The Regional Municipality of Durham

Health & Social Services Committee Agenda

Council Chambers
Regional Headquarters Building
605 Rossland Road East, Whitby

Thursday, October 7, 2021 **9:30 AM**

Please note: In an effort to help mitigate the spread of COVID-19, and to generally comply with the directions from the Government of Ontario, it is requested in the strongest terms that Members participate in the meeting electronically. Regional Headquarters is closed to the public, all members of the public may view the Committee meeting via live streaming, instead of attending the meeting in person. If you wish to register as a delegate regarding an agenda item, you may register in advance of the meeting by noon on the day prior to the meeting by emailing delegations@durham.ca and will be provided with the details to delegate electronically.

1. Roll Call

2. Declarations of Interest

3. Adoption of Minutes

A) Health & Social Services Committee meeting – September 9, 2021 Pages 4 - 11

4. Statutory Public Meetings

There are no statutory public meetings

5. Delegations

5.1 Monika Warsinska, Homelessness Data Coordinator, Community Development Council Durham (CDCD) re: 2020 HIFIS Annual Demographics Report

6. Presentations

6.1 Andrew Greggan, Consultant, Operational Research in Health Limited (ORH), re: Comprehensive Master Plan for Paramedic Services (2021-MOH-5) [Item 7.2 A)]

6.2 R.J. Kyle, Commissioner and Medical Officer of Health, re: COVID-19 Update

6.3 Erin Valant, Program Manager, Housing Services, re: Durham's Homelessness Support and Coordinated Access System (2021-SS-10) [Item 8.2 A)]

7. Health

7.1 Correspondence

7.2 Reports

A) Comprehensive Master Plan for Paramedic Services (2021-MOH-5) 12 - 139

8. Social Services

8.1 Correspondence

8.2 Reports

A) An Update on the Region of Durham's Homelessness Support and Coordinated Access System (2021-SS-10) 140 - 147

9. Advisory Committee Resolutions

There are no advisory committee resolutions to be considered

10. Confidential Matters

10.1 Reports

A) Confidential Report of the Commissioner of Social Services – Closed Matter with respect to information explicitly supplied in confidence to the municipality or local board by Canada, a province or territory or a Crown agency of any of them, regarding Capital Projects Submitted under the Rapid Housing Initiative (RHI) Round 2 and the Social Services Relief Fund Phase 4 (SSRF Phase 4) Funding (2021-SS-11) Under Separate Cover

11. Other Business

12. Date of Next Meeting

Thursday, November 4, 2021 at 9:30 AM

13. Adjournment

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The Regional Municipality of Durham

MINUTES

HEALTH & SOCIAL SERVICES COMMITTEE

Thursday, September 9, 2021

A regular meeting of the Health & Social Services Committee was held on Thursday, September 9, 2021 in the Council Chambers, Regional Headquarters Building, 605 Rossland Road East, Whitby, Ontario at 9:30 AM. Electronic participation was offered for this meeting.

1. Roll Call

Present: Councillor Chapman, Chair
Councillor Anderson
Councillor Carter
Councillor Dies
Councillor Roy
Councillor Wotten
Regional Chair Henry
***all members of the Committee participated electronically**

Also Present: Councillor Grant
Councillor Highet
Councillor Kerr attended the meeting at 9:35 AM
Councillor Smith

Absent: Councillor Pickles, Vice-Chair absent on municipal business

Staff Present: E. Baxter-Trahair, Chief Administrative Officer
S. Danos-Papaconstantinou, Commissioner of Social Services
T. Fraser, Committee Clerk, Corporate Services – Legislative Services
R. Inacio, Systems Support Specialist, Corporate Services – IT
R.J. Kyle, Commissioner and Medical Officer of Health
L. Mizzi, Assistant Administrator, Hillsdale Estates
J. Nesbitt, Director, Population Health and Chief Nursing Officer
N. Prasad, Assistant Secretary to Council, Corporate Services – Legislative Services
***all staff except R. Inacio participated electronically**

2. Declarations of Interest

There were no declarations of interest.

3. Adoption of Minutes

Moved by Councillor Carter, Seconded by Councillor Roy,
(29) That the minutes of the regular Health & Social Services Committee meeting held on Thursday, June 3, 2021, be adopted.

CARRIED

4. Statutory Public Meetings

There were no statutory public meetings.

At this time, Chair Chapman announced the retirement of Jean Nesbitt, Director of Population Health and Chief Nursing Officer. J. Nesbitt was thanked for her exceptional leadership work and her many years of service at the Region of Durham.

5. Delegations

5.1 Joe Otavnik, Oshawa Resident re: Oshawa Micro-Homes Pilot Project

Joe Otavnik, Oshawa resident, provided his delegation later in the meeting due to connectivity issues.

5.2 Dr. Mark Katz, Beaverton Resident, re: The Clinical and Support Needs of Clients of the Beaverton Supportive Housing Proposal

Dr. Mark Katz provided a delegation with regards to the Clinical and Support Needs of Clients of the Beaverton Supportive Housing Proposal. A copy of his presentation material was provided to members prior to the meeting.

Dr. Katz advised that he is a Psychiatrist with 29 years of clinical experience and a recent resident of Beaverton. He stated that Beaverton has no existing mental health or substance use supports; no primary care physician or part time community health clinic with nurse practitioners; limited EMS supports nearby; the nearest hospitals are 45-50 minutes away; and there is a lack of community support for the supportive housing proposal.

Dr. Katz advised that he has had discussions with experts and is of the opinion that required supports for the Beaverton Supportive Housing are as follows: nursing to support various needs; support workers to help with day to day living challenges; security supports who are trained in non-violent crisis intervention, conflict resolution, and mental health emergencies; case management to provide employment support; recreation therapy and programming; teams to help those with mental illness; and individual and group counselling. He inquired whether the Region is prepared to budget for and provide the services required to make the site for this proposal work.

Dr. Katz responded to questions of the Committee.

5.1 Joe Otavnik, Oshawa Resident re: Oshawa Micro-Homes Pilot Project

Joe Otavnik, Oshawa resident, provided a delegation with regards to the Oshawa Miro-Homes Pilot Project.

J. Otavnik stated that local communities are not on board with the Oshawa Micro-Homes Pilot Project. He stated he feels that the property is not being used for what it was originally expropriated for and residents should be given the opportunity to provide their input. With regards to zoning, J. Otavnik believes that the project does not meet all zoning requirements. He further stated that he believes the project will make the City of Oshawa a magnet for the homeless population.

6. Presentations

6.1 R.J. Kyle, Commissioner and Medical Officer of Health re: COVID-19 Update

R.J. Kyle, Commissioner and Medical Officer of Health provided a PowerPoint Presentation with regards to the COVID-19 Update. A copy of the PowerPoint was provided to members in advance of the meeting.

Highlights of the Presentation included:

- COVID-19 Update
- Current Status
- Variants of Concern
- COVID-19 Vaccination Administration
- COVID-19 Vaccination Coverage
- Roadmap to Reopen Indicators
- Recommendations for Establishing a Vaccination Policy for your Workplace
- Proof of Vaccination in Select Settings
- Outdoor Special Events
- Outbreak Management in Long-Term Care Homes, Retirement Homes and Congregate Living Facilities
- Current COVID-19 Vaccine Plan

R.J. Kyle stated that the Delta Variant is currently driving the fourth wave and provided an overview of the vaccination administration in Durham Region. He stated that Durham Region is currently in Stage 3 of the provincial reopening map and has exceeded the Stage 3 targets.

R.J. Kyle advised that the Health Department has issued recommendations to local workplaces to create a vaccination policy to help reduce the risk of COVID-19 transmission in the community and to protect their workers and the public. He stated that as of September 22, 2021, the province will require patrons to provide proof of vaccination in select settings such as: facilities used for sports and fitness; restaurants and bars; sporting events; and concerts, music festivals, theatres and cinemas. He advised that the requirements will not apply to outdoor settings or where people receive medical care or grocery stores.

R.J. Kyle advised that as of August 18, 2021 residents born in 2009 are eligible to receive a COVID-19 vaccine and that a third dose is being offered to individuals at highest risk of a reduced or waning immune response to the vaccine. He further advised that based on increased demand, the mass immunization clinics at the Audley Recreation Centre in Ajax and the Ontario Tech Campus Ice Centre in Oshawa will remain open until December 2021. Plans for mobile and pop-up clinics will focus on target populations and communities with lower vaccination rates. School-based clinics are being planned in collaboration with the school boards.

R.J. Kyle responded to questions with regards to the percentage of Durham Region residents currently vaccinated and how that number compares to other Regions; factors that contributed to the outbreak at Hillsdale Estates; municipal responsibilities with regards to the September 22nd proof of vaccination policy; and whether vaccinations will be available for children under the age of 12.

6.2 L. Mizzi, Assistant Administrator, Hillsdale Estates re: Ontario's Long-Term Care COVID-19 Commissioner – Report Overview (2021-SS-8) [Item 8.2 A)]

Lisa Mizzi, Assistant Administrator, provided a PowerPoint Presentation with regards to Ontario's Long-Term Care COVID-19 Commission Report Overview. A copy of the PowerPoint was provided to members in advance of the meeting.

Highlights of the Presentation included:

- Background to LTC COVID-19 Commission
- State of LTC Prior to COVID-19
- Key Findings
- Key Recommendations
- Key Recommendations and Regional LTC Status
- Closing Remarks

L. Mizzi stated that the Commission was created by the provincial government to investigate the cause of the spread of the COVID-19 virus in long-term care and its effect on residents, staff, families, and volunteers. She advised that the Commission received over 700 submissions in the preparation of the report.

L. Mizzi advised that the report states that Ontario was not prepared for the COVID-19 pandemic and that staffing in long-term care was a concern prior to the pandemic and especially during the first two waves. She also stated that staff composition and capacity were ill-suited to pandemic management; long-term care funding was described as insufficient and underfunded; and there are differences in staffing, quality of resident care, infrastructure and consumer preference between for-profit and not-for-profit homes.

L. Mizzi provided a detailed overview of the key findings and recommendations and advised that the Commission provided 85 recommendations to the provincial government as a result of the investigation. She advised that the Ministry of Long-Term Care has announced support to further enhance staffing, staffing mix, IPAC measures and the inspection process, and noted the Region's long-term care homes are well on their way to meeting many of the recommendations set out in the report.

7. Health

7.1 Correspondence

A) Information Report #2021-INFO-67 of the Commissioner and Medical Officer of Health re: The Health Costs of Climate Change: How Canadians Can Adapt, Prepare and Save Lives

Moved by Councillor Wotten, Seconded by Regional Chair Henry,

(30) That Information Report #2021-INFO-67 of the Commissioner and Medical Officer of Health regarding the Health Costs of Climate Change: How Canadians Can Adapt, Prepare and Save Lives, be received for information.

CARRIED

B) Correspondence from the Municipality of Hastings Highlands re: Resolution passed at their Council Meeting held on June 2, 2021, endorsing 988, a National three-digit suicide and crisis hotline

Moved by Councillor Wotten, Seconded by Regional Chair Henry,

(31) That the correspondence from the Municipality of Hastings Highlands regarding the Resolution passed at their council meeting held on June 2, 2021, endorsing 988, a National three-digit suicide and crisis hotline, be received for information.

CARRIED

C) Correspondence from the City of Pickering re: Resolution passed at their Council Meeting held on June 28, 2021, endorsing 988, a National three-digit suicide and crisis hotline

Moved by Councillor Carter, Seconded by Regional Chair Henry,
(32) That we recommend to Council:

A) That the correspondence from the City of Pickering re: Resolution passed at their Council Meeting held on June 28, 2021, endorsing 988, a National three-digit suicide and crisis hotline be endorsed; and

B) That Durham MPs, MPPs, the Canadian Radio-television and Telecommunications Commission, Ministers of Health (provincial and federal), Minister of Mental Health and Addictions, all Durham Region Post-Secondary Education partners, Durham Regional Police Services, Emergency Management Services, Lakeridge Health and Pinewood Centre of Lakeridge Health, be so advised.

CARRIED

7.2 Reports

There were no Health Reports to consider.

8. Social Services

8.1 Correspondence

There were no communications to consider.

8.2 Reports

A) Ontario's Long-Term Care COVID-19 Commission (2021-SS-8)

Report #2021-SS-8 from S. Danos-Papaconstantinou, Commissioner of Social Services, was received.

Moved by Councillor Carter, Seconded by Councillor Wotten,
(33) That Report #2021-SS-8 of the Commissioner of Social Services be received for information.

CARRIED

B) Updated Durham Advisory Committee on Homelessness Terms of Reference (2021-SS-9)

Report #2021-SS-9 from S. Danos-Papaconstantinou, Commissioner of Social Services, was received.

Moved by Councillor Carter, Seconded by Councillor Wotten,
(34) That we recommend to Council:

That the updated Terms of Reference for the Durham Advisory Committee on Homelessness be adopted.

CARRIED

9. Advisory Committee Resolutions

There were no advisory committee resolutions to be considered.

10. Confidential Matters

There were no confidential matters to be considered.

11. Other Business

A) Feed the Need in Durham - Push Against Hunger 2021

Chair Chapman advised that the Push Against Hunger event will be held on Tuesday, September 14, 2021 from 10 AM to 1:45 PM. The event will start at Oshawa City Hall and is scheduled to end at Regional Headquarters.

B) Feed the Need in Durham – Community Food Drives

Chair Chapman advised that the Fill the Tank event will be held on September 11, 2021 from 10 AM to 2 PM at Sobey's Oshawa, 1377 Wilson Road North, Oshawa.

Chair Chapman also advised that the Cram-a-Cruiser event will be held on September 11, 2021 from 10 AM to 2 PM at Sobey's Whitby, 1615 Dundas Street East, Whitby.

C) Tour of Downtown Oshawa

Regional Chair Henry requested that Committee members be provided with a tour of downtown Oshawa to better understand the City's challenges with regards to various addictions.

12. Date of Next Meeting

The next regularly scheduled Health & Social Services Committee meeting will be held on Thursday, October 7, 2021 at 9:30 AM in the Council Chambers, Regional Headquarters Building, 605 Rossland Road East, Whitby.

13. Adjournment

Moved by Councillor Dies, Seconded by Regional Chair Henry,
(35) That the meeting be adjourned.
CARRIED

The meeting adjourned at 11:05 AM

Respectfully submitted,

B. Chapman, Chair

N. Prasad, Assistant Secretary to Council

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 3111

The Regional Municipality of Durham Report

To:	Health & Social Services Committee
From:	Commissioner & Medical Officer of Health
Report:	#2021-MOH-5
Date:	October 7, 2021

Subject:

Comprehensive Master Plan for Paramedic Services

Recommendations:

That the Health & Social Services Committee recommends to Regional Council:

1. That the Comprehensive Master Plan for Paramedic Services be referred to Regional staff for review by affected Regional departments and be used as a guiding document, along with evolving growth projections and operational considerations, for future Paramedic Services planning, Regional development charge background studies and future business plans and budgets.

2. That Regional staff report back on the status of the review of the recommendations in the Comprehensive Master Plan for Paramedic Services prior to presenting the proposed Public Health and Paramedic Services 2023 Business Plan and Budget.

Report:

1. Purpose

1.1 To provide an update on the Comprehensive Master Plan for Paramedic Services (CMPPS) prepared by Operational Research in Health Limited (ORH) for Region of Durham Paramedic Services (RDPS) (see Attachment).

2. Background

2.1 ORH was engaged by Region of Durham to conduct a review of RDPS and make recommendations for a comprehensive master plan for the ten-year period of 2021 to 2031, using research, best and leading practices, and existing data and reports.

2.2 The CMPPS is a guiding document which, following a feasibility review and assessment of operational and fiscal impacts by staff, will help inform future Paramedic Services planning, Regional development charge background studies,

and future business plans and budgets.

2.3 ORH's objectives were to: project ambulance call volumes; recommend response time performance plans; recommend resources required to achieve response times; recommend a station facility model; and identify broader considerations for overall service efficiencies.

2.4 ORH's analysis and recommendations are informed by current and historical RDPS operations, extensive data analysis, modelling and input from a range of stakeholders including front-line staff.

2.5 It is important to note that currently RDPS meets all performance standards as required.

2.6 ORH recommendations are based on both a 2031 projected total population of 800,000 (lower bound) and 900,000 (upper bound), compared to 666,000 in 2016. Projections also estimate that the population aged 65 and over will account for 20 per cent of the population in 2031 as compared to 14 per cent in 2016. As Committee and Council are aware, growth projections are based on a number of assumptions and are subject to change over time, with actual growth often being much lower than initial projections. As a result, ORH's recommendations are intended to provide a high-level guideline that will need adjustment over time to respond to updated projections.

2.7 ORH has developed a simulation model, AmbSim, for modelling operations of ambulance services. Once populated the model can predict results under various scenarios. In addition, ORH used its location optimization model to identify the best locations for paramedic stations.

2.8 Modelling was used to assess options for changing paramedic station configuration and to identify resource requirements for the next ten years (2021 to 2031) to maintain 2016 performance measures within each municipality.

3. Key Recommendations from the Master Plan

3.1 A forecasted increasing and ageing population as well as increasing demand across all age groups is projected to result in significant increases to demand for paramedic services by 2031.

3.2 ORH modelling suggests future station configuration including three new paramedic stations in Whitby South (2027), Seaton (2023) and Winchester/Simcoe in Oshawa (2029) based on modeled growth projections and maintaining 2016 performance measures. As Committee is aware, the Seaton station is currently underdevelopment with a projected operational date of late 2022/early 2023. When this station comes online it will immediately address one of ORH's recommendations.

3.3 Based on modeled growth projections and maintaining 2016 performance

measures, by 2031 ORH is recommending that future staffing levels:

a. Increase by 130 to 154 additional full-time equivalent paramedic positions (FTEs);
b. Include between 10 and 11 additional Supervisors to achieve a 22:1 ratio of Supervisors to front-line staff – which has been defined as an aspirational goal for other paramedic services in Ontario;
c. Include a new Commander layer between Deputy Chiefs and Supervisors to increase support for senior management and front-line staff and provide a focus on staff welfare; and
d. Incorporate increased operating hours for the logistics role to improve logistics efficiency and increase capacity given future increases in fleet.

3.4 Lastly, a need for 14 to 15 additional vehicles (plus spares) by 2031 has been identified.

3.5 CMPPS also identifies and models the impacts on performance levels, staffing levels, and capital asset requirements for the following additional scenarios and assumptions that require further consideration and evaluation moving forward:

a. Alternative scenarios for Oshawa given capacity issues at the South Oshawa station;
b. Alternative performance scenarios;
c. Alternative phasing strategies;
d. Variations in hospital off-load delays;
e. Introduction of call diversion; and
f. Introduction of treat and release.

3.6 While the CMPPS does not include a projected financial impact, substantial increases to annual operating and capital funding would be required to implement the recommendations identified by ORH.

4. Next Steps

4.1 It is recommended that the CMPPS be referred to Regional staff for review by affected Regional departments.

4.2 Regional staff will review the recommendations outlined in the CMPPS considering population growth projections and sensitivity analysis, Regional priorities over the next ten years, potential provincial funding, timelines for implementation and other factors that will impact the feasibility of implementation of the recommendations identified in the CMPPS. Together this information will be used for future Paramedic Services planning, Regional development charge background studies and future business plans and budgets. Any changes to current service levels will be subject to Council approval as part of the Region's annual business planning and budget process.

4.3 Prior to the submission of the proposed 2023 Public Health and Paramedic

Services Business Plan and Budget, Regional staff will report back providing a status update on the review and further next steps.

4.4 This report has been reviewed by the Finance Department and the Commissioner of Finance concurs with the recommendations.

4.5 This report has been reviewed by the Planning & Economic Development Department and the Commissioner of Planning & Economic Development concurs with the recommendations.

5. Attachment

Comprehensive Master Plan for Paramedic Services

Respectfully submitted,

Original signed by

R.J. Kyle, BSc, MD, MHSc, CCFP, FRCPC, FACPM
Commissioner & Medical Officer of Health

Recommended for Presentation to Committee

Original signed by

Elaine C. Baxter-Trahair
Chief Administrative Officer

Emergency Service Planning
Emergency Medical Services

Regional Municipality of Durham

Comprehensive Master Plan for Paramedic Services

Final Report

ORH/RMD/1
August 13, 2021

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EXECUTIVE SUMMARY

i. The Regional Municipality of Durham (Durham or the Region) has engaged Operational Research in Health Limited (ORH) to deliver a comprehensive review of, and develop a master plan for, the delivery of paramedic services as provided by the Region of Durham Paramedic Services (RDPS). This is the Final Report for the review and encompasses a ten-year time period from 2021 to 2031.

ii. During the five-year sample period (January 1, 2016 to December 31, 2020) RDPS responded to an average of 163 incidents per day, 78% of which were transported to hospital. Demand increased steadily throughout the sample, by an average of 4.7% per year, except for 2020 which was at similar levels to 2019 due to the impacts of the early stages of COVID-19.

iii. Across the five-year sample RDPS were meeting their CTAS performance targets from a Region-wide perspective. While targets were met, performance has been deteriorating since 2016 due to increases in demand and job cycle times outstripping the investment in resources.

iv. As of 2021 RDPS planned to deploy 4,676 vehicle hours, or 9,100 staff hours, per week. Accounting for absences this requires 320 full-time equivalent (FTE) staff, although not all of these need to be actual full-time staff. Overall utilization for P1 to P4 incidents was 36%; there was significant variation by station.

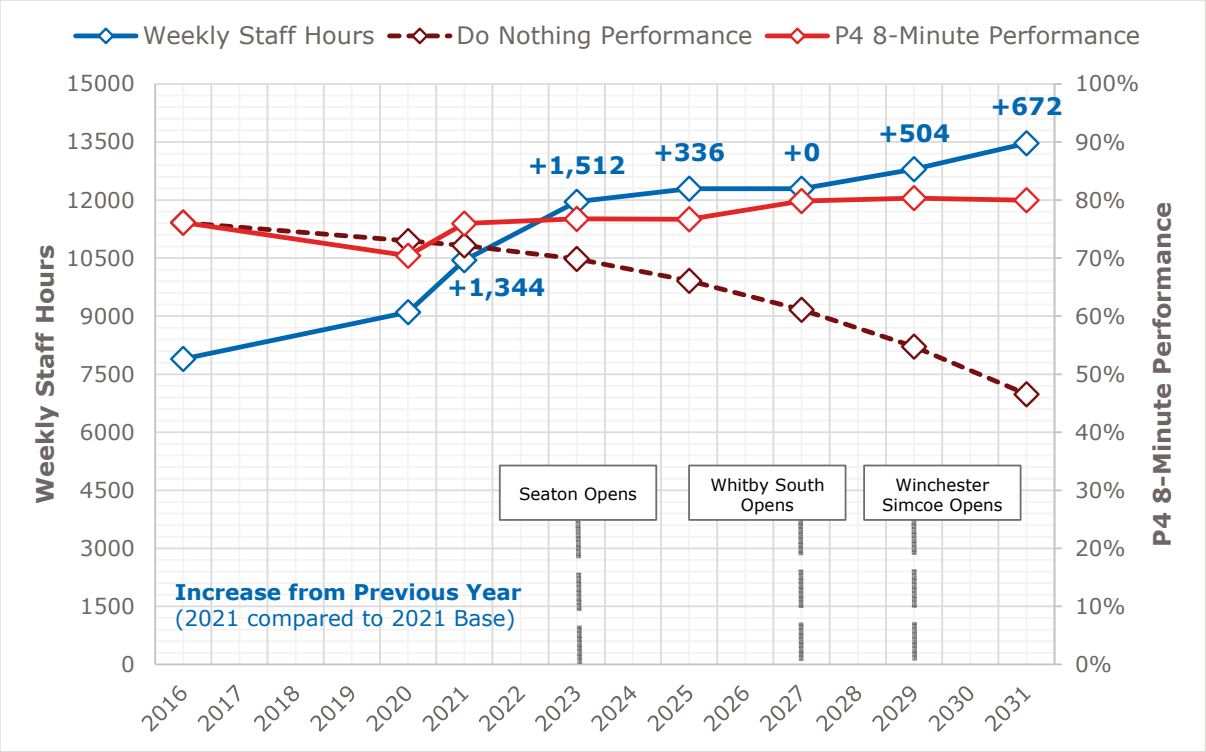
v. Building Condition Assessments were also conducted to support future facility planning.

vi. ORH estimated demand in yearly intervals from 2021 to 2031 to inform the demand levels for the ten-year plan. Total population by 2031 is projected to be between 800,000 (lower bound) and 900,000 (upper bound), compared to 666,000 in 2016. Those aged 65 and over accounted for 14% of the population in 2016, increasing to 20% by 2031. There is a clear correlation between age and demand, with the older age groups generating the most incidents.

vii. The predicted increasing and ageing in population suggests that demand on RDPS will continue to increase significantly to 2031. P3 and P4 demand in Durham is expected to increase by 63% (or 49% under the lower bound) between 2021 and 2031, which equates to a 5% increase year-on-year. Key development areas in Oshawa, Pickering and Whitby were also incorporated into the projections.

viii. ORH has developed a sophisticated simulation model, AmbSim, for modelling the operations of ambulance services. A virtual replica of RDPS operations was created within AmbSim; the model was populated using parameters derived from the analysis of the current service. Once validated, and thereby shown to accurately reflect the historical sample period, the model could then be used to predict future behaviour under a variety of different scenarios.

Figure I: Phasing Summary



Scenario	Staff Hours		Full Time Equivalent Staffing		FT Positions	
	Overall	Difference from Previous	Overall	Difference from Previous	Overall	Difference from Previous
Current	9,100	-	320	-	271	-
2021	10,444	1,344	367	47	311	40
2023	11,956	1,512	420	53	356	45
2025	12,292	336	432	12	366	10
2027	12,292	0	432	0	366	0
2029	12,796	504	450	18	381	15
2031	13,468	672	474	24	401	20
Overall (Current to 2031)	13,468	4,368	474	154	401	130

ix. ORH's location optimization model OGRE (Optimizing by Genetic Resource Evolution) was also used to assess the configuration of existing station locations and identify how this could be improved currently and in the future. The model uses a genetic algorithm that evaluates large numbers of potential configurations, resulting in an optimal solution.

x. The optimization indicated that existing stations were generally well located; that is, the optimal sites were found close to existing stations. However, opportunities for improving coverage were identified and the recommended future station configuration includes three new stations: at 632 Dundas Street West ('Whitby South'), Concession Road 5 and Sideline 16 Road ('Seaton'), and Simcoe Street North and Winchester Road East ('Winchester/Simcoe').

xi. A 2031 'Do Nothing' position was modelled to quantify the impact of demand increases assuming no other operational changes. Under the upper bound projection, Region-wide P4 8-minute response performance degrades by 29.6 percentage points, from 72.2% in the 2021 Base Position to 46.6% in 2031, and ambulance utilization is projected to increase to 63%. Average response times would increase by four minutes.

xii. A performance target was set to maintain 2016 performance in every LTM. In the upper bound scenario this was achieved by adding 4,368 front-line staff hours per week above the 2021 Base Position, making a total of 13,468 per week by 2031; this represents a 48% increase in hours from 2021 to 2031 compared to a 63% increase in demand. This would require a total of 474 FTE staff, an increase of 154 above the Base Position. Under the lower bound scenario, this reduces to 130 additional FTE staff.

xiii. In the upper bound scenario RDPS will need an additional 15 physical vehicles by 2031 plus spares (reducing to 14 in the lower bound scenario).

xiv. To achieve a ratio of 22:1 supervisors to front-line staff, the number of supervisors would increase from 11 to 14 based on current front-line staff, and to 21 or 22 by 2031 based on the upper bound scenario. It is recommended that operating hours for the logistics department are extended, and that a new commander layer be introduced between the deputy chiefs and supervisors, to increase support for both senior management and front-line staff.

xv. The recommended station configuration and additional operational resource requirements are planned to be phased in two-year intervals over the ten-year period (see Figure **I**). This phasing approach aims to be mindful of a sensible construction schedule and to stagger resource changes so that the financial impacts are as evenly spread as possible, while also balancing the need to maintain performance by LTM in each interval.

xvi. Sensitivity modelling was also undertaken to test assumptions about parameters included in the core modelling scenarios. This includes an alternative phasing option with an almost exactly even staggering of resource hours, although this would mean that some years do not maintain 2016 performance in every LTM.

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Figure 1-1: Glossary

Term	Definition	
AVL	Automatic Vehicle Location	
BCA	Building Condition Assessment	
CACC	Central Ambulance Communications Centre	
CTAS	Canadian Triage and Acuity Scale	
	1	(Resuscitation): Conditions that are threats to life or limb (or imminent risk of deterioration) requiring immediate aggressive interventions
	2	(Emergent): Conditions that are a potential threat to life, limb or function requiring rapid medical intervention or delegated acts
	3	(Urgent): Conditions that could potentially progress to a serious problem requiring emergency intervention
	4	(Less Urgent): Conditions that are related to patient age, distress, or potential for deterioration or complications which would benefit from intervention or reassurance
	5	(Non Urgent): Conditions that may be acute but non-urgent as well as conditions which may be part of a chronic problem with or without evidence of deterioration
FT	Full Time	
IFT / Non-IFT	Inter-facility Transfer (patients that need transporting from one hospital to another)	
Incident	A P1 to P4 call resulting in at least one unit response	
LTM	Lower Tier Municipality	
Mobilization	A unit being mobilized to an incident (may be more than one unit mobilization for an incident and may not reach scene)	
Mobilization Time	Time from T2 Unit Notified to T3 Unit Mobile	
MoH	Ministry of Health	
Occupied Time	Time from T3 Unit Mobile to Unit Clear	
Optimization	Using a sophisticated, geographically based genetic algorithm to evaluate multiple configurations of locations and identify best options.	
ORH	Operational Research in Health Ltd	
Priority 1 to 4	P1	(Deferrable): A routine call that may be delayed without detriment to the patient (eg, a non-scheduled transfer; a minor injury)
	P2	(Scheduled): A call which must be done at a specific time, for example because of special treatment or diagnostic facility requirement (eg, inter-hospital transfers or a scheduled meet with an air ambulance)
	P3	(Prompt): A call that should be performed without delay (eg, serious injury or illness)
	P4	(Urgent): A call that must be performed immediately where the patients 'life or limb' may be at risk (eg, Vital Signs Absent patient or unconscious head injury)
PT	Part Time	
Response	A unit arriving at the scene of an incident (there may be more than one unit response at an incident)	
Response Time	Time from T2 Unit Notified of the first notified unit to T4 Arrive Scene of the first arrived unit.	
RDPS	Region of Durham Paramedic Services	
RRV / TRU	Rapid Response Vehicle / Tactical Response Unit (a type of RRV)	
SCA	Sudden Cardiac Arrest	
Simulation	Using a discrete event simulation model, which replicates the key characteristics of an emergency service, to predict future behaviour under a variety of difference scenarios.	
Standby (Priority 8)	Moving a crew from one station to another station to maintain coverage	
Time Events	T0	Time Call Answered
	T1	Time Available for Dispatch
	T2	First Unit Notified
	T3	First Unit Mobilized
	T4	First Unit Arrived at Scene
Utilization	The combined occupied time of all units divided by the combined total deployed unit hours (shift start to shift end)	

1 INTRODUCTION

1.1 The Regional Municipality of Durham (Durham or the Region) has engaged Operational Research in Health Limited (ORH) to deliver a comprehensive review of, and develop a master plan for, the delivery of paramedic services as provided by the Region of Durham Paramedic Services (RDPS).

1.2 The following objectives were set (see more detail in Appendix **A**):

(a) Project ambulance call volumes

(b) Recommend response time performance plans

(c) Recommend resources required to achieve (b)

(d) Recommend a station facility model

(e) Identify broader considerations for overall service efficiencies

1.3 This is the Final Report for the review and encompasses a ten-year time period from 2021 to 2031.

1.4 ORH's approach to strategic planning is centred on consultancy, extensive data analysis, and uses a suite of modelling packages developed in-house:

- **Analysis** of demand, performance and resource use to enable the model of the service area to be populated and validated, and to inform an appraisal of potential options for change.
- Identifying and **modelling** options that aim to improve the effectiveness, efficiency and equity of service provision.
- Delivering sustainable solutions in a timely manner through a tried and tested **consultancy** process with a range of stakeholders (including front-line staff).

1.5 A description of current and historical RDPS operations, support staff and facilities is provided in Section 2. Using historical demand and population data, a demand projection was made to 2031 and is outlined in Section 3.

1.6 Location optimization and simulation models for RDPS front-line operations were built and validated, and used to create a base position for modelling (Section 4). The model was then used to assess options for changing the station configuration (Section 5) and to identify future resource requirements in 2031 (Section 6).

1.7 The final phasing of key recommendations is set out in Section 7, followed by a series of sensitivity modelling scenarios in Section 8.

1.8 A glossary of terms is provided in Figure **1-1**.

Figure 2-1: Demand by Year and LTM

LTM	Average Daily Demand by Year					Average Annual Change (2016 to 2019)	% by LTM (2019)
	2016	2017	2018	2019	2020		
Ajax	19.7	20.6	22.5	23.1	22.7	5.4%	13.4%
Brock	3.4	3.6	3.9	4.4	5.5	8.6%	2.5%
Clarington	18.5	18.9	19.4	20.1	20.0	2.8%	11.7%
Oshawa	53.7	59.4	61.4	63.5	63.5	5.8%	37.0%
Pickering	17.4	16.7	18.4	18.3	17.4	1.7%	10.6%
Scugog	6.4	6.6	6.2	7.2	6.8	4.3%	4.2%
Uxbridge	4.0	4.4	5.0	4.8	5.1	7.0%	2.8%
Whitby	25.7	27.0	28.2	29.2	28.1	4.4%	17.0%
Out-of-Area	*1.1*	*0.9*	*1.0*	*1.2*	*1.6*	*5.3%*	*0.7%*
Region of Durham	149.8	158.1	166.2	171.8	170.6	4.7%	100.0%
Annual % Change	-	5.5%	5.1%	3.4%	-0.7%	4.7%	

2 CURRENT AND HISTORICAL ANALYSIS OF RDPS

During the five-year sample period (January 1, 2016 to December 31, 2020) RDPS responded to an average of 163 incidents per day, 78% of which were transported to hospital. Demand increased steadily throughout the sample, by an average of 4.7% per year, except for 2020 which was at similar levels to 2019 due to the impacts of the early stages of COVID-19.

Across the five-year sample RDPS were meeting their CTAS performance targets from a Region-wide perspective. While targets were met, performance has been deteriorating since 2016 due to increases in demand and job cycle times outstripping the investment in resources.

As of 2021 RDPS planned to deploy 4,676 vehicle hours, or 9,100 staff hours, per week. Accounting for absences this requires 320 full-time equivalent (FTE) staff, although not all of these need to be actual full-time staff. Overall utilization for P1 to P4 incidents was 36%; there was significant variation by station.

