

REGULAR COUNCIL AGENDA

C-05/2021 Monday, March 22, 2021 5:30 PM Town of Pelham Municipal Office - Council Chambers 20 Pelham Town Square, Fonthill

During the ongoing global pandemic, Novel Coronavirus COVID-19, the Town of Pelham Council will continue to convene meetings in compliance with Provincial directives. Attendance by most Members of Council will be electronic. Public access to meetings will be provided via Livestream <u>www.youtube.com/townofpelham/live</u> and subsequent publication to the Town's website at www.pelham.ca.

Pages

- 1. Call to Order and Declaration of Quorum
- 2. Approval of Agenda
- 3. Disclosure of Pecuniary Interests and General Nature Thereof
- 4. Hearing of Presentation, Delegations, Regional Report
 - 4.1. Presentations
 - 4.1.1. COVID-19 Pandemic Update CEMC

B. Lymburner, Community Emergency Management Co-Ordinator

4.1.2. COVID-19 Pandemic Update - CAO

	4.2.	Delega	ations	
		4.2.1.	John Langendoen, Pelham Greenhouse Growers Group re Hoop Houses	5 - 19
	4.3.	Report	of Regional Councillor	
5.	Ado	ption of N	Minutes	
	5.1.	SC-03, Muzzle	/2021 Special Council Minutes February 24, 2021 - e Appeal Hearing	20 - 27
	5.2.	SC-03	-B/2021 Special Council Minutes February 24, 2021	28 - 31
	5.3.	SC-04,	/2021 Special Council Minutes February 25, 2021	32 - 36
	5.4.	C-04/2	2021 Regular Council Minutes March 1, 2021	37 - 47
	5.5.	SC-05,	/2021 - Special Council Minutes March 1, 2021	48 - 51
6.	Busi	ness Aris	sing from Council Minutes	
7.	Req	uest(s) to	o Lift Consent Agenda Item(s) for Separate Consideration	
8.	Con	sent Age	nda Items to be Considered in Block	
	8.1.	Presen Counci	itation of Recommendations Arising from COW or P&P, for il Approval	52 - 53
		1. PCC Februa	W - 02/2021 - Public Meeting Under the Planning Act - ary 8, 2021	
		2. PCC March	W - 03/2021 - Public Meeting Under the Planning Act - 8, 2021	
	8.2.	Minute	es Approval - Committee	
		8.2.1.	PCOW-03/2021 - Public Meeting Under Planning Act Minutes March 8, 2021	54 - 56
	8.3.	Staff R	Reports of a Routine Nature for Information or Action	

		8.3.1.	2020 Council and Board Remuneration, 2021-0029- Corporate Services	57 - 61
	8.4.	Action	Correspondence of a Routine Nature	
	8.5.	Inform	ation Correspondence Items	
		8.5.1.	Regional Report PDS 7-2021 re: Niagara Official Plan Process and Local Municipality Conformity	62 - 72
		8.5.2.	Notice of Public Information Centre #1 Municipal Class Environmental Assessment for Merritt Rd (RR 37) and Rice Road (RR54)	73 - 74
		8.5.3.	Ontario Municipal Administrator's Association	75 - 75
		8.5.4.	Thank You Letter from Hospice Niagara	76 - 76
	8.6.	Region	al Municipality of Niagara - Action Items	
	8.7.	Commi	ttee Minutes for Information	
9.	Iten	ns for Sep	parate Consideration, if Any	
10.	Pres	sentation	& Consideration of Reports	
	10.1.	Repor	ts from Members of Council:	
	10.2.	Staff I	Reports Requiring Action	
		10.2.1.	Town of Pelham Support Letters Regarding Rural Internet, 2021-0055-Corporate Services	77 - 78
		10.2.2.	2021 Summer Ice Recommendation, 2021-0059- Recreation	79 - 83
		10.2.3.	Compensation to Facility Users - Funded by COVID-19 Provincial Financial Relief , 2021-0063-Recreation	84 - 87
		10.2.4.	Recommendation for Zoning By-law Amendment and Draft Plan of Subdivision - Park Place South, 2021- 0052-Planning	88 - 127

- 10.2.5. Recommendation Report for Application AM-01-2021, 128 135 855 Chantler Road Zoning By-law Amendment, 2021-0062-Planning
- **10.2.6.** S801-01 DWQMS Policy Update and Operational Plan 136 163 Endorsement , 2021-0051-Public Works
- 10.2.7. 2020-21 Gypsy Moth Population Assessment Report 164 208 Treatment Program Development, 2021-0054-Public Works
- **10.2.8.** Update on Signalized Pedestrian Crossings on Pelham 209 309 Street, 2020-0100-Public Works
- 11. Unfinished Business
- 12. New Business
- 13. Presentation and Consideration of By-Laws
- 14. Motions and Notices of Motion
 - 14.1. Notice of Motion: Mayor Junkin (Steve Bauer Trail)
 - 14.2. Notice of Motion: Councillor Stewart (Delay Regional Official Plan Update)
- 15. Matters for Committee of the Whole or Policy and Priorities Committee
- 16. Matters Arising Out of Committee of the Whole or Policy and Priorities Committee
- 17. Resolution to Move in Camera
- 18. Rise From In Camera
- 19. Confirming By-Law

310 - 310

20. Adjournment



Request to Appear Before Council

Administration Services

Name: John Langendoen					
Address: 1000 Balfour St. Fenwick, ON					
Postal Code: Te LOS 1C0 905	elephone #: 5-658-4791 or 905-892-5350 x 225				
Email Address: john@willowbrooknurseries.com					
The Council Chambers Is equipped with a laptop and projector. Please Check	your audio/visual needs:				
🗆 Laptop 🗆 Speaker 🔳 Internet (Connection				
PLEASE INDICATE THE DATE OF THE COUNCIL MEETING YOU WISH TO ATTENE Regular Council: 1 st and 3 rd Monday of the month; 5:30 p.m. (except summer s	D AS A DELEGATION: schedule)				
DATE: March 22nd, 2021					
Please identify the desired action of Council that you are seeking on th To amend By-law 4117 (2019) and Section B2.2.B of the OP that includes hoop houses.	is issue:				
I have never spoken on this issue before. Key points of my deputation (Presentation must accompany the request)	are as follows:				
Please see emailed presentation					
In accordance with the Procedure By-law, Requests to Appear before Council w shall submit a written request to the Clerk no later than 12:00 noon, eigh Delegation requests to address Council on matters not already on the Agenda days before the date and time of the Meeting of Council. Delegations shall or specifically invited by Council to a Meeting of a Committee of Council.	with respect to a matter already on Council's Agenda nt business days prior to the meeting of Council. of Council must be submitted at least fourteen (14) nly be heard at regular Meetings of Council, unless				
All requests must include a copy of the presentation materials as detailed in required information on time will result in a deferral or denial. Delegations	the deputation protocol. Failure to provide the are limited to ten (10) minutes.				
I have read and understand the deputation protocol included with this form; including any attachments, will become public documents and listed on Town	and, that the information contained on this form, Meeting Agendas and on the Town's website.				
I also understand that presentation materials must be submitted with this dep e-mailed to <u>NJBozzato@pelham.ca</u> in accordance with the deadlines outlined	putation form. Electronic presentations must be above.				
significant marc	ch 9-2021				
Date Date					

20 Pelham Town Square | PO Box 400 | Fonthill, ON | LOS 1E0 | www.pelham.ca

Hoop Houses are not Greenhouses! PGGG, March 2021

-John Langendoen, Willowbrook Nurseries, Fenwick-





Pelham Greenhouse Growers Group (PGGG)

- Formed September 2019, representing 11 Pelham greenhouse & nursery operations
- Mandate is to facilitate communication between growers & Town of Pelham
- Co-Chairs
 - John Langendoen, Willowbrook Nurseries, Fenwick
 - Louis Damm, Floral Dimensions, Fenwick & Dramm Corporation
- Consultant
 - Hugh Fraser, OTB Farm Solutions, St. Catharines



PGGG is a huge economic & job driver

- 1.6 m sq.ft permanent greenhouse area
- 1.1 m sq.ft temporary hoop house area
- \$42.5 m annual sales
- 135 FTE; 64 live & pay taxes in Pelham
- 205 part-time & offshore workers
- \$10.5 m payroll



The 'Ask'

- No other municipality in Ontario, <u>except</u> <u>Pelham</u>, asks for building permits for hoop houses....we ask Council for the same treatment as our competitors
- 2. Building permits cost a lot of money, slow down expansion & trigger property taxes, which in turn eliminates exemptions from retail sales tax for HH building materials



Hoop houses have unsuspectedly been caught in the local cannabis web

- In spring 2019, greenhouses became no longer exempt from Site Plan Control like all other agricultural uses, likely because of cannabis
- In fall 2019 an on-line Town report links greenhouses and hoop houses:
 - 'Existing Official Plan policies (B2.1.3.12 & B2.2.8) require a ZBL amendment for greenhouses and hoophouses...lot coverage of the greenhouse or hoophouse...require that any greenhouse or hoophouse will be subject to Site Plan Control'
- Hoop houses simply aren't greenhouses & should not be linked in any documents

Here are reasons HH aren't GH!

- 1. GH are permanent; HH are temporary
- GH clear cladding <u>encourages</u> plant growth;
 HH opaque cladding <u>discourages</u> growth
- 3. GH used year-round; HH used only over winter
- 4. GH worked in daily; HH worked in sporadically
- 5. GH can grow marijuana; HH can't grow weed!
- 6. GH have many services; HH simple, or none
- 7. GH elaborate ventilation; HH just open doors!

Boxwood <u>discouraged</u> from growing in hoop house (snow pushing on sides Feb. 19, 2021)

> Potted <u>ornamentals</u> encouraged to grow in a greenhouse

Here are (more) reasons HH aren't GH!

8. GH built by contractors; HH built by growers
 9. GH have permanent floors; HH on soil/stone
 10. GH have foundations; HH just pipes in ground
 11. GH have piers below frost; HH pipes 2 ft deep
 12. GH are heated; HH almost as cold as outside
 13. GH are engineered; HH are not engineered
 14. GH use structural steel; HH non-structural steel



Here are (more) reasons HH aren't GH!

- 15. GH often 1 million sq.ft; HH rarely 10,000 sq.ft
- 16. GH can get up to 32 ft high; HH get to 8 ft high
- 17. GH are gutter connected; HH aren't connected
- 18. GH exempt from RST; **HH also exempt from RST** (but only if they aren't assessed property tax)
- 19. GH property tax everywhere; HH only Pelham
- 20. GH need BP everywhere; HH only in Pelham
- 21. GH cost at least \$50/sf; HH about \$1.25/sf



Thank you for listening

- Some believe hoop houses are a slippery slope to growing cannabis inside, but cannabis needs good growing conditions like in a greenhouse, not the conditions in a hoop house that is:
 - Temporary
 - Covered with opaque plastic that plants won't grow in
 - Unheated
 - Ventilated manually
- Hoop houses should <u>not</u> require building permits just like they do <u>not</u> in every other municipality



Hoop Houses are the <u>NOT</u> the same as Greenhouses, since they are designed and				
	constructed for an entirely different purpose on Ontario farms			
	Greenhouses (GH)	Hoop Houses (HH)		
Definitions	Structure used to <u>cultivate or grow</u> floral, vegetable or other horticultural produce in a climatically controlled environment & made primarily of translucent building material, usually plastic or glass (<i>Pelham ZBL</i>)	Structure used to <u>protect</u> perennial plants, shrubs, trees & keep them dormant in an uncontrolled environment, made of small, bent steel tube framing, grower-installed & manually- pounded steel tubing in ground, covered with one layer plastic sheeting (PGGG definition)		
Purpose	Designed to <u>encourage growth</u> of annual plants, or perennial plants, shrubs & trees in an optimum environment of light, humidity, nutrients & insect control. Require engineered, stamped building plans \$25–\$50/ft ² (\$270–\$540/m ²) contractor	Designed to <u>discourage growth</u> of perennial plants, shrubs, trees & keep them <u>dormant</u> while protecting them from winter cold injury, drying out, wind, nibbling animals and other pests. Have never had any engineering plans \$1.25/ft ² (\$13.50/m ²), grower installed (materials		
Cost	installed (materials, labour & climate control equipment)	& labour)4 man-days to install one; 2 man-days to dismantle		

