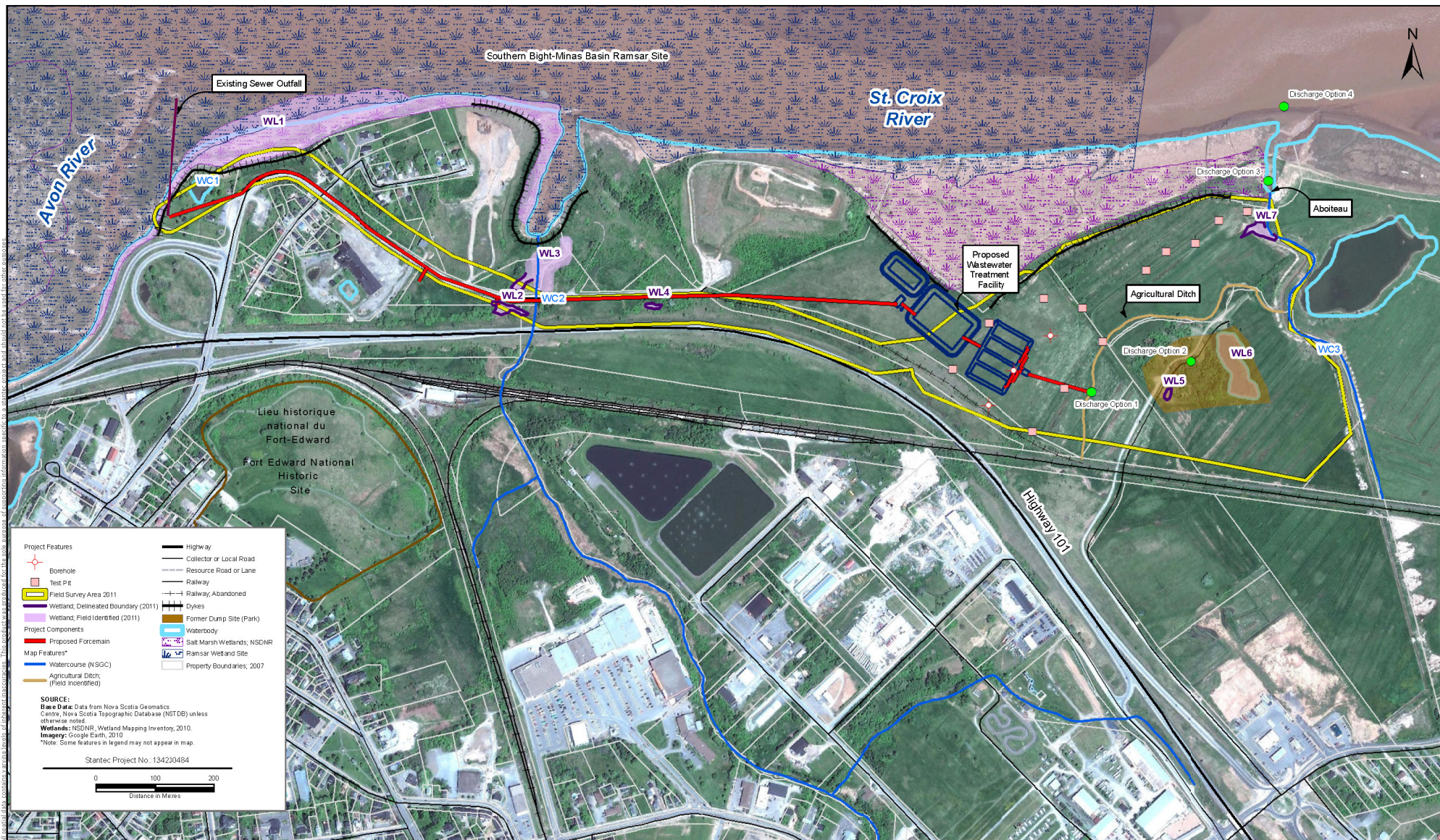
- The date of which effluent was deposited via the combined sewer overflow point
- The duration or estimated duration of the deposit

Exact volume measurements are not required as very few collection systems have flow monitoring at combined sewer overflow points. These points can be located anywhere in the collection system, where it may not be feasible to install the electrical and hardware required for monitoring. Therefore, duration or estimation of duration are accepted under the Regulations.

While the Regulations require annual reporting for the location, volume and frequency of these overflows, it does not authorize discharges of untreated wastewater from combined sewers. These overflows and any other non-authorized deposits are therefore prohibited under subsection 36(3) of the Fisheries Act. In the case of unauthorized releases, there are duties to notify, take corrective measures and report as per subsections 38(5), (6) and (7) of the Fisheries Act.