Building Condition Assessments were also conducted to support future facility planning.

Demand

2.1 ORH collected a five-year sample of Ambulance Dispatch Reporting System (ADRS) and Ambulance Call Record (ACR) data (January 1, 2016 to December 31, 2020) in order to examine and analyze trends in demand and performance. During this time, RDPS responded to an average of 163 incidents[1] per day.

2.2 Priority 1 to Priority 4 (P1 to P4) demand increased steadily throughout the sample period, by an average of 4.7% per year (see Figure **2-1**), except for 2020 which was at similar levels to 2019 due to the early stages of COVID-19. Oshawa Lower Tier Municipality (LTM) accounted for the highest proportion of the demand (37%), and Brock the lowest (2.5%). A more detailed geographical distribution of P4 non-IFT[2] demand is mapped in Appendix **B1a**.

[1] 'Incidents' or 'demand' refers to the number of RDPS responded incidents; that is, if two vehicles attend the scene of the same call, this is only counted once. This excludes responses made for coverage purposes only.

[2] Non-IFT demand excludes Inter-Facility Transfers (IFT); that is, patients that need transporting from one hospital to another.

Figure 2-2: P4 (Non-IFT) Performance - % in 8 minutes

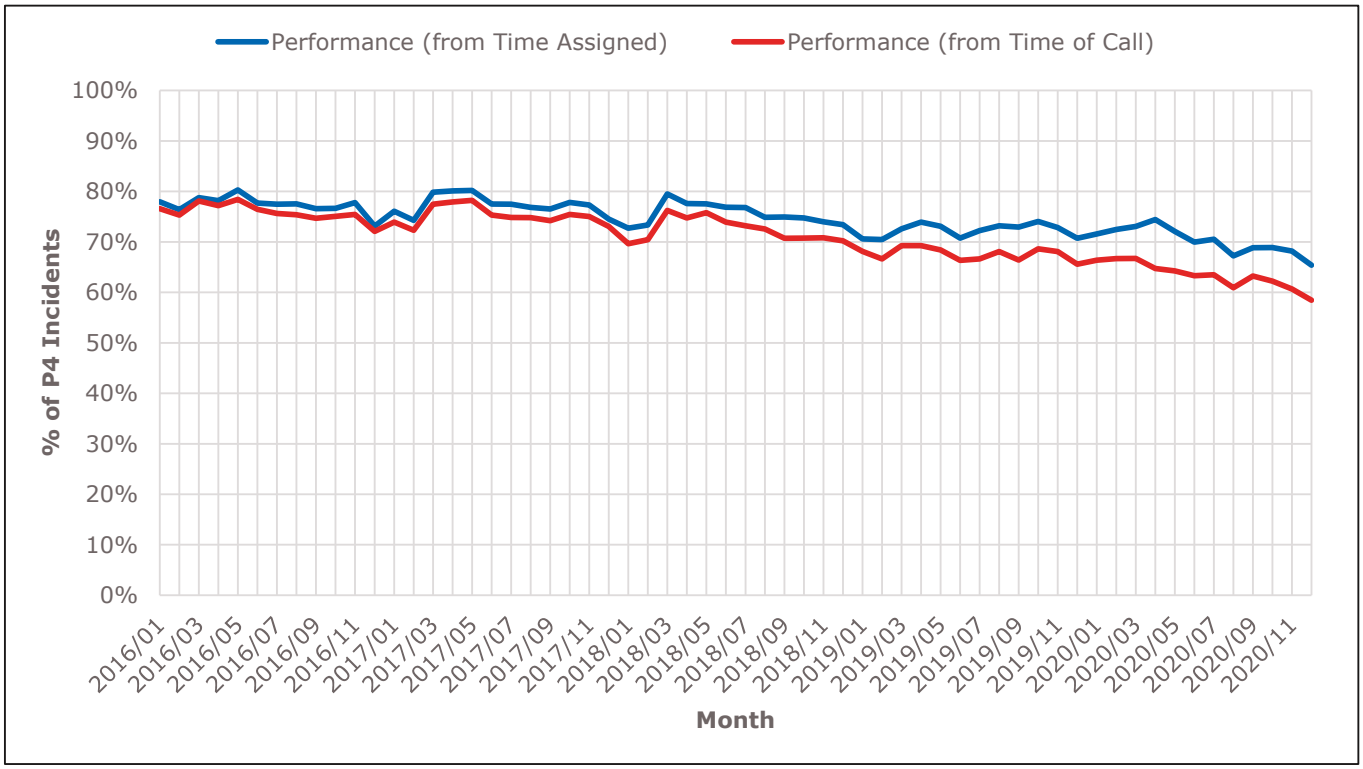

Figure 2-3: Call Components

Component		P3		P4	
		IFT	Non-IFT	IFT	Non-IFT
T0 to T1	T0_TimeZero to T1_CallReceived	14:02	07:15	03:54	01:10
T1 to VA	T1_CallReceived to Vehicle Assign	06:08	02:48	04:00	01:12
T0 to VA	*T0_TimeZero to Vehicle Assign*	*08:49*	*04:30*	*04:58*	*02:22*
VA to VM	Vehicle Assign to Vehicle Mobile	00:29	00:27	00:23	00:24
TTS	Time to Scene	05:33	09:14	03:45	06:20
TAS	Time at Scene	16:46	19:20	19:04	18:31
TTH	Time to Hospital	40:45	11:05	45:32	10:12
TAH	Time at Hospital	23:43	52:38	29:02	52:31
TAH - AtoH	Arrival to Handover	14:39	34:03	18:03	31:15
TAH - HtoC	Handover to Clear	21:33	19:33	29:48	22:32
OCC	Occupied Time	87:27	71:46	93:23	69:17

2.3 P3 and P4 incident categories drove the overall increases, accounting for 77% and 22% of all demand respectively (see Appendix **B1b**). P1 and P2 demand remained at very low, stable levels throughout the sample. While overall 2020 demand did not surpass 2019 levels, this was almost entirely due to initial COVID-19 lockdowns in April and May; by the second half of the year demand by month was generally higher than the same month for the previous year.

2.4 Demand peaked at 11:00 with a total of just under nine incidents per hour (see Appendix **B1c**). During the day period weekdays were busier than weekends, but during the early morning period weekends were busier.

2.5 On average, 127 incidents per day involved transport to hospital during the sample period (see Appendix **B1d**); this means that 78% of incidents were transported to hospital. Lakeridge Health Oshawa was the most frequent hospital destination with an average of 66.8 incidents per day.

Response Performance

2.6 Mandated reporting of response performance to the Ministry of Health (MoH) calculates Region-wide performance from the time the first vehicle is notified until the first vehicle arrival on scene. ORH replicates this calculation, but also presents performance measured from the time the call is answered, to include the processes undertaken in the Central Ambulance Communications Centre (CACC); therefore representing the full patient experience. Targets are set by Canadian Triage Acuity Scale (CTAS) code but not by priority code.

2.7 Across the five-year sample, RDPS were meeting their CTAS performance targets (see Appendix **B2a**) from a Region-wide perspective, although not for every LTM. While targets were met, performance (particularly when measured from call answer time) has been deteriorating since 2016 due to increases in demand and job cycle times outstripping the investment in resources over the last five years (see Figure **2-2**).

2.8 Mean response time to P4 non-IFT incidents is generally quickest in areas with close proximity to stations (see Appendix **B2b**). The areas with longer response times in the map generally have very low demand volumes, although the southern portion of Whitby, where there is considerable demand, does not see such short response times as neighbouring areas. The optimization modelling described in Section 5 aims to propose alternative scenarios to address such gaps in coverage.

Call Components

2.9 ORH calculates each component of the incident cycle separately and analyzes these to understand how they may vary (see Figure **2-3**). Average occupied time for P4 non-IFT calls was around 70 minutes, with time at hospital accounting for 52 minutes of this on average.

Figure 2-4: Weekly Planned Resource Summary

2021 Average Weekly Vehicle Hours

Station	ACP Ambulance	PCP Ambulance	PCP Rapid Response Vehicle	ACP Tactical Response Unit	Total
Ajax	588				588
Beaverton	168				168
Bowmanville	336				336
Courtice	252				252
Oshawa North	588				588
Oshawa South	420	112			532
Pickering	336	84			420
Port Perry	336				336
Sunderland	168		84		252
Uxbridge	252				252
Whitby (HQ)	672	112		168	952
Total	4,116	308	84	168	4,676

Figure 2-5: Utilization by Station

Station	Utilization
Ajax	41.3%
Beaverton	14.8%
Bowmanville	31.5%
Courtice	29.1%
Oshawa North	45.2%
Oshawa South	50.2%
Pickering	35.9%
Port Perry	21.2%
Sunderland	12.8%
Uxbridge	19.0%
Whitby (HQ)	42.0%
Total	**36.2%**

2.10 Between 2016 and 2019 there were increases in P4 non-IFT time at scene (from 17m20s to 18m44s) and time at hospital (from 49m37s to 57m35s). In 2020 time at scene increased further (to 20m32s), while time at hospital decreased (to 52m37s); these are assumed to be outliers relating to COVID-19 (see Appendix **B3a**).

2.11 Examining time at hospital in more detail (see Appendix **B3b**), Lakeridge Health Oshawa had the longest times, followed by Lakeridge Health Ajax and Lakeridge Health Bowmanville.

Resources and Resource Use

2.12 As of 2021 RDPS planned to deploy 4,676 vehicle hours per week (see Figure **2-4**). Of these, 4,116 are Advanced Care Paramedic (ACP) ambulances, 308 are Primary Care Paramedic (PCP) ambulances and 252 are PCP Rapid Response Vehicles (RRVs), including a Tactical Response Unit (TRU).

2.13 Converted to staff hours, this gives 9,100 hours per week. This assumes that an ACP ambulance is staffed by one ACP and one PCP, and a PCP ambulance is staffed by two PCPs. In reality, around 56% of responses by RDPS crews involved an ACP-staffed vehicle (see Appendix **B4a**), demonstrating that RDPS has to deploy some ACP ambulances as PCP ambulances when the planned ACP staff member is unavailable. The level of ACP resourcing remains an aspirational target.

2.14 In evaluating the current use of resources, it is of interest to measure how well front-line resources are utilized. Utilization here is defined as the proportion of a vehicle's planned shift time that is spent responding and dealing with patient care (measured from time mobilized to posting clear). This therefore excludes time spent on rest breaks, returning to base, and other duties such as completing paperwork.

2.15 Overall utilization was 36%, with the profile by hour broadly mirroring the demand profile (see Appendix **B4b**). There was significant variation by station (see Figure **2-5**), with levels highest at Oshawa South (50.2%) and lowest at Sunderland (12.8%).

2.16 Average utilization for the five-year sample increases to 40% when including responses made for coverage purposes only ('standby moves'), however the frequency of standby moves has reduced in the last couple of years due to policy changes. Maps of the most frequent standby moves in 2019 are included in Appendix **B4c**.

2.17 There are currently approximately 256 full-time (FT) and 87 part-time (PT) staff, with a further 25 PT staff in the process of being hired. These front-line staff are supported by 11 operations superintendents, two deputy chiefs and one chief, as well as a logistics team and other support staff.

Figure 2-6: Staff Absences

Absences

Year	Hours	Number of Employees	Average Hours per Employee[(i)]
2016	47,614	220	216.4
2017	44,923	232	193.6
2018	59,880	236	253.7
2019	65,842	244	269.8
2020	72,185	256	282.0

Note: The above absences are inclusive of maternity, paternity and personal leave of absences. Short term sick, long term sick and work injury absences (WSI).
[(i)] This does not mean that every individual was absent for 282 hours in 2020, but is an average across all employees.

Short-term Absences

Year	Hours	Number of Employees	Average Hours per Employee
2016	16,394	220	74.5
2017	16,917	232	72.9
2018	17,691	236	75.0
2019	17,271	244	70.8
2020	17,200	256	67.2

Note: The above absences include only those booked less than four days in advance.

2.18 Absences[3] for FT front-line staff have been increasing since 2016 (except for in 2017) at around 280 hours annually per staff member in 2020 compared to 216 hours annually per staff member in 2016, which reflects the increasing pressures on staff (see Figure **2-6**). Additionally, there are around 17,000 hours lost per year due to short term absences (including sick absences booked less than four days in advance), around 80,000 hours lost per year due to vacation and time in lieu, and also each paramedic is required to complete 48 hours of training per year.

2.19 Comparing the hours lost in 2020 with the total hours FT staff could spend on the road if there were no absences (256 FT staff multiplied by a 42-hour working week), there is an absent rate of 32%. A relief rate of 48% should therefore be accounted for when hiring new staff; that is, to cover all absences for each new FT paramedic, an additional 0.48 full-time equivalent paramedic is also required.

2.20 If the planned deployments for 2021 require 9,100 staff hours per week, this therefore requires 320 full-time equivalent (FTE) staff[4], although not all of these need be actual FT staff. Based on data for 2020, PT staff worked an average of 26.6 hours per week per staff member. Each PT staff is therefore roughly equivalent to 0.6 FT staff (who work a 42-hour week).

Benchmarking

2.21 ORH has compiled an anonymized database of key operational parameters across recent Ontario paramedic service clients (see Appendix **B5a**). The results of this benchmarking can help to identify potential efficiencies for RDPS to target over the next ten years. There were three areas of note identified:

- Activation time[5]: highest for RDPS compared to other services, potentially indicating that dispatchers do not always have crews available for assigning incidents to.
- Mobilization time[6]: quick compared to some other services; at 23 seconds, it is possible that crews are accepting calls but are not necessarily enroute in the sense that their wheels are turning at the point they respond to the dispatcher.

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[3] Inclusive of maternity, paternity and personal leave, as well as short term sick, long term sick and work injury absences.

[4] 9,100 staff hours per week divided by a 42-hour working week, then multiplied by 1.48 to account for the required relief.

[5] The time period from when call details are confirmed and the call becomes available for dispatch to when a dispatcher notifies the chosen crew about the incident.

[6] The time period from when a dispatcher notifies the chosen crew of the incident to when the crew reports that they are enroute to the incident.

Figure 2-7: Building Condition Assessment Summary

Facility Name	Construction Year	Status	Floor Area (sqft)	Brief Summary
Ajax	2004	Region Owned	5,977	In general in **good condition**. Capital and maintenance renewals include the carpet floor cover in the communication room and a study for some cracks in the walls and floors.
Beaverton	2000	Leased Facility	2,528	During the site visit, we were not able to confirm the ownership of this facility. Part of the second level is leased/used as an apartment, to which we had no access. In general the building is **good condition**, except for the roof cover. The roof asphalt shingles are in poor condition, and to minimize potential roof leaks their replacement is recommended with the next two years. On the asphalt paved areas (roadway and parking lot) cracks and differential settlement was observed.
Bowmanville	2000	Leased Facility	2,602	Except for a few potholes in the parking lot, and corrosion on the door metal frames, the building is **good to fair condition.**
Courtice	2010	Region Owned	7,245	Except for some cracks in the exterior walls and slab-on-grade, the building is **good condition.** During interview with on site crew, they complained that the HVAC system is not functioning as intended where it is cold in winter hand hot in summer.
Oshawa North	2014	Region Owned	6,876	In general in **good condition**. Capital and maintenance renewals include corrosion on the door metal frames and carpet floor cover in the communication room.
Oshawa South	2007	Region Owned	4,608	In general in **good condition**. Capital and maintenance renewals include the exterior wall sealant and carpet floor cover in the communication room.
Pickering	2010	Region Owned	6,200	The building is in **good condition**.
Port Perry	1990	Leased Facility	2,600	Overall, the building is **good to fair** condition except for the sheet viny floor finishes in the basement stairways, and corrosion on the door metal frames.
Sunderland	2018	Region Owned	3,000	The building was built in 2018 and overall in **good condition**.
Uxbridge	1990	Leased Facility	2,630	The building is **good to fair condition**.
Whitby & EMS HQ	2005	Region Owned	19,945	Except for the carpet floor cover, and corrosion on the door metal frames, the building is **good to fair condition**.

- Time at hospital[7]: one of the highest compared to other services; while not a directly controllable factor, shortening these could release crew capacity and improve response times.

2.22 It was agreed with RDPS senior management that, while 2019 levels of time spent at hospital would be built into the model, the impacts of reducing offload delays should be tested as part of sensitivity modelling (see Section 8).

2.23 ORH benchmarked the RDPS ratio of team leader (supervisor) staff to front-line staff against UK ambulance services (see Appendix **B5b**)**.** There are 28.3 front-line staff per team leader in RDPS, higher than the UK average of 22.4. It should be noted that these are ratios at which services currently operate, rather than aspirational or optimal ratios to ensure effective operation of the team leader role.

Facilities

2.24 As part of the review, ORH sub-contracted Roth IAMS Limited to conduct Building Condition Assessments (BCAs) for each of RDPS' 11 stations. These BCAs were performed in accordance with the requirements of the ASTM Standard E2018-15 (Standard Guide for Property Condition Assessments) and components were classified using ASTM Standard E1557 (Standard Classification for Building Elements and Related Sitework).

2.25 For each element assessed, Roth IAMS were able to make recommendations regarding the requirements for either an engineering study (to diagnose an issue that could not be determined based on visual assessment only), a major repair or replacement, and/or a lifecycle replacement. Full BCA reports have been provided separately and include details such as site photographs, element overall condition (from very good to very poor), expected costs[8] and useful life.

2.26 Element conditions were also updated directly in the Region's AssetPlanner software.

2.27 A high-level summary is provided in Figure **2-7**.

[7] The time period from a crew arriving at hospital to when they indicated that they are ready for the next call.

[8] Roth IAMS' internal estimated unit cost document, using standard cost guides, regional factors and experience, as well as client-specific pricing as available.

Figure 3-1: Summary of Population Data

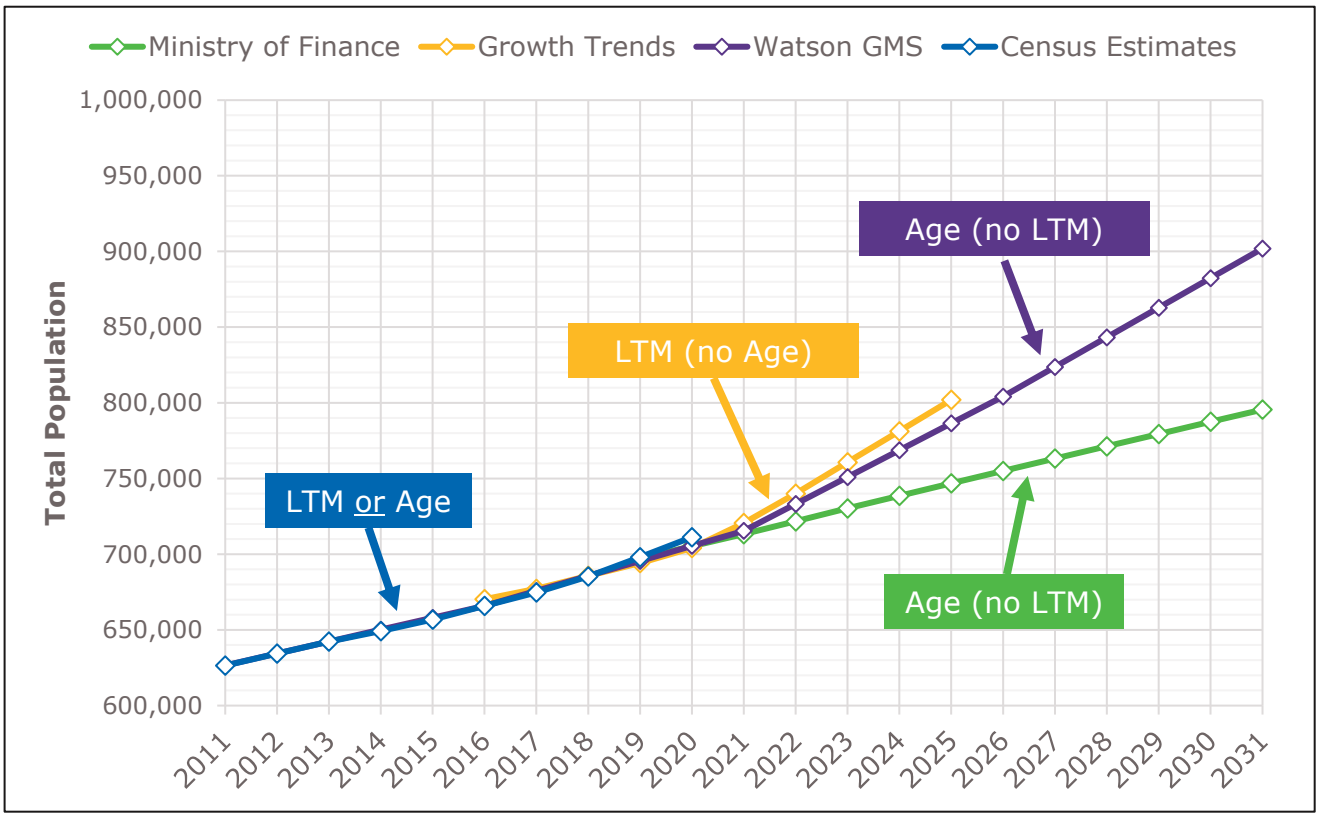
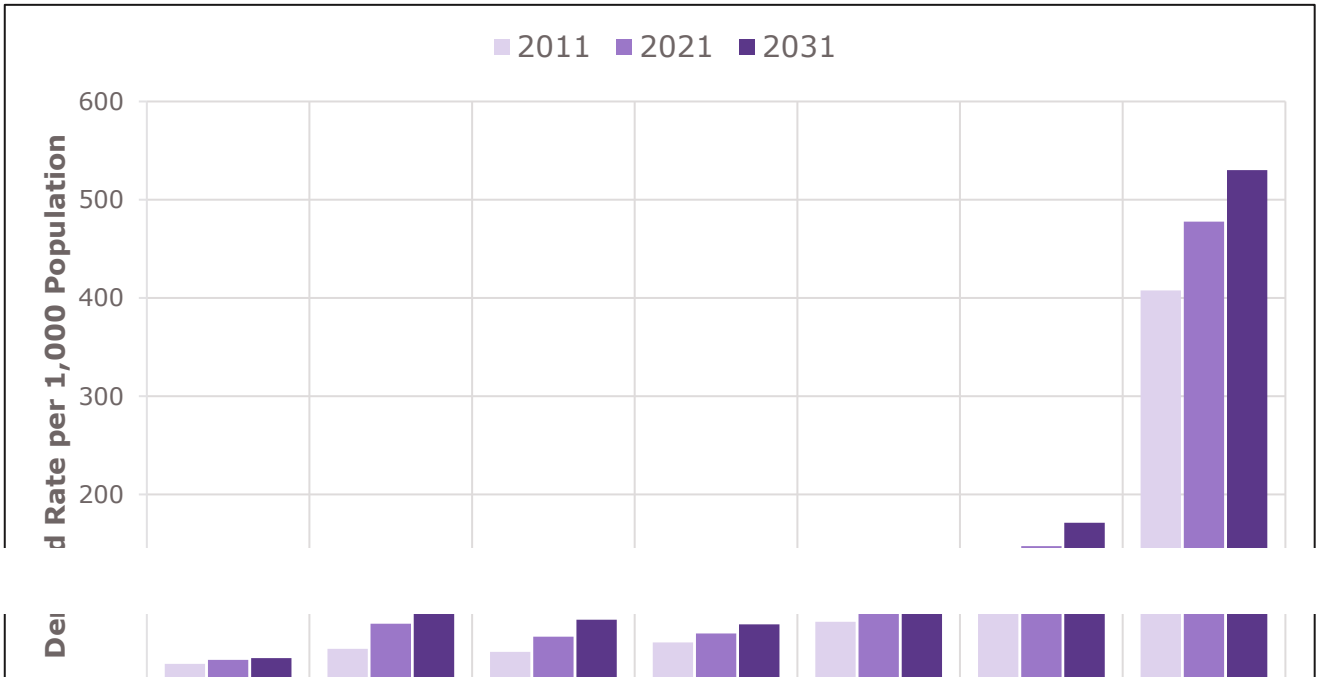


Figure 3-2: Demand Rates by Age Group



3 DEMAND PROJECTIONS

ORH estimated demand in yearly intervals from 2021 to 2031 to inform the demand levels for the ten-year plan. The underlying hypothesis of the method used is that demand is strongly related to the population age profile.

Total population by 2031 is projected to be between 800,000 (lower bound) and 900,000 (upper bound), compared to 666,000 in 2016. Those aged 65 and over accounted for 14% of the population in 2016, increasing to 20% by 2031. There is a clear correlation between age and demand, with the older age groups generating the most incidents.

The predicted increasing and ageing in population, coupled with increasing demand rates across all age groups, suggests that demand on RDPS will continue to increase significantly to 2031. P3 and P4 demand in Durham is expected to increase by 63% (or 49% under the lower bound) between 2021 and 2031, which equates to a 5% increase year-on-year.

Key development areas in Oshawa, Pickering and Whitby were also incorporated into the projections.

Methodology

3.1 ORH estimated demand in yearly intervals from 2021 to 2031 to inform the demand levels for the ten-year plan. The approach used in this review is based on the methodology presented in the La Trobe report 'Factors in Ambulance Demand: Options for Funding and Forecasting' (Livingstone 2007).

3.2 Their 'Method 4', which uses age and gender distribution trends to forecast future growth, was considered by the authors to produce the best results. The underlying hypothesis is that demand is strongly related to the population age profile. There is an underlying trend for increased demand in all age groups due to unquantifiable factors such as the overall level of health provision, public expectation, etc, which, it is assumed, will continue into the foreseeable future.

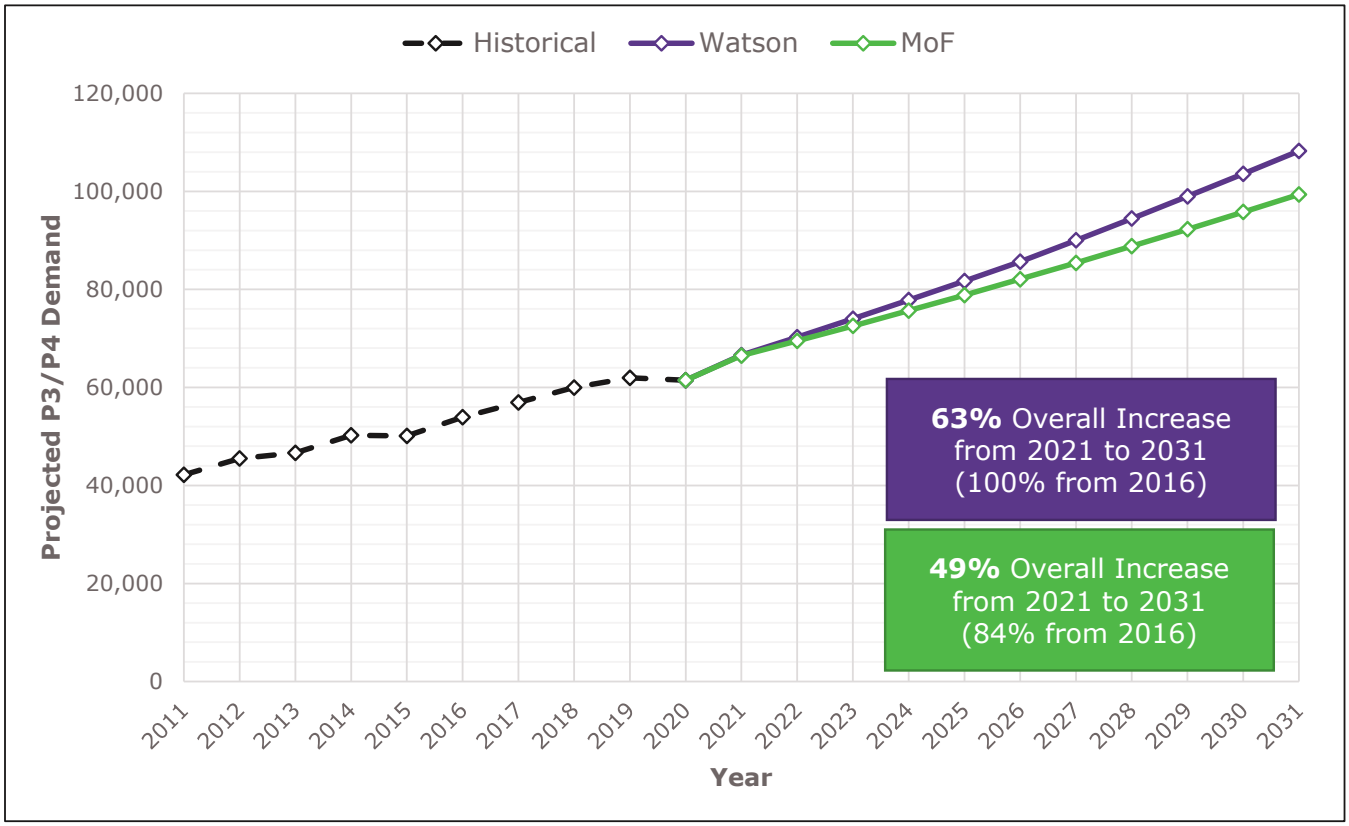
3.3 An overview of the approach taken is provided in Appendix **C1**.

Population

3.4 Population data by year, age and LTM for each year from 2011 to 2031 inclusive was required in order to calculate the demand projections.

3.5 ORH was provided with several datasets regarding the historical and projected population of Durham (see Figure **3-1**); no single dataset contained every

Figure 3-3: Demand Projection



Responded P3/P4 Incident Demand by LTM

LTM	2011	2021	2031
Ajax	5,629	9,145	15,416
Brock	541	958	1,614
Clarington	4,978	8,141	13,781
Oshawa	15,329	25,431	40,865
Pickering	5,045	7,248	13,293
Scugog	1,648	2,682	3,946
Uxbridge	1,147	1,756	2,589
Whitby	7,847	11,214	16,745
Durham	**42,163**	**66,574**	**108,249**

Annual Increase %

2011 to 2021	2021 to 2031
5.0%	5.4%
5.9%	5.4%
5.0%	5.4%
5.2%	4.9%
3.7%	6.3%
5.0%	3.9%
4.4%	4.0%
3.6%	4.1%
4.7%	**5.0%**

element required, so they were combined to give age profiles for every LTM for each year. Given the differences in projected 2031 population between the Ministry of Finance data (c. 800,000) and the Watson Growth Management Study (c. 900,000), it was agreed that these would form lower and upper bounds for the projections.

3.6 Population in 2016 was around 666,000 across Durham (see Appendix **C2a**); Oshawa accounted for the highest proportion of the total population (25%), and Brock the lowest (2%). Those aged 65 and over accounted for 14% of the population. By 2031, under both the upper and lower bound scenarios (see Appendix **C2b**), this proportion is expected to increase to 20%.

Demand

3.7 Demand data by year, age and LTM was also required in order to calculate the demand projections for each year from 2011 to 2020 inclusive.

3.8 There is a clear correlation between age and demand, with the older age groups generating the most incidents. In 2019, demand generated by those aged 75 years or older accounted for 34% of all P3 and P4 demand (compared to this age group accounting for 6% of the total population).

3.9 As a result, demand rates per 1,000 population are substantially higher for the '75+' age group than for other age groups. Demand rates in each age group increased between 2011 and 2021, and are therefore predicted to increase again between 2021 and 2031 (see Figure **3-2**).

3.10 The predicted increasing and ageing in population, coupled with increasing demand rates across all age groups, suggests that demand on RDPS will continue to increase significantly to 2031. Although there was a slight dip in the number of incidents RDPS responded to in 2020 due to COVID-19, this is not expected to impact the onward projections.

3.11 P3 and P4 demand in Durham is expected to increase by 63% (or 49% under the lower bound) between 2021 and 2031, from 182 incidents per day to 297 (or 272) incidents per day (see Figure **3-3**). This equates to a 5% increase year-on-year Region-wide. There is not huge variation between the LTMs, although Pickering is set to see the largest increase at 6.3% per year, and Scugog is set to see the smallest increase at 3.9% per year. It is assumed that P1 and P2 demand will remain stable at analyzed levels.

3.12 In discussion with the Region and municipal planning departments, four significant developments in currently greenfield areas were identified that are expected to generate more than one incident per day by 2031: Brooklin (Whitby), Columbus and Kedron (Oshawa) and Seaton (Pickering). The estimated 2031 population and residential unit locations were provided to ORH, converted into anticipated demand (see Appendix **C3**) and incorporated into the projections.

Figure 4-1: 2021 Base Performance

Modelled 2021 Position

LTM	P4 Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	75.1%	91.1%	99.3%	06:25	09:36
BROCK	49.8%	57.8%	81.7%	09:43	18:00
CLARINGTON	64.0%	77.3%	92.6%	07:45	13:30
OSHAWA	81.0%	91.9%	98.5%	06:07	09:26
PICKERING	72.4%	87.2%	98.1%	06:52	10:09
SCUGOG	55.7%	64.5%	86.4%	08:42	16:08
UXBRIDGE	57.4%	66.3%	87.4%	08:49	15:59
WHITBY	66.7%	85.6%	97.8%	07:13	10:56
Overall	**72.2%**	**85.8%**	**96.6%**	**06:55**	**11:12**

Difference to 2016 Position

LTM	P4 Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-2.1%	-0.1%	0.5%	00:02	-00:12
BROCK	8.4%	10.7%	12.9%	-01:44	-01:00
CLARINGTON	-5.8%	-4.4%	-1.4%	00:32	00:44
OSHAWA	-7.4%	-4.1%	-0.8%	00:38	01:11
PICKERING	-4.3%	-2.1%	0.0%	00:20	-00:02
SCUGOG	-3.7%	-4.1%	-0.6%	00:27	00:05
UXBRIDGE	-4.5%	-3.9%	-2.7%	00:21	00:59
WHITBY	0.3%	-1.6%	-0.7%	00:03	00:24
Overall	**-4.0%**	**-2.3%**	**-0.1%**	**00:19**	**00:33**

4 BASE POSITION FOR MODELLING

Simulation Model Setup

4.1 ORH has developed a sophisticated simulation model, AmbSim (see Appendix **D1**), for modelling the operations of paramedic services. AmbSim is a discrete event simulation model that replicates the key characteristics of an emergency ambulance service and can be used to predict future behaviour under a variety of different scenarios.

4.2 AmbSim takes account of the actual geographical and temporal distributions of demand and resources, and incorporates travel times between locations. It reports operational performance in terms of response times, vehicle workload and utilization, and patient flows.

4.3 A virtual replica of RDPS operations was created within AmbSim by populating inputs using parameters derived from the analysis presented in Section 2. In addition to this data, ORH developed a detailed travel time model of the Region using commercially available data calibrated against information on journey times from activity data and Automatic Vehicle Location (AVL) data.