Installation	Contractor-installed with specialized	Grower-installed with simple equipment,
	equipment, knowledge & training	knowledge & training
Connectivity	Connected at eavestroughs so rain &	Not connected, so rain & snow is shed; HH
	snow is collected; structures can be >	are ≈ 10 ft (3 m) apart lengthwise & rarely
	1,000,000 ft ² in floor area (100,000 m ²)	are > 10,000 ft ² (1,000 m ²) in ground area
Frames &	Structural, 3–5 in. (75–125 mm) round	Non-structural, 2 in. (50 mm) round steel
Footings	or rectangular steel posts anchored in	tubing bent into hoops, bolted to 2.6 ft (80
	the ground <u>below frost</u> on concrete	cm) pipes manually-pounded vertically in
	piers & often have internal trusses	ground, no concrete piers; not below frost
	and/or welded/bolted components.	so will shift up & down
Dimensions	Width: Narrow GH connected to others	Width : Up to ≈ 21 ft (6.4 m)
	Length: 100s of feet long	Length: Up to \approx 500 ft (152 m), limited by
	Wall height : 10–30 ⁺ ft (3–10 ⁺ m)	effectiveness of natural ventilation from
	Peak height : 15–40 ⁺ ft (4–12 ⁺ m)	doors at either end of HH
		Wall height: Up to ≈ 3 ft (1 m)
		Peak height : Up to \approx 8 ft (2.4 m)
Use Period	One to four seasons each year	Two seasons, late fall to early spring,
		depending on crop & weather conditions
Inside Air	20°C, or higher	Follows, but usually slightly above outside
Temperature		air temperature.
Cladding	Double layer, UV-treated, clear plastic	Single layer, non-UV-treated, single use,
	(to <u>encourage</u> growth) lasts ≈ 5 years.	75% white plastic (to <u>discourage</u> plant
	Polycarbonate, acrylic, glass glazing too	growth) lasting 2-6 months
Floor	Concrete, or cloth on compacted stone	Fabric on topsoil or compacted stone
Services	Electrical, heat, cooling, CO ₂ , internet,	Very simple, or no services at all
	control systems & irrigation	
Inside Climate	Mechanically-controlled using many	Manually-controlled by opening doors
Management	variables; indoor & outdoor air temps,	either end of HH & by slitting open the
	humidity, light intensity, wind speed &	single layer of plastic in spring to prevent
	direction, CO ₂ , electric assimilation	'cooking' of plant material before the
-	lighting or photo periodic lighting	plastic is ultimately removed for the year
Workers	Every day inside, low human occupancy	Seldom inside, ≈ 3 X/week to inspect
Exemption	GH building materials qualify for	HH building materials qualify for exemption
From RST	exemption from Retail Sales Tax (2006)	from Retail Sales Tax (2006) if only used for
		dormant crops, not heated, not for growing
		plants, sealed up for winter, not fan-
		ventilated & not assessed property taxes
Property Tax	Always assessed by any Municipality	Never assessed by any Municipality
Building	Always required by any Municipality	Never required by any Municipality
Permit		



7856 Fifth Line South, RR 4, Milton, ON L9T 2X8 Phone: 905-875-1805 • Fax: 905-875-3942 www.landscapeontario.com

April 18, 2019

To Whom It May Concern:

Rob Langendoen from Langendoen Nurseries has asked me to provide an overview regarding how hoop-house (polyhouses) structures are treated in other municipalities and the Province with respect to regulatory issues. We are hoping that this information will clarify how hoop-house structures are utilized in agricultural and horticultural production. Thank you for taking the time to read this document. We would be pleased to take you on a tour of horticultural operations so that you can witness how the structure is used to over-winter plants.

Landscape Ontario perspective Re: Hoop-House Assessments

Profile of the Nursery/Landscape sector of Horticulture

Landscape Ontario Horticultural Trades Association represents over 2000 firms operating in the Nursery/Landscape Industry. Our function is to promote and advance horticulture. Nursery and Floriculture represents the largest farm-gate crop receipts in Agriculture. Ontario's horticultural growers produce over 1billion dollars of ornamental plants. The industry is a considerable employer (over 100,000 jobs) and contributes significant economic and environmental benefit to Ontario's communities.

The issue of Hoop House Assessment has come up in the past and doubtless will come up in the future as our members in different communities go through inspections and assessment.

Over the years we have reviewed this issue with:

Mr. John Devries, Town of Milton Planning Department, Bill Hopkins, Assessment Officer for the Township of Westminster, Ed Vanderwindt from the Town of Ancaster, Brenda Petro from Essex Region, Harry Klassen from the Township of Mersia, Paul Gill from Simcoe, Mr. Knox from Haldimand Township, Rick Jones of Murray Township and many other municipal officials.

The City of St. Catharines, Ministry of Revenue, Township of Flamborough and other communities in Ontario have also considered this issue. Central to the issue is usually a technical misunderstanding about the nature of Hoop-Houses and the differences between Greenhouses and Hoop-Houses.

The following overview explains the nature of Hoop-Houses also referred to as Poly-Houses:

- Hoop-Houses are temporary structures used to over-winter nursery stock.
- A plastic covering is used directly as protection against frost and wind.
- Some of the covering is removed in the early spring. For more tender varieties, the plastic is removed when the threat of frost is past
- If the temperatures are low in the spring, holes are cut in the plastic to allow access to the plants for shipping purposes.

- Hoop-Houses are not assessed property taxes as structures by municipal governments, whereas Greenhouses are.
- The plastic covering for Hoop-Houses are not assessed provincial sales tax, (see Retail Sales Tax Guide 807).
- Hoop-Houses are not considered permanent structures as they have a temporary use, usually contain no doors or windows and have no form of controlled heat and humidity. In fact, many of our members set up their Hoop-Houses in the fall and store them for the summer.
- Hoop-Houses are sealed up to prevent any loss of moisture.
- They are simply a form of temporary storage.
- The plastic covering for a Hoop-House has a short life and is usually discarded after one winter.
- The steel tubing is used simply to keep the plastic off the plants. It has no real structural purpose.
- Some growers are experimenting with other forms of winter storage utilizing pits covered over with plastic. This type of system would in no way be confused with an assessable structure yet the purpose is identical to a Hoop-House.

For your information, please refer to Decisions of the Assessment Review Court in a case involving one of our members. Also please refer to pg.2 of St. Catherines BY-LAW NO. 84-120. It distinguishes between Hoop-Houses and Green Houses. The Ministry of Revenue also defines the difference between a Hoop-House and a Greenhouse for tax exclusion purposes.

Please see http://www.rev.gov.on.ca/en/guides/rst/807.html#hoophouses

I hope this information is helpful. You should be aware that our members are not assessed in any other community in Ontario.

Yours sincerely,

Jony Wiliovanni

Tony DiGiovanni, Executive Director



3559 North Service Rd., Vineland Station, ON (905)562-7341 FAX 562-3011 http://www.ggsstructures.com

Willowbrook Nurseries Inc. RR#4 935 Victoria Avenue Fenwick, ON LOS 1C0

John,

February 27, 2021

As for your questions regarding hoop houses. These are not engineered structures. We have been in business since 1979 and have never had a nursery grower need engineering on these frames. We have never been asked for a building permit in any province.

As you know hoop houses are designed only for seasonal crop cover to overwinter the nursery plants, shrubs, and trees.

Hoop houses are temporary in nature because posts are pounded into the ground without concrete. They are unheated crop cover. They are left uncovered for the plants to grow and harden in the natural environment and covered only during the winter months to provide protection for young plants. The White Nursery Film that is used to cover the crops is a single layer without UV protection so it is not a long lasting sustainable cover and has to be removed once it has fulfilled its useful purpose. Again this cover is not structural in nature and only a temporary protection for the plants.

Construction of hoop houses is a long-standing standard practice and is implemented throughout Southern Ontario and the majority of North America for farming. In the last few years we have sold 6,000 of these frames to farmers like you. Hoop houses are an integral part of farming in Canada.

If you have any additional questions, please feel free to contact us.

Regards,

Leigh Coulter President



SPECIAL COUNCIL MINUTES

Meeting #: Date:	SC-03/2021 - Muzzle Order Appeal - Special Council
Location:	Wednesday, February 24, 2021, 5:30 pm Town of Pelham Municipal Office - Council Chambers
	20 Pelham Town Square, Fonthill
Members Present	Marvin Junkin Lisa Haun Ron Kore Wayne Olson Marianne Stewart John Wink
Regrets	Bob Hildebrandt
Staff Present	David Cribbs

Staff Present David Cribbs Nancy Bozzato Holly Willford Sarah Leach Jennifer Stirton

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, the Mayor called the meeting to order at approximately 5:30 pm.

Ms. Jennifer Stirton, Town Solicitor, read opening remarks regarding the Zoom Webinar meeting and procedures for public participation.

2. Approval of the Agenda

Moved ByWayne OlsonSeconded ByMarianne StewartBE IT RESOLVED THAT the agenda for the February 24, 2021,Muzzle Order Appeal Special Meeting of Council be adopted as circulated.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	

Results	6	0
John Wink	Х	
Marianne Stewart	Х	

Carried (6 to 0)

3. Disclosure of Pecuniary Interest and General Nature Thereof

There were no pecuniary interests disclosed by any of the members present.

4. Purpose of the Meeting

Ms. Holly Willford, Deputy Clerk advised all Members of the Appeal Committee had been previously circulated the Occurrence Report, Notice to Muzzle and Request for Appeal

5. Statement of Evidence of Animal Control Officers

Prior hearing statements of evidence, Ms. Willford administered the required oath or affirmation to both Ms. Carly Koll and Mr. Ryan Huurman, Officers from the SPCA.

Ms. Koll stated on December 8, 2020 she received a complaint from Ms. Monique Charette indicating she had been walking her dog along Maple Avenue when her dog was attacked by another dog from 1191 Maple Street.

Ms. Koll stated as a result of her investigation and the witness statement provided she issued a Muzzle Order on Oakley, being the dog that lives at 1191 Maple Avenue.

The Irwin's legal representative, Mr. Frank Alfano questioned Ms. Koll with regards to her investigation. From the questions, Ms. Koll described the SPCAs investigation process and stated she did not view the dog which was alleged to be attacked.

A Member of the Appeal Committee requested clarification with regards to the size difference between the two dogs. In response, Ms. Koll advised Oakley is a medium sized dog whereas Phoebe (victim dog) is a small dog.

6. Statement and Evidence of Owners

Ms. Holly Willford stated all Character Letters and Videos of Oakley had been previously circulated to all Members of the Appeal Committee and form part of the official record.

Prior hearing statements of evidence, Ms. Willford administered the required oath or affirmation to both Mr. Paul Irwin and Ms. Jennifer Iwrin.

The Irwin's legal representative, Mr. Frank Alfano and Ms. Jody Gutoski questioned the Irwin's with regards to their: family life; dog ownership history; purpose of purchasing Oakley; history of Oakley's training; events that occurred on and after the alleged incident; and, how the muzzle order has negatively affected their lives.

In addition to verbal statements, Ms. Irwin narrated the events of several videos of Oakley's behaviors in different situations.

A Member of the Appeal Committee asked Ms. Irwin why she believed the witness had a conflict of interest. In response, Ms. Irwin stated she believes the victim and witness should not be the same person and stated he believes this to be a conflict of interest.

A Member of the Appeal Committee asked Ms. Irwin guestions with regards to why the victim's husband would have a conversation with her husband if there was no attack. In response, Ms. Irwin indicated she is not sure and stated perhaps the victim was scared or startled by Oakley barking.

A Member of the Appeal Committee asked Ms. Irwin if Oakley always wears her electric fence collar outside. In response, Ms. Irwin indicated yes.

A Member of the Appeal Committee asked Ms. Irwin if Oakley has completed her training to be a diabetic indicator dog. In response, Ms. Irwin indicated Oakley has not and stated the training for this is a long process. She detailed the training that Oakley has received.

A Member of the Appeal Committee asked for clarification as to the boundaries of the electric fence and asked if it is only on the Irwin's property. In response, Ms. Irwin stated the electric fence is within their property and confirmed the electric fence stops before the sidewalk.

A Member of the Appeal Committee asked when Oakley must wear the muzzle. In response, Ms. Irwin indicated to her understanding Oakley must wear a muzzle around any other dogs or people, other than their own dogs and immediate family.

Ms. Koll indicated she had no questions for Ms. Irwin.

7. Statement and Evidence of Victim

Ms. Holly Willford stated the recorded conversation has been previously circulated to all Members of the Appeal Committee and forms part of the official record.

Prior to hearing statements of evidence, Ms. Willford administered the required oath or affirmation to Ms. Monique Charette.

Ms. Charette stated she had provided a written statement with regards to the events which occurred and stated she had nothing more to add.

A Member of the Appeal Committee asked Ms. Charette if there was any damage to the dog's coat and asked what the coat material was made of. In response, she indicated there was no damage; however, stated there was a broken buckle. Ms. Charette stated she is not

aware if the buckle was broken during the incident. She furthermore advised she believes the coat material was nylon.

A Member of the Appeal Committee asked Ms. Charette if she walks her dog regularly and if they have seen Oakley before. In response, Ms. Charette stated she does walk her dog regularly and has not, to her knowledge seen Oakley before.

A Member of the Appeal Committee asked Ms. Charette if there were any warning signs from Oakley the alleged attack was going to occur. In response, Ms. Charette stated there were no warning signs and that Oakley came from behind a large vehicle. Ms. Charette briefly described the events which she stated occurred.

A Member of the Appeal Committee asked Ms. Charette if Oakley was wearing a collar. In response, Ms. Charette stated she did not recall.

Ms. Koll indicated she had no questions for Ms. Charette.

The Irwin's legal representative, Mr. Frank Alfano asked Ms. Charette questions with regards to the condition of her dog's coat, if she took pictures of the coat or dog and requested clarification to where Ms. Charette walked her dog. In response, Ms. Charette reiterated the coat was not damaged however, stated a buckle is broken. Ms. Charette stated she did not take pictures of the coat or dog, however did check her dog and determined there was no physical harm to the animal. She described the direction she was walking on Maple Avenue.

8. Witness Statements, If Any

Ms. Willford stated all verbal witness statements will form part of the official record.