Regulatory Data

Data collected under the Regulations is available publicly on the Government of Canada Open Government [website](#). This dataset includes both monitoring data and the combined sewer overflow reports for those systems that have combined sewers.



PREPARED BY:
R. Sutcliffe

REVIEWED BY:
S. Saley

CLIENT:
Town of Windsor

Proposed Wastewater Treatment Facility

Environmental Features

FIGURE NO.: 1

DATE: Aug 18, 2011

stantec
Stantec Consulting Ltd. © 2011

Abandoned Sewer Outflow
(Untreated) at Avon River

Exit 6 - WB On-Ramp

Exit 6 - WB Off-Ramp

St. Croix River

Existing Sewer Outflow
(Treated) at St. Croix River



Combined Sewer Outflow
at Lift Station #1

Water Street



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Committee of the Whole

Submitted by: 
Shelleena Thornton, Municipal Operations Supervisor

Date: December 07, 2021

Subject: Summerville Fire Rescue Truck – Tender Award

LEGISLATIVE AUTHORITY

Municipal Government Act, Section 65A - Authorized municipal expenditures.

RECOMMENDATION or DECISION REQUEST

...that Committee of the Whole recommends to Council the award of Tender WHRMAD20-07A for a Fire Rescue Truck to Rocky Mountain Phoenix at a net cost of \$215,137.00 plus applicable taxes.

...that Committee of the Whole recommends to Council to approve a temporary borrowing resolution in the amount of \$202 878.00 for the Fire Rescue Truck for the Summerville Fire Department.

BACKGROUND

Property ☒	Public Opinion ☐	Environment ☐	Social ☒	Economic ☒	Councillor Activity ☐
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In 2019, Goudreault Associates was hired for a Regional Fire Services Review.

The November 2019 report prepared by Goudreault Associates is an accumulation of local information measured against current legislation, regulations, recognized standards, and guidelines. Included was a compiled 'table of recommendations' that identified suggested responsibilities and timeframes.

At the January 27, 2020 Co-ordinating Committee Meeting, the consultant's report was adopted including the attached recommendations which included Recommendation # 145 – Scheduled Fire Apparatus Replacements (p. 290 of the Regional Fire Services Review).

DISCUSSION

Tenders were called for on the NS Procurement website twice.

May 18, 2021 - First call for proposals was issued; however, received no responses primarily due to unknown timelines on behalf of vendors to be able to get specific parts due to COVID-19 and the delays faced by many manufacturers.

October 15, 2021 – Second call for proposals was issued on the NS Procurement website, in which one proposal was received from Rocky Mountain Phoenix for the unit price identified in the recommendation. This tender closed November 18, 2021.

The proposal was reviewed by the Summerville Fire Department's Truck Committee and rated to ensure the vendor could meet the specifications identified as well as operational requirements. One highlight of mention is that with respect to timelines, the proponent identifies that delivery of the Fire Rescue Truck would be within 300 days after they received the chassis, as it is recognized there are still some delays in acquiring components. This is satisfactory to the fire department.

The truck being replaced is a 19-year-old (2003) FORD F350 Rescue Utility Truck, which has been more of a Rescue than Utility truck and near (or at) weight capacity for equipment needing to be carried on the unit. Further, a couple of years ago, it was out of service for 12 days due to engine failure which cost over \$6,000 and is but one issue experienced supporting its near end-of-life expectancy and reliability.

The replacement Fire Rescue Truck will be

- on a heavier dual rear wheel Chassis, providing for greater capacity to meet the needs of the Department.
- increased internal and external compartment storage space adding functionality to the Rescue by providing easier accesses to transport items to and from the scene.
- provide members area to shelter in-place and rehab while on fire scenes.

This proposal is quite similar to the recent build completed for South West Hants Fire Station, less the costing of the pump and water system. That Rescue truck was tendered at \$252,299.68 plus applicable taxes.

NEXT STEPS

If the recommendation is supported, notify the vendor to proceed.

FINANCIAL IMPLICATIONS

Purchase cost of this tender exceeds the spending authority of the CAO.

For the 2020/21 fiscal period, the amount of \$175,000 was approved under the Summerville Fire Department section within the capital budget, for the replacement of a 19-year-old Utility truck. In the 2020/21 Capital Budget the Fire Rescue Truck is funded by long-term borrowing through Municipal Finance Corporation (MFC). The operating budget has been budgeted

21,488 (\$10,744 yearly) in debt servicing costs over the last two years for this truck purchase, which will be applied to reduce the amount borrowed.