4.4 The model was validated by comparing a wide range of outputs from the model, such as response performance, vehicle workload (utilization) and hospital workload, to the corresponding analyzed figures for these factors based on actual data (see an example in Appendix **D2**). The comparison of outputs, including others not listed here, showed that the model replicated historical operations accurately and therefore was appropriate to use for different 'what if' modelling scenarios.

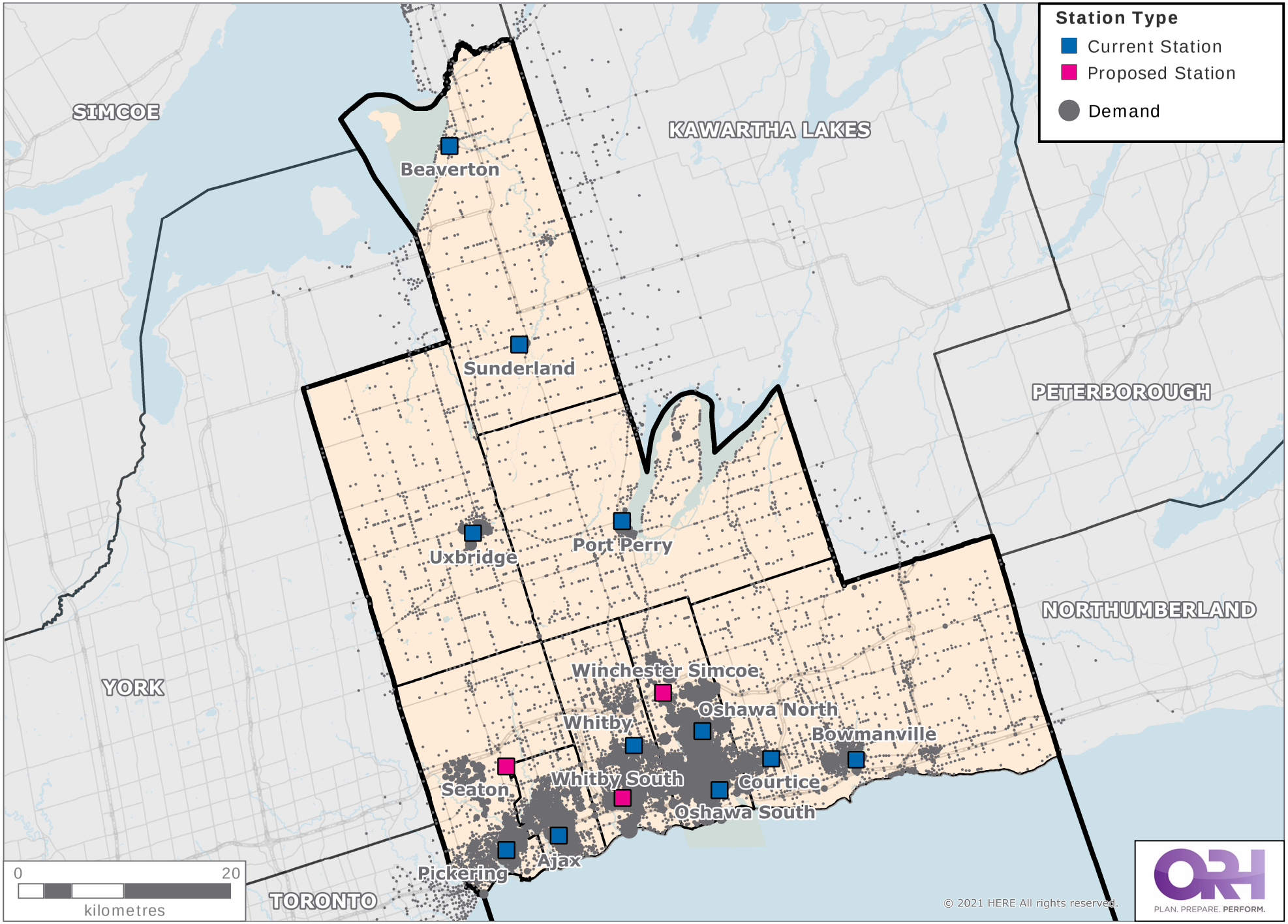
Base Position

4.5 The model was initially set up to reflect RDPS operations during the 2016 to 2019 sample period to provide a robust sample for model validation; however, it was then possible to switch to a more up-to-date Base Position for 2021.

4.6 In line with projections, demand was uplifted slightly in the model and the vehicle shift pattern was updated to reflect the latest 2021 position. No other model parameters were changed as it was assumed that these would remain at analyzed levels, although variations to this assumption have been tested through sensitivity modelling in Section 8.

4.7 In the Base Position, P4 8-minute response performance, when measured from time assigned, was 72.2% (see Figure **4-1**); this is 4 percentage points lower than analyzed performance from 2016. Oshawa sees the largest fall in P4 8-minute performance compared to 2016; a fall of 7.4 percentage points. Brock performance improves due to the Sunderland station opening post-2016. Mean response time to P4 non-IFT incidents is mapped in Appendix **D3**.

Figure 5-1: Recommended Station Configuration



5 STATION LOCATION OPTIMIZATION

5.1 ORH's location optimization model OGRE (Optimizing by Genetic Resource Evolution) was used to assess the configuration of existing station locations and identify how this could be improved currently and in the future. The model uses a genetic algorithm that evaluates large numbers of potential configurations, resulting in an optimal solution (see Appendix **E1**).

5.2 The location optimization criteria used in all cases was to minimize the mean response time to P4 non-IFT incidents. Only travel time to incidents is accounted for in the optimization process; the exact impact of changing resource deployments within a changed station configuration is fully evaluated by simulation modelling (see Section 6).

5.3 A series of blank canvas optimization runs were modelled, which indicated that existing stations were generally well located; that is, the optimal sites were found close to existing stations. Blank canvas modelling identifies ideal locations and takes no account of current station locations or other constraints.

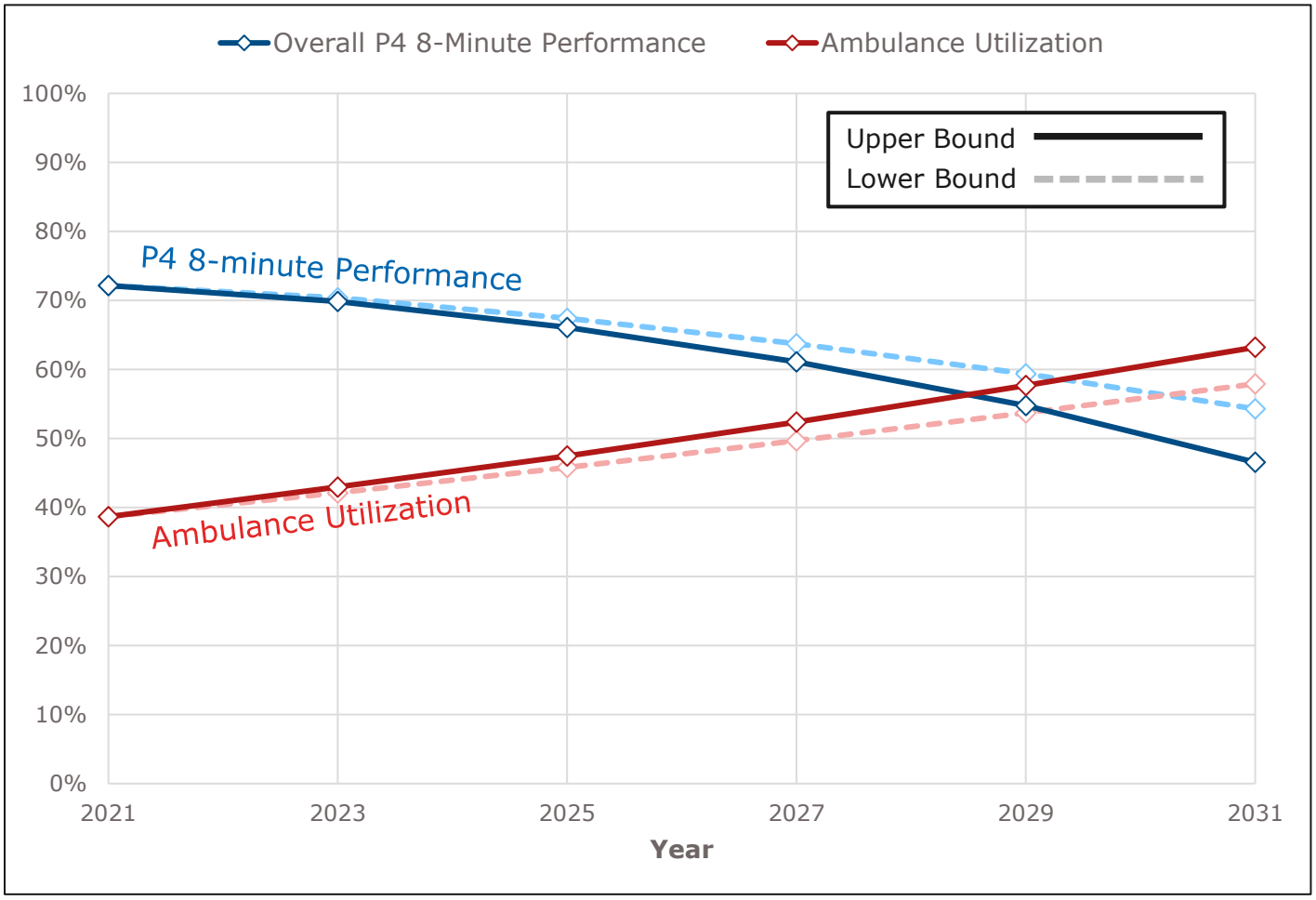
5.4 However, opportunities for improving coverage were identified in south Whitby, north Ajax/Pickering and north Oshawa. Additional targeted optimization was then undertaken to look for sites in these areas, taking account of anticipated development demand.

5.5 The recommended future station configuration (see Figure **5-1**) therefore includes three new stations: at 632 Dundas Street West ('Whitby South'), Concession Road 5 and Sideline 16 Road ('Seaton'), and Simcoe Street North and Winchester Road East ('Winchester/Simcoe'). The proposed Whitby South and Seaton locations are slightly different from their exact optimal locations; this is to take account of the potential for available land.

5.6 Optimal sites were also identified for Port Perry and Uxbridge stations (see Appendices **E2a** and **E2b** respectively); these are close to the current sites and would not offer significantly improved response performance, so were not built into the recommended station configuration. However, these stations are leased, were built in 1990, and were identified as in 'good to fair' condition by the facility assessments (whereas the majority of other stations were identified as 'good' condition), and therefore RDPS may wish to re-locate them in the future.

5.7 In projecting the station changes required for the next ten years, there will be uncertainty in the exact locations for new station sites. This will depend on available land and other planning and logistical considerations which will have to be assessed nearer the year scheduled for the change. 'Site search' maps were therefore generated for each of the optimal sites mentioned above (see Appendix **E3**). Around the optimal locations, good siting areas are shown in red, and 'poor' areas (in a relative sense compared with optimal) in dark blue, with a graduation between good and poor.

Figure 6-1: 'Do Nothing' Trajectory



6 IDENTIFYING FUTURE RESOURCE REQUIREMENTS

A 2031 'Do Nothing' position was modelled to quantify the impact of demand increases assuming no other operational changes. Under the upper bound projection, Region-wide P4 8-minute response performance degrades by 29.6 percentage points, from 72.2% in the 2021 Base Position to 46.6% in 2031, and ambulance utilization is projected to increase to 63%. Average response times would increase by four minutes.

A performance target was set to maintain 2016 performance in every LTM. In the upper bound scenario this was achieved by adding 4,368 front-line staff hours per week above the 2021 Base Position, making a total of 13,468 per week by 2031; this represents a 48% increase in hours from 2021 to 2031 compared to a 63% increase in demand. This would require a total of 474 FTE staff, an increase of 154 above the Base Position.

Under the lower bound scenario, this reduces to 130 additional FTE staff.

In the upper bound scenario RDPS will need an additional 15 physical vehicles by 2031, plus spares (reducing to 14 in the lower bound scenario).

To achieve a ratio of 22:1 supervisors to front-line staff, the number of supervisors would increase from 11 to 14 based on current front-line staff, and to 21 or 22 by 2031 based on the upper bound scenario. It is recommended that operating hours for the logistics department are extended, and that a new commander layer be introduced between the deputy chiefs and supervisors, to increase support for both senior management and front-line staff.

'Do Nothing' Scenario

6.1 To provide meaningful context for future resource recommendations, it was important to create a 'Do Nothing' position through to 2031. The core demand projections of between 3.7% and 5.0% average increases per annum (incorporating the new development locations) were applied to the Base Position, and no other operational changes were made.

6.2 Under the upper bound projection, Region-wide P4 8-minute response performance degrades by 29.6 percentage points, from 72.2% in the 2021 Base Position to 46.6% in 2031, and ambulance utilization is projected to increase to 63% (see Figure **6-1**). Modelling two-year intervals between 2021 and 2031 showed similar reductions in performance year-on-year, although the performance decreases become larger as demand pressures build.

Figure 6-2: Maintain 2016 Performance by LTM

Modelled 2031 Position

LTM	P4 Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.0%	95.3%	99.8%	05:45	08:43
BROCK	48.7%	56.5%	81.0%	09:50	18:18
CLARINGTON	69.6%	81.6%	94.7%	07:05	12:13
OSHAWA	85.9%	94.9%	99.4%	05:35	08:35
PICKERING	76.5%	90.6%	99.1%	06:20	09:06
SCUGOG	61.1%	69.2%	88.3%	07:59	15:36
UXBRIDGE	67.0%	74.7%	92.4%	07:27	13:52
WHITBY	86.4%	94.8%	99.1%	05:32	08:51
Overall	**80.0%**	**90.3%**	**97.7%**	**06:10**	**09:51**

Difference to 2016 Position

LTM	P4 Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	4.7%	4.1%	1.0%	-00:38	-01:05
BROCK	7.3%	9.4%	12.2%	-01:37	-00:42
CLARINGTON	-0.2%	-0.2%	0.6%	-00:08	-00:33
OSHAWA	-2.6%	-1.1%	0.0%	00:06	00:19
PICKERING	-0.2%	1.3%	1.0%	-00:12	-01:04
SCUGOG	1.6%	0.6%	1.3%	-00:16	-00:27
UXBRIDGE	5.1%	4.6%	2.3%	-01:01	-01:08
WHITBY	20.1%	7.6%	0.6%	-01:38	-01:41
Overall	**3.8%**	**2.3%**	**1.0%**	**-00:26**	**-00:48**

Figure 6-3: Comparison of Staff Hours

Average Weekly Vehicle Hours

Station	2021 Base		2031 Position		Difference
	Amb.	RRV	Amb.	RRV	Ambulance
Ajax	588		756		168
Beaverton	168		168		
Bowmanville	336		588		252
Courtice	252		336		84
Oshawa North	588		1,008		420
Oshawa South	532		700		168
Pickering	420		588		168
Port Perry	336		420		84
Sunderland	168	84	168	84	
Uxbridge	252		420		168
Whitby (HQ)	784	168	616	168	-168
Seaton			168		168
Whitby South			336		336
Winchester Simcoe			336		336
Overall	**4,424**	**252**	**6,608**	**252**	**2,184**

Staff Hours	9,100	13,468	4,368
FTE Staffing (inc. 47.7% relief)	320	474	154
FT Positions	271	401	130

6.3 Average response times would increase by four minutes, and every LTM would see an increase of six minutes or more to 90th percentile response times (see Appendix **F1**).

Maintaining 2016 Performance

6.4 To offset the projected demand increases and negative impacts on response performance outlined in the previous sub-section, RDPS will need to deploy additional resources by 2031, even with the new stations identified in Section 5[9].

6.5 A performance target was set to maintain 2016 performance in every LTM, assuming that the three new recommended stations were in operation. In achieving this, Region-wide P4 8-minute response performance improves by 3.8% compared to 2016 (see Figure **6-2**). This is in part due to the use of 12-hour shifts; in some areas perhaps only a 6-hour shift would technically be required to maintain performance, but this cannot be realistically deployed.

6.6 Whitby performance improves significantly due to the introduction of the Whitby South station; this is now more in line with the other lakeshore corridor LTMs. Oshawa performance is slightly lower than 2016 levels due to capacity issues at Oshawa South station; there is no space for additional resources where they would ideally go, although this scenario has assumed that one more shift is added here. However, as this is a top performing LTM, it was not deemed crucial.

6.7 Modelled P4 average (mean) response time was mapped, showing the level of performance that could be expected in different geographical areas (see Appendix **F2a**). Comparing this with Appendix **D3** (the same map for the 2021 Base Position) illustrates the detailed geographical response performance improvements; there are more areas of blue and green and fewer areas of yellow and red.

6.8 Target performance was achieved by adding 4,368 staff hours per week to the 2021 Base Position, for a total of 13,468 per week (see Figure **6-3**); this represents a 48% increase in hours. Using the same calculation described in Section 2, this would require a total of 474 FTE staff, an increase of 154 above the Base Position. RDPS typically hires five FT staff per 12-hour 7-day ambulance shift, which equates to 130 additional FT staff, with the remaining 24 FTE staff positions being covered by PT staff.

6.9 Vehicle utilization for P1 to P4 incidents would be around 3% higher than the Base Position (equivalent to 0.3 additional jobs per shift), but standby moves would be reduced given that vehicles are more optimally located.

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[9] The impact of using only the current station configuration, with additional resources, is examined through sensitivity modelling in Section 8.

6.10 The peak deployment at each station increases (see Appendix **F2b**) from a total of 31 in the Base Position to 46. This represents the minimum physical vehicles required to have all day shifts (or night shifts) on the road at the same time. Therefore, at a minimum, RDPS will need an additional 15 physical vehicles by 2031 plus spares.

6.11 Under the lower bound scenario with the same performance targets applied, Region-wide P4 8-minute response performance improves by 4.1% compared to 2016 (see Appendix **F3a**).

6.12 The was achieved by adding 3,696 staff hours per week to the 2021 Base Position, for a total of 12,796 per week (see Appendix **F3b**); this represents a 41% increase in staff hours. This would require a total of 450 FTE staff, an increase of 130 above the Base Position and 24 fewer than the upper bound scenario.

6.13 For the lower bound scenario, peak deployments increase from 31 in the Base Position to 45 (see Appendix **F3c**). Therefore, RDPS would need an additional 14 physical vehicles by 2031 plus spares.

Support Services

Supervisors

6.14 The overall ratio of team leaders (supervisors) to front-line staff in RDPS is higher than the average for UK services, at 28.3 front-line staff per team leader (see Section 2).

6.15 This figure represents total employed staff and does not reflect temporal or geographical variation. RDPS roster three supervisors in the day and two at night; ORH attended 'town hall' events for RDPS front-line and support staff, and a common finding was that the level of supervisors at night was not adequate. This is often exacerbated as other support services such as logistics and scheduling do not operate during the night, leading to an increased scope of operation for supervisors.

6.16 It is therefore suggested that the level of supervisors is increased to a 22:1 ratio, which is in line with aspirational ratios within other Ontario services. Increased operating hours for logistics would also help to reduce the workload for supervisor staff (see 'Logistics').

6.17 Using the 22:1 ratio RDPS would need 14 supervisors, compared to the current 11, which should allow for four in the day and two at night, or three in the day and three at night. A total of 474 FTE front-line staff are recommended in order to maintain performance in 2031; to continue to maintain the 22:1 ratio, a total of 21 or 22 supervisors would be required.

Logistics

6.18 The logistics role currently operates from 07:00 to 16:30 Monday through Friday. Following consultation with RDPS senior management and front-line staff, it is suggested that these operating hours are increased (either by moving to a seven-day week or extending hours on weekdays). This would help improve logistics efficiency and increase capacity given future increases in fleet.

Management Structure

6.19 It was noted that other comparable Ontario services either have an additional level of staff between deputy chiefs and management staff ('commanders'), or have more than two deputy chiefs. Following consultation with senior management, it is suggested that RDPS introduce a commander layer to increase support for both senior management and front-line staff. It is envisaged that this would include four roles:

- Operations
- Operational support
- Education
- Community programs and emergency management

6.20 A key theme from the town hall events was that of staff morale and welfare, which is aligned with the increase in sickness levels observed. Given its impact on the effective operation of the service, this area should be focused on by RDPS, and changes to the management structure could provide the opportunity to include a portfolio with a focus on staff welfare.

Figure 7-1: Phasing Summary

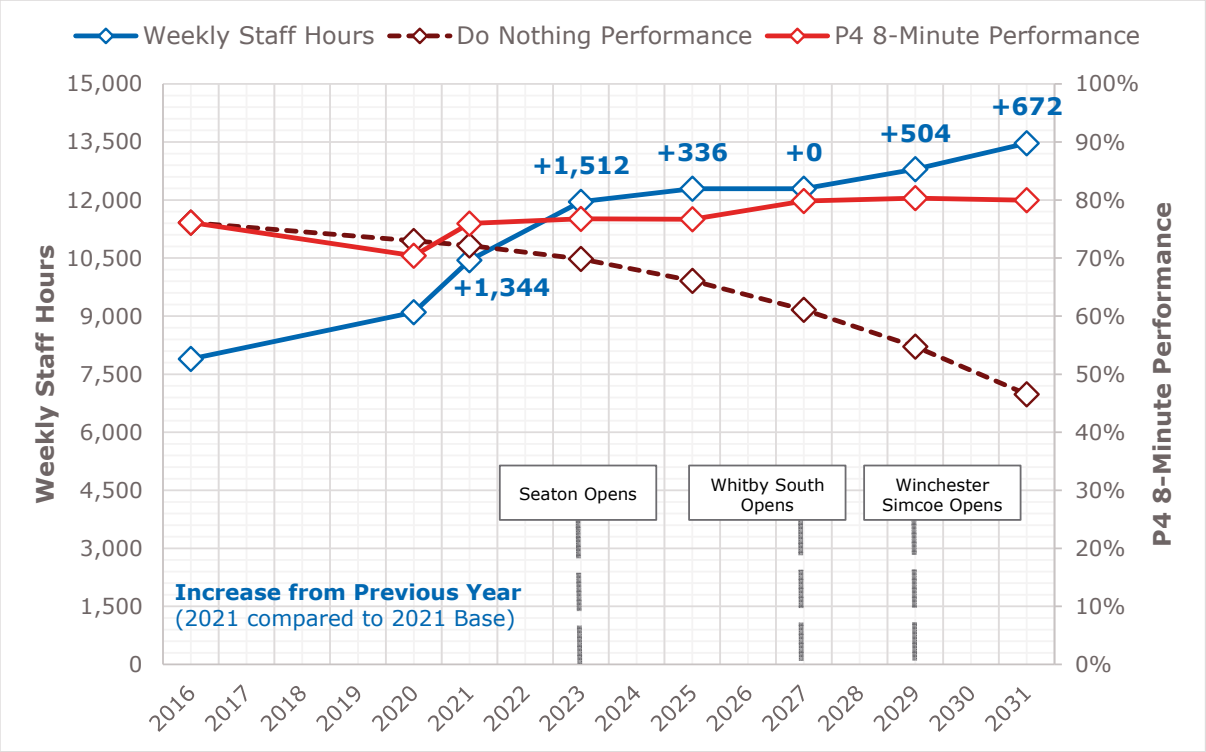


Figure 7-2: Phased Staffing Requirements

Scenario	Staff Hours		Full Time Equivalent Staffing		FT Positions	
	Overall	Difference from Previous	Overall	Difference from Previous	Overall	Difference from Previous
Current	9,100	-	320	-	271	-
2021	10,444	1,344	367	47	311	40
2023	11,956	1,512	420	53	356	45
2025	12,292	336	432	12	366	10
2027	12,292	0	432	0	366	0
2029	12,796	504	450	18	381	15
2031	13,468	672	474	24	401	20
Overall (Current to 2031)	13,468	4,368	474	154	401	130

7 KEY RECOMMENDATIONS

7.1 The recommended station configuration and additional operational resource requirements are planned to be phased in two-year intervals over the ten-year period (see Figure **7-1**).

7.2 This phasing approach aims to be mindful of a sensible construction schedule and to stagger resource changes so that the financial impacts are as evenly spread across the 10 years as possible, while also balancing the need to maintain performance by LTM in each two-year interval. However, there is an initial need to address the deterioration in performance that has occurred since 2016. There are more resource hours added in the earlier years than in the later years; this is because fewer additional resources are needed to maintain performance as the station configuration changes come into effect.

7.3 An alternative phasing option with an even staggering of resource hours is discussed in Section 8, although this would mean that some years do not maintain 2016 performance in every LTM.

7.4 Under both phasing options it is recommended that Seaton opens in 2023 (as work to build this station is already underway), Whitby South opens in 2027 (or as soon as is feasibly possible), and Winchester/Simcoe opens in 2029.

7.5 A conversion of the recommended staff hours, an additional 4,368 by 2031, to FTE staffing and FT positions is given in Figure **7-2** for each two-year interval.

7.6 As discussed in Section 6, several support services changes are also recommended:

- Increase the number of supervisors from 11 to 14 based on current front-line staff to achieve a 22:1 ratio, and to 21 or 22 by 2031 based on the upper bound scenario.
- Extend operating hours for the logistics department.
- Introduce a new commander layer between the deputy chiefs and supervisors, to increase support for both senior management and front-line staff.

7.7 RDPS will need to monitor demand and performance over the next ten years and make alterations to the phasing if appropriate.

Figure 8-1: Sensitivity Modelling Scenario Impacts

Overall Response Performance

Scenario		P4 Performance				
		8-Minute	10-Minute	15-Minute	Average	90th Percentile
2031 Final Position		80.0%	90.3%	97.7%	06:10	09:51
Remove Whitby South & Winchester/Simcoe (G1)		75.4%	88.0%	97.4%	06:32	10:30
Alternative Oshawa Scenarios (G2)	Optimal Downtown Site	81.9%	90.9%	97.7%	05:55	09:40
	Redistributing Oshawa South Additional Resource - Winchester/Simcoe	79.7%	90.2%	97.7%	06:12	09:57
	Redistributing Oshawa South Additional Resource - Oshawa North	79.7%	90.2%	97.7%	06:11	09:57
	Redistributing Oshawa North Additional Resources	80.4%	90.6%	97.7%	06:08	09:45
Alternative Performance Scenarios (G3)	Maintain Overall Performance	76.5%	87.8%	96.9%	06:31	10:41
	Maintain LTM Performance with 8-/10-hour	79.9%	90.3%	97.7%	06:11	09:51
Time at Hospital (G5)	Reduction: Maintaining 2016 Levels	81.0%	91.1%	97.9%	06:05	09:34
	Reduction: No Offload Delays (max of 40 minutes)	82.5%	92.0%	98.1%	05:57	09:18
	Increase: Equivalent to 2016 to 2019 Increase	78.2%	89.1%	97.3%	06:20	10:19
	Increase: Equivalent to Double 2016 to 2019 Increase	76.2%	87.5%	96.8%	06:33	10:52
Call Diversion (G6)		80.7%	91.0%	97.9%	06:07	09:40
Treat and Release (G7)		81.2%	91.2%	97.9%	06:04	09:34

8 SENSITIVITY MODELLING SCENARIOS

Sensitivity modelling was also undertaken to test assumptions about parameters incorporated into the core modelling scenarios, including:

- Not building the recommended new stations
- Alternative Oshawa scenarios, given the capacity issues at Oshawa South
- Alternative performance scenarios
- An alternate phasing strategy
- Time at hospital variation
- Introducing call diversion
- Introducing treat and release

Figure **8-1** summarizes the overall response performance impacts for each scenario (although some scenarios will have more significant LTM-specific impacts).

Removing Whitby South and Winchester/Simcoe

8.1 Three new stations are recommended to be built by 2031: Whitby South, Seaton and Winchester/Simcoe.

8.2 To emphasise the impact of building these stations, the final 2031 scenario was re-run without these locations and with their resources moved to alternative locations (Whitby South to Whitby HQ and Winchester/Simcoe to Oshawa North). Seaton was not excluded because building of this site is already underway so this will be realised within the next ten years.

8.3 With Whitby South and Winchester/Simcoe removed, overall P4 8-minute response performance would fall by 4.6 percentage points (see Appendix **G1**). P4 8-minute response performance in Whitby falls considerably, by 18.5 percentage points.

Alternative Oshawa Scenarios

8.4 Given the capacity issues in Oshawa South, several options for redistributing resources in this area were tested. If expansion of Oshawa South was possible, then these options would not be necessary.

8.5 Firstly, ORH's location optimization model was used to identify an additional optimal site in the Oshawa area: this was located in the downtown area. The additional shifts recommended at Oshawa South (09:00 to 21:00 and 21:00 to

09:00) were moved to this location, along with two of the additional shifts recommended at Oshawa North (06:00 to 18:00 and 18:00 to 06:00). This would improve P4 8-minute response performance by 1.9 percentage points overall and by 4.5 percentage points in Oshawa (see Appendix **G2a**).

8.6 If the additional shifts recommended at Oshawa South were instead deployed to Winchester/Simcoe (Appendix **G2b-i**) or to Oshawa North (Appendix **G2b-ii**) then P4 8-minute response performance would fall by 0.7 percentage points and 0.5 percentage points respectively.

8.7 Only one additional 24-hour ambulance (two 12-hour shifts) was added to Oshawa South because of capacity issues, and other resources required in Oshawa had to be added to either Oshawa North or Winchester/Simcoe. If all the additional shifts that were deployed to Oshawa North were instead deployed to Oshawa South, P4 8-minute response performance would improve by 0.9 percentage points (see Appendix **G2c**).

Alternative Performance Scenarios

8.8 An alternative target for 2031 was set to maintain 2016 performance Region-wide only, therefore accepting that performance may degrade in certain LTMs. This therefore represents a 'best bang for the buck' scenario to maintain overall performance (see Appendix **G3a**).

8.9 Overall, P4 8-minute performance would be 3.4 percentage points worse than the final 2031 scenario, although this is around 2016 levels. All LTMs have worse performance than the final scenario and four LTMs also have worse performance than 2016: Clarington, Oshawa, Scugog and Uxbridge.

8.10 The target was achieved by adding 3,192 staff hours per week to the 2021 Base Position, for a total of 12,292 per week; this represents a 35% increase in staff hours. This would require a total of 432 FTE staff, an increase of 112 above the Base Position and 41 fewer than the maintaining performance by LTM scenario.

8.11 The maintaining performance by LTM scenario assumed that all new shifts would be 12 hours in length, as these are mostly used currently and are generally most palatable to staff. An alternative maintain performance scenario was modelled assuming that some 8- and 10-hour shifts could be used (see Appendix **G3b**).

8.12 As a result, response performance was reduced slightly in Brock, Scugog and Uxbridge. This scenario involved adding 4,172 staff hours per week to the 2021 Base Position, for a total of 13,272 hours per week; this represents a 46% increase in staff hours. This would require a total of 467 FTE staff, an increase of 147 above the Base Position and seven fewer than the maintaining performance by LTM scenario.

Alternate Phasing

8.13 The phasing recommended in Section 7 focuses on ensuring that 2016 performance is maintained by LTM in every two-year interval. As there is an initial need to address the deterioration in performance that has occurred since 2016, this results in more resource hours being added in the earlier years than in the later years.

8.14 An alternative phasing strategy has been modelled with an even staggering of resource hours (see Appendix **G4**), although this would mean that some years do not maintain 2016 performance in every LTM. Compared with the recommended phasing, P4 8-minute performance would decrease by more than one percentage point for:

- Brock, Pickering, Scugog and Uxbridge in 2021
- Brock, Clarington, Oshawa, Scugog and Uxbridge in 2023
- All LTMs except Clarington and Whitby in 2025

8.15 For 2027 onwards performance is similar to the original phasing, as the recommended resourcing is almost, or exactly, identical.

Time at Hospital

8.16 In the core modelling it was assumed that time at hospital would remain at the levels observed in 2019. However, four alternative time at hospital scenarios have also been modelled, two that involve reducing times and two that involve increasing times:

- Reducing time at hospital to 2016 levels (see Appendix **G5a**)
- Allowing no offload delays, equivalent to reducing time at hospital to a maximum of 40 minutes (see Appendix **G5b**)
- Increasing time at hospital equivalent to the increases observed between 2016 and 2019 (see Appendix **G5c**)
- Increasing time at hospital equivalent to double the increases observed between 2016 and 2019 (see Appendix **G5d**)

8.17 P4 8-minute response performance impacts range from an improvement of 2.5% when allowing no offload delays, to a fall of 3.7% when increasing time at hospital equivalent to double the increases observed between 2016 and 2019.

Call Diversion

8.18 In the UK ambulance services employ clinicians in their call taking and dispatch centres who are able to triage certain types of incident at the point of call. This means that low acuity calls can be diverted before an ambulance is sent, and the call redirected through an alternative, more appropriate pathway.

8.19 Based on benchmarking undertaken by ORH in the UK, an average of 6.5% of calls are triaged in this way and therefore no ambulance is sent. In the coming years, the MoH is planning to transition Ontario CACCs to the Medical Priority Dispatch System (MPDS), which will lead to a re-categorization of calls, and in turn may enable improved call diversion.

8.20 The average of 6.5% was tested against the final 2031 scenario and this effectively reduces ambulance-responded demand by 6.5%; these calls were removed from the P3 category. P4 8-minute response performance improves by approximately one percentage point, with some variation by LTM (see Appendix **G6**).

Treat and Release

8.21 Changes to the Ontario Ambulance Act mean that RDPS could potentially reduce the number of patients transported to hospital where appropriate (that is, increase the number of patients treated on scene). Based on benchmarking undertaken by ORH in the UK, an average of 36% of incidents involved patients that were treated on scene and released. For RDPS, an average of 22% of incidents involved patients that were treated on scene and released.

8.22 Average RDPS time at scene for patients transported to hospital was roughly 17.5 minutes, increasing to roughly 23.5 minutes for those treated on scene. This is equivalent to a 35% increase for those treated on scene. In the UK, time on scene for those treated on scene is around 70% higher on average.

8.23 An increased rate of patients treated on scene of 14% was tested, including a lengthening of average time at scene for these patients (to reflect UK levels). In this scenario, P4 8-minute response performance improves by 1.2 percentage points, with some variation by LTM (see Appendix **G7**).

Appendices

A	Terms of Reference
B	Historical Analysis of RDPS
C	Demand Projections
D	Simulation Model Setup
E	Station Location Optimization
F	Identifying Future Resource Requirements
G	Sensitivity Modelling Scenarios

Regional Municipality of Durham

Comprehensive Master Plan for Paramedic Services

Final Report

ORH/RMD/1

PLAN. PREPARE. **PERFORM.**

A Terms of Reference

A

Terms of Reference

The interest of the Regional Municipality of Durham (RMD) is to develop a Comprehensive Master Plan (CMP) for the delivery of Paramedic Services which, for operational purposes, would encompass a 10-year time period between 2021-2030.