Prior hearing statements of evidence, Ms. Willford administered the required oath or affirmation to: Nancy Rushford; Catherine and John Griff; Phil and Nicole Hayes; and, Sarah Servos.

Each of the witnesses spoke as character witnesses on behalf of Oakley and/or the Irwins.

A Member of the Appeal Committee asked Mr. Hayes if his dog wears a coat and if Oakley would recognize a dog coat. In response, Mr. Hayes indicated many dogs walk along Maple Avenue wearing coats and suspected Oakley would recognize a coat.

A Member of the Appeal Committee asked Ms. Servos if any dog is surprised, could the dog react out of character and be aggressive? He asked if she believed this is a true statement. In response, Ms. Servos stated she did not believe that was a true statement and stated it depended on the dogs' temperament. She stated it was unlikely for Oakley to act aggressively.

9. Presentation of Summary Arguments

Mr. Ryan Huurman, SPCA Officer stated when the SPCA receives a complaint they ask the victim to provide a statement. He stated the SPCA then issued an order pursuant to the definition of a vicious or

dangerous dog as defined within the Town of Pelham's Vicious or Dangerous Dog By-Law. Mr. Huurman stated no damage to property has to occur to issue the order. He further clarified the conditions of the order for the Appeal Committee and parties' benefit.

Mr. Alfano, Legal representation for the Irwin's, stated the Appeal Committee does not have to determine if the alleged incident happened or not. Rather he stated an abundance of evidence had been submitted with regards to Oakley's disposition and temperament. Mr. Alfano emphasized the dog's submissive behavior and respectfully requested the Appeal Committee reverse the order.

10. Rendering of Decision

The Appeal Committee discussed the evidence heard and stated there had been overwhelming evidence submitted that Oakley is not a vicious dog. The Appeal Committee further stated they believed the victim and that something transpired, however stated the incident likely was a 'one off' event. The Committee further discussed Oakley's formal training and re-training. The Appeal Committee indicated they believed the extent of the punishment was unfair.

Moved ByJohn WinkSeconded ByWayne OlsonBE IT RESOLVED THAT the evidence submitted by Carly Koll,Investigator, Welland & District SPCA and Officer RyanHuurman, Welland & District SPCA, be received; and

THAT the evidence submitted by the victim, Ms. Charette, be received; and

THAT the evidence submitted by Mr. Al Gacnik, be received.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

Moved ByMarianne StewartSeconded ByJohn WinkBE IT RESOLVED THAT the evidence submitted by Mr. and Mrs.Irwin, Owners, be received for information.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

Moved ByRon KoreSeconded ByLisa HaunBE IT RESOLVED THAT the verbal witness statements, be
received for information.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

Moved ByJohn WinkSeconded ByLisa HaunBE IT RESOLVED THAT the following Muzzle Order AppealHearing Decision be and is hereby rendered:

THAT the Notice to Muzzle Order dated December 10, 2020 to "Oakley", Mr. and Mrs. Irwin, be and is hereby: Exempt

 Every owner shall not permit the dog to be on any streets or in any public place or any other place that is not owned or controlled by the owner unless the dog is on a substantial chain or leash not exceeding 1.5m in length and muzzled in a manner that will not cause injury to the dog or interfere with its vision or respiration, but will prevent the dog from biting another animal or human - Sec. 8 (d)(1);

- At indoors all times or in while an the enclosed dog is pen on or the other premises structure, owned of or minimum controlled size by five such feet by person, ten feet, keep the capable dog of securely preventing confined the entry of children and other animals and adequately constructed to prevent the dog from escaping - Sec. 8 (d)(2);
- Conspicuously display a sign on his/her premises warning that there is a dangerous dog on the property - Sec. 8 (d)(3);
- 4. So confine said dog that allows persons who have lawful entry onto the premises of the dog owner to have such entry without fear of attack by said dog - Sec. 8 (d)(4);
- Allow an officer to inspect such pen or other structure or to make whatever inquiry is deemed necessary to ensure compliance with the provisions of this by law - Sec. 8 (d)(5); and
- 6. Notify the poundkeeper immediately if a dangerous dog is loose, unconfined, has attacked another animal or human or has died or has been sold or given away. If the dog has been sold or given away the owner or harbourer shall provide the poundkeeper with the name, address, and telephone number of the new owner - Sec. 8 (d)(6)

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

11. Confirming By-law

Moved ByRon KoreSeconded ByWayne OlsonBE IT RESOLVED THAT the following By-law be read a first,
second and third time and passed:

Being a By-law No. 4324(2021) to Adopt, Ratify and Confirm the proceedings of Council of the Town of Pelham at its Special Meeting held on the 24th day of February, 2021.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

12. Adjournment

Moved ByJohn WinkSeconded ByMarianne StewartBE IT RESOLVED THAT this Special Meeting of February 24,2021 be adjourned.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

Mayor Marvin Junkin

Deputy Clerk, Holly Willford



SPECIAL COUNCIL MINUTES

Meeting #:	SC-03-B-2021 Special Meeting of Council
Date:	Wednesday, February 24, 2021, 6:30 pm
Location:	Town of Pelham Municipal Office - Council
	Chambers
	20 Pelham Town Square, Fonthill

Members Present Lisa Haun Bob Hildebrandt Ron Kore Wayne Olson Marianne Stewart John Wink

Regrets Marvin Junkin

Staff Present David Cribbs Nancy Bozzato Jennifer Stirton Holly Willford

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, the Deputy Mayor called the meeting to order at approximately 7:50 pm.

2. Approval of the Agenda

Moved ByRon KoreSeconded ByBob HildebrandtBE IT RESOLVED THAT the agenda for the February 24th, 2021Special Meeting of Council be adopted as circulated.

	For	Against
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

3. Disclosure of Pecuniary Interest and General Nature Thereof

There were no pecuniary interests disclosed by any of the members present.

4. Resolution to Move in Camera

Moved ByWayne OlsonSeconded ByLisa Haun

BE IT RESOLVED THAT the next portion of the meeting be closed to the public in order to consider a matter under Section 239 (2) of the Municipal Act, as follows:

(b) - personal matters about an identifiable individual, including municipal employees;

(e) - litigation or potential litigation, including matters before administrative tribunals, affecting the municipality;

(f) - advice that is subject to solicitor-client privilege, including communications necessary for that purpose.

(1 Item, File L02-02-2021L)

	For	Against
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

5. Rise From In Camera

Moved ByJohn WinkSeconded ByBob HildebrandtBE IT RESOLVED THAT Council adjourn the In Camera Sessionand that Council do now Rise: With Report.

	For	Against
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	

John Wink	Х	
Results	6	0

Carried (6 to 0)

Moved ByLisa HaunSeconded ByWayne Olson

BE IT RESOLVED THAT the Chief Administrative Officer and Town Solicitor be and is hereby authorized to undertake the directions provided during the In Camera meeting of February 24th, 2021.

	For	Against
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

Carried (6 to 0)

6. Confirming By-law

Moved ByBob HildebrandtSeconded ByJohn WinkBE IT RESOLVED THAT the following By-law be read a first,
second and third time and passed:

Being a By-law No. 4327(2021) to Adopt, Ratify and Confirm the proceedings of Council of the Town of Pelham at its Special Meeting (SC-03B/2021) held on the 24th day of February, 2021.

	For	Against
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	6	0

7. Adjournment

Moved ByRon KoreSeconded ByLisa HaunBE IT RESOLVED THAT this Special Meeting of Council beadjourned until the next regular meeting scheduled for March1, 2021 at 5:30 pm.

For	Against
Х	
Х	
Х	
Х	
Х	
Х	
6	0
	For X X X X X X 6

Carried (6 to 0)

Deputy Mayor Stewart

Deputy Clerk, Holly Willford



SPECIAL COUNCIL MINUTES

Meeting #:	SC-04/2021 Special Council
Date:	Thursday, February 25, 2021, 4:00 pm
Location:	Town of Pelham Municipal Office - Council Chambers
	20 Pelham Town Square, Fonthill
Members Present	Bob Hildebrandt
	Ron Kore
	Wayne Olson
	Marianne Stewart
	John Wink
Regrets	Marvin Junkin
	Lisa Haun

Staff PresentDavid Cribbs
Nancy Bozzato
Bob Lymburner (part time)
Jason Marr
Teresa Quinlin
Vickie vanRavenswaay
Barbara Wiens
Ryan Cook
Holly Willford

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, Deputy Mayor Stewart called the meeting to order at approximately 4:00pm.

2. Approval of the Agenda

Moved ByRon KoreSeconded ByBob HildebrandtBE IT RESOLVED THAT the agenda for the February 24, 2021Special Meeting of Council be adopted as circulated.

	For	Against
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	

Results	5	0
John Wink	Х	

Carried (5 to 0)

3. Disclosure of Pecuniary Interest and General Nature Thereof

There were no pecuniary interests disclosed by any of the members present.

4. Review of Regional Transit Proposal

4.1 Niagara Transit Governance Report, 2021-0044-Recreation

Moved ByJohn WinkSeconded ByWayne OlsonBE IT RESOLVED THAT Council receive Report #2021-0044, Considerations for Service Provision Arising fromRegion of Niagara's Transit Governance Report, forinformation.

	For	Against
Bob Hildebrandt		Х
Ron Kore	Х	
Wayne Olson		Х
Marianne Stewart	Х	
John Wink	Х	
Results	3	2

Carried (3 to 2)

Moved ByJohn WinkSeconded ByBob HildebrandtBE IT RESOLVED THAT the Council for the Town of Pelhamdoes not support the full Transit Commission Model aspresented by the Region of Niagara in Report LNTC-C-04/2020 as the Town of Pelham will not be sufficientlyrepresented on the Commission Board as it pertains togovernance of the Commission, and that the Region ofNiagara be so advised.

	For	Against
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

Moved ByJohn WinkSeconded ByRon KoreBE IT RESOLVED THAT the Regional levy as proposed,based on MPAC assessment which does not take intoconsideration population size or ridership, and that a500% increase to the Town of Pelham is not acceptable,and is not supported by the Council for the Town ofPelham.

	For	Against
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

Moved ByJohn WinkSeconded ByWayne OlsonBE IT RESOLVED THAT the Council for the Town of Pelham
directs Town staff to enter into negotiations with Regional
Niagara staff as it pertains to the level of service,
including but not limited to the response time for required
service,

AND THAT details be negotiated as it relates to extending the current transit system for one year including any cost implications;

AND THAT STAFF Report back to Council with an update

report by the Regular Council meeting scheduled for April 6, 2021.

	For	Against
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

5. Confirming By-law

Moved ByJohn WinkSeconded ByBob HildebrandtBE IT RESOLVED THAT the following By-law be read a first,
second and third time and passed:

Being a By-law No. 4325(2021) to Adopt, Ratify and Confirm the proceedings of Council of the Town of Pelham at its Special Meeting held on the 25th day of February, 2021.

	For	Against
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

6. Adjournment

Moved ByBob HildebrandtSeconded ByWayne OlsonBE IT RESOLVED THAT this Special Meeting of Council beadjourned until the next regular meeting scheduled for March1, 2021 at 5:30 pm.

	For	Against
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

Deputy Mayor Marianne Stewart

Town Clerk, Nancy J. Bozzato


REGULAR COUNCIL MINUTES

Meeting #: Date: Time: Location:	C-04/2021 Monday, March 1, 2021 5:30 PM Town of Pelham Municipal Office - Council Chambers 20 Pelham Town Square, Fonthill
Members Present	t Marvin lunkin
	Lisa Haun
	Bob Hildebrandt
	Ron Kore
	Wavne Olson
	Marianne Stewart
	John Wink
Staff Present:	David Cribbs
	Nancy Bozzato
	Bob Lymburner
	Jason Marr
	Teresa Quinlin
	Vickie vanRavenswaay
	Barbara Wiens
	Holly Willford
	Sarah Leach

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, the Mayor called the meeting to order at approximately 5:47 pm.

2. Approval of Agenda

Moved By John Wink Seconded By Wayne Olson

BE IT RESOLVED THAT the agenda for the March 1, 2021 Regular meeting of Council be adopted.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	

Results	7	0
John Wink	Х	
Marianne Stewart	Х	
Wayne Olson	Х	

Carried (7 to 0)

3. Disclosure of Pecuniary Interests and General Nature Thereof

There were no pecuniary interests disclosed by any of the members present.

4. Hearing of Presentation, Delegations, Regional Report

4.1 Presentations

4.1.1 COVID-19 Pandemic Update - CEMC

Chief Lymburner updated Council and the public on the continuing COVID-19 pandemic.

Moved By John Wink Seconded By Bob Hildebrandt

BE IT RESOLVED THAT Council receive the COVID-19 update presentation from B. Lymburner, Fire Chief and Community Emergency Management Co-Ordinator, for information.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

4.1.2 COVID-19 Pandemic Update - CAO

Chief Administrative Officer, D. Cribbs indicated he was pleased to announce the MCC has reopened, the Town's Emergency Management Group has been working with the Library to explore options on how the Town might assist residents registering for their COVID-19 vaccine and stated the Town is working on a rollout plan for greater return to work.

Moved By Lisa Haun Seconded By Marianne Stewart

BE IT RESOLVED THAT Council receive the COVID-19 update presentation from D. Cribbs, Chief Administrative Officer, for information.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

4.2 Delegations

4.2.1 Beautification Committee, 2020 Committee Report

On behalf of the Beautification Advisory Committee, Ms. Jennifer Pilzecker provided an up-date presentation to Council. The Committee request an annual budget of \$250.00. A copy of the presentation is on file with the Clerk.