The incurred cost of the proposed Fire Rescue Truck would be \$224,366.38 including applicable taxes (non-recoverable portion), resulting in 202,878 to be funded through long-term borrowing less the debt servicing costs carried over. The additional amount of \$27,878 will add \$1,711 to the 2022/2023 Operating Budget debt servicing costs.

The additional amount of \$27,878 is calculated by (\$224,366.38 (incurred cost) - \$175,000.00 (budgeted) - \$21,488 (budgeted operationally over past two years) = \$27,878 (additional amount needed).

ALTERNATIVES

1. Council may choose not to fund or award this contract.

This alternative is not being recommended to Council.

ATTACHMENTS

1. Recommendations approved at the January 27, 2020 Co-ordinating Committee Meeting
2. TBR Fire Rescue Truck Summerville Fire Dept.

CHIEF ADMINISTRATIVE OFFICER REVIEW

The report is thorough and reflects the various steps carried out in procuring this truck by the Summerville Fire Department. The report and recommendation is further in alignment with the Fire Study and comparable in cost to the truck recently sourced for the South West Hants Fire Department.

I support the recommendation.

Report Prepared by: 
Shelleena Thornton, Municipal Operations Supervisor

Report Reviewed by: _____
Carlee Rochon, Director of Financial Services

Report Approved by: 
Mark Philips, Chief Administrative Officer (CAO)

WWH Fire Study Recommendations

2020-01-23

CC = Coordinating Committee or Council Responsibility FS = Fire Service Responsibility Joint = CC or Council and FS Responsibility	PRIORITY		ACTION
	Immediate (I)	CC Responsibility	RECOMMEND ADOPTION
	Short-term (S)	0 to 1 year	RECOMMEND ADOPTION WITH REVISIONS
	Long-term (L)	1 year +	RECOMMEND ADOPTION IN PRINCIPLE
			NOT RECOMMENDING

The following table references only 25 of 151 recommendations identified in the fire study.

REC #	Recommendations	Priority	Report Page	Joint CAO(s) and Fire Chief(s) Position
10	GA recommends that the current 1.5 FTE fire-inspectors in Planning and Development be reassigned to the regional fire service.	I	xv	NOT RECOMMENDING
61	GA recommends the hiring of a full-time Assistant Fire Chief.	I	127	NOT RECOMMENDING
62	GA recommends the hiring of a part-time Divisional Chief.	I	127	NOT RECOMMENDING
65	GA recommends the transfer of 1.5 FTE Fire-Inspectors from Planning & Development, Building, to the regional fire services.	I	127	NOT RECOMMENDING
63	GA recommends the hiring of a full-time Administrative Assistant.	I	127	NOT RECOMMENDING (CAPACITY WITHIN EXISTING WWH STAFFING)
64	GA recommends the hiring of four part-time paid on call fire-investigators.	I	127	NOT RECOMMENDING (TRAINING SCHEDULE TO BE DEVELOPED)
7	GA recommends that all purchasing of significant-cost items be coordinated.	I	xiv	RECOMMEND ADOPTION
99	GA recommends, based on the travel-time predictions, the following fire station response districts. (detail on page)	I	197	RECOMMEND ADOPTION
1	GA recommends the hybrid organizational model because it is the best compromise in providing regional coordination and efficiencies yet maintains the local volunteer character of the fire department.	I	xiv	RECOMMEND ADOPTION
3	GA recommends a District Fire Chief management committee as a key recommendation, to bring together all the local fire district management personnel; so that plans and decisions on common issues of concern and service delivery can be made.	I	xiv	RECOMMEND ADOPTION
13	GA recommends that when the new regional municipality officially comes into being April 1, 2020, that all the fire departments, municipal or otherwise, providing fire and rescue services within the region, including those that are contracted by the municipality, register with the new municipality on an annual basis.	I	11	RECOMMEND ADOPTION
15	GA recommends that a review of the current registration form used by the Municipality of West Hants be used as the base registration document, and that it be amended to reflect the new regional municipality and its needs.	I	12	RECOMMEND ADOPTION
122	GA recommends that these Minor Capital expenditures be treated differently in future budgets and will address this recommendation in the benchmark portion of this analysis.	I	254	RECOMMEND ADOPTION
140	GA recommends that Windsor's other aerial (ALF) be scrapped without direct replacement and an unsuitable wildland/urban interface pumper be sold.	I	284	RECOMMEND ADOPTION
6	GA recommends the proposed 20-year capitalization plan, primarily for fire apparatus replacements, using a standardized approach to specification and group purchasing.	I	xiv	RECOMMEND ADOPTION IN PRINCIPLE
39	GA recommends that the Regional municipality register their volunteer firefighters with WCB before the eventual requirement for such registration occurs.	I	38	RECOMMEND ADOPTION IN PRINCIPLE
107	GA recommends that the following replacement schedule be adopted for the purposes of determining fire apparatus suitability for continued service. (detail on page)	I	215	RECOMMEND ADOPTION IN PRINCIPLE
110	GA recommends a standardized vehicle specification be used Region-wide. Standardized apparatus descriptions are included in Appendix IX; Standardized Fire Apparatus Features starting on page 377.	I	216	RECOMMEND ADOPTION IN PRINCIPLE
111	GA recommends that specifications for the major classes of fire apparatus be standardized across all stations in the new regional municipality. This will generate savings in total cost of ownership for the municipality.	I	219	RECOMMEND ADOPTION IN PRINCIPLE
139	GA recommends that the following fire apparatus replacement schedule be adopted for the purposes of determining fire apparatus suitability for continued service and as a budget planning tool for fire apparatus replacement. (detail on page)	I	283	RECOMMEND ADOPTION IN PRINCIPLE
145	GA recommends the following table of scheduled fire apparatus replacements. (detail on page)	I	290	RECOMMEND ADOPTION IN PRINCIPLE
9	GA recommends that all fire prevention activities, including fire inspection, fire investigation, and fire-safety education be brought inhouse. These are mandated services and require coordination, proper execution, and prioritizing in order to meet legislative mandates.	I	xv	RECOMMEND ADOPTION WITH REVISIONS
2	GA recommends providing centralized administration support, management and leadership. A full-time Director Manager of Public Safety Services – Regional Fire Chief, and a full-time Assistant Fire Chief with primary responsibilities for fire prevention are recommended. A part-time Divisional Chief is also recommended to take responsibility for developing and coordinating of firefighter qualifications and training.	I	xiv	RECOMMEND ADOPTION WITH REVISIONS
59	GA recommends the implementation of Model 3; Hybrid Regional Fire Service, for all of the reasons discussed starting on page 120.	I	127	RECOMMEND ADOPTION WITH REVISIONS
60	GA recommends the hiring of a full-time Director-MANAGER of Protective Services/Fire Chief.	I	127	RECOMMEND ADOPTION WITH REVISIONS