The CMP shall include recommendations to achieve optimal and efficient Paramedic Services on evidence-based research and industry proven leading practices. The RMD is mindful of the need for fiscal responsibility in operating and potential capital expenditures and will consider alternative, innovative recommendations that maintain excellent service yet slow cost escalation.

The focus is to review and make recommendations for an operating CMP using research, best and leading practices, existing data and reports to achieve the following objectives:

1. Projected ambulance call volumes taking into consideration opportunities for alternate response options;
2. Recommended response time performance plans including key performance indicators linked to measurable clinical outcome;
3. Recommended resources required to achieve #2 above including frontline and support services;
4. Recommended station facility model;
5. Identify and recommend broader Emergency Service considerations for overall service efficiencies.

The development of the CMP will incorporate input derived from Paramedic Service internal and external stakeholders including but not limited to; RDPS frontline paramedics, superintendents, service management, Central Ambulance Communication Centre (CACC), local area municipal emergency services, Local Health Integration Networks (LHIN), local and base hospitals.

B Historical Analysis of RDPS

B1 Demand

- **B1a** P4 Non-IFT Demand Distribution
- **B1b** P1 to P4 Demand by Month
- **B1c** P1 to P4 Demand by Day and Hour
- **B1d** Hospital Profile
  - B1d-i Destination Hospitals
  - B1d-ii P4 Non-IFT Patient Flow Map

B2 Response Performance

- **B2a** CTAS Performance by LTM
- **B2b** P4 Non-IFT Mean Response Time Map

B3 Call Components

- **B3a** P4 Non-IFT Call Components by Year
- **B3b** Average Time at Hospital by Facility

B4 Resources and Resource Use

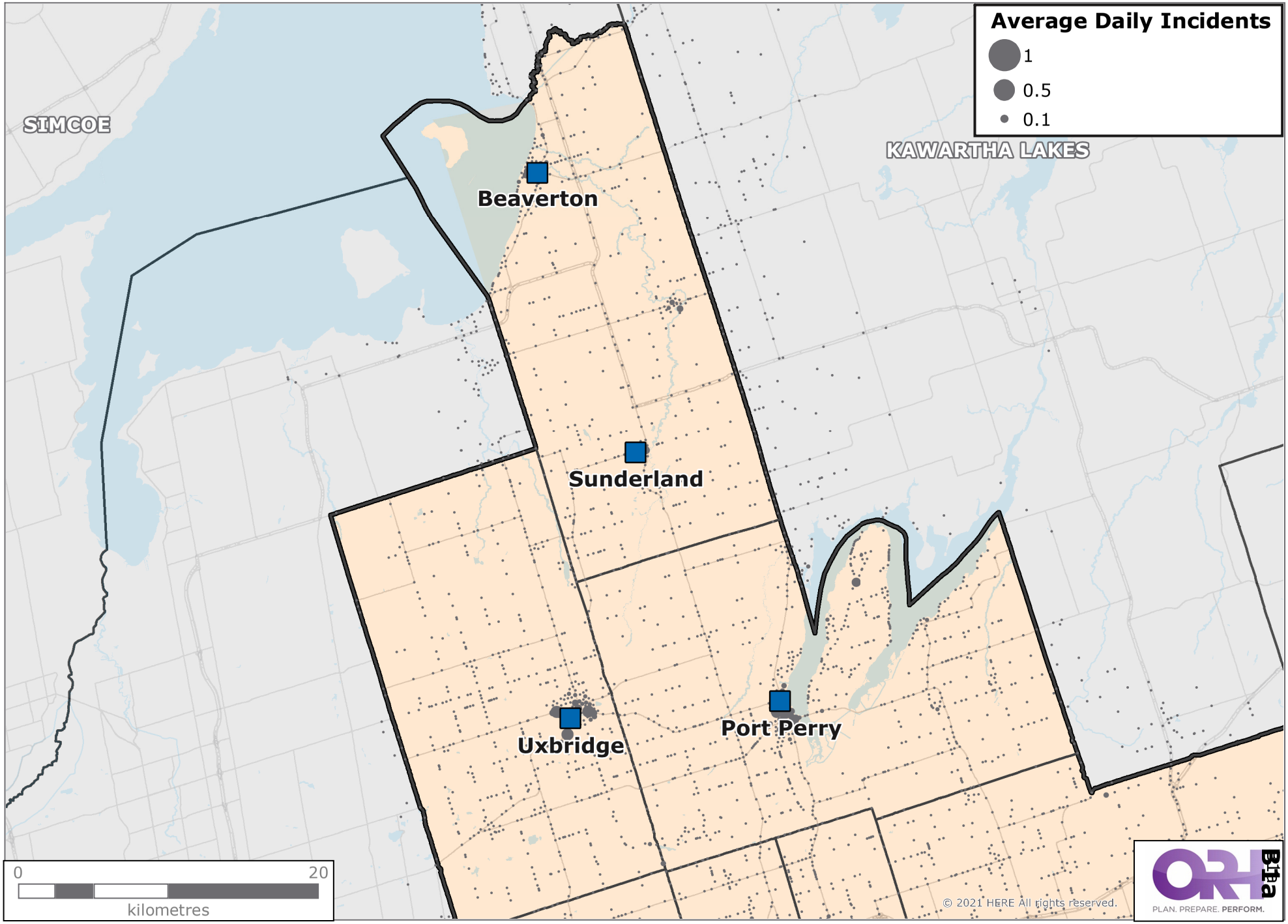
- **B4a** Responses with ACPs
- **B4b** Utilization by Hour (P1 to P4)
- **B4c** Frequent Standby Moves

B5 Benchmarking

- **B5a** Operations Benchmarking
- **B5b** UK Team Leader (Supervisor) Benchmarking

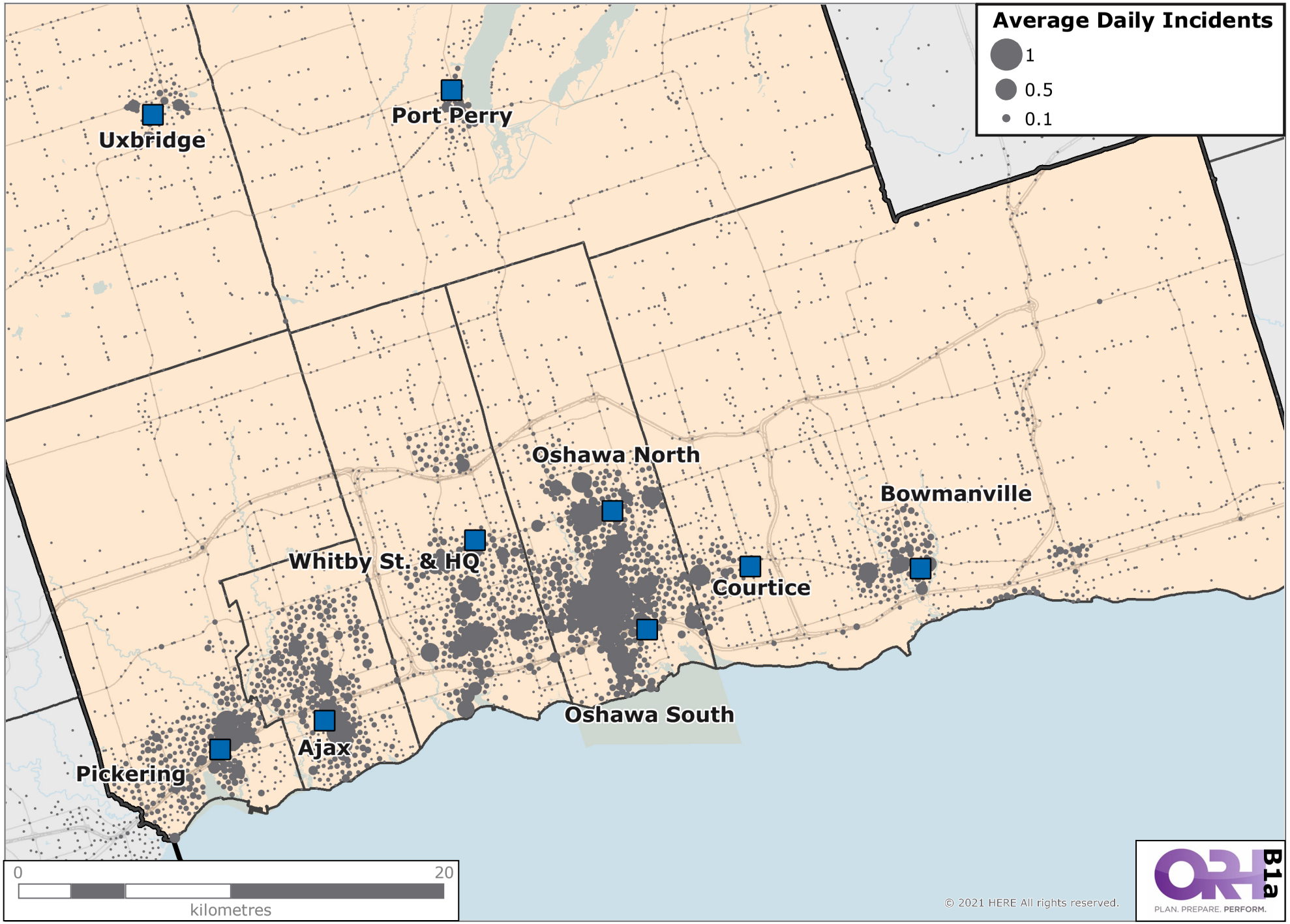
P4 (Non-IFT) Demand Distribution - North Durham

January 2016 - December 2020



P4 (Non-IFT) Demand Distribution - South Durham

January 2016 - December 2020



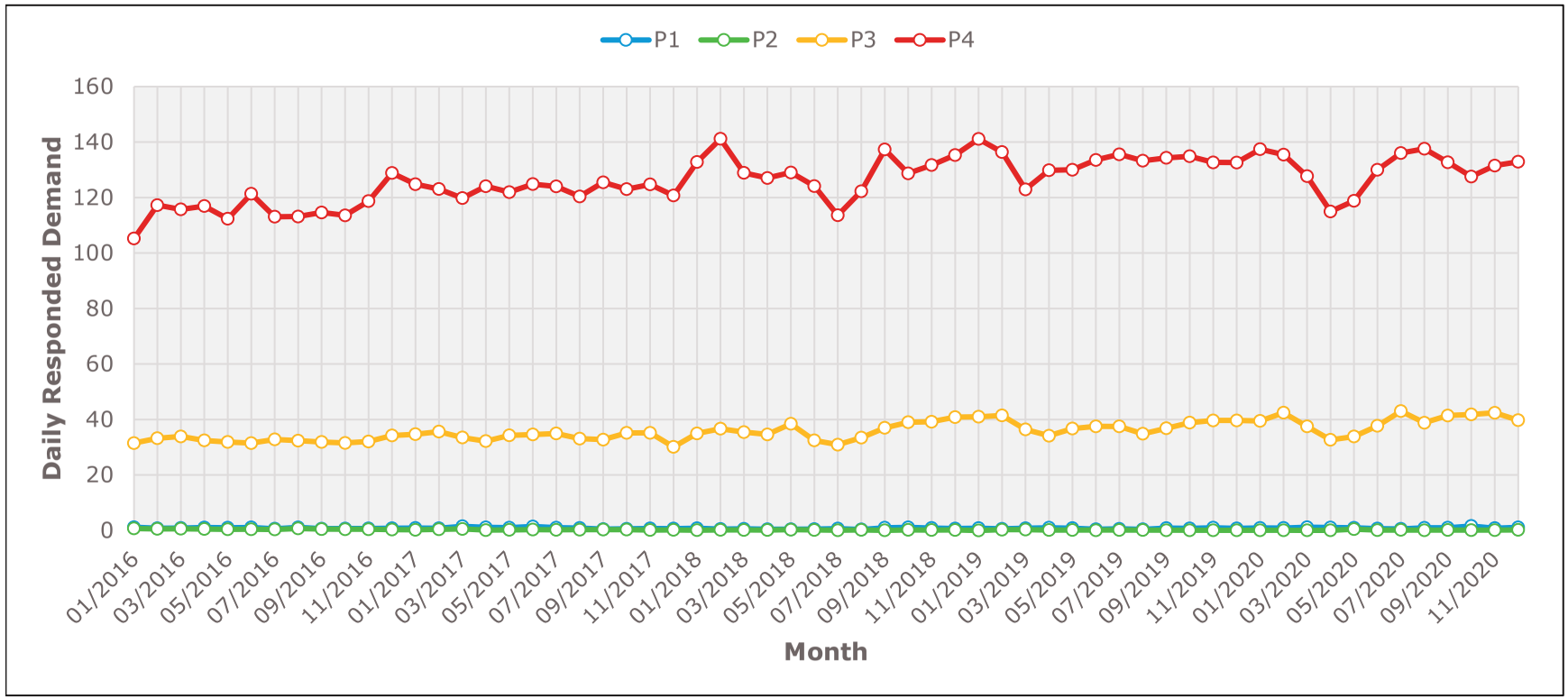
B1a

Region of Durham Paramedic Services

P1 to P4 Demand by Month

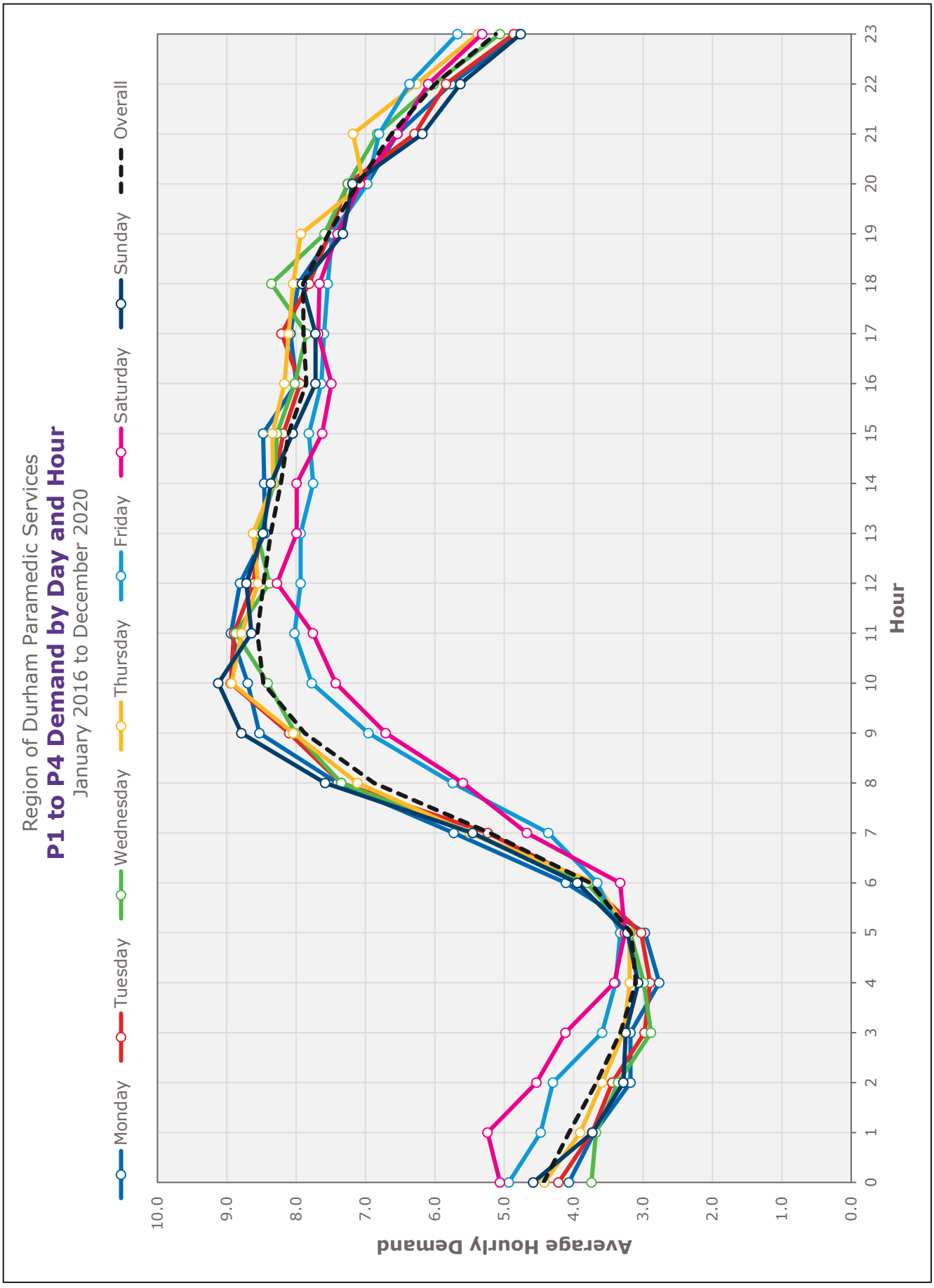
January 2016 to December 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Overall
2016	138.7	151.9	151.2	151.0	145.7	154.4	147.0	147.5	147.7	146.3	152.0	164.2	**149.8**
2017	160.7	160.0	155.4	157.6	157.5	161.2	160.3	154.7	159.1	159.1	160.8	151.8	**158.1**
2018	168.7	178.6	165.2	162.3	168.2	157.3	145.3	156.3	175.4	169.1	172.0	177.1	**166.2**
2019	183.0	178.8	160.5	165.2	167.8	171.7	173.9	168.7	172.1	174.6	173.4	173.1	**171.9**
2020	177.9	178.9	166.5	148.8	154.1	168.6	179.9	177.5	175.4	171.2	174.9	174.0	**170.6**



B1b

B1c


Region of Durham Paramedic Services
P1 to P4 Demand by Day and Hour
January 2016 to December 2020
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Overall
Average Hourly Demand
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
Hour

Region of Durham Paramedic Services

Destination Hospitals

January 2016 to December 2020

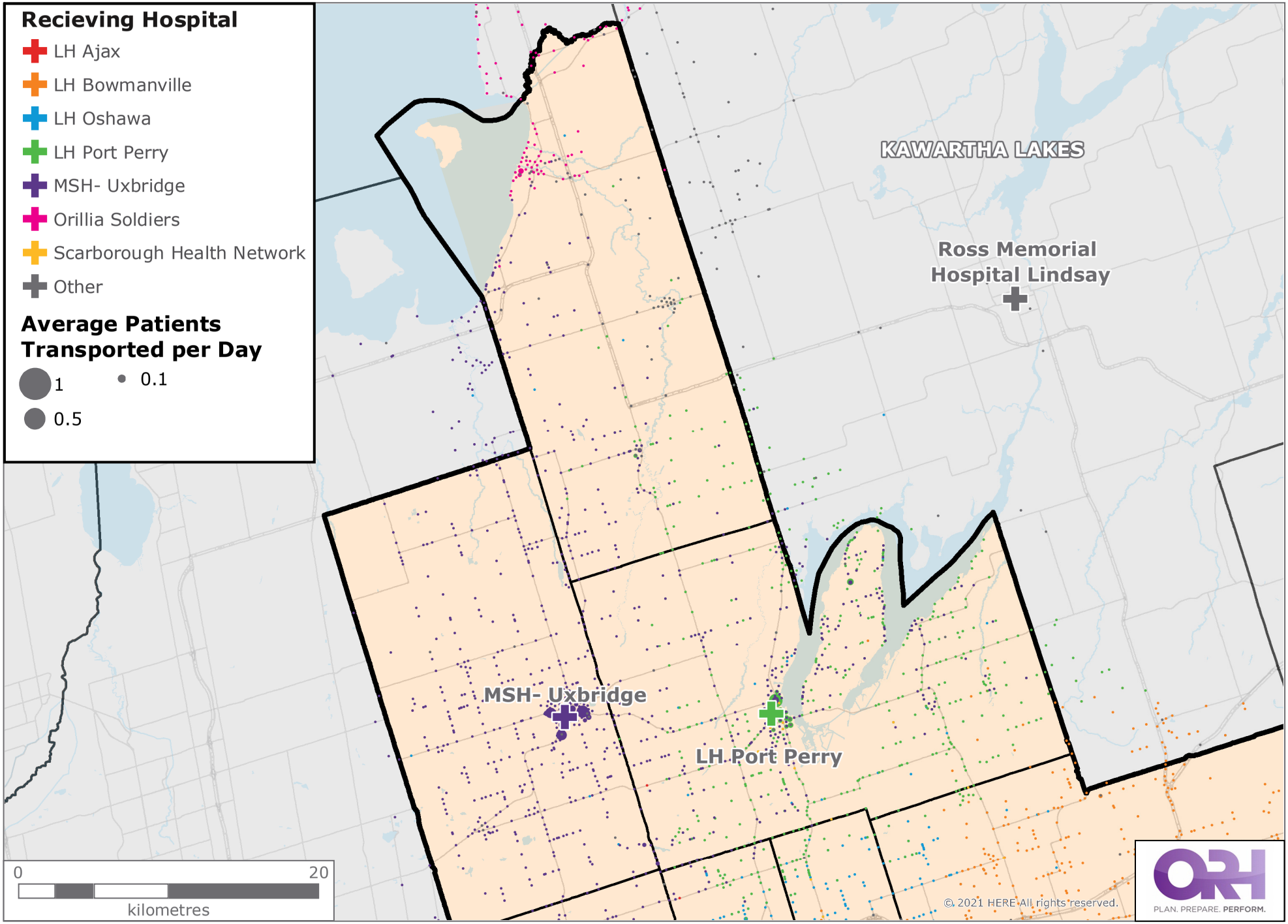
Average Daily Patient Journeys

Destination Hospital	Priority						Total
	P1	P2	P3 IFT	P3 Non-IFT	P4 IFT	P4 Non-IFT	
Lakeridge Health Oshawa	0.19	0.08	1.58	11.77	0.65	52.54	66.80
Lakeridge Health Ajax	0.01	0.01	0.10	5.38	0.05	23.99	29.54
Lakeridge Health Bowmanville	0.04	0.01	0.10	1.98	0.06	8.46	10.65
Scarborough Health Network, Centenary	0.02	0.03	1.18	0.40	0.73	2.07	4.44
Markham Stouffville Hospital - Uxbridge	0.01	0.00	0.02	0.83	0.01	3.37	4.24
Lakeridge Health Port Perry	0.15	0.02	0.43	0.67	0.02	2.69	3.98
Toronto Hospitals	0.01	0.02	0.64	0.09	0.76	0.31	1.83
Orillia Soldiers	0.00	0.00	0.00	0.25	0.00	1.17	1.42
Markham Stouffville Hospital - Markham	0.02	0.01	0.36	0.16	0.09	0.28	0.92
Ross Memorial Hospital Lindsay	0.00		0.00	0.12	0.00	0.71	0.84
Other/Unknown	*0.22*	*0.07*	*0.17*	*0.15*	*0.21*	*1.81*	*2.63*
Total	**0.7**	**0.2**	**4.6**	**21.8**	**2.6**	**97.4**	**127.3**

Within Durham Region

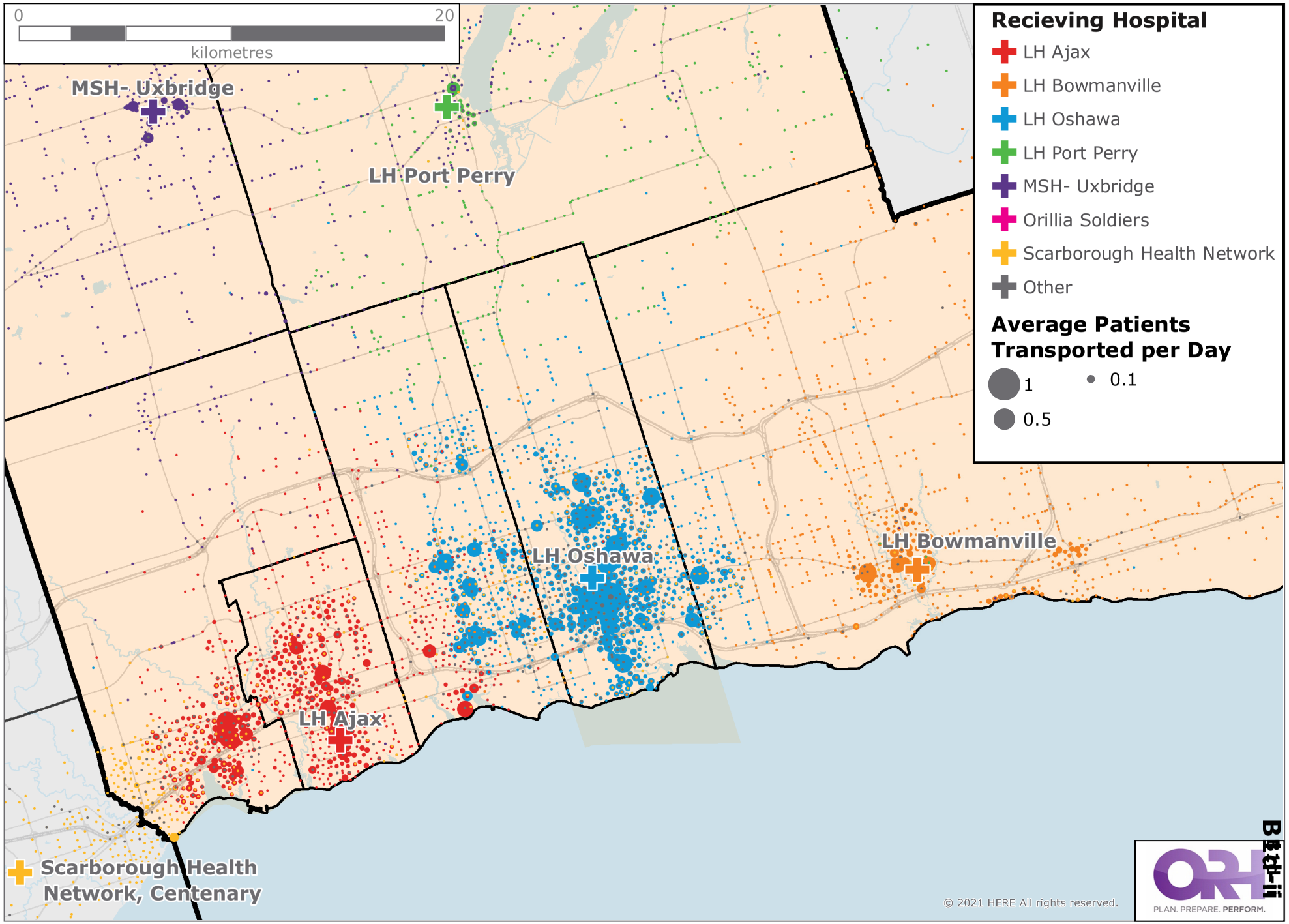
P4 Non-IFT Patient Flow Map - North Durham

January 2016 - December 2020



P4 Non-IFT Patient Flow Map - South Durham

January 2016 - December 2020



Region of Durham Paramedic Services

CTAS Performance by LTM

January 2016 to December 2020

Average Daily Incidents

Category	Lower Tier Municipality									Service-wide
	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Out-of-Area	
Sudden Cardiac Arrest	0.03	0.00	0.02	0.10	0.04	0.01	0.01	0.03	0.00	**0.23**
CTAS1	0.34	0.08	0.34	1.16	0.26	0.12	0.08	0.42	0.04	**2.79**
CTAS2	4.10	0.64	3.89	12.64	2.89	1.21	0.76	5.53	0.19	**31.65**
CTAS3	8.44	1.79	7.66	20.22	7.11	2.79	1.98	10.00	0.41	**60.00**
CTAS4	3.76	0.78	3.24	9.71	3.19	1.08	0.86	4.68	0.17	**27.30**
CTAS5	2.76	0.51	2.44	8.68	2.41	0.89	0.61	3.95	0.12	**22.25**

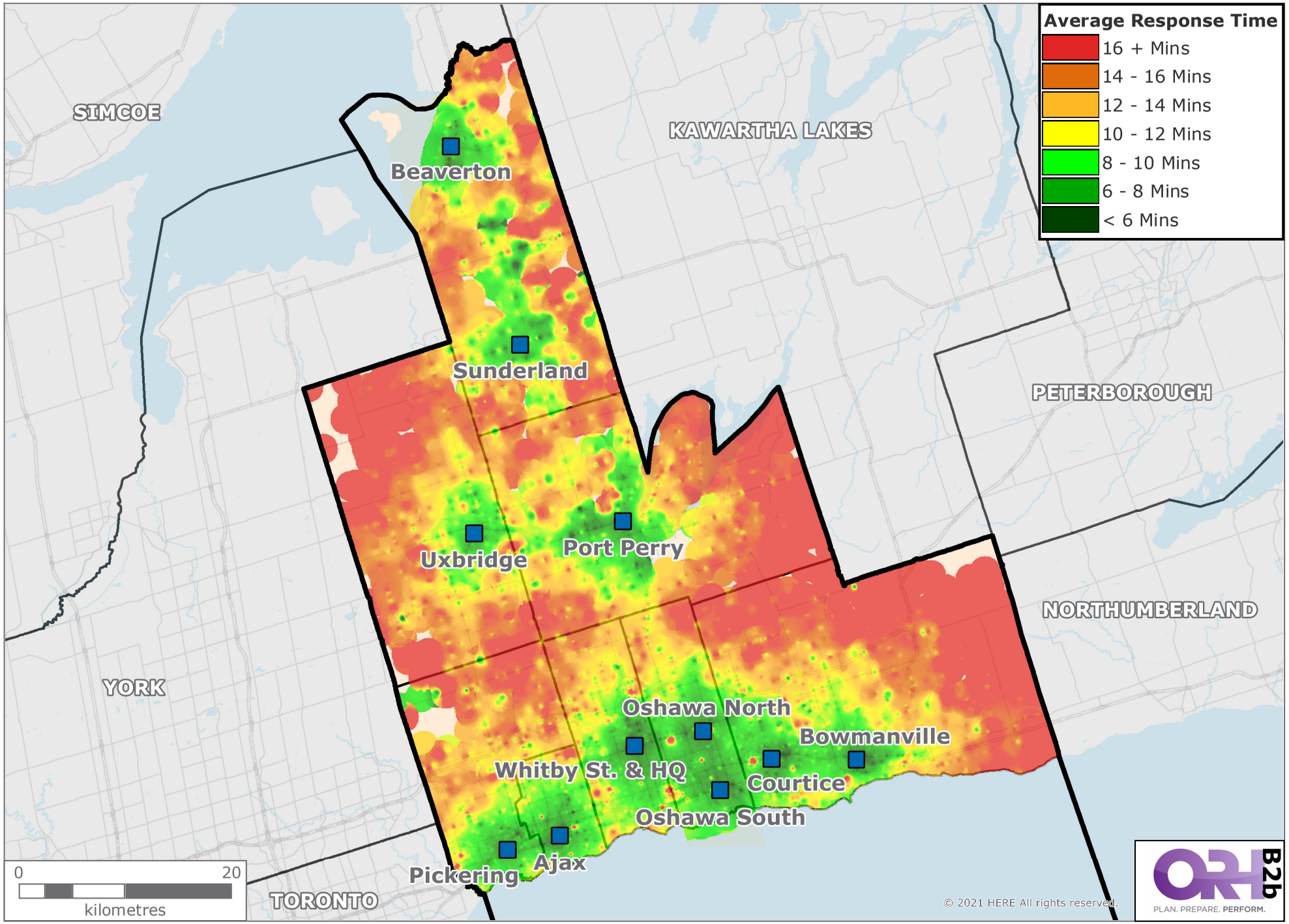
Response Performance (Time Notify to Arrive Scene)

Category	Target Minute	Target Performance	Lower Tier Municipality									Service-wide
			Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Out-of-Area	
SCA	6	60%	57%	63%	41%	82%	53%	23%	27%	44%		**62%**
CTAS1	8	75%	86%	46%	70%	91%	78%	61%	56%	80%	16%	**81%**
CTAS2	10	75%	90%	55%	82%	93%	86%	71%	74%	87%	29%	**87%**
CTAS3	15	75%	97%	78%	92%	98%	96%	84%	86%	96%	61%	**95%**
CTAS4	20	75%	99%	92%	97%	99%	98%	93%	95%	99%	84%	**98%**
CTAS5	25	75%	99%	95%	99%	100%	99%	96%	96%	99%	89%	**99%**

B2a

P4 Non-IFT Mean Response Time Map

January 2016 - December 2020



B2b

Region of Durham Paramedic Services

P4 Non-IFT Call Components by Year

January 2016 to December 2020

Component		Year					Overall
		2016	2017	2018	2019	2020	
T0-T1	T0_TimeZero to T1_CallReceived	01:04	01:08	01:11	01:11	01:16	01:10
T1-VA	T1_CallReceived to Vehicle Assign	01:06	01:07	01:09	01:18	01:22	01:12
CC-VA	*T0_TimeZero to Vehicle Assign*	*02:10*	02:13	02:18	02:29	02:37	*02:22*
VA-VM	Vehicle Assign to Vehicle Mobile	00:22	00:24	00:25	00:24	00:23	00:24
TTS	Time to Scene	06:07	06:04	06:10	06:30	06:44	06:20
TAS	Time at Scene	17:20	17:36	18:12	18:44	20:32	18:31
TTH	Time to Hospital	10:14	10:22	10:15	10:00	10:11	10:12
TAH	Time at Hospital	49:37	48:07	54:03	57:35	52:37	52:31
OCC	Occupied Time	66:50	65:03	68:49	74:01	71:05	69:17