Moved By Lisa Haun Seconded By Ron Kore

BE IT RESOLVED that Council receive the 2020 Beautification Committee update, for information; and

THAT Council approve the requested annual budget of \$250.00.

For	Against
Х	
Х	
Х	
Х	
Х	
Х	
	For X X X X X X

Results	7	0
John Wink	Х	

4.3 Report of Regional Councillor

5. Adoption of Minutes

Moved By Lisa Haun Seconded By Wayne Olson

BE IT RESOLVED THAT the following minutes be adopted as printed, circulated and read:

1. C-03/2021 Regular Council Minutes - February 16, 2021.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

6. Business Arising from Council Minutes

7. Request(s) to Lift Consent Agenda Item(s) for Separate Consideration

8. Consent Agenda Items to be Considered in Block

Moved By John Wink Seconded By Ron Kore

BE IT RESOLVED THAT Council direct staff to provide picnic tables to local restaurant to be used for patios and outdoor eating at no cost.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	

Results	7	0
John Wink	Х	
Marianne Stewart	Х	
Wayne Olson	Х	
Ron Kore	Х	

Carried (7 to 0)

Moved By Lisa Haun Seconded By Ron Kore

BE IT RESOLVED THAT the Consent Agenda items as listed on the March 1, 2021 Council Agenda be received and the recommendations contained therein be approved, as applicable, save and expect item 8.1.

8.1 Presentation of Recommendations Arising from COW or P&P, for Council Approval

BE IT RESOLVED THAT COUNCIL HEREBY approves the Recommendations Resulting from the following:

- PCOW 02/2021 Public Meeting Under the Planning Act -February 8, 2021 (Recommendation sheet from January 18th, 2021 was inadvertently attached)
- 8.2 Minutes Approval Committee

8.2.1 PCOW-02/2021 Public Meeting Under Planning Act Minutes, February 8, 2021

BE IT RESOLVED THAT Council receive the following minutes for information:

- 1. PCOW-02/2021 Public Meeting Under Planning Act February 8, 2021
- 8.3 Staff Reports of a Routine Nature for Information or Action

8.3.1 Tax Write-Off Under Municipal Act, Section 357 & 358

BE IT RESOLVED THAT Council receive the Taxes Written-Off Report from the Corporate Services Department; and

THAT Council approve the Taxes Written-Off Report in the amount of \$1037.83 as per the Municipal Act, Sections 357 and 358.

8.3.2 Outdoor Restaurant Patios 2021, 2021-0046-Planning

BE IT RESOLVED THAT Council receive Report #2021-046 for information.

8.3.3 Residential Development Monitoring Report, 2021-0047-Planning

BE IT RESOLVED THAT Council receive Report #2021-047 for information.

8.3.4 Grants Update Modernization; Healthy Community; Cycling, 2021-0050-Corporate Services

BE IT RESOLVED THAT Council receive Report # 2021-0050-Corporate Services for information about the three grants to be submitted: Municipal Modernization, Canada Healthy Community Initiative and 2021 Regional Bikeways Network Facilities on Municipal Roadways.

8.5 Information Correspondence Items

8.5.1 Cannabis Related Items

BE IT RESOLVED THAT Council receive Cannabis Related correspondence from the City of Port Colborne, for information.

8.5.2 Ontario Consultation on Growing the Size of the Greenbelt

BE IT RESOLVED THAT Council receive for information the correspondence from the Minister of Municipal Affairs and Housing, Steve Clark, outlining the public consultation process for Growing the Size of the Greenbelt in Ontario.

8.5.3 Ontario Home-Based Food Businesses

BE IT RESOLVED THAT Council receive for information the correspondence from the Minister of Agriculture, Food and Rural Affairs, Ernie Hardeman, as it relates to home-produced food sales in Ontario.

8.5.4 Letter to Ontario Councils from Association of Municipal Clerks and Treasurers of Ontario

BE IT RESOLVED THAT Council receive for information the correspondence from Robert Tremblay, President, AMCTO, outlining the importance of continued training opportunities for municipal professionals.

8.5.5 NPCA Board of Directors' 2021 Meeting Schedule

BE IT RESOLVED that Council receive the NPCA Board of Directors' 2021 Meeting Schedule dated February 18, 2021, for information.

8.5.6 Request for No Parking Signs on Marlene Stewart Drive

BE IT RESOLVED THAT Council receive the correspondence from Marylou Hilliard requesting no parking signs on Marlene Stewart Drive, for information;

AND THAT the correspondence be referred to the Town Public Works Department for report.

8.5.7 Niagara Regional Housing 2020 Fourth Quarter Report

BE IT RESOLVED THAT Council receive the Niagara Regional Housing 2020 Fourth Quarter Report, for information.

8.7 Committee Minutes for Information

8.7.1 Pelham Finance and Audit Committee

BE IT RESOLVED that Council receive the Pelham Finance and Audit Committee minutes dated November 25, 2020, for information.

8.7.2 Mayors Youth Advisory Council Minutes

BE IT RESOLVED that Council receive the minutes of the Mayors Youth Advisory Council dated October 28, 2020, December 3, 2020 and January 26, 2021, for information.

8.7.3 Cannabis Control Committee Minutes

BE IT RESOLVED that Council receive the Cannabis Control Committee minutes dated November 25, 2020 and December 16, 2020, for information.

8.7.4 Pelham Seniors Advisory Committee Minutes

BE IT RESOLVED THAT Council receive the Pelham Seniors Advisory Committee minutes dated November 12, 2020, December 10, 2020 and January 21, 2021, for information.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

- 9. Items for Separate Consideration, if Any
- **10.** Presentation & Consideration of Reports
- **10.1** Reports from Members of Council:
- **10.2 Staff Reports Requiring Action**
- **11. Unfinished Business**
- **12.** New Business

13. Presentation and Consideration of By-Laws

Councillor Hildebrandt requested the motion be divided.

Moved By Bob Hildebrandt Seconded By Lisa Haun

BE IT RESOLVED THAT the Council of the Town of Pelham, having given due consideration to the following By-laws do now read a first, second and third time and do pass same, and

THAT the Mayor and Clerk be and are hereby authorized to sign and seal the by-laws:

1. 4320(2021) - Being a by-law to amend Zoning By-law 1136 (1987), as amended, for lands located at 3 Hurricane Road (north side of Hurricane Road opposite Chestnut Street), legally described as Part of Lot 163, formerly Township of Thorold, now in the Town of Pelham. The Zoning By-law Amendment rezones the lands from the Residential 1 (R1) zone to the following site-specific zones:

- Residential 1 302 (R1-302)
- Residential 1 303 (R1-303)

AJDS Properties Ltd. File No. AM-09-2020

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

Moved By Bob Hildebrandt Seconded By Lisa Haun

BE IT RESOLVED THAT the Council of the Town of Pelham, having given due consideration to the following By-laws do now read a first, second and third time and do pass same, and

THAT the Mayor and Clerk be and are hereby authorized to sign and seal the by-laws:

2. 4326(2021) - Being a by-law to appoint David Christensen as a Building Inspector for the Corporation of the Town of Pelham.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

14. Motions and Notices of Motion

14.1 Motion re Toronto Dominion Bank Pelham Branch Closure

Moved By Marianne Stewart Seconded By Lisa Haun

Moved by Councillor Stewart

Seconded by Councillor Haun

WHEREAS the Toronto Dominion Bank has notified is customers that they are closing the Fonthill Branch July 16, 2021;

AND WHEREAS Council believes the Toronto Dominion Bank has not taken into full consideration the fact that Pelham is a fast growing municipality with many current and future residents depending on their in-person financial services;

AND WHEREAS the Town of Pelham has a large and growing senior population who will be seriously impacted by this closure;

AND WHEREAS a trip to a neighbouring city to a bank that is already overly busy is unacceptable;

AND WHEREAS many residents of the Town of Pelham are not tech savvy enough or do not have suitable access for internet banking;

NOW THEREFORE Council for the Town of Pelham asks that the Toronto Dominion Bank seriously take into account these concerns and reconsider the closure of the Fonthill Branch.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	

Results	7
John Wink	Х
Marianne Stewart	Х
Wayne Olson	Х
Ron Kore	Х
Bob Hildebrandt	Х

Carried (7 to 0)

0

- **15.** Matters for Committee of the Whole or Policy and Priorities Committee
- **16.** Matters Arising Out of Committee of the Whole or Policy and Priorities Committee
- 17. Resolution to Move in Camera
- 18. Rise From In Camera

19. Confirming By-Law

Moved By Ron Kore Seconded By Wayne Olson

BE IT RESOLVED THAT the following By-law be read a first, second and third time and passed:

Being a By-law No. 4329(2021) to Adopt, Ratify and Confirm the proceedings of Council of the Town of Pelham at its Regular Meeting held on the 01st day of March, 2021.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

20. Adjournment

Moved By Marianne Stewart Seconded By Lisa Haun

BE IT RESOLVED THAT this Regular Meeting of Council be adjourned until the next regular meeting scheduled for March 22, 2021 at 5:30 pm.

	For	Against
Marvin Junkin	Х	
Lisa Haun	Х	
Bob Hildebrandt	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	7	0

Carried (7 to 0)

Mayor: Marvin Junkin

Deputy Clerk: Holly Willford



SPECIAL COUNCIL MINUTES

- Meeting #:SC-05/2021 Special CouncilDate:Monday, March 1, 2021, 4:00 pmLocation:Town of Pelham Municipal Office CouncilChambers20 Pelham Town Square, Fonthill
- Members Present Marvin Junkin Ron Kore Wayne Olson Marianne Stewart John Wink
- Regrets Lisa Haun Bob Hildebrandt
- Staff PresentDavid Cribbs
Nancy Bozzato
Bob Lymburner
Jason Marr
Teresa Quinlin
Vickie vanRavenswaay
Barb Wiens
Holly Willford
Sarah Leach (open session)

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, the Mayor called the meeting to order at approximately 4:00 pm.

2. Approval of the Agenda

Moved ByMarianne StewartSeconded ByWayne OlsonBE IT RESOLVED THAT the agenda for the March 1st, 2021Special Meetingof Council be adopted as circulated.

	For	Against
Marvin Junkin	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	х	
John Wink	х	
Results	5	0

3. Disclosure of Pecuniary Interest and General Nature Thereof

Ms. Nancy Bozzato, Town Clerk, stated for the record Councillor Hildebrandt and Councillor Haun have declared a pecuniary interest in the matters to be discussed.

4. Resolution to Move in Camera

Moved ByRon KoreSeconded ByJohn WinkBE IT RESOLVED THAT the next portion of the meeting beclosed to the public in order to consider a matter under Section239 (2) of the Municipal Act, as follows:

(f) - advice that is subject to solicitor-client privilege, including communications necessary for that purpose; and (i) - a trade secret or scientific, technical, commercial, financial or labour relations information, supplied in confidence to the municipality or local board, which, if disclosed, could reasonably be expected to prejudice significantly the competitive position or interfere significantly with the contractual or other negotiations of a person, group of persons, or organization. (1 item)

	For	Against
Marvin Junkin	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

5. Rise From In Camera

Moved ByWayne OlsonSeconded ByRon KoreBE IT RESOLVED THAT Council adjourn the In Camera Sessionand that Council do now Rise: With Report.

For Against

Results	5 0
John Wink	х
Marianne Stewart	Х
Wayne Olson	Х
Ron Kore	Х
Marvin Junkin	Х

Carried (5 to 0)

Moved ByWayne OlsonSeconded ByMarianne StewartBE IT RESOLVED THAT the Chief Administrative Officer be andis hereby authorized to undertake the directions providedduring the In Camera meeting of March 1st, 2021.

	For	Against
Marvin Junkin	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

6. Confirming By-law

Moved ByJohn WinkSeconded ByRon KoreBE IT RESOLVED THAT the following By-law be read a first,
second and third time and passed:

Being a By-law No. 4328(2021) to Adopt, Ratify and Confirm the proceedings of Council of the Town of Pelham at its Special Meeting held on the 01st day of March, 2021.

	For	Against
Marvin Junkin	Х	
Ron Kore	Х	

Results	5	0
John Wink	Х	
Marianne Stewart	Х	
Wayne Olson	Х	

Carried (5 to 0)

7. Adjournment

Moved ByRon KoreSeconded ByJohn WinkBE IT RESOLVED THAT this Special Meeting of Council beadjourned until the next regular meeting scheduled for March1st, 2021 at 5:30 pm.

	For	Against
Marvin Junkin	Х	
Ron Kore	Х	
Wayne Olson	Х	
Marianne Stewart	Х	
John Wink	Х	
Results	5	0

Carried (5 to 0)

Mayor Marvin Junkin

Town Clerk, Nancy J. Bozzato

Recommendations of the Public Meeting under the Planning Act held February 8, 2021

BE IT RESOLVED THAT COUNCIL HEREBY approves the following Recommendations Resulting from the Public Meeting under the Planning Act meeting of February 8, 2021:

1. THAT the agenda for the February 8th, 2021 Public Meeting Under the Planning Act, Special Meeting of Committee of the Whole, be adopted as circulate.