MUNICIPAL COUNCIL OF THE

Werst Hants Regional Municipality

TEMPORARY BORROWING RESOLUTION

Amount: \$ 202,878

Purpose: Summerville Fire - Light Rescue Truck

WHEREAS Section 66 of the Municipal Government Act provides that the Council of the West Hants Regional Municipality, subject to the approval of the Minister of Municipal Affairs, may borrow to expend funds for a capital purpose as authorized by statute;

WHEREAS the Council of the West Hants Regional Municipality has adopted a capital budget for this fiscal year as required by Section 65 of the Municipal Government Act and are so authorized to expend funds for a capital purpose as identified in their capital budget; and

WHEREAS the Council of the West Hants Regional Municipality has determined to borrow for the purposes of Summerville Fire - Light Rescue Truck;

BE IT THEREFORE RESOLVED

THAT under the authority of Section 66 of the Municipal Government Act, the Council of the West Hants Regional Municipality borrow a sum or sums not exceeding Two Hundred and Two Thousand Eight Hundred and Seventy-Eight Dollars (\$ 202,878) for the purpose set out above, subject to the approval of the Minister of Municipal Affairs;

THAT the sum be borrowed by the issue and sale of debentures of the Council of the West Hants Regional Municipality to such an amount as the Council deems necessary;

THAT the issue of debentures be postponed pursuant to Section 92 of the Municipal Government Act and that the Council borrow from time to time a sum or sums not exceeding Two Hundred and Two Thousand Eight Hundred and Seventy-Eight Dollars (\$ 202,878) in total from any chartered bank or trust company doing business in Nova Scotia;

THAT the sum be borrowed for a period not exceeding Twelve (12) Months from the date of the approval of the Minister of Municipal Affairs and Housing of this resolution;

THAT the interest payable on the borrowing be paid at a rate to be agreed upon; and

THAT the amount borrowed be repaid from the proceeds of the debentures when sold.

THIS IS TO CERTIFY that the foregoing is a true copy of a resolution read and duly passed at a meeting of the Council of the West Hants Regional Municipality held on the 16 day of December, 2021.

GIVEN under the hands of the Clerk and under the seal of the West Hants Regional Municipality this ____ day of _____, 2021.

Clerk