>15 Second Increase from previous year

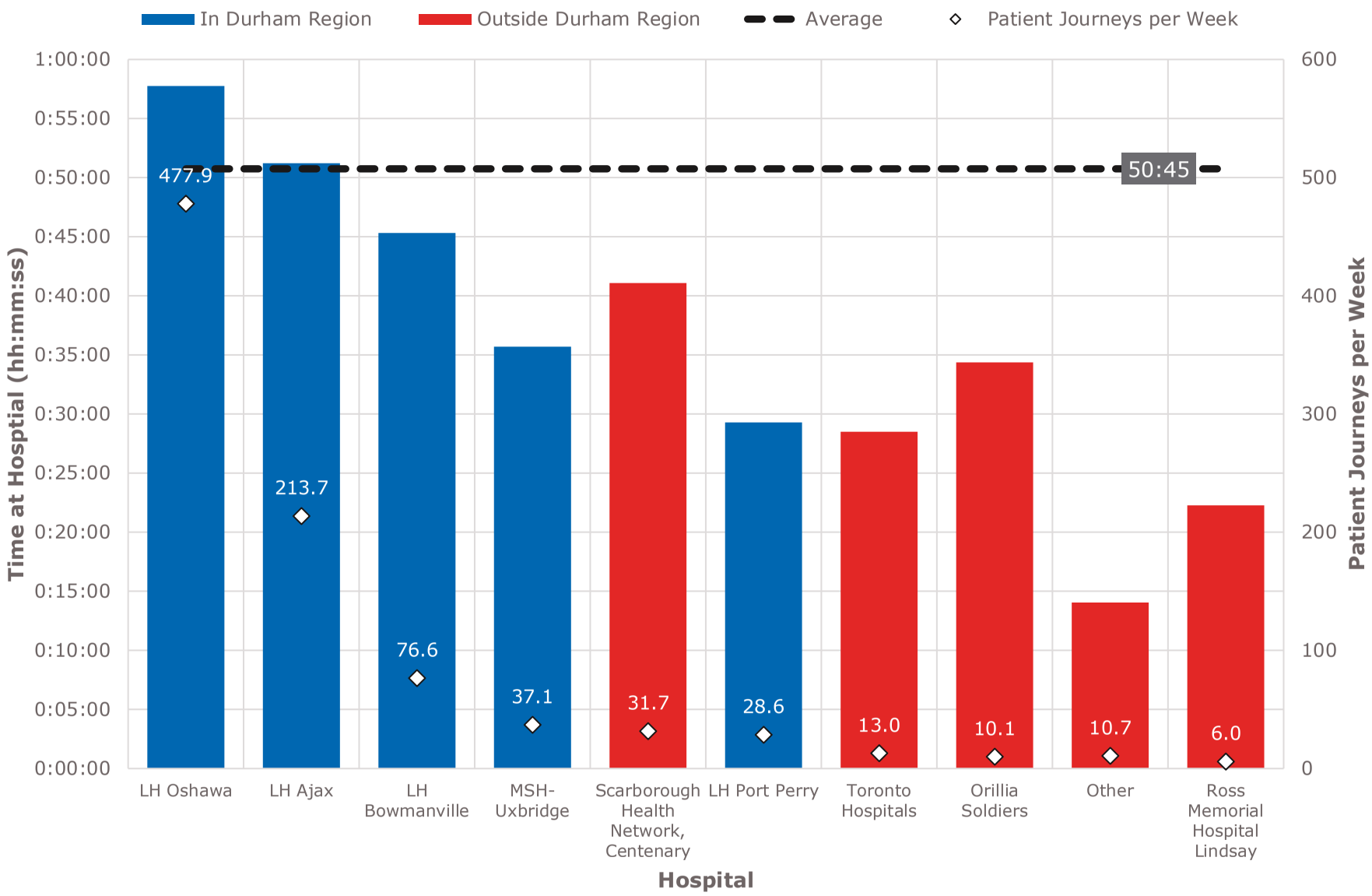
>15 Second Decrease from previous year

B3a

Region of Durham Paramedic Services

Average Time at Hospital by Facility

January 2016 to December 2020



Region of Durham Paramedic Services

Responses with ACPs

January 2016 to December 2020

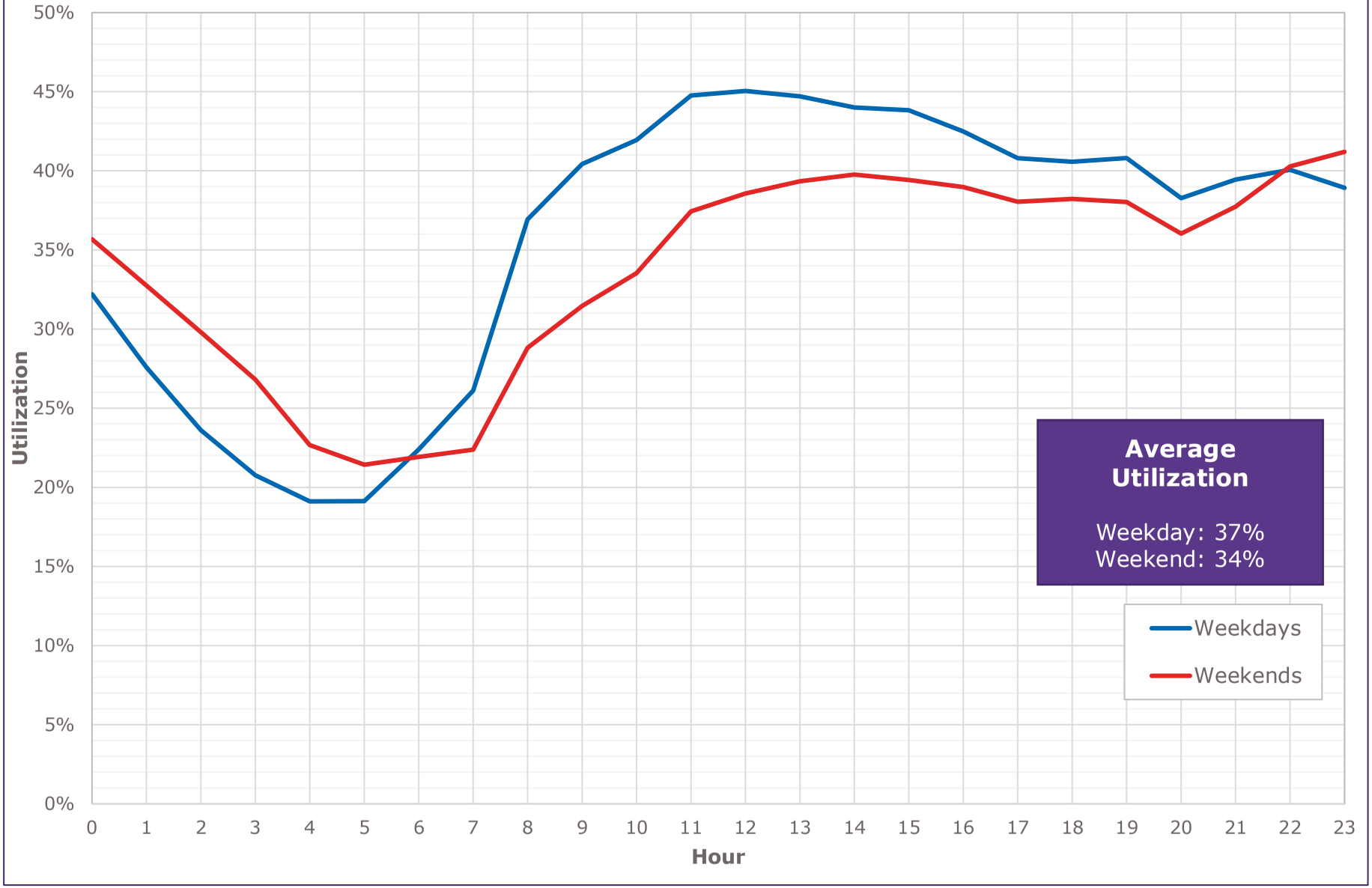
Station	Responses per Day				
	At least 1 ACP on Scene	%	No ACPs on Scene	%	Total
Ajax	14.9	65.1%	8	34.9%	22.9
Beaverton	1.4	47.0%	1.6	53.0%	3
Bowmanville	9	70.4%	3.8	29.6%	12.8
Courtice	6.2	50.1%	6.2	49.9%	12.4
Oshawa North	16.8	57.6%	12.3	42.4%	29.1
Oshawa South	16.1	52.2%	14.7	47.8%	30.7
Pickering	11	56.7%	8.4	43.3%	19.4
Port Perry	5.3	59.5%	3.6	40.5%	9
Sunderland	0.7	27.4%	1.8	72.6%	2.5
Uxbridge	3.5	58.8%	2.5	41.2%	6
Whitby (HQ)	18	50.7%	17.5	49.3%	35.5
Total	103.1	56.1%	80.5	43.9%	183.7

B4a

Region of Durham Paramedic Services

Utilization by Hour (P1 to P4)

January 2016 to December 2020



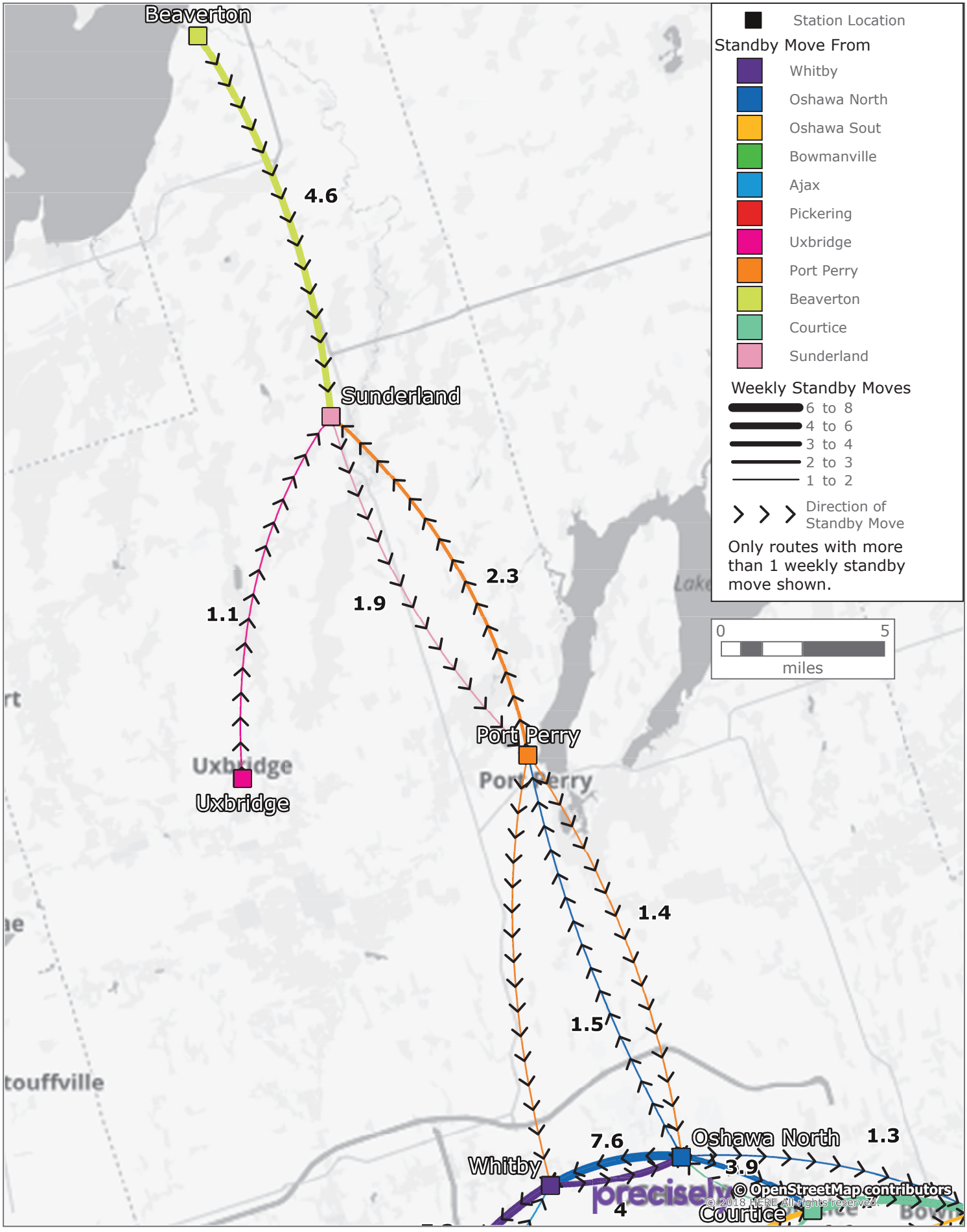
B4b

B4b

Frequent Standby Moves - North Durham

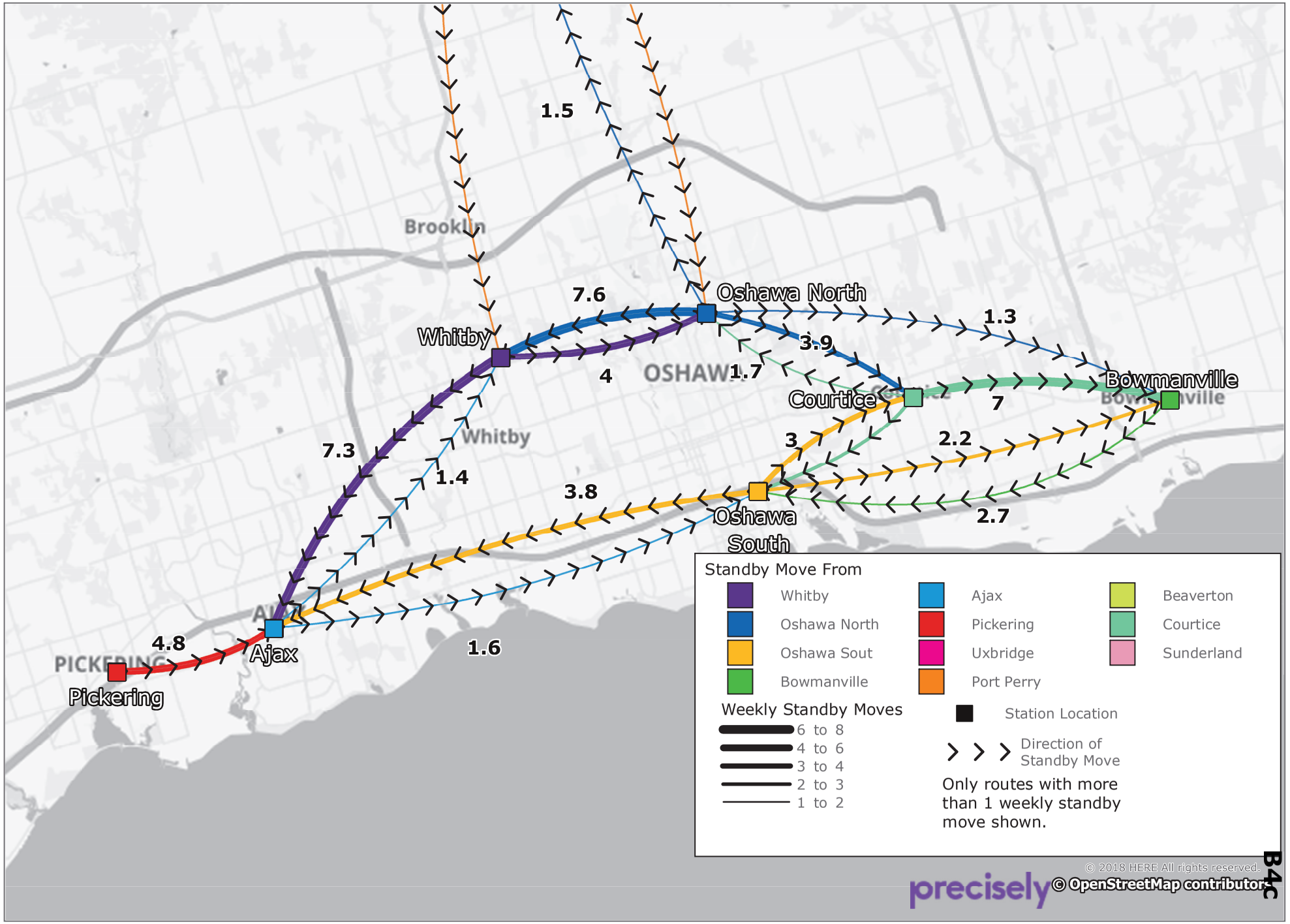
January 2019 to December 2019

B4c



Frequent Standby Moves - South Durham

January 2019 to December 2019



B4C

B4C

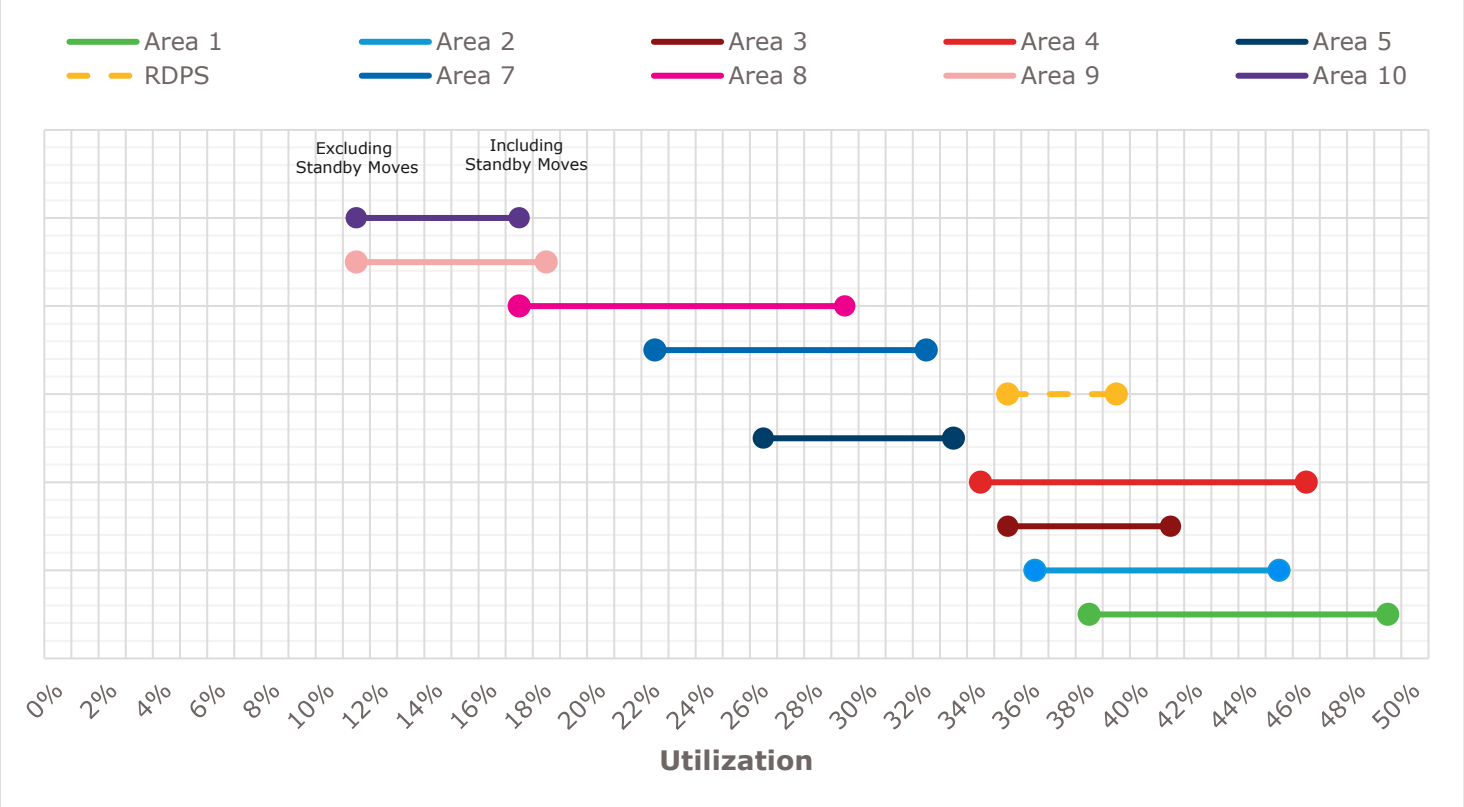
Region of Durham Paramedic Services

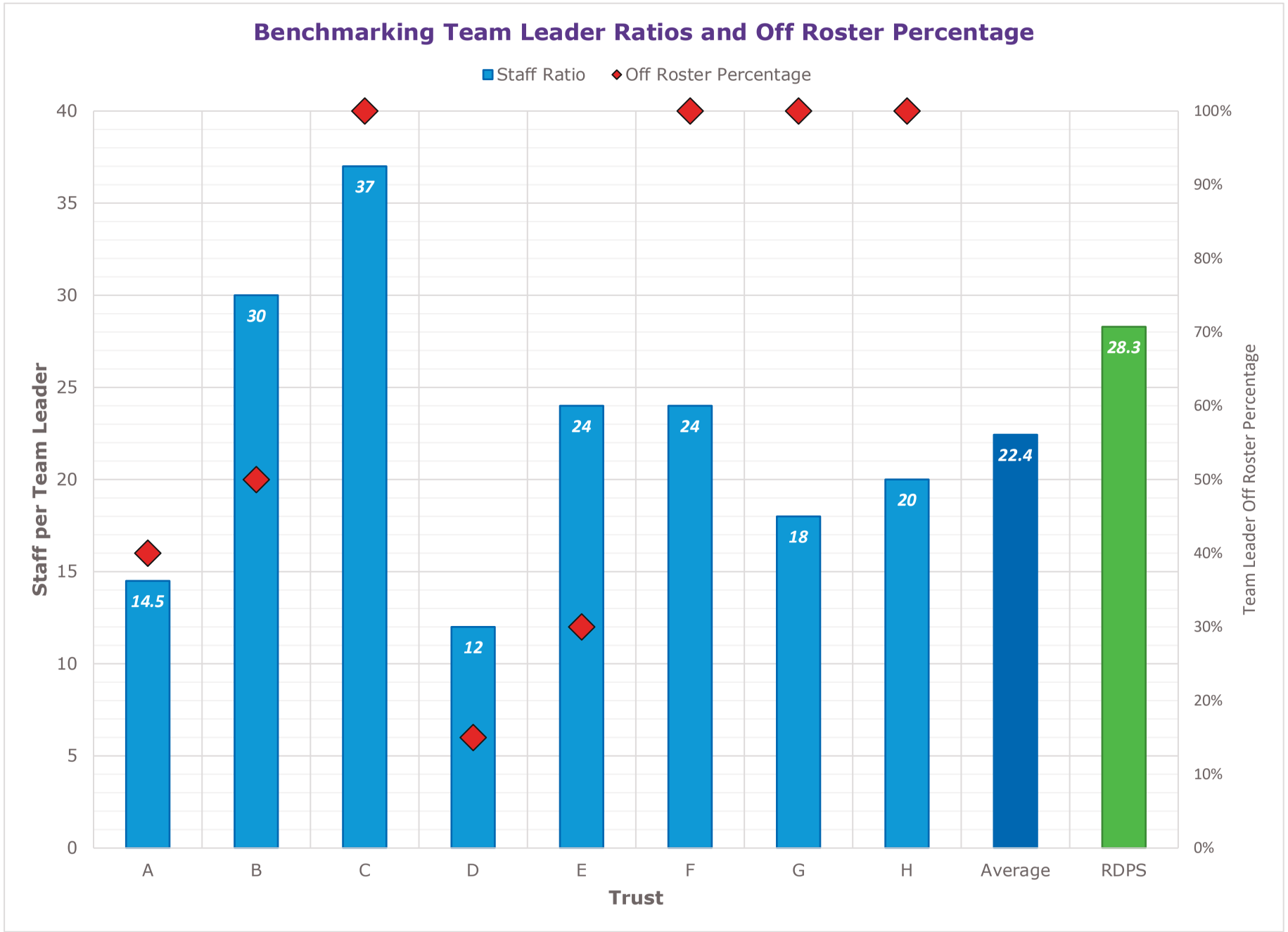
B5a

Operations Benchmarking

January 2016 to December 2019

Benchmark	RDPS Value	Rank	Minimum	Median	Maximum
P4 Activation Time	01:14	10 of 10	00:41	01:05	01:14
P4 Mobilization Time	00:23	3 of 11	00:20	00:36	01:11
P4 Time to Scene	06:18	1 of 11	06:18	07:19	09:12
Time at Scene	20:14	6 of 11	15:59	20:14	27:17
Time to Hospital	12:01	3 of 11	11:20	14:11	24:25
Time at Hospital	53:10	9 of 11	15:34	33:24	55:03
P4 Conveyance Rate	77.8%	11 of 11	78%	86%	89%
P4 Multiple Attendance Ratio	1.15	3 of 11	1.04	1.09	1.24
Occupied Time	70:18	6 of 11	55:35	70:18	84:45




Benchmarking Team Leader Ratios and Off Roster Percentage
Staff Ratio
Off Roster Percentage
Staff per Team Leader
Team Leader Off Roster Percentage
Trust
0
5
10
15
20
25
30
35
40
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
14.5
30
37
12
24
24
18
20
22.4
28.3
A
B
C
D
E
F
G
H
Average
RDPS

B5b

C Demand Projections

C1 Projection Methodology

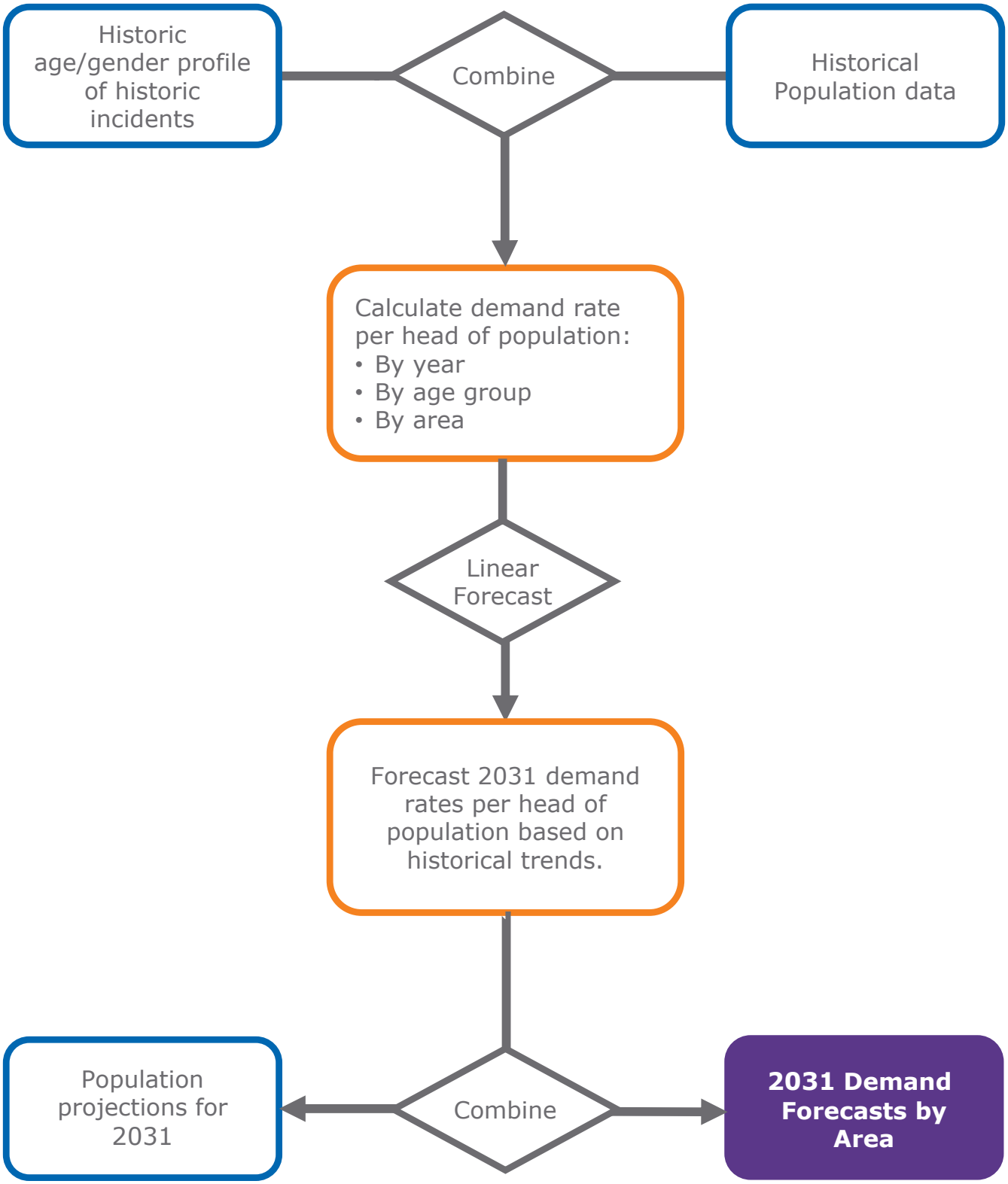
C2 Population Profile

- **C2a** Historical Population Profile
- **C2b** Future Population Profile
  - C2b-i Upper Bound
  - C2b-ii Lower Bound

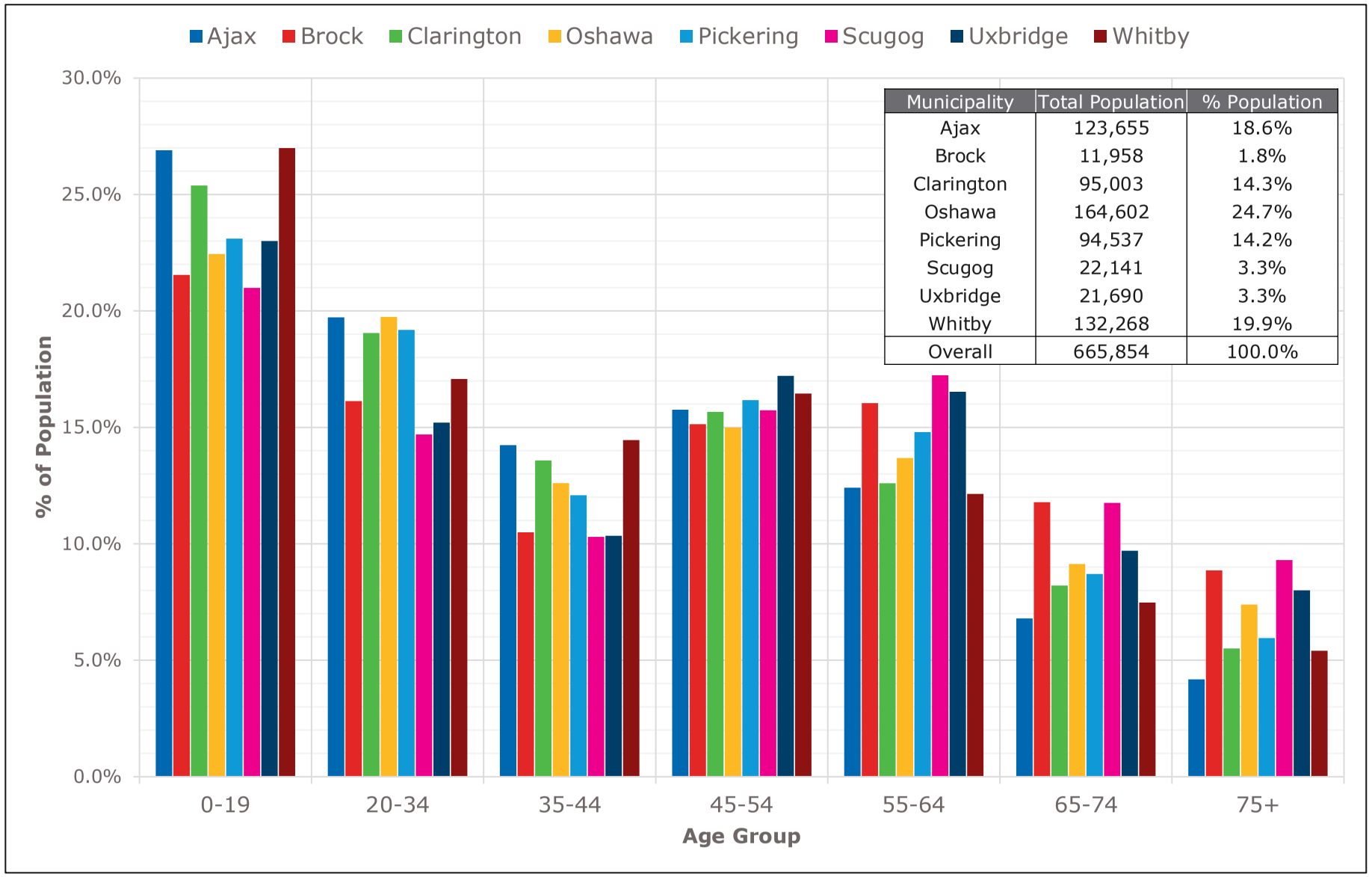
C3 Housing Development Demand

Population-based Projection Methodology

C1



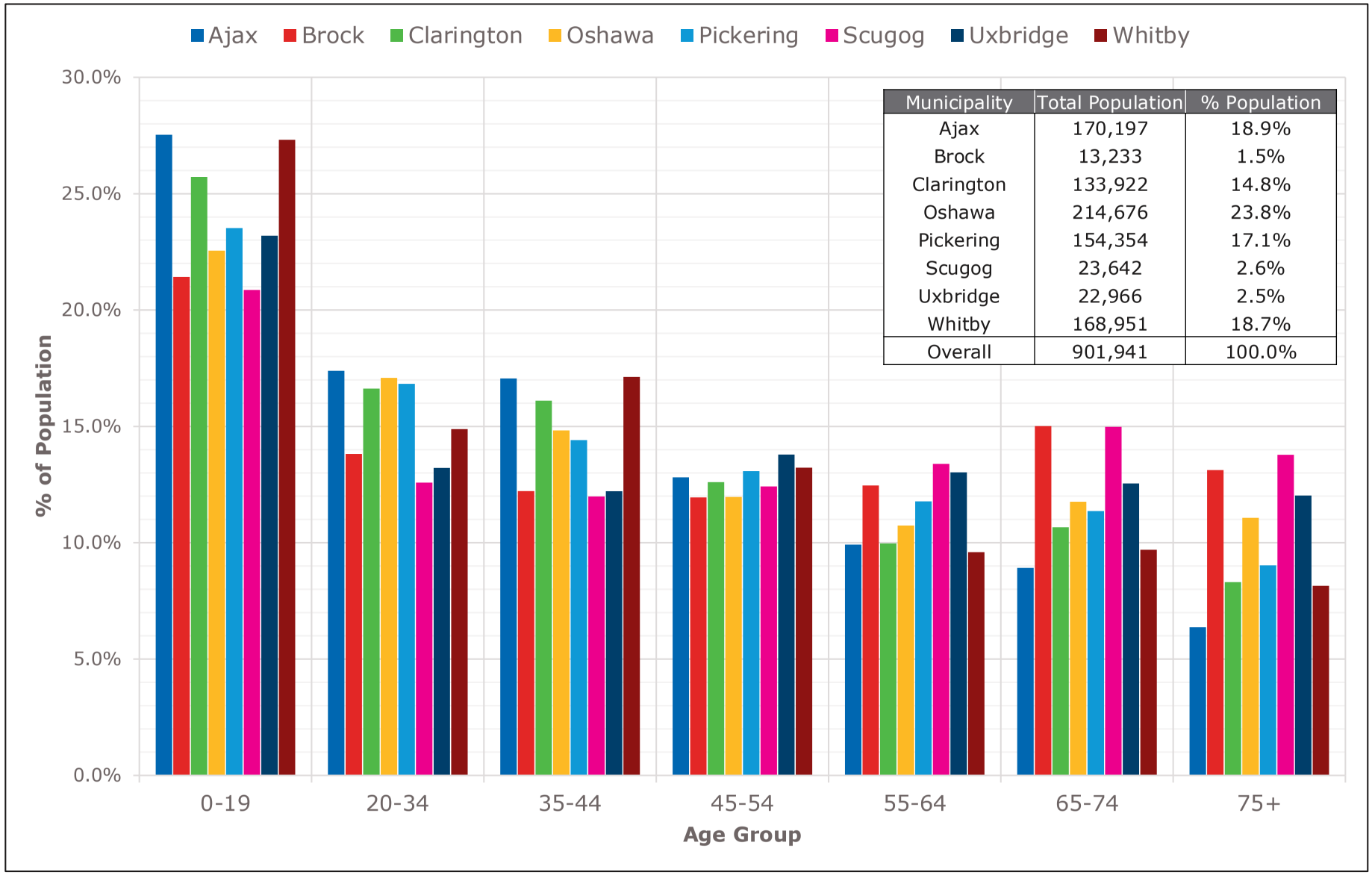
Historical Population Profile



Municipality	Total Population	% Population
Ajax	123,655	18.6%
Brock	11,958	1.8%
Clarington	95,003	14.3%
Oshawa	164,602	24.7%
Pickering	94,537	14.2%
Scugog	22,141	3.3%
Uxbridge	21,690	3.3%
Whitby	132,268	19.9%
Overall	665,854	100.0%