Amendment

THAT the agenda be amended to include the addendum items, being the addition of:

- John and Jill Cappa, Patrick Maloney and Stephen Kaiser as preregistered members of the public; AND
- The addition of: Jessica and Evan Leung, Carol Jones, Mike and Mary Hughes, Tim Nohara, Todd Barber and Annette Mastracci written correspondence.

Main Motion as Amended

THAT the agenda for the February 8th, 2021 Public Meeting Under the Planning Act, Special Meeting of Committee of the Whole, be adopted as amended.

2. THAT Council receive Report 2021-0038 as it pertains to Second Dwelling Units Policies and Regulations (OP-AM-01-2020 and AM-04-2020);

AND THAT Committee directs Planning staff to prepare the Recommendation Report on this topic for Council's consideration once all comments have been received.

3. THAT Committee receive the written correspondence as listed on the agenda;

AND THAT Committee receive the verbal presentations made by the public listed on the Agenda;

AND THAT Committee receive any e-mail comments received during the public portion of the meeting at the clerks@pelham.ca e-mail address.

4. THAT this Special Committee of the Whole, Public Meeting Under the Planning Act, be adjourned.

Recommendations of the Public Meeting under the Planning Act held March 8, 2021

BE IT RESOLVED THAT COUNCIL HEREBY approves the following Recommendations Resulting from the Public Meeting under the Planning Act meeting of March 8, 2021:

- 1. THAT the agenda for the March 8th, 2021 Public Meeting Under the Planning Act, Special Meeting of Committee of the Whole, be adopted as circulated.
- 2. THAT Committee receive Report # 2021-0053 for information and recommend to Council:

THAT Planning staff be directed to prepare the Recommendation Report for consideration of adopting the Zoning By-law Amendment.

- **3. THAT Committee Receive the applicants presentation for information.**
- 4. THAT this Special Committee of the Whole, Public Meeting Under the Planning Act, be adjourned.



Committee of the Whole Meeting

Minutes

Meeting #:	PCOW-03/2021 Public Meeting Under the Planning Act
Date:	Monday, March 8, 2021
Time:	5:30 PM
Location:	Town of Pelham Municipal Office - Council Chambers 20 Pelham Town Square, Fonthill
Members Present:	Marvin Junkin, Lisa Haun, Bob Hildebrandt, Ron Kore, Wayne Olson, Marianne Stewart, John Wink
Staff Present:	Holly Willford, Barbara Wiens, Curtis Thompson, Sarah Leach

1. Call to Order and Declaration of Quorum

Noting that a quorum was present, the Mayor called the meeting to order at approximately 5:30pm.

Ms. Holly Willford, Deputy Clerk read opening remarks regarding the Zoom Webinar meeting and procedures for public participation.

2. Adoption of Agenda

Moved By Councillor Wayne Olson

THAT the agenda for the March 8th, 2021 Public Meeting Under the Planning Act, Special Meeting of Committee of the Whole, be adopted as circulated.

For (7): Marvin Junkin, Lisa Haun, Bob Hildebrandt, Ron Kore, Wayne Olson, Marianne Stewart, and John Wink

Carried (7 to 0)

3. Disclosure of Pecuniary Interest and General Nature Thereof

There were no pecuniary interests disclosed by any of the members present.

4. Planning Act Application: AM-01-2021 - 855 Chantler Road

The Deputy Clerk read into the record the Notice Requirements regarding this application.

4.1 Planning Report

Mr. Curtis Thompson, Town Planner provided an overview of the application before Council. A copy is available through the Clerk.

4.1.1 Zoning By-law Amendment (AM-01-2021) 855 Chantler Rd - Information Report, 2021-0053-Planning

4.2 Applicant's Presentation

The Applicants stated they had no comments.

4.3 Public Input

Ms. Willford stated there were no pre-registered members of the public registered to speak. Ms. Willford indicated she checked the <u>clerks@pelham.ca</u> email address at 5:43pm and had received no e-mail. Therefore, the Mayor closed the public portion of the meeting.

4.4 Committee Input

There were no comments made by Members of the Committee.

4.5 Presentation of Resolutions

Moved By Councillor John Wink

THAT Committee receive Report # 2021-0053 for information and recommend to Council:

THAT Planning staff be directed to prepare the Recommendation Report for consideration of adopting the Zoning By-law Amendment.

For (7): Marvin Junkin, Lisa Haun, Bob Hildebrandt, Ron Kore, Wayne Olson, Marianne Stewart, and John Wink

Carried (7 to 0)

Moved By Councillor Bob Hildebrandt

THAT Committee Receive the applicants presentation for information.

For (7): Marvin Junkin, Lisa Haun, Bob Hildebrandt, Ron Kore, Wayne Olson, Marianne Stewart, and John Wink

Carried (7 to 0)

5. Adjournment

Moved By Councillor Lisa Haun

THAT this Special Committee of the Whole, Public Meeting Under the Planning Act, be adjourned.

For (7): Marvin Junkin, Lisa Haun, Bob Hildebrandt, Ron Kore, Wayne Olson, Marianne Stewart, and John Wink

Carried (7 to 0)

Mayor: Marvin Junkin

Deputy Clerk: Holly Willford



CORPORATE SERVICES DEPARTMENT

Monday, March 22, 2021

Subject: 2020 Statement of Council and Board Remuneration

Recommendation:

BE IT RESOLVED THAT Council receive Report # 2021-0029, being the 2020 Statement of Council and Board Remuneration, for information

Background:

Section 284(1) of the *Municipal Act, 2001,* S.O. 2001, c. 25, as amended, requires that the Treasurer shall in each year on or before March 31 provide to Council an itemized statement on remuneration and expenses paid in the previous year to,

(a) each member of council in respect of his or her services as a member of the council or any other body, including a local board, to which the member has been appointed by council or on which the member holds office by virtue of being a member of council;

(b) each member of council in respect of his or her services as an officer or employee of the municipality or other body described in clause (a); and

(c) each person, other than a member of council, appointed by the municipality to serve as a member of any body, including a local board, in respect of his or her services as a member of the body.

Analysis:

Appendix 1 through Appendix 3 to this report contains the 2020 Statement of Council and Board Remuneration.

Council remuneration may be defined in different ways depending on the purpose of the information. Remuneration for the purposes of this report is based on payments made to members of Council and is derived from the elected official's T4, excluding taxable benefits. Benefits paid by the employer, which are not paid to the official, have been excluded. Benefits for all of Council in 2020 totaled \$9,485, of which \$40 was taxable.

For the purposes of reporting remuneration and expenses in accordance with Section 284 of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, expenses include payments made on behalf of members of Council from public funds which were paid for conference registration, accommodations, and other expenses.

Financial Considerations:

The reported costs were budgeted.

Alternatives Reviewed:

Not applicable.

Strategic Plan Relationship: Strong Organization

The presentation of the 2020 Statement of Council and Board Remuneration is a legislated requirement.

Consultation:

Not applicable.

Other Pertinent Reports/Attachments:

Appendix 1 – Statement of Council Remuneration and Expenditures for 2020

Appendix 2 – Statement of Library Board Remuneration and Expenses for 2020

Appendix 3 – Statement of Committee of Adjustment Remuneration and Expenses for 2020

Prepared and Recommended by:

Teresa Quinlin, MBA, CPA, CA Director of Corporate Services/Treasurer

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer

STATEMENT OF COUNCIL REMUNERATION AND EXPENDITURES FOR THE YEAR ENDED DECEMBER 31, 2020

	Conferences Attended	Remuneration	Car Allowance	Conference Registration	Conference Mileage & Expenses	Conference Accommodations	Other Travel & Expenses	Total
MAYOR Junkin, Marvin	#1	\$ 32,346.46	\$ 2,200.00	\$-	\$ -	\$ 295.88	\$-	\$ 34,842.34
COUNCILLORS								
Ciolfi, Mike	#1	5,599.44	-	-	-	233.89	-	5,833.33
Haun, Lisa		16,810.25	-	-	-	-	-	16,810.25
Hildebrandt, Bob		16,810.25	-	-	-	-	-	16,810.25
Kore, Ron		11,517.43	-	-	-	-	-	11,517.43
Olson, Wayne		4,678.13	-	-	-	-	-	4,678.13
Stewart, Marianne		16,810.25	-	-	-	-	-	16,810.25
Wink, John		16,810.25	-	-	-	-	-	16,810.25
Total		\$ 121,382.46	\$ 2,200.00	\$ -	\$-	\$ 529.77	\$ -	\$ 124,112.23

The remuneration paid to all members of Council was paid pursuant to by-law #4226(2020) under section 284 of the *Municipal Act*, 2001, as amended.

Conference Details

#1 ROMA Conference in Toronto, Ontario.

APPENDIX 2

Board Member	Conferences & Webinars	Remu	uneration	Ex	penses	Total
Brown, Donald		\$	-	\$	-	\$ -
Lewis, Greg	#1, #2 & #3		-		566.53	566.53
MacDougall, Gwendoline			-		-	-
McPherson, Catherine			-		-	-
Nolan, Nicole			-		-	-
Pepper, Gail			-		-	-
Smith, Madison			-		-	-
Stewart, Marianne			-		-	-
Wright, Tim			-		-	-
Total		\$	-	\$	566.53	\$ 566.53

STATEMENT OF LIBRARY BOARD REMUNERATION AND EXPENSES FOR THE YEAR ENDED DECEMBER 31, 2020

The remuneration paid to all board members was paid pursuant to the Corporate By-law BI-04, as amended February 2018, and the *Public Libraries Act*, Section 18.

#1 OLA Conference in Toronto, Ontario	
#2 Engaging Community Webinar.	
#3 Marketing Libraries Think Tank Webinar.	

APPENDIX 3

STATEMENT OF COMMITTEE OF ADJUSTMENT REMUNERATION & EXPENSES FOR THE YEAR ENDED DECEMBER 31, 2020

Committee Member	Ren	nuneration	Tra	Mileage & avel (OACA & Meetings)	C Re	onference egistration (OACA)	Ac	commodations (OACA)	Total
Cook, Don	\$	1,053.84	\$	83.57	\$	-	\$	-	\$ 1,137.41
Klassen, John		508.00		37.08		-		-	545.08
Law, Bernie		913.99		107.49		-		-	1,021.48
Marsh, Sandra		747.81		-		-		-	747.81
Stan, Brenda		83.09		-		-		-	83.09
Total	\$	3,306.73	\$	228.14	\$	-	\$	-	\$ 3,534.87

The remuneration paid to all committee members was paid pursuant to by-law #2441(2002) under section 284(1) subsection 2 of the *Municipal Act*, 2001, as amended.



Administration Office of the Regional Clerk 1815 Sir Isaac Brock Way, PO Box 1042, Thorold, ON L2V 4T7 Telephone: 905-685-4225 Toll-free: 1-800-263-7215 Fax: 905-687-4977 www.niagararegion.ca

March 3, 2021

CL 4-2021, February 25, 2021 PEDC 2-2021, February 17, 2021 PDS 7-2021, February 17, 2021

DISTRIBUTION LIST

SENT ELECTRONICALLY

RE: Niagara Official Plan Process and Local Municipality Conformity

Regional Council, at its meeting of February 25, 2021, approved the following recommendation of its Planning and Economic Development Committee:

That Report PDS 7-2021, dated February 17, 2021, respecting Niagara Official Plan Process and Local Municipality Conformity, **BE RECEIVED** and **BE CIRCULATED** to the Local Area Municipalities, Niagara Peninsula Conservation Authority (NPCA), and Niagara Home Builders Association.

A copy of Report PDS 7-2021 is enclosed for your information.

Yours truly,

Ann-Marie Norio Regional Clerk :me

CLK-C 2021-032

Distribution List:

Local Area Municipalities Niagara Peninsula Conservation Authority Niagara Home Builders Association K. McCauley, Acting Manager, Long Range Planning D. Giles, Acting Commissioner, Planning & Development Services N. Oakes, Executive Assistant to the Commissioner, Planning & Development Services



PDS 7-2021 February 17, 2021 Page 1

Subject: Niagara Official Plan Process and Local Municipal Conformity Report to: Planning and Economic Development Committee Report date: Wednesday, February 17, 2021

Recommendations

- 1. That Report PDS 7-2021 BE RECEIVED for information; and
- 2. That Report PDS 7-2021 **BE CIRCULATED** to the Local Area Municipalities, Niagara Peninsula Conservation Authority (NPCA), and Niagara Home Builders Association.

Key Facts

- The purpose of this report is to provide Committee with an overview of the Niagara Official Plan ("NOP") process and the subsequent conformity requirements of local municipalities.
- The NOP is the planning document that guides land use and development over the long term. Its requirements are set out in the *Planning Act, 1990* and it is foundational for the management of growth and the social, economic and environmental resources across the region.
- The Niagara Official Plan must be adopted by July 1, 2022 to meet the conformity deadline set by the Province.
- The policies of the NOP are prepared in the Regional context but must also consider their applicability to each community and must be balanced and implementable for Local Councils.
- Each local municipality has its own Official Plan and Zoning By-law that will require amendments to be brought into conformity with the NOP, once approved.
- Section 27 of the *Planning Act, 1990* requires local area municipalities to initiate conformity amendments to implement the policy direction of the NOP. Local municipalities have one year to bring the local Official Plan and Zoning By-laws into conformity once the NOP comes into effect.