Future Population Profile

Upper Bound

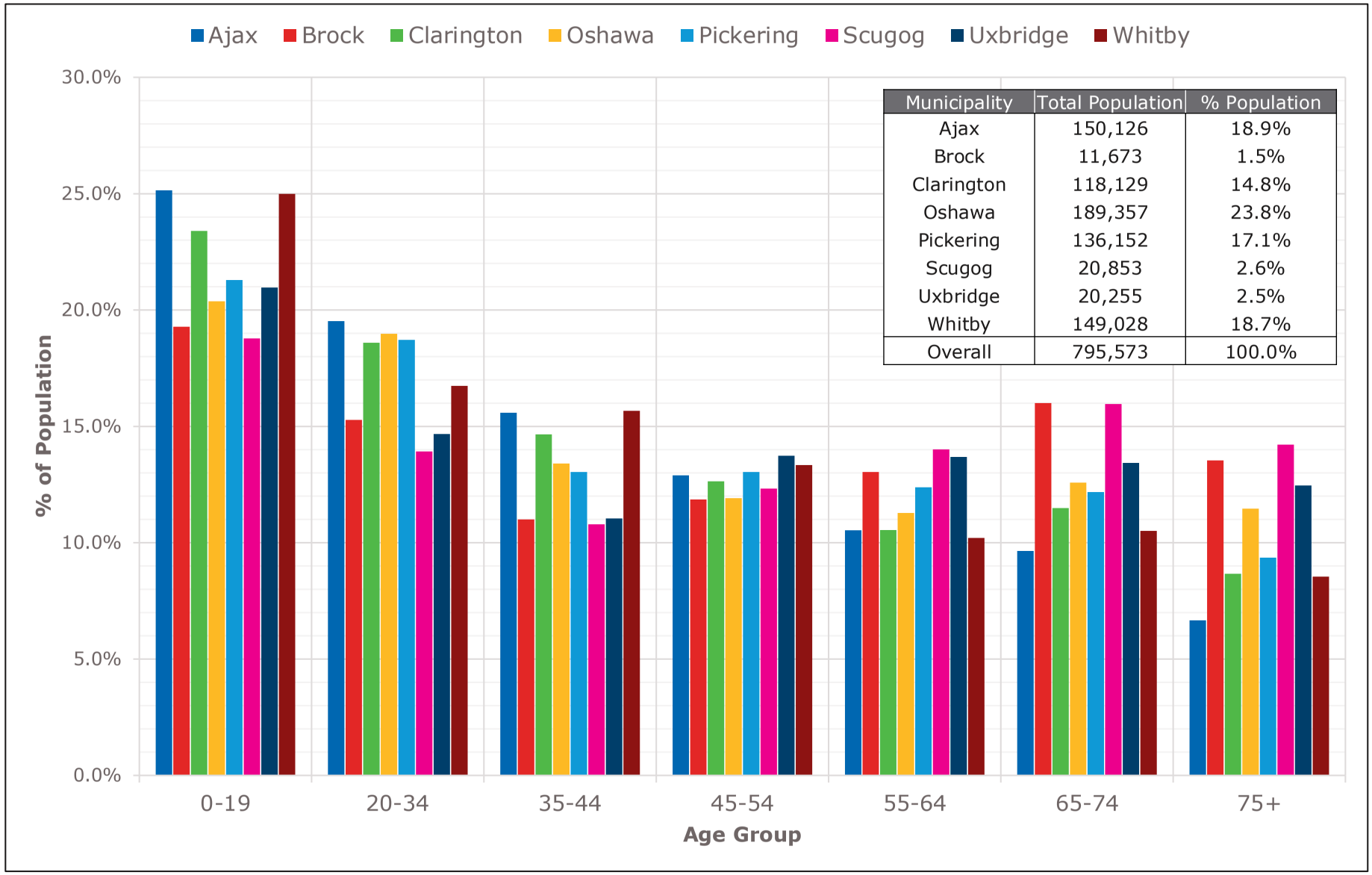


Municipality	Total Population	% Population
Ajax	170,197	18.9%
Brock	13,233	1.5%
Clarington	133,922	14.8%
Oshawa	214,676	23.8%
Pickering	154,354	17.1%
Scugog	23,642	2.6%
Uxbridge	22,966	2.5%
Whitby	168,951	18.7%
Overall	901,941	100.0%

C2b-i

Future Population Profile

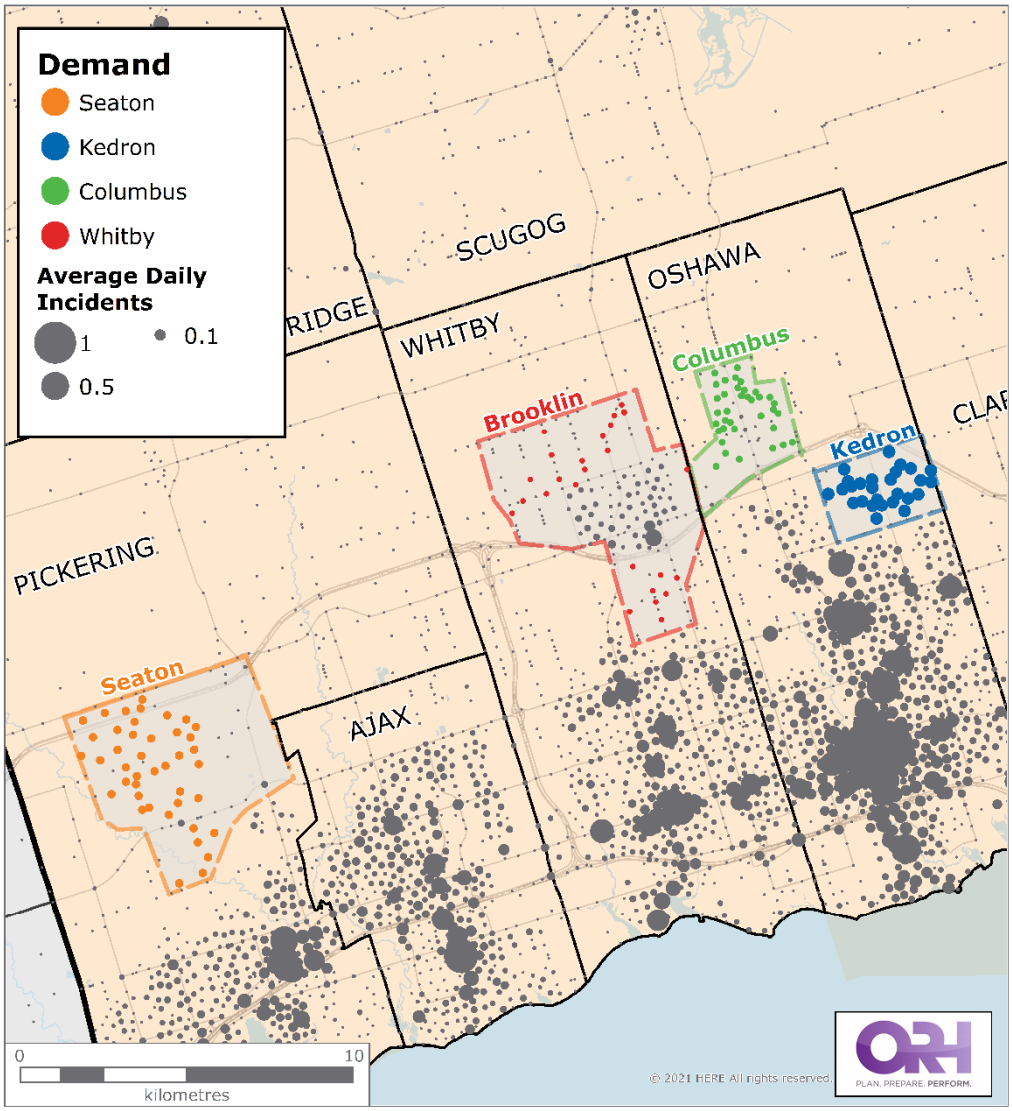
Lower Bound



Municipality	Total Population	% Population
Ajax	150,126	18.9%
Brock	11,673	1.5%
Clarington	118,129	14.8%
Oshawa	189,357	23.8%
Pickering	136,152	17.1%
Scugog	20,853	2.6%
Uxbridge	20,255	2.5%
Whitby	149,028	18.7%
Overall	795,573	100.0%

C3

Housing Development Demand



Average Daily Demand (Upper Bound)		
LTM	Development Area	2031
Pickering	Seaton	**2.51**
Oshawa	Kedron	**4.01**
Oshawa	Columbus	**1.82**
Whitby	Brooklin	**1.47**

D Simulation Model Setup

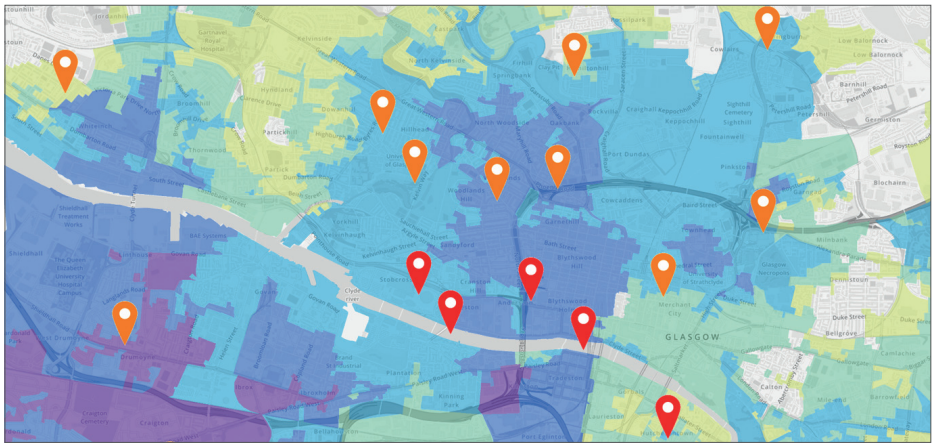
D1 AmbSim Overview

D2 P4 Non-IFT Response Time Distribution: Analyzed vs Validated

D3 P4 Non-IFT Mean Response Time Map: Base Position

AmbSim

ORH Ambulance Simulation Model



KEY BENEFITS

- Quickly identifies the impact of future changes on response performance and utilization
- Quantifies seasonal vehicle and staffing requirements to meet national standards in future scenarios
- Examines impacts of changes in individual or multiple interrelated operational factors

Simulating potential changes and understanding their impacts

KEY FACTS

- Used in numerous studies worldwide
- Built on historical analysis
- Validated against known operations
- Risk-free environment for testing
- Evidence base for change

ABOUT AMBSIM

AmbSim is a simulation model that replicates the key characteristics of an ambulance service to predict future behaviour and performance under a variety of different scenarios. AmbSim is used by ORH consultants for ambulance service reviews, and in-house by services worldwide.

AMBSIM'S APPROACH

Demand is generated in AmbSim in accordance with historical data. Vehicles within the model respond to this demand according to their proximity and the desired dispatch protocols; dispatch rules can be based on any combination of categorization systems, resource types and staff skills.

ORH analyzes Automatic Vehicle Location data to understand variation in road speeds by time, location, road classification and vehicle type. These are fed into the model to ensure that travel times accurately replicate reality.

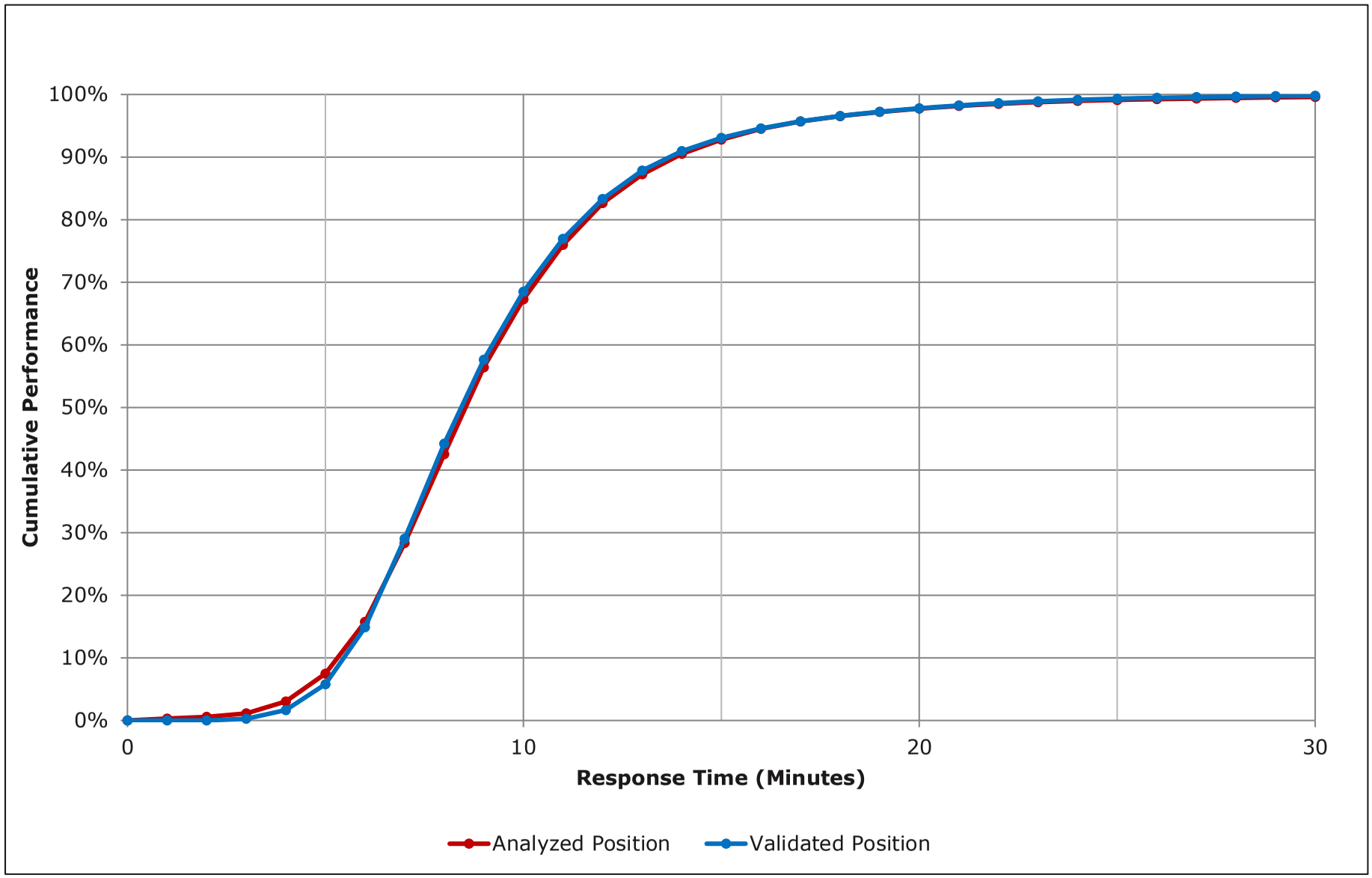
Resources within AmbSim can reflect both actual and planned rosters. This allows the user to identify required changes in resource levels/balance in specific detail.

Time components of the job cycle are based on historical analysis and differ by location, day, hour, category, and vehicle type. Along with demand and resourcing, the user can vary these parameters to assess different scenarios.

APPLICATION

AmbSim can be used to devise optimal operational models and resourcing by location, time, vehicle type and staff skill. Different demand levels and combinations of operational parameters can be incorporated to provide an evidence base for informed decision making. Inputs and parameters are flexible and can be updated to reflect changes that are within the control of the service and those that are external, such as hospital configuration.

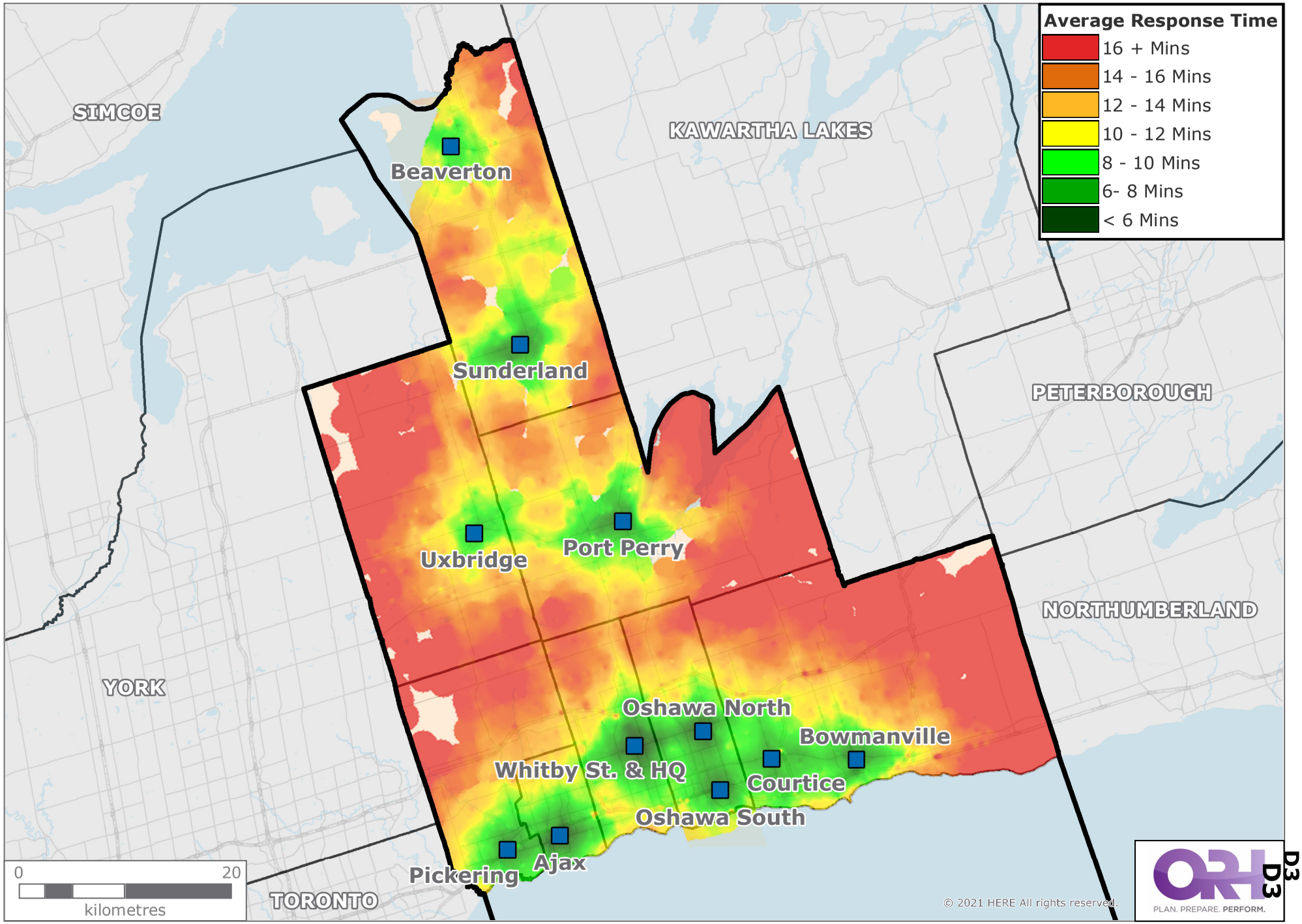
P4 Non-IFT Response Time Distribution: Analyzed vs Validated



D2 D2

P4 Non-IFT Mean Response Time Map: Base Position

Modelled 2021 Base Position



E Station Location Optimization

E1 Optimization Approach Overview

E2 Further Station Optimization (not modelled)

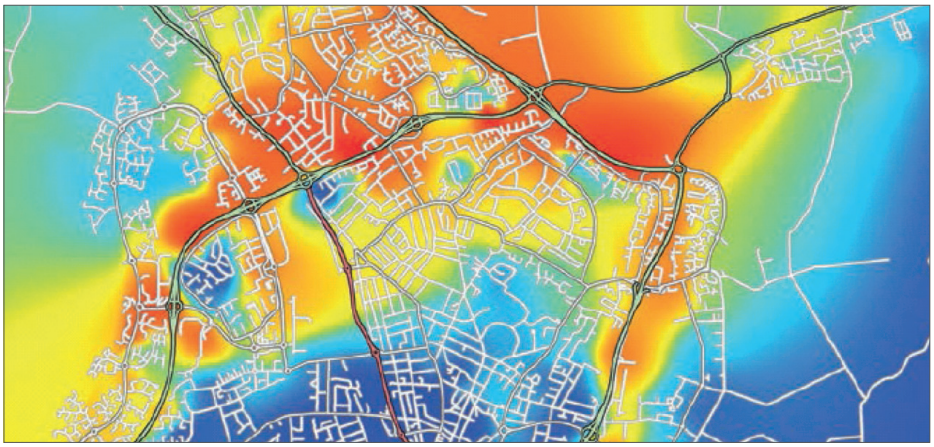
- **E2a** Port Perry
- **E2b** Uxbridge

E3 Site Search Maps

- **E3a** Port Perry
- **E3b** Seaton
- **E3c** Uxbridge
- **E3d** Whitby South
- **E3e** Winchester/Simcoe

Optimization

ORH Approach



KEY BENEFITS

- Proven approach successfully applied for hundreds of emergency services
- Identify optimal sites for stations and standby points
- Highlight the best locations within a local area
- Take account of specific targets, objectives or operational constraints
- Practical support for implementation

Optimizing response locations for emergency services

THE CHALLENGE

Identifying and evaluating optimal locations for stations and resources is a highly complex procedure. For an example scenario where an emergency service wants to place 20 resources across 15 stations, there are over 1.4 billion potential combinations to consider. If the service is not restricted to existing locations, the numbers become astronomical. Some of the questions that emergency services need to answer include:

- Where is the optimal site to relocate an old station, merge existing stations or build an additional station?
- How many locations are required to meet response standards?
- Where should stations be located to meet future demand?
- What is the optimal balance between stations and standby points?

> ***ORH determined optimum locations for new and existing fire stations using accurate modelling tools, and helped us to identify the most efficient use of our resources.***
>
> Assistant Chief Officer,
> UK Fire & Rescue Service

ORH'S APPROACH

ORH's unique and powerful program, OGRE, optimizes the locations of sites, quickly determining which options best achieve the objectives. In order to do this it uses a sophisticated genetic algorithm to assess configurations.

ORH designed OGRE to answer a range of optimization questions, taking account of issues that are specific to each emergency service. The bespoke optimization process addresses the following:

- **Response standards:** minimize average response times or maximize the number of incidents within specific timeframes?
- **Risk factors:** assess coverage to incident locations or apply a risk-based approach that can include multiple factors?
- **Resources:** the types of vehicle that contribute to coverage, and whether multiple responders are required?
- **Restrictions:** are there any fixed current locations, and can new sites be located anywhere within the area?

To deliver solutions, ORH's experienced consultants work closely with clients to specify their requirements, understand the constraints and iteratively develop outcomes. Using simulation modelling, we fully test all potential options to quantify the impacts on response times and vehicle workload.

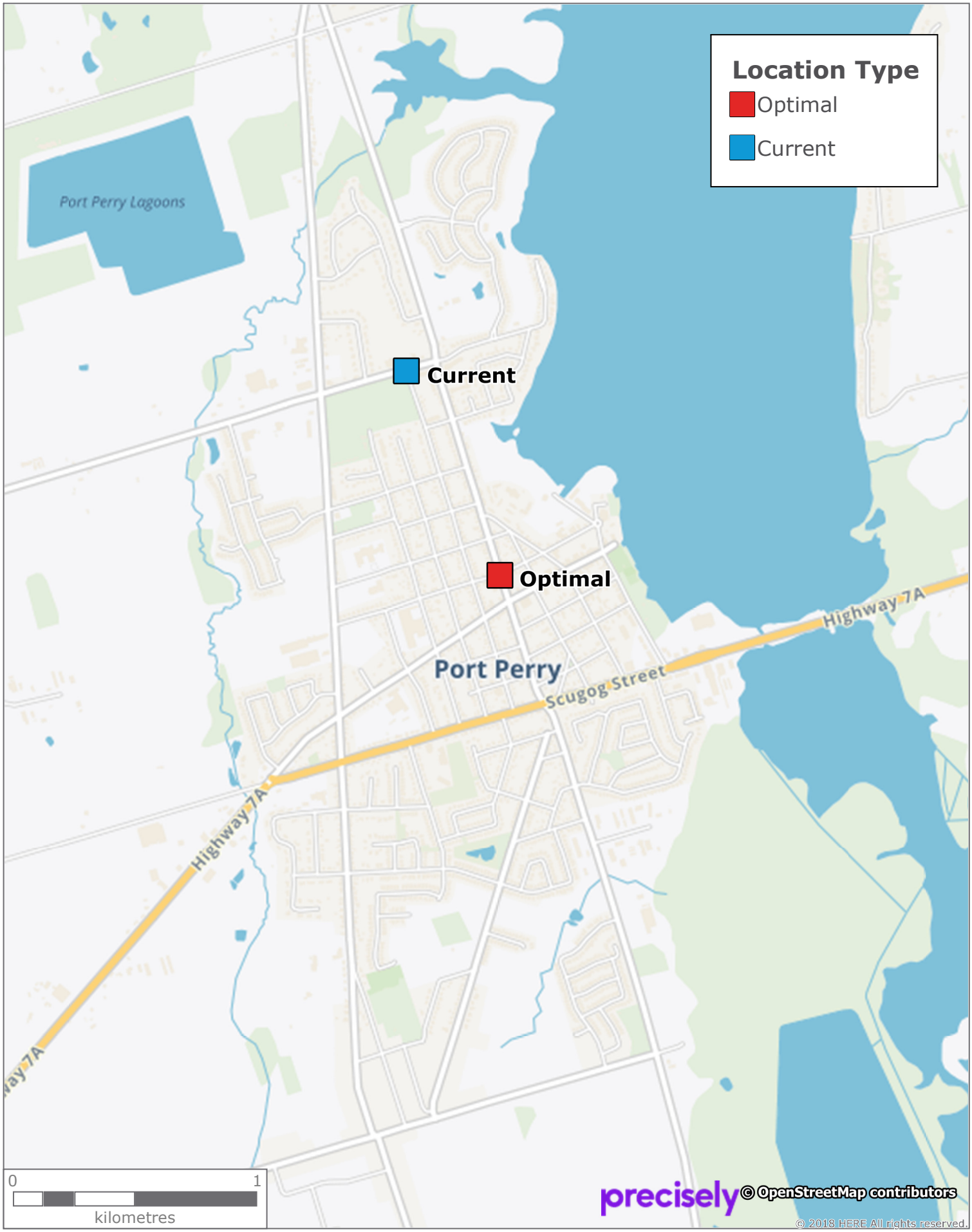
The outcomes from the process include:

- Service-wide maps to identify optimal sites and compare to current response locations.
- Detailed impacts on response performance and vehicle workload.
- Site-search maps that highlight the best options for potential sites within the local area.