- Public consultation is an important part of the planning process. In a two-tier system, the regulatory responsibilities between upper and lower tier municipalities is not always clear. This has been evident during consultation for the NOP.
- Consultation at the local level will occur, and may be supplemented by consultation from the NOP, as local municipalities will be required to initiate public and stakeholder consultation programs in conjunction with their Local Official Plan and Zoning By-law update programs.
- As required by the *Planning Act, 1990,* local planning documents are required to be brought into conformity quite expeditiously and doing so will require adequate resource allocation by local municipalities.
- This report was discussed with Area Planners on Friday January 22, 2021, and the direction and objective of this report was supported.

Financial Considerations

There is no financial impact directly associated with this report.

Local municipalities should be prepared to commit funding to their own Official Plan and Zoning By-law update programs upon adoption of the NOP. The funding commitment for conformity work could commence as early as 2022-2023.

Funding for Official Plans and Zoning By-laws are recoverable, in part, through Development Charge and Building Permit revenues. Local municipalities presently or intending to update their Development Charges By-law or Building Permit fee structure should ensure these items are captured accordingly.

Analysis

An Official Plan is the planning document that guides land use and development over the long term. Its requirements are set out in the *Planning Act, 1990* and is foundational for the management of growth and the social, economic, and environmental resources across the region.

Regional Planning staff have been working towards the preparation of NOP since 2017, following the completion of the Province's Coordinated Plan Review (CPR). Through the CPR, the Region consulted area planners and prepared joint submissions to the

Province on comments related to the review and update of *A Place to Grow – Growth Plan for the Greater Golden Horseshoe*, the *Greenbelt Plan* and the *Niagara Escarpment Plan*. These submissions demonstrated the alignment of Regional and local municipal interest in how Provincial policy is applied in Niagara.

The *Planning Act, 1990* requires all municipal Council decisions to be consistent with, conform to, or not conflict with the applicable Provincial policy. Regional and local planning staff must provide planning advice and make recommendations under the same requirements.

The NOP program has a number of background studies that are informing the NOP, including Growth Management, Natural Heritage Systems, Employment Strategy, Housing Strategy, Land Needs Assessment and Settlement Area Boundary Review, Agricultural Systems Review and climate change considerations. This work is completed at a Regional scale and in the context of the Region's mandate.

Throughout the NOP work plan and the preparation of the background studies, the Region has maintained a consistent level of engagement with area planners, stakeholders, special interest groups, Regional and Local committees and Council, and the public. General input and specific input on key milestones has been consolidated and reflected in the work going forward. Consultation is further detailed later in the report.

Regional Planning staff will continue to finalize these background studies, collect data and prepare draft policies to present a complete draft of the NOP for the end of 2021. Timing for conformity with the *Growth Plan* is July 1, 2022.



The NOP has five components, as shown in the graphic below:

The following sections highlights some of the NOP topic areas that may require additional study work by local municipalities to implement the direction of the NOP. Other areas of the NOP will need to be implemented through the local municipal conformity exercises and this implementation will be done in the context of conformity with Provincial policy.

The policies of the NOP are prepared in the Regional context but must also consider their applicability to each community and must be balanced and implementable for Local Councils.

Growth Management

Growth is coming to Niagara and the governments must proactively prepare for and manage this growth. Within the NOP, the Regional Structure will identify strategic growth areas where a significant portion of growth and intensification should be directed.

As discussed with area planners, the NOP will allocate the Niagara's population and employment growth forecasts to local municipalities to 2051. This growth will be accommodated through specific density targets in strategic growth areas, designated greenfield areas for new development and intensification rates in built-up areas.

Through conformity exercises, local municipalities will define the boundaries for strategic growth areas (where applicable), prepare secondary plans or district plans for new or evolving areas and identify areas for potential redevelopment through intensification strategies.

Within the context of the local official plan, municipalities will have the ability to balance and manage growth and development at the local level.

Employment

The employment strategy will identify and map employment areas to protect clusters of employment land across the Region. The employment areas will be mapped in a schedule of the NOP and policies will set a framework to maintain and protect existing employment areas to meet forecasted need.

Protecting employment areas will contribute to a complete community structure and ensure a full spectrum of employment job options is available to support the local economy.

Through the conformity exercise, local municipalities will update mapping to designate employment areas at the local level and include policy that supports the long-term retention of these areas.

In addition, population related employment growth will need to be provided through commercial and mixed use development. This type of employment is typically more compatible with and serves residential needs. Local municipalities will be encouraged to incorporate mixed-use area policies to support population-related employment and the creation of a complete community.

Housing Strategy

Niagara is in need of more diverse housing options in order to remain affordable. A diverse range of housing will ensure choice and provide the opportunity for residents to stay within their neighbourhood as housing needs change over time and provide the ability to age in place.

The Housing Strategy suggests Niagara will require more mid to higher density development than has traditionally occurred. This means development of townhouses, apartments and mixed-use building to meet the needs of current and future residents. Compact, denser development will enhance the community structure, support transit, and make efficient use of services and public facilities.

Forecasted population growth allocations together with demographic analysis will inform the housing mix (i.e. the ratio of types of housing) and affordability targets for the Region.

Local Official Plans will implement the recommendations of the Housing Strategy to ensure an appropriate housing mix and affordability. Not all municipalities will plan for the same housing mix. For this reason, the local municipality may wish to use local data to complete their own detailed housing analysis to identify their housing needs.

Secondary planning and intensification strategies will also assist local municipalities to prepare plans for a strong, healthy, balanced and complete community, as well as

address development and redevelopment pressure, to ensure growth aligns with the context of the surrounding neighbourhood.

Natural Heritage System/Watershed Study

The NOP will have policies that identify and protect the natural heritage system and the water resource system. Together, these will form the Region's environment system.

The natural environmental system approach must be balanced and designed with consideration of the unique attributes of each geographic area of the Region. The preferred approach to implement is still under review. The final direction will require detailed policies and other implementation tools.

Each local municipality will implement the preferred approach through their conformity exercise. This conformity will provide a level of protection of the natural heritage system. Through future planning applications/projects, more detailed environmental planning studies or environmental impact statements may be undertaken to support the proposal. These studies/statements would be reviewed and approved by the local municipality through development application process.

Niagara Official Plan Completion and Local Implementation Programs

Once adopted by Council, the NOP will require approval from the Ministry of Municipal Affairs and Housing (MMAH). The Ministry will review the policy content, post to the ERO for public comment and confirm consistency, conformity, or no conflict, with Provincial Plans. MMAH may modify the NOP as a result of this review.

Following approval on the NOP, under Section 27 of the *Planning Act, 1990*, local municipalities are required to initiate conformity amendments and have one year to update their Official Plans to bring them into conformity with the NOP.

The amount of work to be done by local municipalities to conform to the NOP will depend on a number of factors, including how recently the local Official Plan was updated, if the municipality choses to undertake more localized study work, and if the local Official Plan has already completed amendments to implement changes made through coordinated Provincial plan review.

Potential tools and options to assist with conformity are discussed below.

District Planning / Regional Strategic Growth Areas

District Plans are prepared by the Region, with input and involvement of the local municipality, as an intermediate step for more detailed planning analysis between Regional growth planning and local planning instruments. District Plans provide proactive planning strategies that focus on growth, the development of complete communities, and support economic prosperity. These Plans are prepared in collaboration with a variety of stakeholders and with input from the public.

Existing District Plan locations were selected for their ability to accommodate a significant amount of the future growth. The Region continue to engage the local municipalities and key stakeholders to implement and monitor these Plans.

Secondary Plans

Secondary Plans are prepared and implemented by the local municipality for areas that require detailed land use planning direction. They follow a statutory process and involve significant community and stakeholder consultation at the local level. The Region's role is to participate in the process and act as the approval authority, where required.

Secondary Plans are intended to implement the Regional Structure at the local level and will be prerequisite for strategic growth areas, new designated greenfield areas and to implement District Plans. They may also be required for detailed land use direction for existing greenfield areas and built-up areas that are facing development pressure.

Proactive Secondary Planning is essential to manage growth and to set expectations for the community. The Region will continue to work collaboratively with the local municipalities on these plans to proactively guide development. This process will also ensure efficient land use, appropriate mix of built form, consider infrastructure and transportation requirements, natural and cultural heritage protection, urban design, and similar matters beyond general policy.

Secondary Plans are prepared based on community input. No two Secondary Plans are the same; each plan is different and dependent on the surrounding neighbourhood context and input from the public.

Zoning

In addition to local Official Plan conformity, local municipalities must update their Zoning By-law to conform with the NOP. This is where *"the rubber hits the road"* – when

individual property owners are explicitly informed of land use changes affecting their property. This process is the responsibility of the local municipality and provides another opportunity to engage local area residents, businesses and stakeholders on changes required for conformity.

Zoning can be the most volatile phase as this process targets properties that will see land use permissions change. It also provides for opportunities for representation to local Council. For this reason, it is important for the Regional policies to allow for some discretion, as the Region is only a commenting authority on zoning by-law updates and amendments.

Consultation and engagement

Local area planners have been included throughout the NOP process. The Region has connected with area planners regularly since 2016, including monthly or bi-monthly scheduled area planners meetings, one-on-one meetings to discuss topic-specific content, information sharing and joint report submissions on changes to provincial policy, and information and discussion on policy direction. This consultation will continue with regular area planners meetings already scheduled for the balance of 2021. Additional meetings will be added as required or desired.

Other consultations undertaken to date include presentations to Regional and local councils, regular Planning Advisory Committee meetings, in-person and virtual public information centres, online surveys and meetings with stakeholder groups.

Consultation efforts will continue throughout the preparation of the NOP. Engagement with Regional Councillors, local area municipal staff and Council members, as well as future public information centres and stakeholder meetings will help collect a broad spectrum of input to inform the NOP policies and mapping. Ongoing consultation will continue leading up to the release of the NOP in late 2021.

As robust as the NOP engagement strategy is, consultation and involvement does not stop there. Local municipalities will engage their communities through their own Official Plan and Zoning By-law conformity exercises. Engagement through this process is often more targeted to local landowners as specific property changes can be identified.

Development Application Portal

The Region and local municipalities are working together to create a development portal that will standardize development applications and track performance of allocations, intensification and density assignments. Some local governments have already moved to digital submission, but the first step in Niagara is to establish uniformity in planning applications, submission requirements and key performance indicators for monitoring.

Conclusion

Regional Planning staff have provided this report for information and awareness of the importance of the NOP process and the subsequent responsibility of local municipalities to bring planning documents into conformity with the NOP.

Local planning documents are required to be brought into conformity quite expeditiously. Doing so will require adequate resource allocation by local municipalities. Local municipalities may wish to start identifying staffing resources and budget allocation early to accommodate a timely conformity exercise.

As noted above, local municipal Councils will have the opportunity to further refine planning policy/mapping through detailed planning analysis in the local context. In addition, there will be many opportunities to consult and engage local residents through the NOP, local Official Plan conformity exercises, zoning updates, future Secondary Plans/planning studies and development applications.

This report was discussed with the Area Planners on Friday January 22, 2021, and the direction and objective of this report was supported.

Alternatives Reviewed

This report is for information purposes and to note the requirement under Section 27 of the *Planning Act, 1990* to bring local Official Plans and Zoning By-laws into conformity following the approval of the NOP.

No alternatives are available.

Relationship to Council Strategic Priorities

The Niagara Official Plan is important to address Council's priorities, being:

- Supporting Businesses and Economic Growth;
- Healthy and Vibrant Community; and
- Responsible Growth and Infrastructure Planning.

Implementation of the Niagara Official Plan will help support these priorities and serve to provide local municipalities the policy guidance needed during the own Official Plan conformity exercises.

Other Pertinent Reports

PDS 4-2021	Niagara Official Plan – Steps and Directions Moving Forward
PDS 35-2020	Niagara Official Plan - Consultation Update
PDS 28-2020	Regional Structure Background Report
PDS 1-2020	New Niagara Official Plan - Public Consultation Summary
PDS 33-2019	Growth Management Program Update for New Official Plan
PDS 9-2019	New Official Plan Consultation Timeline Framework
CWCD 421-2019	New Niagara Official Plan Updates

Prepared by: Kirsten McCauley, MCIP, RPP Acting Manager, Long Range Planning Planning and Development Services

Recommended by:

Doug Giles, MES, BUP Acting Commissioner Planning and Development Services

Submitted by:

Ron Tripp, P.Eng. Acting Chief Administrative Officer

This report was reviewed by Isaiah Banach, Acting Director of Community and Long Range Planning.




Notice of Online Public Information Centre #1 Municipal Class Environmental Assessment for Merritt Rd. (RR 37) and Rice Rd. (RR 54) in Pelham, Thorold and Welland

The Study

Niagara Region is undertaking an Environmental Assessment (EA) Study for improvements to Merritt Road and Rice Road as a result of proposed developments in the Town of Pelham, the City of Thorold and the City of Welland.



This study will build on the recommendations of the Niagara Region's Transportation Master Plan (TMP), which included the following:

- Extension of Merritt Road between Regional Road 54 (Rice Road) and Cataract Road;
- Capacity improvements of Merritt Road from Cataract Road to Highway 406; and,
- Capacity improvements to Regional Road 54 (Rice Road) from 200 meters north of Merritt Road to Quaker Road.