Optimal Location for Port Perry

Further Station Optimization

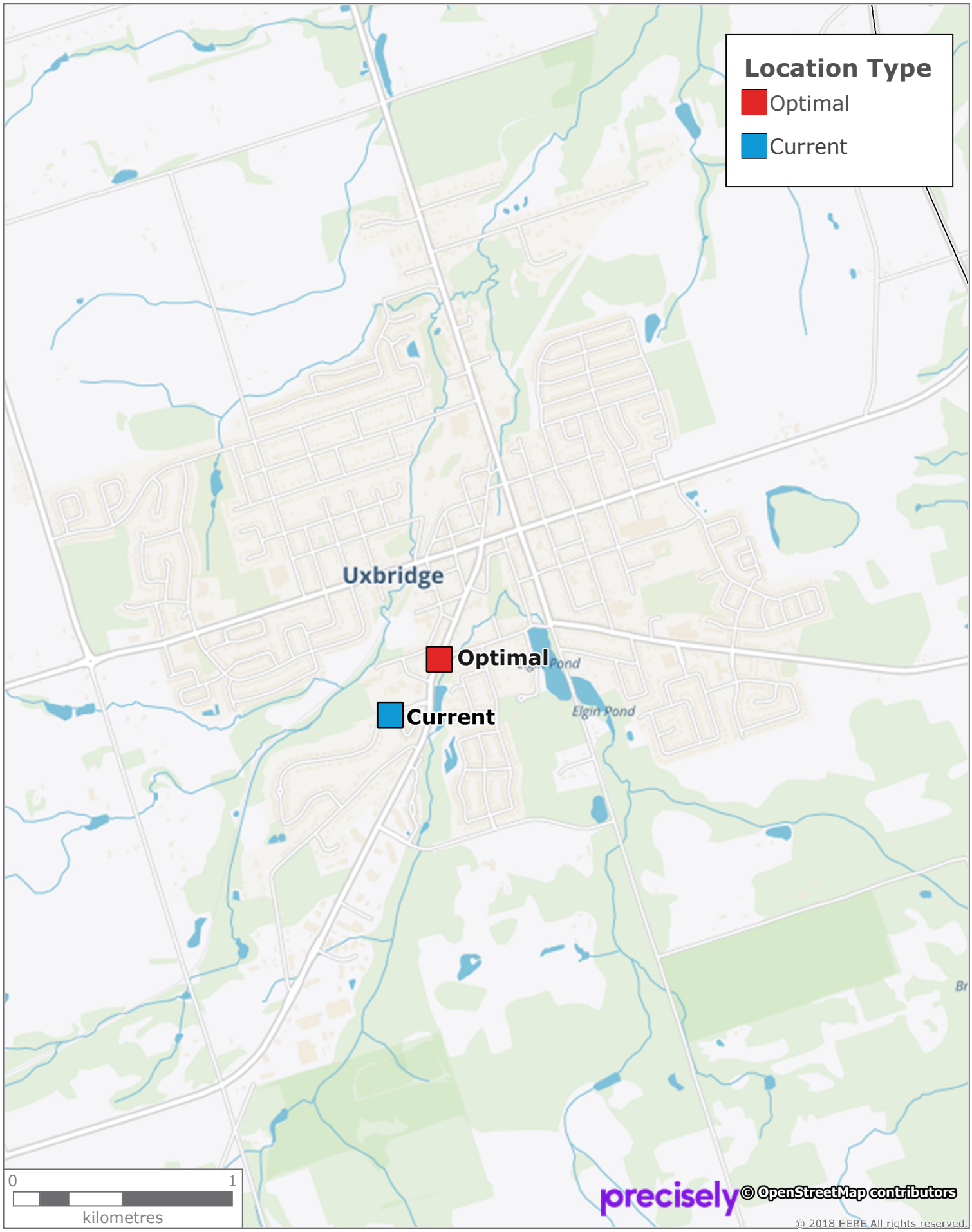
E2a **E2a**



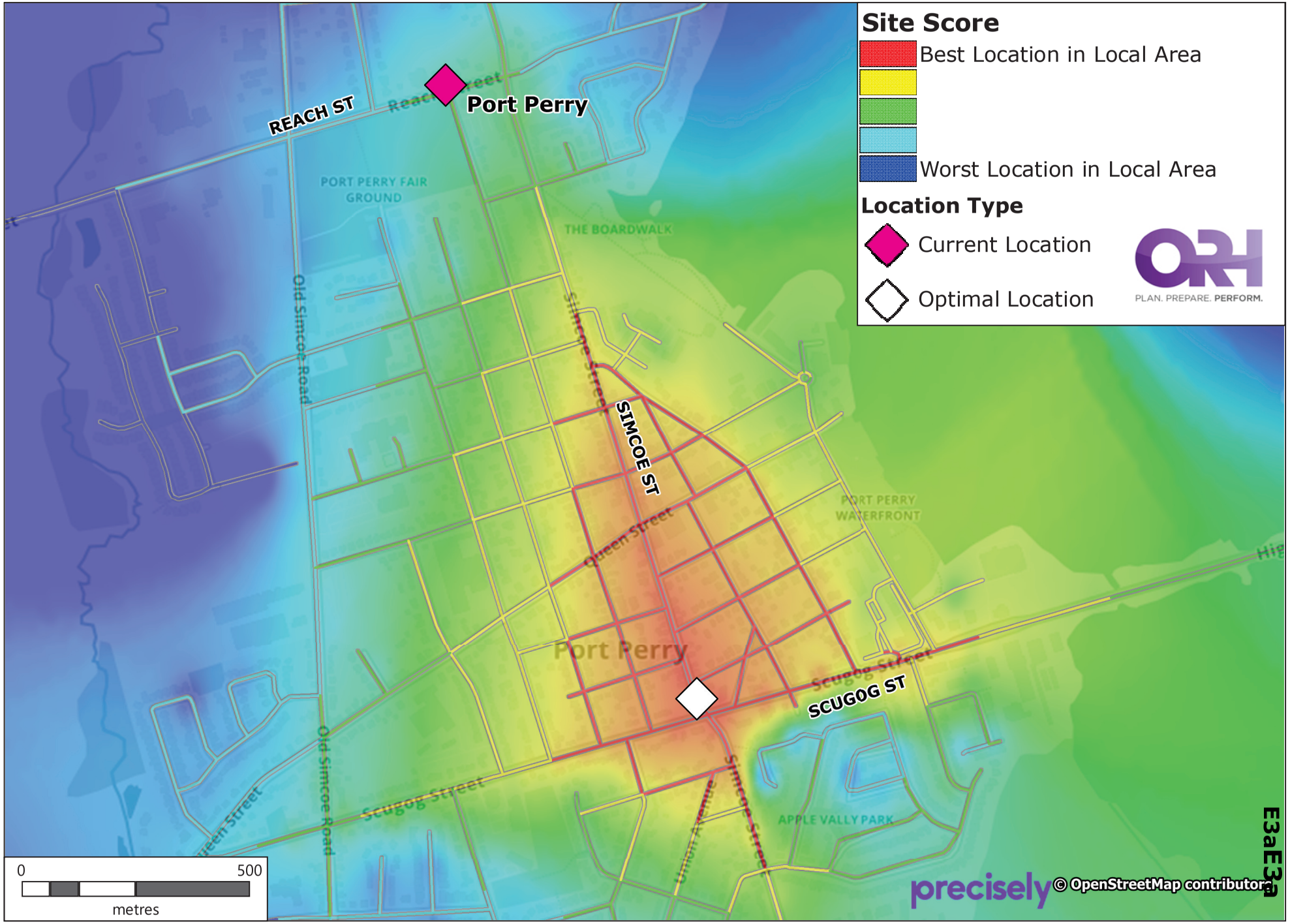
Optimal Location for Uxbridge

Further Station Optimization

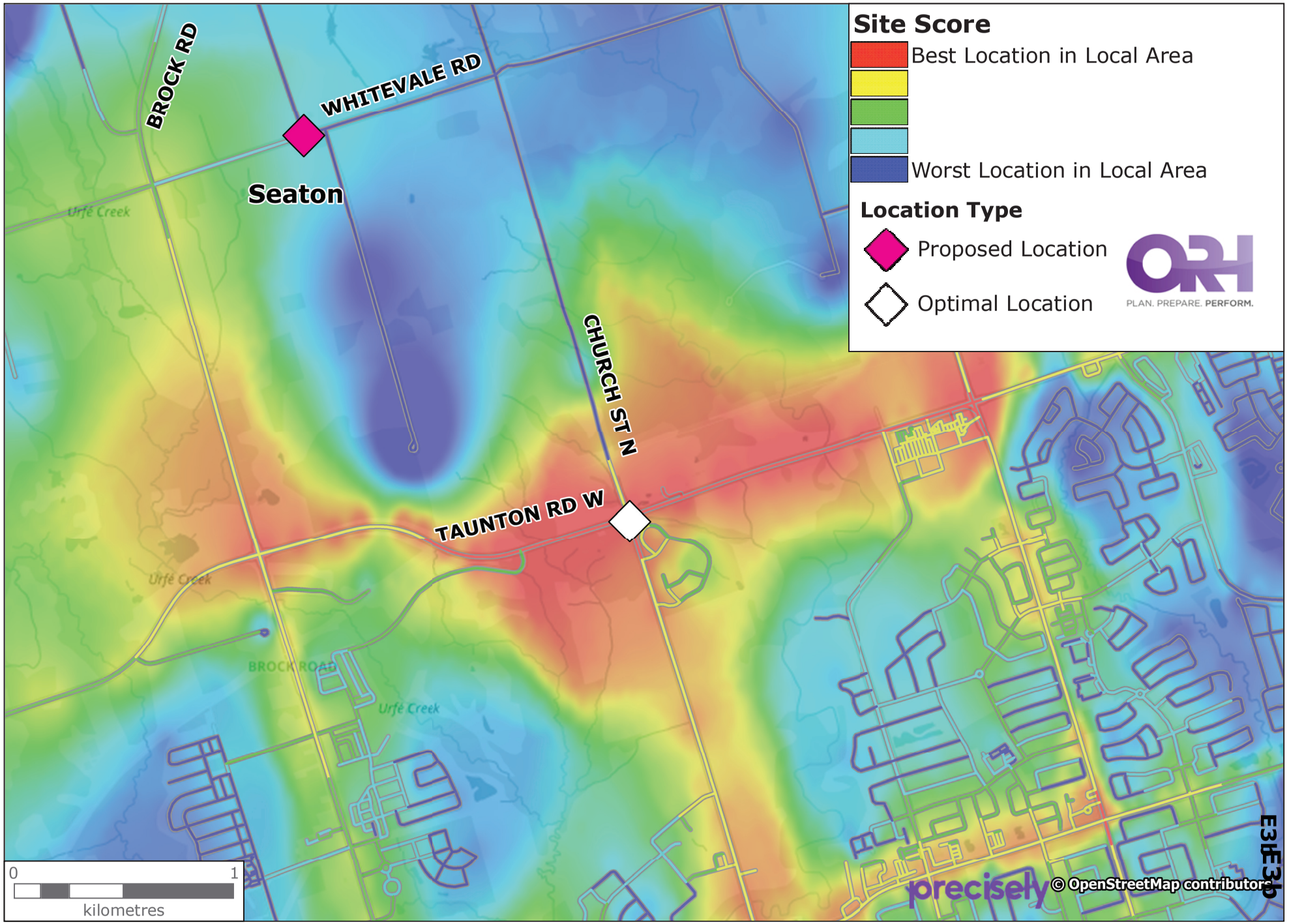
E2b



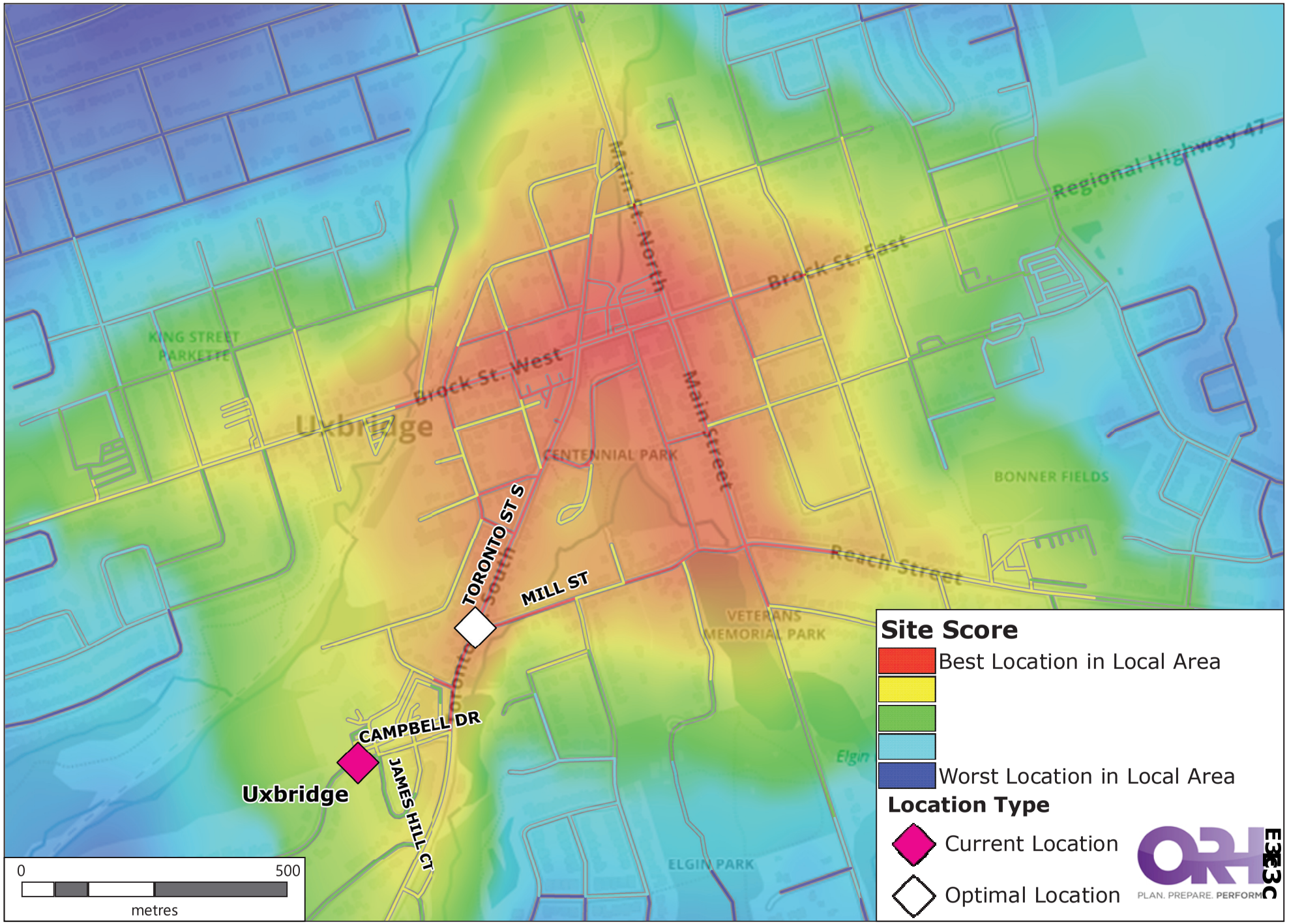
Site Search Optimization - Port Perry



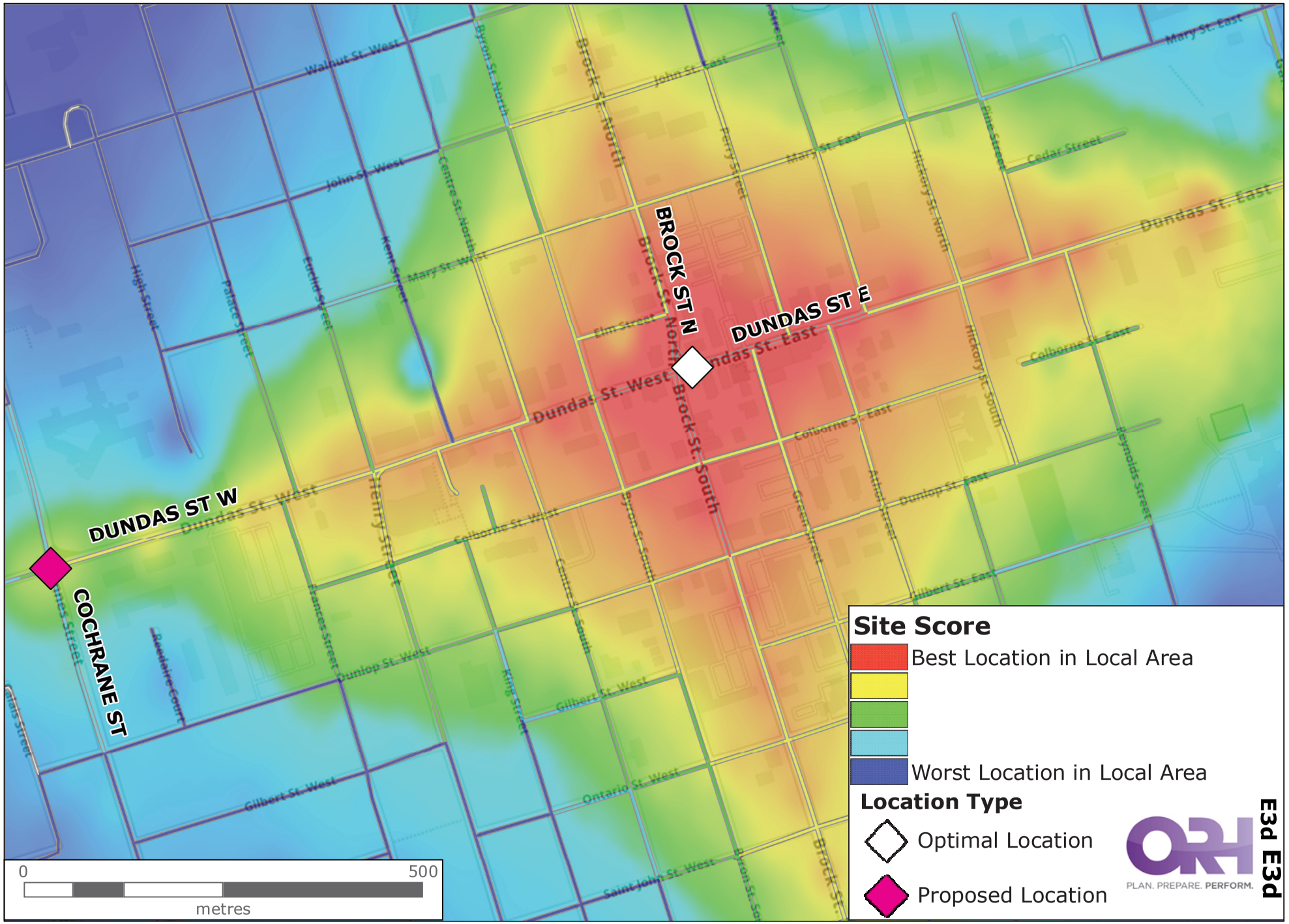
Site Search Optimization - Seaton



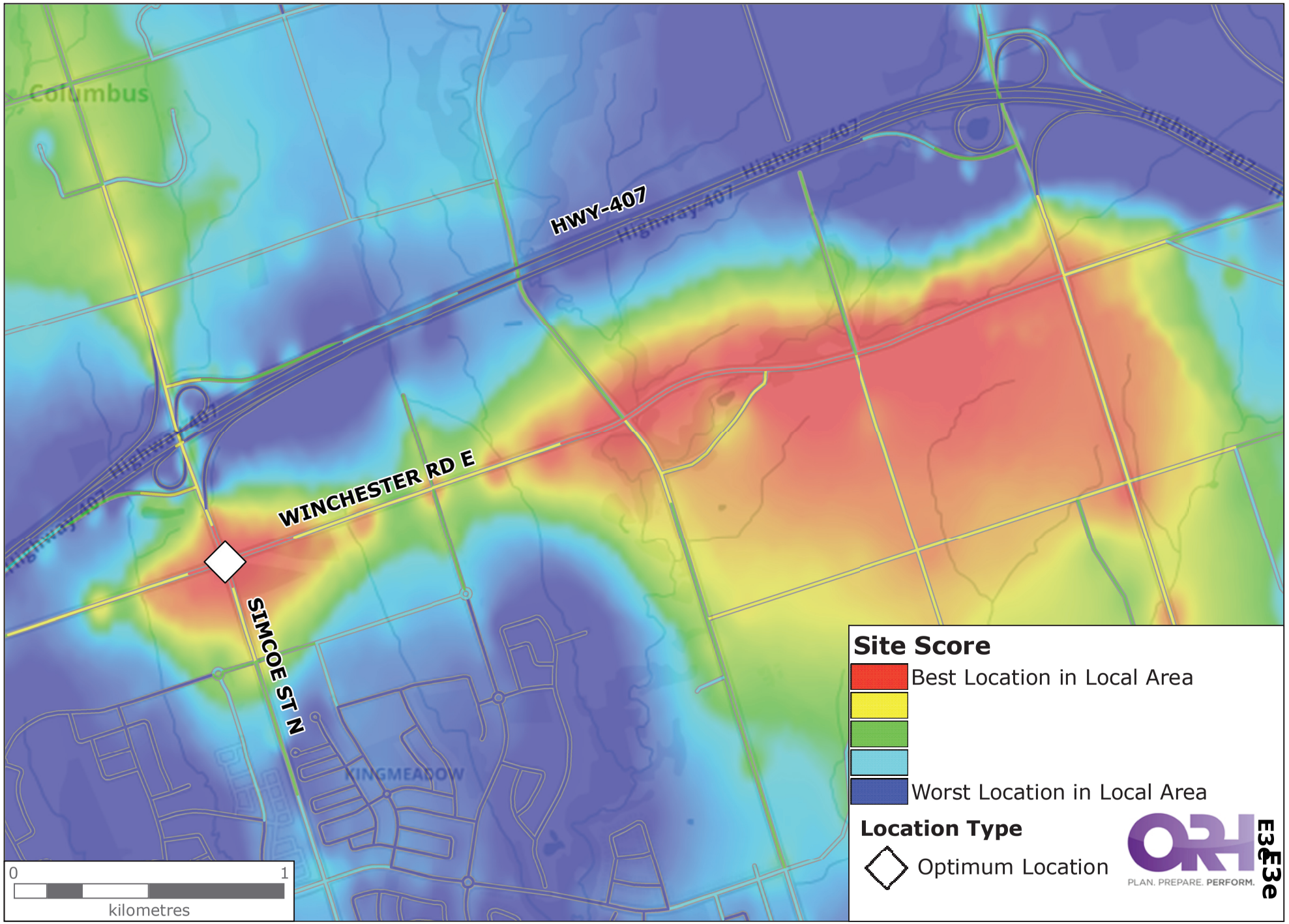
Site Search Optimization - Uxbridge



Site Search Optimization - Whitby South



Site Search Optimization - Winchester Simcoe



F Identifying Future Resource Requirements

F1 P4 Performance Results: Do Nothing Scenario

F2 Maintaining Performance by LTM – Upper Bound

- **F2a** P4 Mean Response Time Map
- **F2b** Peak Deployments

F3 Maintaining Performance by LTM – Lower Bound

- **F3a** P4 Performance Results
- **F3b** Deployments by Station
- **F3c** Peak Deployments

F1

Regional Municapility of Durham Paramedic Services

P4 Performance: Do Nothing Scenario

Modelling Results

Modelled 2031 Position

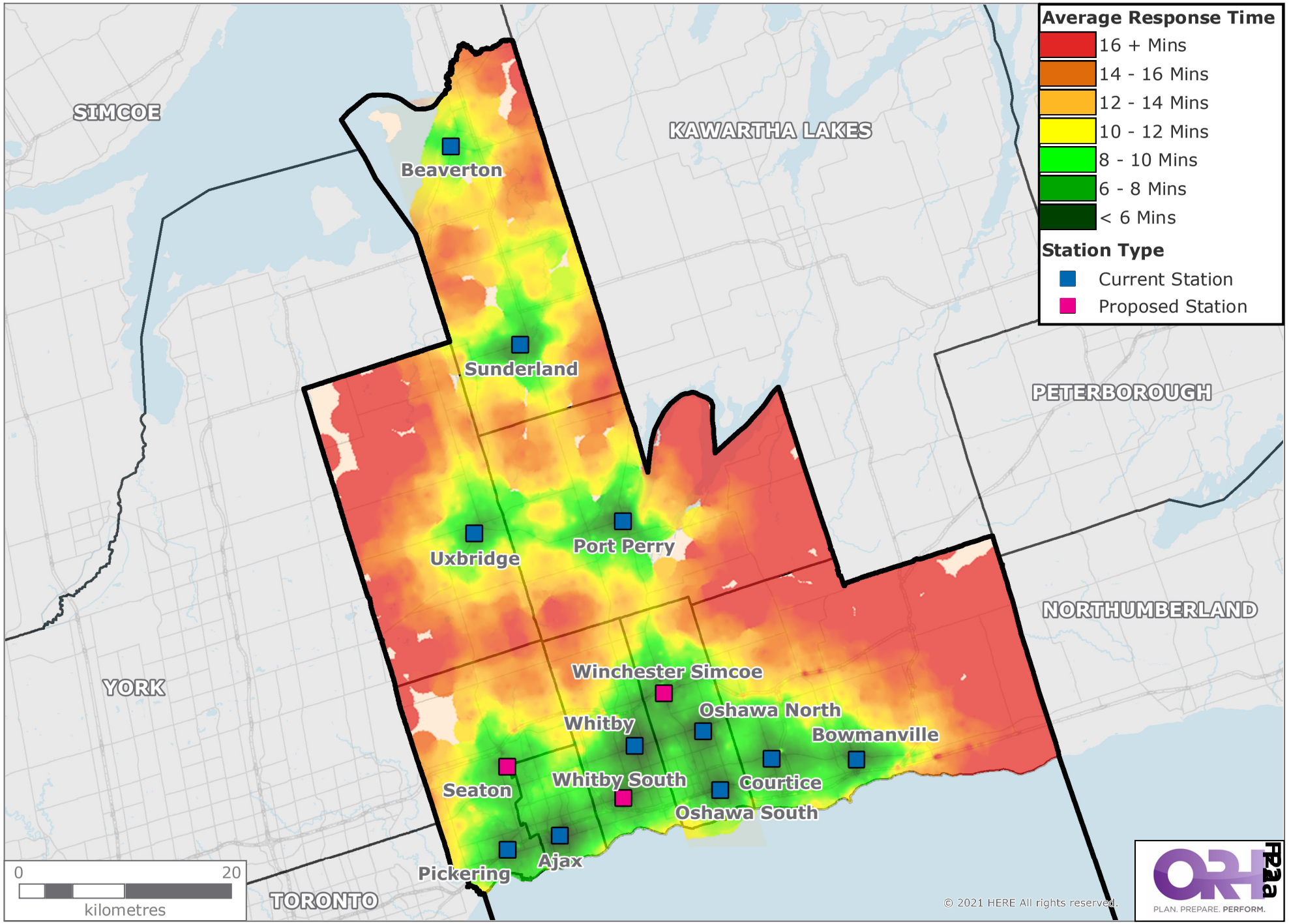
LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	52.9%	66.2%	82.5%	09:36	18:43
BROCK	36.4%	43.2%	66.4%	13:46	25:48
CLARINGTON	38.8%	50.9%	70.3%	12:18	23:07
OSHAWA	51.5%	63.0%	82.9%	09:28	17:26
PICKERING	39.9%	52.6%	72.4%	11:51	22:02
SCUGOG	45.9%	53.5%	73.4%	11:25	22:10
UXBRIDGE	34.6%	42.7%	63.8%	13:13	23:33
WHITBY	45.6%	60.6%	82.3%	10:04	17:26
Overall	**46.6%**	**58.6%**	**78.5%**	**10:33**	**20:09**

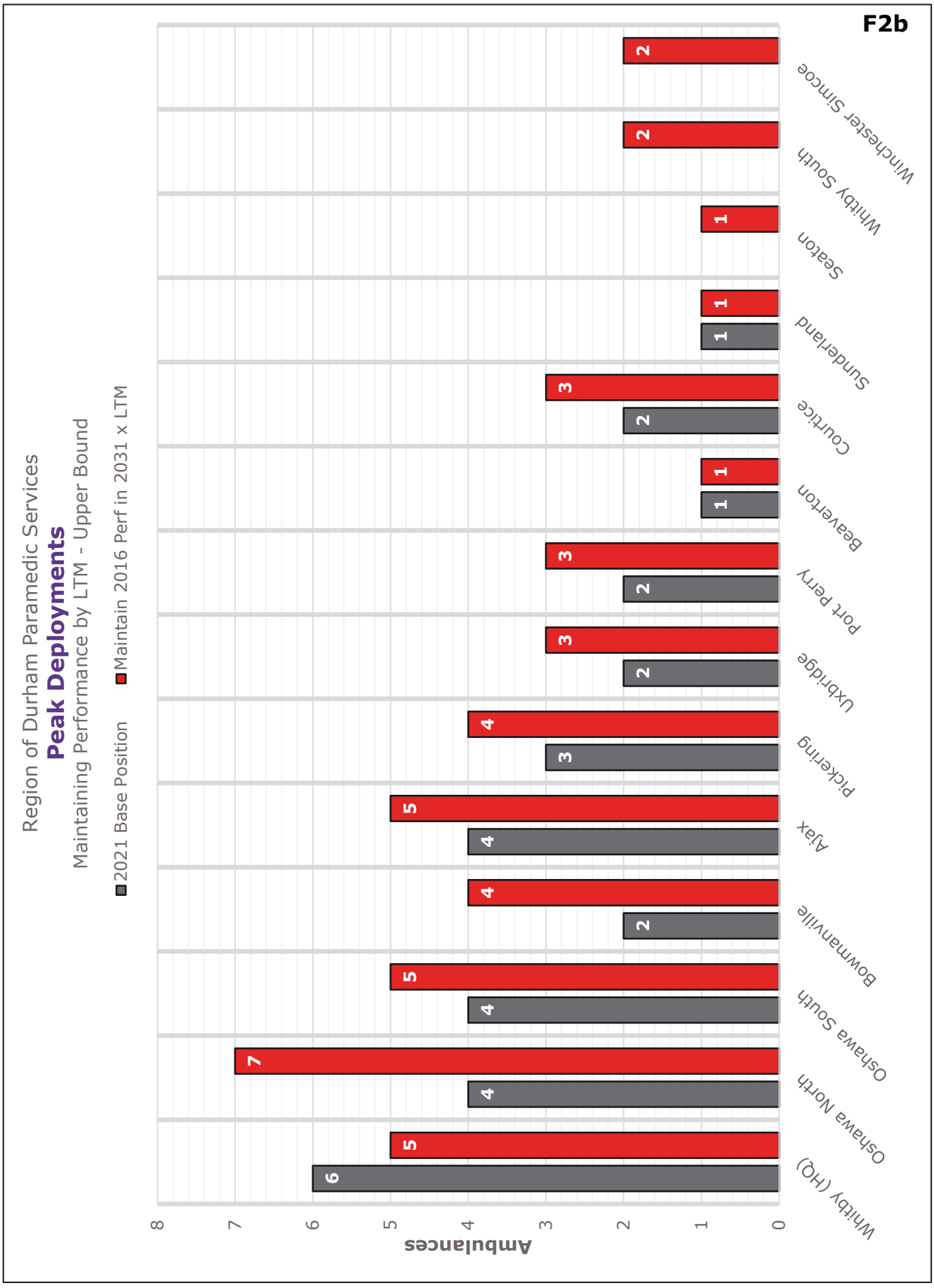
Difference to 2016 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-24.4%	-25.0%	-16.4%	03:13	08:55
BROCK	-5.0%	-3.9%	-2.4%	02:19	06:48
CLARINGTON	-31.0%	-30.9%	-23.7%	05:05	10:21
OSHAWA	-36.9%	-33.1%	-16.4%	03:59	09:11
PICKERING	-36.8%	-36.7%	-25.7%	05:19	11:52
SCUGOG	-13.5%	-15.1%	-13.6%	03:10	06:07
UXBRIDGE	-27.2%	-27.5%	-26.3%	04:45	08:33
WHITBY	-20.7%	-26.6%	-16.3%	02:54	06:54
Overall	**-29.6%**	**-29.4%**	**-18.2%**	**03:57**	**09:30**

P4 Non-IFT Mean Response Time Map: Maintain Performance by LTM - Upper Bound

Maintain 2016 Performance in 2031 - Upper Bound




F2b
Region of Durham Paramedic Services
Peak Deployments
Maintaining Performance by LTM - Upper Bound
2021 Base Position
Maintain 2016 Perf in 2031 x LTM
Ambulances
0
1
2
3
4
5
6
7
8
Whitby (HQ)
Oshawa North
Oshawa South
Bowmanville
Ajax
Pickering
Uxbridge
Port Perry
Beaverton
Courtice
Sunderland
Seaton
Whitby South
Winchester Simcoe
6
5
7
4
5
4
4
2
5
4
3
4
3
2
3
2
1
1
2
1
1
3
2
2
2
1

Regional Municapility of Durham Paramedic Services

P4 Performance: Maintaining 2016 Performance by LTM - Lower Bound

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	81.9%	95.3%	99.9%	05:46	08:43
BROCK	48.6%	56.4%	81.0%	09:53	18:24
CLARINGTON	70.3%	82.1%	94.9%	07:02	12:02
OSHAWA	86.2%	95.2%	99.4%	05:34	08:29
PICKERING	77.1%	91.0%	99.2%	06:17	09:01
SCUGOG	60.8%	68.8%	87.9%	08:03	15:46
UXBRIDGE	63.9%	71.8%	90.6%	07:53	14:45
WHITBY	86.4%	94.8%	99.2%	05:32	08:51
Overall	**80.2%**	**90.5%**	**97.7%**	**06:10**	**09:51**

Difference to 2016 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	4.7%	4.1%	1.0%	-00:37	-01:05
BROCK	7.2%	9.3%	12.2%	-01:34	-00:36
CLARINGTON	0.6%	0.3%	0.8%	-00:11	-00:44
OSHAWA	-2.2%	-0.8%	0.1%	00:05	00:14
PICKERING	0.4%	1.7%	1.1%	-00:15	-01:10
SCUGOG	1.3%	0.2%	0.9%	-00:12	-00:16
UXBRIDGE	2.0%	1.7%	0.5%	-00:35	-00:15
WHITBY	20.1%	7.7%	0.7%	-01:38	-01:41
Overall	**4.1%**	**2.4%**	**1.0%**	**-00:26**	**-00:48**

F3b

Regional Municapility of Durham Paramedic Services

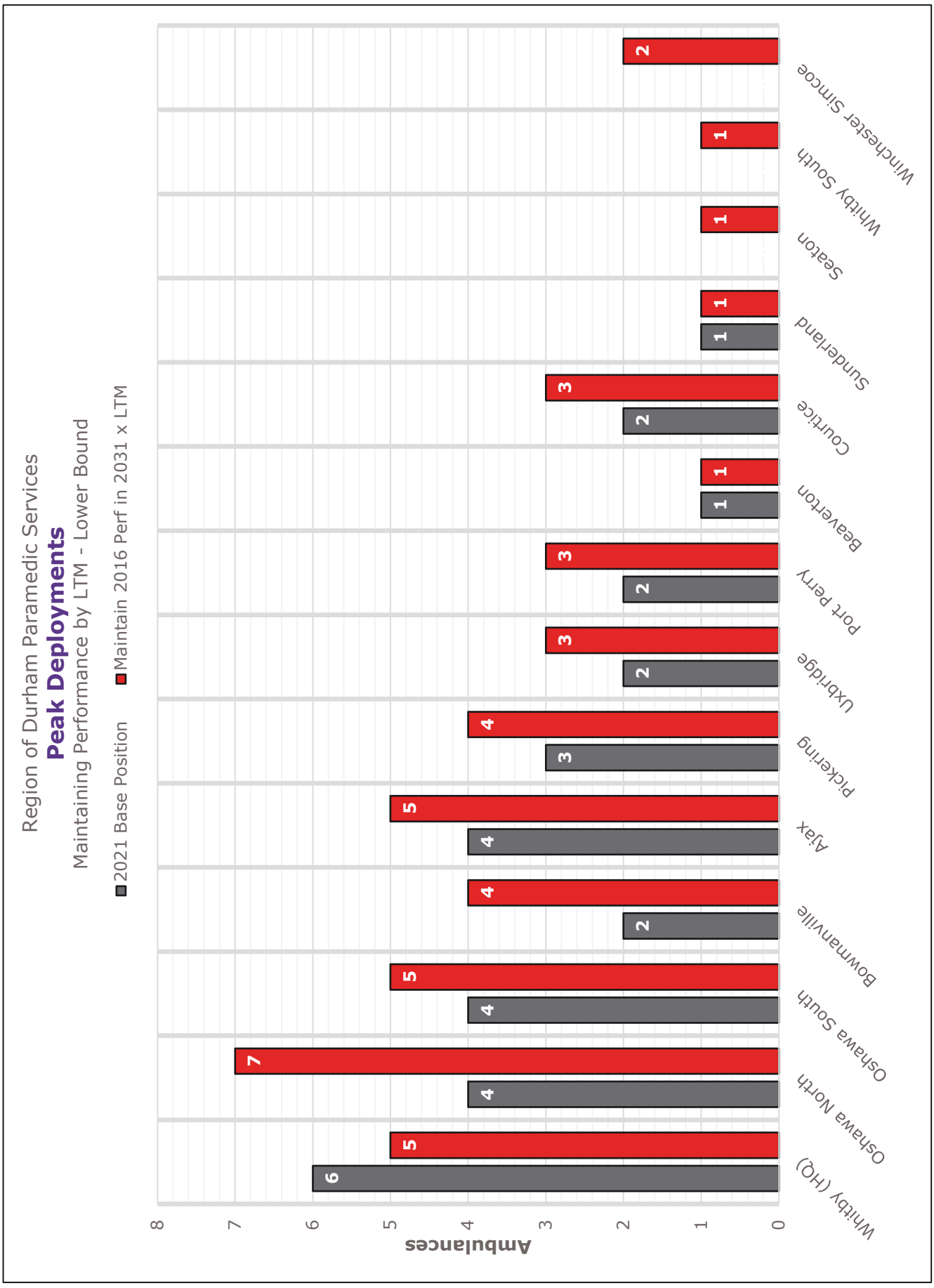
Maintaining 2016 Performance by LTM - Lower Bound

Modelling Results

Deployments by Station

Station	2021 Base		2031 Position		Difference
	Ambulance	RRV	Ambulance	RRV	Ambulance
Ajax	588		672		84
Beaverton	168		168		
Bowmanville	336		588		252
Courtice	252		336		84
Oshawa North	588		1,008		420
Oshawa South	532		700		168
Pickering	420		588		168
Port Perry	336		420		84
Sunderland	168	84	168	84	
Uxbridge	252		336		84
Whitby (HQ)	784	168	616	168	-168
Seaton			168		168
Whitby South			168		168
Winchester Simcoe			336		336
Grand Total	**4,424**	**252**	**6,272**	**252**	**1,848**

Staff Hours	9,100	12,796	3,696
FTE Staffing (inc. 47.7% relief)	320	450	130
FT Positions	271	381	110


Region of Durham Paramedic Services
Peak Deployments
Maintaining Performance by LTM - Lower Bound
2021 Base Position
Maintain 2016 Perf in 2031 x LTM
Ambulances
0
1
2
3
4
5
6
7
8
Whitby (HQ)
Oshawa North
Oshawa South
Bowmanville
Ajax
Pickering
Uxbridge
Port Perry
Beaverton
Courtice
Sunderland
Seaton
Whitby South
Winchester Simcoe
6
5
7
4
5
4
4
2
5
4
3
4
3
2
3
2
1
1
2
1
1
1
2
1
1

G Sensitivity Modelling Scenarios

G1 Removing Whitby and Winchester/Simcoe

G2 Alternative Oshawa Scenarios

- **G2a** Additional Optimal Downtown Site
- **G2b** Redistributing Oshawa South Additional Resource
  - G2b-i Winchester Simcoe
  - G2b-ii Oshawa North
- **G2c** Redistributing Oshawa North Additional Resources

G3 Alternative Performance Scenarios

- **G3a** Maintaining Overall Performance
- **G3b** Maintaining LTM Performance with 8- & 10- hour Shifts

G4 Alternate Phasing: Performance and Utilization

G5 Time at Hospital

- **G5a** Reduction: Maintaining 2016 Levels
- **G5b** Reduction: No Offload Delays (max of 40 minutes)
- **G5c** Increase: Equivalent to 2016 to 2019 Increase
- **G5d** Increase: Equivalent to Double 2016 to 2019 Increase