The Study will aim to identify improvements to the two roadways to meet the future needs of the surrounding community for all road users. The study will address active transportation needs by providing dedicated pedestrian and cyclist infrastructure that is safe, attractive, conform to a complete streets approach, and compatible with the changing land use in the three local municipalities.





The process

The study is being carried out as a Schedule 'C' project in accordance with the requirements of the Municipal Class EA process, which is an approved process under the Ontario Environmental Assessment Act. This study will address the requirements of Phases 1 to 4 of the Municipal Class EA process. Once the study is complete, an Environmental Study Report will be prepared and available for public review and comment. A Notice of Completion will be issued at that stage.

You are invited to participate

Consultation with the public, Indigenous Nations, regulatory agencies and stakeholders is a key element of the Class EA process. Three (3) Public Information Centers will be conducted throughout this study to solicit public input. At this time, the Niagara Region is planning to host the Public Information Centre (PIC) #1. The purpose of the first PIC is to share information about the project background, Class EA Study process, the problem to be addressed by this study, and obtain preliminary input from the public for consideration into the Study process. The PIC #1 will be held in **an online format.** You can participate in this PIC by attending an online presentation and/or by viewing information materials on Wood's Virtual Consultation Platform.

Online Presentation: The Study Team will deliver an online presentation on **March 24, 2021**, starting at **6:00 pm**. There will be an opportunity at the end of the presentation to ask any questions or submit comments. Please email <u>mir.talpur@woodplc.com</u> (**Mir Talpur, Environmental Planner**) to receive an invite to the online presentation.

Virtual Consultation Platform: Information materials related to the Online PIC #1 will be available on <u>Wood's Consultation Platform on project webpage</u> starting **March 24**, **2021** and comments will be received until **April 7**, **2021**.

Stay Connected

If you would like to receive future notices via email, or if you have any questions or comments, please contact one of the Study Team Members identified below:

Maged Elmadhoon, M.Eng., P.Eng. Manager, Transportation Planning Niagara Region 905-980-6000 ext. 3583 Maged.Elmadhoon@niagararegion.ca

Jeff Suggett, M. Sc.

Consultant Project Manager Wood Environment & Infrastructure Solutions 905-380-3601 Jeff.Suggett@woodplc.com

Information will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.



March 6, 2021

Mayor and Council Town of Pelham 20 Pelham Town Square Fonthill ON LOS 1E0

Dear Mayor Junkin and Members of Council,

I write to you as President of the Ontario Municipal Administrators' Association (OMAA) to offer on behalf of our members, congratulations to your Chief Administrative Officer, David Cribbs, on his recent recognition at the OMAA Awards Event held on February 25th, 2021.

Our Association has been in existence for over 60 years as an organization devoted exclusively to supporting the municipal Chief Administrative Officer (CAO) in Ontario. Collectively OMAA strives to enhance good governance by promoting leadership excellence and professional management in local government administration for municipalities throughout the province.

On behalf of the Ontario Association of Municipal Administrators it is a pleasure to advise that your Chief Administrative Officer David Cribbs was recognized by their peers with a special OMAA achievement award for demonstrating exceptional leadership in response to the COVID-19 pandemic crisis, including the award-winning municipal reopening plan. Awards presented this year were special for our Association, celebrating career milestones, exemplary leadership, innovation, and professionalism demonstrated by the members of our CAO community. This has been a particularly challenging time for the municipal sector and Chief Administrative Officers in Ontario. It is a delight to congratulate David for his commitment to excellence in municipal management.

OMAA is pleased to celebrate the achievement of your CAO and we thank you for the support provided by Council for your Chief Administrative Officer and the commitment to excellence in local administration and governance. Together we are all working towards superior local government in Ontario.

Sincerely

Gayle Jackson OMAA President Chief Administrative Officer, City of Orillia



March 2, 2021

Dear Mayor Junkin and Members of Council,

We would like to sincerely thank you for the very generous commitment to changing the lives of people in the Niagara community, by the Town of Pelham.

The much needed Hospice Niagara's expansion plan reflects the growing need in Niagara and aims to strengthen access to community-based hospice palliative care, including areas that are currently underserviced, bringing care closer to home.

Upon completion, Niagara residents will have access to three hospice residences – Centres of Excellence, available to everyone across the Region. Each Centre will maintain globally recognized hospice palliative standards of compassionate care, and will significantly reduce costs on Niagara's healthcare system.

Hospice Niagara has been helping people live well since 1993. We believe everyone deserves to have access to dignified care, based on each person's unique physical, emotional, social and spiritual health and well-being.

The Town of Pelham's philanthropic leadership is instrumental to our continued fundraising success that make this plan a reality. Indeed, the true significance of Pelham's contribution is the profound and immediate impact it will have on the people and families living in this community during one of the most difficult times in life.

If you have any questions regarding our *Close to Home* fundraising campaign, please do not hesitate to contact us.

Thank you again for your gracious support!

Warm regards,

Chagy.

Carol Nagy **Executive Director** Hospice Niagara Phone: 905-984-8766 ext. 225 Email: cnagy@hospiceniagara.ca

> The Stabler Centre 403 Ontario Street, Unit 2, St. Catharines, ON L2N 1L5 T: 905-984-8766 | F: 905-984-8242 T: 905-984-8766 | F: 905-735-1703

Welland Office 555 Prince Charles Drive, 2nd Floor, Welland, ON L3C 6B5



Subject: Town of Pelham Support for Grant Applications Seeking Funding For Rural Internet Connectivity Enhancements

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0055, Town of Pelham Support for Grant Applications Seeking Funding for Rural Internet Connectivity Enhancements;

AND THAT Council authorize the Chief Administrative Officer to provide letters of endorsement and support on behalf of the Town of Pelham as it pertains to any future third party application for funding under the Universal Broadband Fund to improve broadband coverage in Pelham.

Background:

Innovation, Science and Economic Development Canada is accepting applications for funding support under the Universal Broadband Fund to improve broadband coverage. Improvements to broadband capabilities, with speeds of at least 75 Mbps download and 10Mbps upload is anticipated to allow individuals and businesses to better access government services, e-commerce and internet-based resources, including e-learning.

To date, the two letters of support have been provided in support of applications, with an informal Council endorsement. Adoption of the resolution as proposed will allow the Chief Administrative Officer to provide letters of support in a timely and efficient manner, given delays that can be experienced due to receipt of requests and Council agenda preparation timelines. The benefit to the community is multifaceted, not only for e-commerce but also to assist households in the more remote parts of the Town of Pelham with better ability to enhance social inclusiveness and stay connected to others when personal visits are impacted under various circumstances including, but not limited to, the ongoing pandemic and stay at home initiatives.

Analysis:

These grant applications by third parties do not require the Town of Pelham to contribute to the cost; therefore, it will benefit the rural residents without impacting the local tax levy.

Financial Considerations:

There are no financial implications to the Town by supporting these grant applications by third party providers.

Alternatives Reviewed:

There are no other alternatives since the funding of improving rural internet connectivity can only be funded by these grants since funds are not in the Town's long-term capital plan. Therefore, it is critical for the Town to provide letter of support to these third party providers seeking grant funding.

Strategic Plan Relationship: Communication and Engagement

Support for applications under the broadband improvement programs will assist in enhancing internet provision to the underserviced areas within the Town of Pelham.

Consultation:

N/A

Other Pertinent Reports/Attachments:

None

Prepared and Recommended by:

Teresa Quinlin, MBA, CPA, CA Director of Corporate Services/Treasurer

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer



RECREATION, CULTURE & WELLNESS DEPARTMENT

Monday, March 22, 2021

Subject: 2021 Summer Ice in Accipiter and Duliban Insurance Arena Pads

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0059 Recreation;

AND THAT Council directs staff to maintain ice in both arena surfaces at the Meridian Community Centre for the summer of 2021

Background:

During the summer of 2019, the Meridian Community Centre removed ice from the Accipiter pad, April 1. With the ice removed the facility was able to host the 2019 Home Show, 2019 Art Show, the Notre Dame High School Graduation and the Pelham Minor Lacrosse Season. The ice was installed after the Lacrosse Paperweight Tournament and was ready for use August 20, 2019, for the winter season.

Due to Covid restrictions in 2020, the Home Show; Art Festival; graduations and Pelham Minor Lacrosse all cancelled. Once the lockdown began to lift, the ice was installed in the Duliban Arena opening July 8, 2020. This ice was booked fully almost instantly and due to high demand, the Town opened the Accipiter ice pad on July 27, 2020. Pelham was one of only two facilities in the Region to have summer ice. Both ice pads were booked to near capacity seven days a week from 7am – 10pm July and August.

Analysis:

Once again, 2021 Home Show; Art Festival; and Graduations have been cancelled. Pelham Minor Lacrosse have decided to delay and shorten their upcoming season, with a proposed start date of June instead of April ending mid-August. Total revenues from the proposed Lacrosse season is \$5,460.00. The approximate cost of removing ice and reinstalling \$7,860.00 leaving a net loss of \$2,460.00. Revenues for Summer Ice requests received to date, without advertising availability, is \$69,000.00 for Duliban and \$64,000.00 for Accipiter arena. The City of Welland will not be offering summer ice so Pelham Staff have been in contact with the City of Welland to see if it is possible for Lacrosse to play this season in Welland.

During these unprecedented times staff would never normally suggest a local organization go outside of the Municipality for facility use. However, during this continued challenging operating environment, the Town has an opportunity to offset revenue loss in the MCC by maintaining summer ice so as to come close to breaking even. It is not economically feasible to host one organization (lacrosse) with such limited use.

Financial Considerations:

OPTION 1.

Ice removal one arena pad to facilitate Pelham Minor Lacrosse Association's use:

Cost to remove ice,	\$1260
Cost to install ice,	\$6660
Projected Revenue from Lacrosse,	\$5460
Net loss for the Town of Pelham	-\$2460

OPTION 2.

Summer ice in both ice surfaces and assist Pelham Minor Lacrosse to secure floor time in Welland this summer.

Total dollars of ice requests, as of March 11, 2021: Duliban Ice \$64,000.00, Accipiter Ice \$69,000.00 = \$133,000.00 Staff complement the same whether 1 ice pad or 2 ice pads no extra staff costs. Extra utility costs for second ice pad approximately \$30,000.00 Conservative Net Gain approximately \$35,000.00 for summer ice

Alternatives Reviewed:

The alternative to leaving the ice in both pads would be to remove one pad of ice in May to allow Pelham Minor Lacrosse to use it for their shortened season.

Strategic Plan Relationship: Financial Sustainability

Due to Covid-19 recommendations with recreation facilities use during restrictions, it has been difficult for user groups to complete their seasons and sustain operation. By allowing 2 ice pads during the summer the Town is able to allow organizations to complete their seasons and skill development. Summer use of the

pad is limited due to cancellations of major events. And is financially unsustainable due to limited rentals.

Consultation:

Summer User Groups

Pelham Minor Lacrosse

Teresa Quinlin, Director of Corporate Services

Other Pertinent Reports/Attachments:

Accipiter Ice Rentals

Duliban Ice Rentals

Prepared and Recommended by:

James Allen, CIT Supervisor of Facilities

Vickie vanRavenswaay, RRFA Director of Recreation, Culture and Wellness

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer

Deferre	ed	Revenue Repo	rt (Summary)				
			Facility: Accipiter Arena [101]				
			Revenue Recognized: From May 1	15, 2021 To Aug 31,	2021		
				<u>,</u> ,,,,,,,, _			
Month							
Revenu	e Gl	_ Account	Account #			Amount	
May 2021							
HST			1-1-01000-1093			(1,772.68)	
Insuranc	ce		1-4-90950-4908			(469.80)	
PCC Re	ntal	s - Figure Skating	1-3-50550-2500-399935			(1,480.00)	(1,480.00)
PCC Re	entals	s - Pelham Panthers JrB	1-3-50550-2515-399935			(2,664.00)	(2,664.00)
PCC Re	ntal	s - Public / Other Ice	1-3-50550-2509-399935			(9,492.00)	(9,492.00)
				May 2021	Total:	(15,878.48)	(13,636.00)
June 2021							
HST			1-1-01000-1093			(2,987.92)	
Insuranc	ce		1-4-90950-4908			(696.60)	
PCC Re	ntal	s - Figure Skating	1-3-50550-2500-399935			(1,776.00)	(1,776.00)
PCC Re	ntal	s - Pelham Panthers JrB	1-3-50550-2515-399935			(6,956.00)	(6,956.00)
PCC Re	ntal	s - Public / Other Ice	1-3-50550-2509-399935			(14,252.00)	(14,252.00)
				June 2021	Total:	(26,668.52)	(22,984.00)
July 2021							
HST			1-1-01000-1093			(2,063.36)	
Insuranc	ce		1-4-90950-4908			(648.00)	
PCC Re	ntal	s - Pelham Panthers JrB	1-3-50550-2515-399935			(4,144.00)	(4,144.00)
PCC Re	ntal	s - Public / Other Ice	1-3-50550-2509-399935			(11,728.00)	(11,728.00)
				July 2021	Total:	(18,583.36)	(15,872.00)
August 2021							
HST			1-1-01000-1093			(2,162.68)	
Insuranc	ce		1-4-90950-4908			(664.20)	
PCC Re	ntal	s - Pelham Panthers JrB	1-3-50550-2515-399935			(6,956.00)	(6,956.00)
PCC Re	ntal	s - Public / Other Ice	1-3-50550-2509-399935			(9,680.00)	(9,680.00)
				August 2021	Total:	(19,462.88)	(16,636.00)
					Totals:	(80,593.24)	69128.00