G6 Call Diversion

G7 Treat and Release

Regional Municapility of Durham Paramedic Services

P4 Performance: Removing Whitby South and Winchester/Simcoe

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	79.7%	93.5%	99.6%	05:57	09:06
BROCK	48.5%	56.4%	80.9%	09:52	18:24
CLARINGTON	69.8%	81.8%	94.7%	07:04	12:13
OSHAWA	83.9%	93.8%	99.2%	05:46	08:57
PICKERING	74.5%	88.9%	98.6%	06:33	09:37
SCUGOG	59.8%	68.1%	87.7%	08:11	15:58
UXBRIDGE	67.3%	75.0%	92.5%	07:24	13:47
WHITBY	68.0%	86.9%	98.6%	07:04	10:38
Overall	**75.4%**	**88.0%**	**97.4%**	**06:32**	**10:30**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-2.3%	-1.8%	-0.3%	00:12	00:22
BROCK	-0.2%	-0.1%	-0.1%	00:02	00:06
CLARINGTON	0.3%	0.2%	0.0%	-00:02	00:00
OSHAWA	-2.0%	-1.1%	-0.1%	00:11	00:22
PICKERING	-2.0%	-1.6%	-0.5%	00:14	00:31
SCUGOG	-1.2%	-1.1%	-0.6%	00:12	00:22
UXBRIDGE	0.3%	0.3%	0.2%	-00:04	-00:05
WHITBY	-18.5%	-7.9%	-0.5%	01:32	01:47
Overall	**-4.6%**	**-2.4%**	**-0.3%**	**00:22**	**00:39**

G2a

Regional Municapility of Durham Paramedic Services

P4 Performance: Additional Optimal Downtown Site

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.0%	95.3%	99.8%	05:45	08:43
BROCK	48.7%	56.5%	81.1%	09:49	18:18
CLARINGTON	69.8%	81.7%	94.7%	07:04	12:13
OSHAWA	90.4%	96.2%	99.5%	04:54	07:51
PICKERING	76.5%	90.6%	99.2%	06:20	09:06
SCUGOG	61.2%	69.3%	88.3%	07:58	15:36
UXBRIDGE	67.1%	74.8%	92.5%	07:27	13:52
WHITBY	86.5%	94.8%	99.2%	05:31	08:51
Overall	**81.9%**	**90.9%**	**97.7%**	**05:55**	**09:40**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.0%	0.0%	0.0%	-00:00	00:00
BROCK	0.0%	0.1%	0.1%	-00:01	00:00
CLARINGTON	0.3%	0.2%	0.0%	-00:01	00:00
OSHAWA	4.5%	1.3%	0.1%	-00:41	-00:44
PICKERING	0.0%	0.0%	0.0%	-00:00	00:00
SCUGOG	0.1%	0.1%	0.0%	-00:01	00:00
UXBRIDGE	0.1%	0.1%	0.1%	-00:01	00:00
WHITBY	0.1%	0.1%	0.0%	-00:02	00:00
Overall	**1.9%**	**0.6%**	**0.0%**	**-00:16**	**-00:11**

Region of Durham Paramedic Services

P4 Performance: Redistributing Oshawa South Additional Resource

Modelling Results

Winchester Simcoe

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.0%	95.3%	99.8%	05:45	08:43
BROCK	48.7%	56.5%	81.1%	09:49	18:18
CLARINGTON	69.5%	81.5%	94.6%	07:06	12:18
OSHAWA	85.2%	94.6%	99.3%	05:38	08:46
PICKERING	76.5%	90.6%	99.1%	06:20	09:06
SCUGOG	61.2%	69.3%	88.3%	07:58	15:36
UXBRIDGE	67.0%	74.7%	92.4%	07:27	13:52
WHITBY	86.5%	94.8%	99.1%	05:32	08:51
Overall	**79.7%**	**90.2%**	**97.7%**	**06:12**	**09:57**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.0%	0.0%	0.0%	-00:00	00:00
BROCK	0.0%	0.1%	0.1%	-00:01	00:00
CLARINGTON	-0.1%	-0.1%	0.0%	00:00	00:05
OSHAWA	-0.7%	-0.4%	0.0%	00:03	00:11
PICKERING	0.0%	0.0%	0.0%	00:00	00:00
SCUGOG	0.1%	0.1%	0.0%	-00:01	00:00
UXBRIDGE	0.0%	0.0%	0.0%	-00:00	00:00
WHITBY	0.0%	0.0%	0.0%	-00:00	00:00
Overall	**-0.3%**	**-0.2%**	**0.0%**	**00:01**	**00:06**

Region of Durham Paramedic Services

P4 Performance: Redistributing Oshawa South Additional Resource

Modelling Results

Oshawa North

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.0%	95.3%	99.8%	05:45	08:43
BROCK	48.6%	56.5%	81.1%	09:50	18:18
CLARINGTON	69.5%	81.6%	94.6%	07:06	12:13
OSHAWA	85.4%	94.6%	99.3%	05:37	08:40
PICKERING	76.5%	90.5%	99.1%	06:20	09:06
SCUGOG	61.1%	69.2%	88.3%	07:58	15:36
UXBRIDGE	67.0%	74.7%	92.4%	07:27	13:52
WHITBY	86.4%	94.7%	99.1%	05:32	08:51
Overall	**79.7%**	**90.2%**	**97.7%**	**06:11**	**09:57**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.0%	0.0%	0.0%	-00:00	00:00
BROCK	0.0%	0.0%	0.1%	-00:01	00:00
CLARINGTON	0.0%	0.0%	0.0%	00:00	00:00
OSHAWA	-0.5%	-0.3%	0.0%	00:02	00:06
PICKERING	-0.1%	0.0%	0.0%	00:00	00:00
SCUGOG	0.0%	0.0%	0.0%	-00:00	00:00
UXBRIDGE	0.0%	0.0%	0.1%	-00:00	00:00
WHITBY	-0.1%	0.0%	0.0%	00:00	00:00
Overall	**-0.2%**	**-0.1%**	**0.0%**	**00:01**	**00:06**

Region of Durham Paramedic Services

P4 Performance: Redistributing Oshawa North Additional Resources

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.0%	95.3%	99.8%	05:45	08:43
BROCK	48.6%	56.5%	81.1%	09:50	18:18
CLARINGTON	69.7%	81.7%	94.7%	07:05	12:13
OSHAWA	86.8%	95.5%	99.4%	05:30	08:24
PICKERING	76.6%	90.6%	99.2%	06:19	09:06
SCUGOG	61.2%	69.2%	88.3%	07:58	15:36
UXBRIDGE	66.9%	74.7%	92.4%	07:27	13:52
WHITBY	86.6%	94.8%	99.1%	05:31	08:51
Overall	**80.4%**	**90.6%**	**97.7%**	**06:08**	**09:45**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.0%	0.0%	0.0%	00:00	00:00
BROCK	-0.1%	0.0%	0.1%	-00:00	00:00
CLARINGTON	0.1%	0.1%	0.0%	-00:00	00:00
OSHAWA	0.9%	0.5%	0.1%	-00:05	-00:11
PICKERING	0.0%	0.0%	0.0%	-00:00	00:00
SCUGOG	0.1%	0.0%	0.0%	-00:00	00:00
UXBRIDGE	0.0%	0.0%	0.0%	-00:00	00:00
WHITBY	0.2%	0.1%	0.0%	-00:01	00:00
Overall	**0.4%**	**0.2%**	**0.0%**	**-00:02**	**-00:06**

G3a

Regional Municapility of Durham Paramedic Services

P4 Performance: Maintaining Overall Performance

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	81.6%	95.0%	99.8%	05:47	08:43
BROCK	45.7%	53.5%	77.9%	10:29	20:12
CLARINGTON	64.8%	77.8%	92.7%	07:36	13:25
OSHAWA	80.8%	91.3%	98.5%	06:01	09:38
PICKERING	75.9%	90.1%	99.0%	06:24	09:16
SCUGOG	57.4%	65.6%	85.4%	08:40	16:52
UXBRIDGE	57.1%	66.0%	86.8%	08:44	16:03
WHITBY	83.6%	92.8%	98.3%	05:48	09:31
Overall	**76.5%**	**87.8%**	**96.9%**	**06:31**	**10:41**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-0.4%	-0.3%	-0.1%	00:03	00:00
BROCK	-2.9%	-3.0%	-3.1%	00:39	01:54
CLARINGTON	-4.8%	-3.8%	-1.9%	00:30	01:13
OSHAWA	-5.1%	-3.6%	-0.9%	00:27	01:03
PICKERING	-0.6%	-0.5%	-0.1%	00:04	00:10
SCUGOG	-3.7%	-3.7%	-2.9%	00:41	01:16
UXBRIDGE	-9.9%	-8.7%	-5.6%	01:17	02:10
WHITBY	-2.8%	-1.9%	-0.8%	00:16	00:40
Overall	**-3.4%**	**-2.5%**	**-0.8%**	**00:21**	**00:50**

Regional Municapility of Durham Paramedic Services

P4 Performance: Maintaining LTM Performance with 8-/10-hour Shifts

Modelling Results

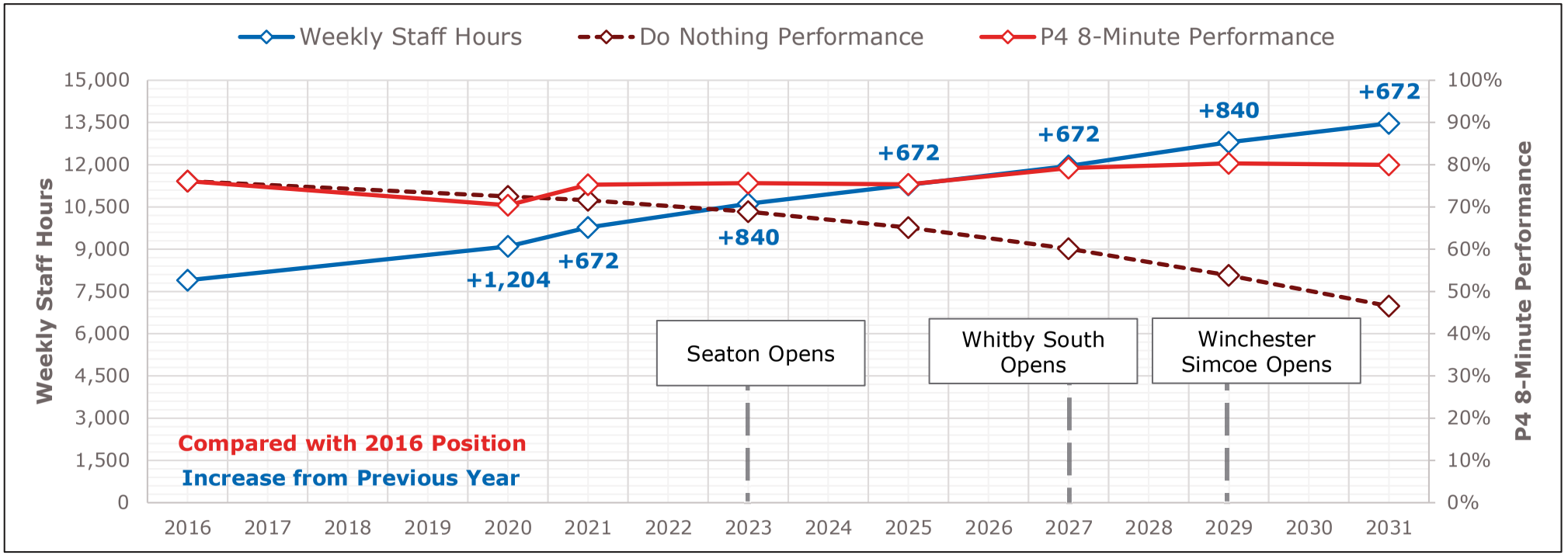
Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	81.9%	95.2%	99.8%	05:45	08:43
BROCK	48.2%	56.1%	80.6%	09:55	18:36
CLARINGTON	69.6%	81.6%	94.7%	07:05	12:13
OSHAWA	85.9%	94.9%	99.4%	05:35	08:35
PICKERING	76.4%	90.5%	99.1%	06:20	09:06
SCUGOG	60.6%	68.9%	88.1%	08:02	15:41
UXBRIDGE	65.4%	73.3%	91.6%	07:39	14:14
WHITBY	86.3%	94.7%	99.2%	05:32	08:51
Overall	**79.9%**	**90.3%**	**97.7%**	**06:11**	**09:51**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-0.1%	-0.1%	0.0%	00:00	00:00
BROCK	-0.5%	-0.4%	-0.4%	00:05	00:18
CLARINGTON	0.0%	0.0%	0.0%	00:00	00:00
OSHAWA	0.0%	0.0%	0.0%	00:00	00:00
PICKERING	-0.1%	-0.1%	0.0%	00:00	00:00
SCUGOG	-0.4%	-0.4%	-0.2%	00:03	00:05
UXBRIDGE	-1.6%	-1.4%	-0.8%	00:11	00:21
WHITBY	-0.1%	0.0%	0.0%	00:00	00:00
Overall	**-0.1%**	**-0.1%**	**0.0%**	**00:01**	**00:00**

Alternate Phasing: Performance and Utilization



Difference in P4 8-Minute Response Performance from Original Phasing

LTM	2021	2023	2025	2027	2029	2031
AJAX	0.0%	-0.1%	-1.2%	-0.2%	0.0%	0.0%
BROCK	-2.0%	-1.1%	-1.1%	0.0%	0.0%	0.0%
CLARINGTON	-0.3%	-1.9%	-0.4%	-0.3%	0.0%	0.0%
OSHAWA	-0.4%	-1.7%	-1.3%	-0.9%	0.0%	0.0%
PICKERING	-3.0%	-0.2%	-3.6%	-0.2%	0.0%	0.0%
SCUGOG	-2.1%	-1.7%	-1.9%	0.0%	0.0%	0.0%
UXBRIDGE	-5.2%	-3.1%	-3.6%	-0.1%	0.0%	0.0%
WHITBY	0.0%	0.0%	-0.2%	-0.9%	0.0%	0.0%
Overall	**-0.7%**	**-1.1%**	**-1.3%**	**-0.6%**	**0.0%**	**0.0%**

G4

G5a

Regional Municapility of Durham Paramedic Services

P4 Performance: Reduction in TAH: Maintaining 2016 Levels

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.5%	95.7%	99.9%	05:42	08:38
BROCK	48.9%	56.8%	81.3%	09:47	18:06
CLARINGTON	70.3%	82.1%	94.9%	07:01	12:02
OSHAWA	87.2%	95.8%	99.6%	05:27	08:18
PICKERING	77.5%	91.3%	99.3%	06:14	08:56
SCUGOG	61.5%	69.6%	88.5%	07:55	15:31
UXBRIDGE	67.9%	75.4%	92.8%	07:21	13:37
WHITBY	87.7%	95.6%	99.4%	05:25	08:34
Overall	**81.0%**	**91.1%**	**97.9%**	**06:05**	**09:34**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.5%	0.4%	0.1%	-00:03	-00:06
BROCK	0.4%	0.3%	0.2%	-00:04	-00:12
CLARINGTON	0.7%	0.5%	0.2%	-00:03	-00:11
OSHAWA	1.4%	0.9%	0.2%	-00:08	-00:17
PICKERING	1.0%	0.8%	0.2%	-00:06	-00:10
SCUGOG	1.4%	1.3%	0.5%	-00:11	-00:10
UXBRIDGE	0.3%	0.2%	0.1%	-00:01	-00:05
WHITBY	1.3%	0.8%	0.3%	-00:07	-00:17
Overall	**1.1%**	**0.8%**	**0.2%**	**-00:06**	**-00:17**

Regional Municapility of Durham Paramedic Services

P4 Performance: Reduction in TAH: No Offload Delays (max 40 mins)

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	83.5%	96.3%	100.0%	05:37	08:27
BROCK	48.8%	56.7%	81.3%	09:48	18:12
CLARINGTON	71.0%	82.6%	95.1%	06:57	11:56
OSHAWA	88.9%	96.9%	99.8%	05:18	08:02
PICKERING	79.6%	92.9%	99.6%	06:03	08:30
SCUGOG	61.3%	69.4%	88.4%	07:56	15:36
UXBRIDGE	67.4%	75.1%	92.6%	07:24	13:47
WHITBY	89.2%	96.4%	99.6%	05:17	08:11
Overall	**82.5%**	**92.0%**	**98.1%**	**05:57**	**09:18**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	1.5%	1.0%	0.1%	-00:08	-00:17
BROCK	0.3%	0.2%	0.2%	-00:03	-00:06
CLARINGTON	1.4%	1.0%	0.4%	-00:07	-00:16
OSHAWA	3.1%	2.0%	0.4%	-00:17	-00:33
PICKERING	3.1%	2.3%	0.4%	-00:17	-00:36
SCUGOG	1.2%	1.0%	0.4%	-00:09	-00:05
UXBRIDGE	-0.2%	-0.2%	-0.1%	00:03	00:05
WHITBY	2.8%	1.7%	0.5%	-00:15	-00:40
Overall	**2.5%**	**1.7%**	**0.4%**	**-00:13**	**-00:33**

G5c

Regional Municapility of Durham Paramedic Services

P4 Performance: Increase in TAH: Equivalent to 2016 to 2019 Increase

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	81.1%	94.6%	99.7%	05:50	08:49
BROCK	48.1%	56.0%	80.5%	09:57	18:36
CLARINGTON	68.4%	80.7%	94.3%	07:12	12:29
OSHAWA	83.8%	93.5%	99.0%	05:47	09:02
PICKERING	75.0%	89.4%	98.9%	06:29	09:27
SCUGOG	59.5%	67.9%	87.7%	08:11	15:52
UXBRIDGE	66.1%	73.9%	91.9%	07:33	14:08
WHITBY	84.4%	93.4%	98.6%	05:44	09:19
Overall	**78.2%**	**89.1%**	**97.3%**	**06:20**	**10:19**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-0.9%	-0.7%	-0.1%	00:05	00:06
BROCK	-0.4%	-0.5%	-0.6%	00:07	00:18
CLARINGTON	-1.2%	-1.0%	-0.4%	00:07	00:16
OSHAWA	-2.0%	-1.4%	-0.4%	00:12	00:28
PICKERING	-1.5%	-1.2%	-0.3%	00:09	00:21
SCUGOG	-0.6%	-0.5%	-0.3%	00:05	00:10
UXBRIDGE	-1.5%	-1.4%	-0.8%	00:12	00:26
WHITBY	-2.0%	-1.3%	-0.5%	00:12	00:28
Overall	**-1.7%**	**-1.2%**	**-0.4%**	**00:10**	**00:28**

Regional Municapility of Durham Paramedic Services

P4 Performance: Increase in TAH: Equivalent to Double 2016 to 2019 Increase

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	79.9%	93.6%	99.5%	05:58	09:06
BROCK	47.6%	55.3%	79.9%	10:06	19:00
CLARINGTON	66.8%	79.3%	93.5%	07:25	13:01
OSHAWA	81.1%	91.2%	98.2%	06:02	09:38
PICKERING	73.0%	87.7%	98.4%	06:43	10:03
SCUGOG	59.7%	67.9%	87.5%	08:12	15:58
UXBRIDGE	63.7%	71.9%	90.7%	07:53	14:40
WHITBY	82.0%	91.8%	97.8%	05:59	09:53
Overall	**76.2%**	**87.5%**	**96.8%**	**06:33**	**10:52**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	-2.1%	-1.6%	-0.3%	00:13	00:22
BROCK	-1.0%	-1.1%	-1.2%	00:15	00:42
CLARINGTON	-2.8%	-2.4%	-1.2%	00:20	00:49
OSHAWA	-4.7%	-3.7%	-1.1%	00:27	01:03
PICKERING	-3.5%	-2.8%	-0.7%	00:23	00:57
SCUGOG	-0.4%	-0.5%	-0.5%	00:06	00:16
UXBRIDGE	-3.9%	-3.4%	-2.0%	00:32	00:58
WHITBY	-4.4%	-3.0%	-1.3%	00:27	01:02
Overall	**-3.7%**	**-2.8%**	**-0.9%**	**00:23**	**01:01**

G6

Regional Municapility of Durham Paramedic Services

P4 Performance: Call Diversion - 6.5% Demand Reduction

Modelling Results

Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.2%	95.6%	99.9%	05:44	08:38
BROCK	49.2%	57.0%	81.6%	09:44	18:00
CLARINGTON	70.2%	82.1%	94.9%	07:02	12:07
OSHAWA	86.7%	95.6%	99.5%	05:31	08:24
PICKERING	77.6%	91.5%	99.3%	06:14	08:50
SCUGOG	61.5%	69.5%	88.4%	07:56	15:31
UXBRIDGE	67.9%	75.3%	92.7%	07:22	13:42
WHITBY	87.5%	95.4%	99.3%	05:27	08:34
Overall	**80.7%**	**91.0%**	**97.9%**	**06:07**	**09:40**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.2%	0.3%	0.1%	-00:01	-00:06
BROCK	0.6%	0.5%	0.6%	-00:06	-00:18
CLARINGTON	0.6%	0.5%	0.2%	-00:03	-00:05
OSHAWA	0.8%	0.6%	0.2%	-00:03	-00:11
PICKERING	1.1%	0.9%	0.2%	-00:05	-00:16
SCUGOG	0.4%	0.3%	0.1%	-00:03	-00:05
UXBRIDGE	0.9%	0.6%	0.4%	-00:06	-00:11
WHITBY	1.0%	0.7%	0.2%	-00:05	-00:17
Overall	**0.8%**	**0.6%**	**0.2%**	**-00:04**	**-00:11**

Regional Municapility of Durham Paramedic Services

P4 Performance: Treat & Release - 14.2% Conveyance Rate Reduction

Modelling Results

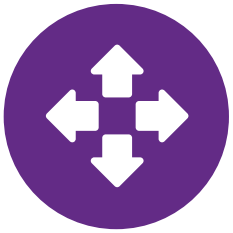
Modelled 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	82.5%	95.8%	99.9%	05:43	08:38
BROCK	49.3%	57.1%	81.7%	09:43	18:00
CLARINGTON	70.5%	82.3%	95.0%	07:00	12:02
OSHAWA	87.1%	95.8%	99.6%	05:29	08:18
PICKERING	78.4%	92.0%	99.4%	06:09	08:45
SCUGOG	61.4%	69.5%	88.4%	07:56	15:31
UXBRIDGE	67.8%	75.3%	92.8%	07:21	13:42
WHITBY	88.0%	95.7%	99.4%	05:23	08:28
Overall	**81.2%**	**91.2%**	**97.9%**	**06:04**	**09:34**

Difference to 2031 Position

LTM	Performance				
	8-Minute	10-Minute	15-Minute	Average	90th Percentile
AJAX	0.5%	0.5%	0.1%	-00:02	-00:06
BROCK	0.6%	0.7%	0.6%	-00:08	-00:18
CLARINGTON	1.0%	0.7%	0.3%	-00:06	-00:11
OSHAWA	1.2%	0.9%	0.2%	-00:06	-00:17
PICKERING	1.9%	1.4%	0.3%	-00:10	-00:21
SCUGOG	0.3%	0.3%	0.1%	-00:03	-00:05
UXBRIDGE	0.8%	0.6%	0.4%	-00:06	-00:11
WHITBY	1.6%	0.9%	0.3%	-00:09	-00:23
Overall	**1.2%**	**0.9%**	**0.2%**	**-00:06**	**-00:17**

Emergency Service Planning



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The Regional Municipality of Durham Report

To:	Health and Social Services Committee
From:	Commissioner of Social Services
Report:	#2021-SS-10
Date:	October 7, 2021

Subject:

An Update on the Region of Durham's Homelessness Support and Coordinated Access System

Recommendation:

That the Health and Social Services Committee recommends:

That this report be received for information.

Report:

1. Purpose

1.1 The purpose of this report is to provide an update on the Region of Durham's Homelessness Support and Coordinated Access System.

2. Background

2.1 Built for Zero Canada (BFZ-C) is led by the Canadian Alliance to End Homelessness (CAEH). It is a Canada wide change effort that helps a core group of leading communities work towards ending chronic homelessness by implementing a By-Name List (BNL) and Coordinated Access System. The Region of Durham (Durham) was invited to join the Campaign in July 2019.

a. A BNL is a real-time list of all people experiencing homelessness in Durham that includes specific data points to support prioritization and program matching. Knowing the people experiencing homelessness by name and prioritizing the most vulnerable is essential to ending homelessness in Durham.
b. Coordinated Access is a process that helps people experiencing homelessness get help in a coordinated way. In a Coordinated Access System, service providers use a shared information system and work together

to triage, assess and prioritize people in a standardized way to access supported housing opportunities (see Appendix A).

2.2 Durham achieved the first milestone, to operationalize the By-Name List, in October 2020.

2.3 Durham then implemented Coordinated Access in less than six months after achieving a Quality By-Name List by remaining action-oriented. Durham achieved a Quality Coordinated Access System in April 2021. Durham is only the fifth community to achieve this milestone.

a. Having a quality Coordinated Access System means that our system is focused on matching people experiencing homelessness to appropriate supports and housing solutions as quickly as possible.

3. Previous Reports and Decisions

3.1 2020-INFO-104: Built for Zero Canada Update

3.2 2020-SS-12: Durham's Homelessness Support System Update

4. Homelessness Support and Coordinated Access System Statistics

4.1 By-Name List Statistics are updated monthly and provided to the Health and Social Services Committee with the Durham Advisory Committee on Homelessness (DACH) Minutes. At the end of June 2021:

Data Point	June 2021	Notes
Total number of people experiencing Homelessness on Durham's By-Name List	149	
Total number of people experiencing Chronic Homelessness on Durham's By-Name List	95	Someone experiencing chronic homelessness has been homeless for six months or longer in the past year.
Current Sleeping Arrangements of all people experiencing homelessness.		
Housing-Focused Shelter	57	Includes people in shelter and in shelter hotel programs.
Unsheltered	41	Includes people sleeping rough or in places not fit for habitation.
Couch Surfing	26	

Other	25	Includes other sleeping arrangements such as Public Institution (correctional facility, hospital) or Not Declared.
Demographics of all people experiencing homelessness.		
Adults (24 to 59 years)	109	
Youth (16 to 24 years)	24	
Families	16	
People who Identify as Male	90	
People who Identify as Female	59	

a. The homelessness support system housed 112 people from January 1, 2021 – June 30, 2021. On average, more than 18 people are housed using Durham's Coordinated Access System each month.
b. Our Coordinated Access System reached a new milestone in May by achieving our first month of reducing chronic homelessness in Durham by 10 people.

- People are housed from Durham's By-Name List through 19 housing programs and almost 200 program spaces.

c. Durham is on track to add more than 100 additional spaces in 2021.

4.2 Durham's Homelessness Support and Coordinated Access System is also focused on preventing homelessness wherever possible. Eviction prevention supports and the Housing Stability Program (HSP) work collaboratively to stabilize households at-risk of eviction. From January 1, 2021 to June 30, 2021:

Support	Number of People Helped	Notes
Housing Stability Program: Rent and/or Utility Arrears	150	Rent and utility arrears help people who are at-risk of eviction remain stably housed.
Housing Stability Program: Last Month's Rent	195	Last month's rent helps people who can't afford to pay their last month's rent upfront when they secure a place to live.

Eviction Prevention Case Management	862	Eviction prevention workers across Durham help people who are at-risk of homelessness with case management to help them stay housed.

4.3 Housing-focused shelters help people move from homelessness to housing as quickly as possible. From the moment someone enters shelter, there are supports and a plan to ensure a safe and appropriate exit from shelter. Shelter programs are part of the process of helping people end their homelessness while helping to meet their basic needs. From January 1, 2021 to June 30, 2021:

Data Point	Time Period: January 1, 2021 to June 30, 2021:
Total people who accessed shelter	723
Average length of stay	14 days
Number of shelter beds available each night	113 (not including hotel program extensions)
Average number of shelter beds used each night	98
Average occupancy rate across shelter beds from January-June 2021.	~72%

5. Housing-Focused Initiatives

5.1 Durham Region's Homelessness Support and Coordinated Access System is committed to being housing focused to continuously increase the number of housing opportunities for the By-Name List and engage with clients about housing at every opportunity.

5.2 Durham implemented several housing-focused strategies throughout 2020/2021:

a. Renter's Toolkit: A self-service toolkit available on durham.ca that provides information, links to resources and tip sheets for renters. This self-service option allows housing outreach workers to dedicate more one-on-one support for residents who need more help.
b. Landlord engagement specialist pilot positions: Two pilot positions focused on landlord engagement to increase partnerships with landlords across Durham with the goal of increasing the number of housing opportunities for Durham's By-Name List.

c. Investing in capital projects: Several capital projects have been initiated to support new housing opportunities for Durham's By-Name List. It is expected that more than 50 new units will be online across Durham by the end of 2021.
d. Investing in Housing First: Housing First programs were expanded to increase the number of evidence-based, low-barrier housing opportunities for Durham's By-Name List. These programs match a case manager to people on Durham's By-Name List and work one-on-one with intensive housing-focused case management.
e. Housing-Focused Shelters: Homeless shelters in Durham are working with the Canadian Shelter Transformation Network to become housing-focused to make homelessness as brief as possible for shelter clients with a strong focus on engaging with clients on their housing plans. An additional shelter location was opened in Ajax to increase capacity and help people stay in their home community.
f. Street Outreach Strategy: OrgCode Consulting, Inc. developed a Street Outreach Strategy for Durham that focuses on housing-based case management to help people exit unsheltered homelessness. Housing-based case management helps clients meet their basic needs while also working towards housing goals at every opportunity.

6. Homelessness Funding

6.1 In 2020/2021, $9.1 million in 100 per cent provincial funding and $0.8 million in 100 per cent federal funding was committed to homelessness supports in Durham Region. Funds are flowed to community partners to support programs that contribute to the homelessness support system in Durham.

a. The Durham Advisory Committee on Homelessness (DACH) provides recommendations on where to target these funding allocations.

6.2 Durham received an additional $4.5 million in 100 per cent federal funding and $12.5 million in 100 per cent provincial funding to help respond to the COVID-19 pandemic. This funding was targeted to help our community respond to COVID-19, as well as increase the number of housing-focused programs that are available for people experiencing homelessness.

6.3 The current federal and provincial funding for homelessness programs is insufficient to meet local need. An environmental scan was completed in 2021 and suggest similarly sized Service Managers (SM) are contributing more local tax dollars to their homelessness support systems in comparison to Durham.

6.4 The Region of Durham's budgeted contribution to the homelessness support system is $27,000 annually.

6.5 The additional COVID-19 support funding ends in 2021. Without continued investment, either from Durham or upper level governments, currently funded programs will not be able to continue, including:

a. The homeless hubs in Ajax and Oshawa
b. The Christian Faith Outreach Centre housing-focused shelter program in Ajax
c. Additional housing-focused street outreach teams to house people with higher support needs
d. The Youth Reconnect Program to prevent youth homelessness

6.6 In addition, capital investments secured for transitional and supportive housing projects require ongoing operational funding. While advocacy to increase annual federal and provincial funding to support these projects is ongoing, funding will need to be diverted from currently funded programs and services if additional funding is not secured.

7. Relationship to Strategic Plan

7.1 This report aligns with/addresses the following strategic goals and priorities in the Durham Region Strategic Plan:

a. Goal 4: Social Investment – to ensure a range of programs, services and supports are available and accessible to those in need, so that no individual is left behind.

- Homelessness funding targeted to projects that increase the number of housing opportunities for vulnerable residents contributes to the Community Vitality goal by creating stronger neighbourhoods and vibrant and diverse communities.
- Homelessness funding targeted to projects that work to reduce homelessness in Durham Region contributes to the Social Investment goal by ensuring supports are available so that no one gets left behind.

8. Conclusion

8.1 The Region of Durham is committed to reducing chronic homelessness to zero over the next five years. To achieve this goal, the Region of Durham has:

a. Achieved a Quality By-Name List and Coordinated Access System through Built for Zero Canada, led by the Canadian Alliance to End Homelessness, to work towards ending chronic homelessness.
b. Focused on becoming housing-focused in all areas of the homelessness support system.
c. Continued to work on continuous improvements and implemented strategies supported by OrgCode Consulting, Inc.

8.2 The Region of Durham received significant investments from both the provincial and federal governments to bolster the homelessness support system during the COVID-19 pandemic.

a. This additional funding will not continue after 2021.

b. Without additional investment, several housing-focused programs will close at the end of this year.

9. Attachments

Attachment #1: Coordinated Access Infographic

Respectfully submitted,

Original signed by

Stella Danos-Papaconstantinou
Commissioner of Social Services

Recommended for Presentation to Committee

Original signed by

Elaine C. Baxter-Trahair
Chief Administrative Officer

Coordinated Access and Durham's By-Name List

The goal of the system is to prevent and reduce homelessness and provide streamlined access to available supports.

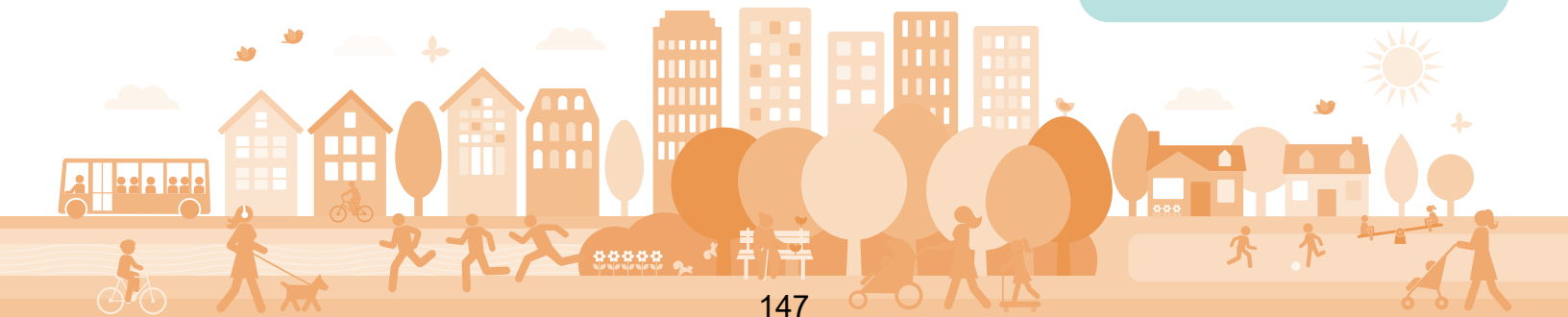
Coordinated Access System Steps to Finding Housing

1. **People** contact **Access Points** and are **added** to the **By-Name List.**
2. **People** are **triaged** and **assessed** using the **Intake Form.**
3. **People** are **prioritized** for **housing** by **vulnerability.**
4. **People** are **matched** with **available housing.**

The Components of a Coordinated Access System

- Access Points are where people make contact with the Coordinated Access System and can be added to the By-Name List
- Clients are triaged and assessed using a common intake form to gather the information needed to make appropriate referrals
- Durham Region uses the Vulnerability Index – Service Prioritization Decision Assistance Tool (VI-SPDAT)
- People on the By-Name List are prioritized based on need for housing resources
- People are matched and referred for available housing resources based on prioritization

Why is it important?

- The alternative to Coordinated Access is to provide help on a first-come, first-served basis. This means that people who can better navigate the support system get help, not people who need it most
- Coordinated Access helps people access services based on their individualized needs
- Helps track our progress in ending chronic homelessness
- Makes it easier for people to find help
- Helps us identify gaps in service

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