De	ferr	ed	Re	evenu	e Report	(Summary)				
						Facility: Duliban Insurance Arena [156]		2024		
						Revenue Recognized: From May 15, 2	021 To Aug 31,	2021		
Month	_					• • • •				
	Reven	ue GL	Acc	ount		Account #			Amount	
May 2	2021									
	HST					1-1-01000-1093			(1,347.32)	
	Insurar	nce				1-4-90950-4908			(547.36)	
	PCC lo	e Rer	ntals -	AAA Admira	ls	1-3-50550-2518-399935-505000-3999	80		(2,442.00)	(2,442.00)
	PCC R	entals	s - Pul	olic / Other Io	e	1-3-50550-2509-399935			(7,922.00)	(7,922.00)
							May 2021	Total:	(12,258.68)	(10,364.00)
June	2021									
	HST					1-1-01000-1093			(2,240.29)	
	Insurar	nce				1-4-90950-4908			(906.71)	
	PCC R	entals	s - Fig	ure Skating		1-3-50550-2500-399935			(592.00)	(592.00)
	PCC R	entals	- Pul	olic / Other Io	e	1-3-50550-2509-399935			(16,641.00)	(16,641.00)
							June 2021	Total:	(20,380.00)	(17,233.00)
July 2	2021									
	HST					1-1-01000-1093			(2,217.28)	
	Insurar	nce				1-4-90950-4908			(1,055.51)	
	PCC R	entals	s - Pul	olic / Other Io	e	1-3-50550-2509-399935			(17,056.00)	(17,056.00)
							July 2021	Total:	(20,328.79)	
Augu	st 202	1								
	HST					1-1-01000-1093			(2,686.84)	
	Insurar	nce				1-4-90950-4908			(1,200.45)	
	PCC R	entals	- Pul	olic / Other Id	e	1-3-50550-2509-399935			(20,668.00)	(20,668.00)
							August 2021	Total:	(24,555.29)	
								Totals:	(77,522.76)	65321.00



RECREATION, CULTURE & WELLNESS DEPARTMENT Monday, March 22, 2021

Subject: Compensation to facility users during – Facility Restrictions, funded under COVID-19 Provincial Financial Relief

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-00063 re Compensation to Facility Users during COVID-19;

AND THAT Council approve the recommended facility rate reduction during COVID-19 – Red Control Level: compensation to Pelham Minor Basketball Association to offset loss of gymnasium during vaccination centre use; and unforeseen costs to offset Pelham Minor Lacrosse relocation for summer season;

AND THAT all expenses to be covered under COVID-19 Provincial Financial Relief Funding.

Background:

COVID-19 has taken a toll on local facility users. Many had received registrations based on a normal operating season. Unfortunately, Covid restrictions in Recreation Facilities continue to force drastic changes for users especially in RED Level where the restrictions are 10 participants at a time to a facility, when it would be normal to have at least 15 participants at a time. To comply with health regulations, the users may need to double the ice time to accommodate the registration.

Analysis:

Ice Users: Most Municipalities across the Region have offered a 50% rate decrease to all ice users while in RED Level. In Pelham's case, staff are recommending substituting prime time rates for non-prime time rates to provide financial relief to struggling community organizations which would see application of the Youth rate of \$87.00 (compared to \$148) and Adult rate \$114.00 (compared to \$207) per hour plus tax. (see attached Regional Rate Reduction chart for

comparison). The user groups have found these rates, although not the lowest in the Region, to be acceptable. When Niagara is no longer in RED the rates will revert back to the normal ice rates.

Pelham Basketball Association: Basketball is getting hit not only due to the participant limit, but also lack of facilities. As Council is aware, a vaccination centre will occupy one gymnasium and will be off limits to Pelham Basketball Association. This is a potential financial crisis, as registration fees were spent on uniforms, balls, facility use, etc. although didn't take into consideration not having the ability to use one gymnasium which could result in refunds. A couple of factors play into this, school gymnasiums are not available for use and originally the thought was staff would tear down vaccine set up between usage. This is not the case, set up is too cumbersome and not feasible. Therefore, the Association will only have use of one gymnasium for an undetermined amount of time. Until we know how long the vaccination centre will occupy the gymnasium staff cannot know the exact amount that will be compensated although it should not be more than \$5,000.00. Because the Town anticipates receiving compensation for use of its facility for vaccine distribution, it is fair and appropriate to compensate the PBA for its equivalent losses.

Pelham Minor Lacrosse Association: There may be additional costs to Pelham Minor Lacrosse Association in relocating their program to Welland Arena for the 2021 Season. This will be determined by the number of players allowed in the facility at a time, as well as the additional per hour fee.

Financial Considerations:

All costs related to these considerations will be charged against the COVID-19 Financial Relief Funding that has been received, as it is directly related to COVID-19 restrictions.

Alternatives Reviewed:

Do not offer relief to the user groups.

Strategic Plan Relationship: Build Strong Communities and Cultural Assets

By supporting relief to Community User Groups it allows for sustainability during this challenging year and builds strong organizations for future years.

Consultation:

Area Municipalities Pelham Minor Basketball Pelham Minor Hockey Pelham Minor Lacrosse Teresa Quinlin, Director of Corporate Services

Other Pertinent Reports/Attachments:

Regional Arena Rental Rate Reduction – COVID-19 Red Restricted Level

Prepared and Recommended by:

Vickie vanRavenswaay, RRFA Director of Recreation, Culture and Wellness

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer

Proposed Arena Rental Rates - RED Level

Pelham	Youth	\$87.00	Adult	\$114.00	
Niagara Falls	Prime Time	\$100.00	Non-Prime Time	\$80.00	
Grimsby	Prime Time	\$202.21	Non-Prime Time	\$79.20	
	Prime Time - Youth	\$120.80	Non-Prime Time - Youth	\$45.58	
Lincoln	Prime Time	\$111.35	Non-Prime Time	\$97.50	
St. Catharines	Prime Time	\$78.10	Non-Prime Time	\$78.10	
Welland	Prime Time	\$170.61	Non-Prime Time	\$95.13 Buy one get one fre	е
Port Colborne	Prime Time	\$72.09	Non-Prime Time	\$72.09	
Fort Erie	Prime Time	\$208.61	Non-Prime Time	\$105.63 Normal rates	



Report: Recommendation for Applications for Zoning By-law Amendment and Draft Plan of Subdivision – Park Place South

Recommendation:

THAT Committee receives Report #2021-52 for information as it pertains to File Nos. 26T19-02-2020 & AM-08-20 relating to Park Place South;

AND THAT the proposed changes to the draft plan of subdivision and zoning by-law amendment related to Park Place South are minor in nature and no further public meeting is required;

AND THAT Committee directs Planning staff to prepare the by-law for approval of the Zoning By-law amendment for Council's consideration.

AND THAT Council approves the Draft Plan of Subdivision, attached as Appendix A, subject to the conditions in Appendix B.

Executive Summary:

The purpose of this report is to provide Council with a recommendation regarding applications for Zoning By-law Amendment and Draft Plan of Subdivision for Park Place South.

Location:

The property is located on the north side of Summersides Boulevard east of Station Street, legally described as Part of Lots 7, 8, 9, 13 & 14, Registered Plan 717, Part of Thorold Township; Lot 166 & 167, Geographic Township of Thorold, in the Town of Pelham, Regional Municipality of Niagara (refer to Figure 1).



Figure 1: Location of the Property



Project Description and Purpose:

The property is a total of 4.46 ha (11.02 ac) of developable area. The developable area was originally proposed to be 13 single detached residential lots (0.55 ha), 7 blocks for 30 rear lane townhouse dwellings (1.004 ha), 10 blocks for 44 two-storey townhouse dwellings (0.957 ha), 5 blocks for 40 back to back townhouse dwellings (0.589 ha) and associated public streets (1.336 ha) and walkway (0.008 ha) (refer to Figure 2).





Figure 2: Proposed Draft Plan Subdivision

In response to concerns raised by Council, neighbouring property owners and Town staff, the developer has submitted a revised draft plan. The modifications include removing the laneway originally proposed behind 1405 Station Street and replacing it with a street connection further east and replacing the proposed block townhouse dwellings abutting 1405 Station Street with single detached dwellings. The revised draft plan consists of 16 single detached residential lots (0.7 ha), 14 blocks for 2-storey townhouses (1.257 ha), 4 blocks for rear lane townhouses (0.580 ha), 5 blocks for back-to-back townhouses (0.589 ha) and associated public streets (1.301 ha) and walkway (0.008 ha) (refer to Figure 3).



Figure 3: Revised Draft Plan



The requested zoning change has also been updated to reflect the revised draft plan. The revised request would rezone the property from Agricultural (A) to site specific R2 (*Residential 2*) to permit single detached dwellings, site specific RM1 (*Residential Multiple 1*) to permit back to back and street townhouse dwellings and OS (*Open Space*) zones where the public walkway and parkland are located.

Policy Review:

Section 3 of the *Planning Act* requires that, in exercising any authority that affects a planning matter, planning authorities "shall be consistent with the policy statements" issued under the Act and "shall conform with the provincial plans that are in effect on that date, or shall not conflict with them, as the case may be".

Section 34 of the Act allows for consideration of amendments to the zoning by-law.

Section 51 of the Act allows for consideration of a plan of subdivision.

Section 51 (24) of the Act states that in considering a draft plan of subdivision regard shall be had, among other matters, to the health, safety, convenience,



accessibility for persons with disabilities and welfare of the present and future inhabitants of the municipality and to:

- The effect of development of the proposed subdivision on matters of provincial interest as referred to in section 2;
- Whether the proposed subdivision is premature or in the public interest;
- Whether the plan conforms to the official plan and adjacent plans of subdivision, if any;
- The suitability of the land for the purposes for which it is to be subdivided;
- The number, width, location and proposed grades and elevations of highways, and the adequacy of them, and the highways linking the highways in the proposed subdivision with the established highway system in the vicinity and the adequacy of them;
- The dimensions and shapes of the proposed lots;
- The restrictions or proposed restrictions, if any, on the land proposed to be subdivided or the buildings and structures proposed to be erected on it and the restrictions, if any, on adjoining land;
- Conservation of natural resources and flood control;
- The adequacy of utilities and municipal services;
- The adequacy of school sites;
- The area of land, if any, within the proposed subdivision that, exclusive of highways, is to be conveyed or dedicated for public purposes;
- The extent to which the plan's design optimizes the available supply, means of supplying, efficient use and conservation of energy; and,
- The interrelationship between the design of the proposed plan of subdivision and site plan control matters relating to any development on the land, if the land is also located within a site plan control area designated under subsection 41 (2) of this Act.

Analysis of Section 51 (24) of the *Planning Act* will be provided under the Town of Pelham Official Plan analysis below.

Greenbelt Plan, 2017

The subject parcel is located in an identified settlement area that is outside of the Greenbelt Plan Area; therefore, the policies of the Greenbelt Plan do not apply.



Niagara Escarpment Plan, 2017

The subject parcel is not located in the Niagara Escarpment Plan Area; therefore, the Niagara Escarpment Plan policies do not apply.

Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development, and sets the policy foundation for regulating the development and use of land. The PPS provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment.

Section 3 of the *Planning Act* requires that decisions affecting planning matters "shall be consistent with" policy statements issued under the *Act*. The PPS recognizes the diversity of Ontario and that local context is important. Policies are outcome-oriented, and some policies provide flexibility provided that provincial interests are upheld. PPS policies represent minimum standards.

The subject land is located in a 'Settlement Area' according to the PPS. Policy 1.1.3.1 states that settlement areas shall be the focus of growth and their vitality and regeneration shall be promoted.

Policy 1.1.3.2 states that land use patterns within settlement areas shall be based on densities and mix of land uses that efficiently use land and resources, are appropriate for and efficiently use infrastructure and public service facilities, minimize negative impacts to air quality and climate change and promote energy efficiency, prepare for the impacts of a changing climate, support active transportation and are transit and freight supportive.

Policy 1.1.3.3 provides for the promotion of intensification and redevelopment accommodating a significant supply and range of housing options where it can be accommodated taking into account the building stock, availability of existing and planned infrastructure and public service facilities required to accommodate the needs of the development.

The proposed draft plan of subdivision will help to facilitate a mix of housing options in the East Fonthill neighbourhood and within the Settlement Area as a whole. The density of the development provides for the efficient use of land and



planned/existing infrastructure that minimizes land consumption and costs of servicing. Further, the redevelopment of the property for single detached and various types of townhouse dwellings will be transit and active transportation supportive due to the location along existing transit routes and will be well served by sidewalks and bike lanes. Furthermore, Town staff are recommending that the developer provide a pedestrian crossing of the watercourse north of the property as a condition of approval to ensure access to the nearby off road trail and commercial area to the north. There are adequate public service facilities, including a planned neighbourhood park directly north and east of the property. The Community Centre and library are also located within a short distance.

Based on this information, the proposed draft plan of subdivision and zoning by-law amendments are consistent with the Provincial Policy Statement subject to approval of the recommended conditions of draft plan approval.

Growth Plan for the Greater Golden Horseshoe, 2019

The subject parcel is identified as being within a Delineated Built-up Area (rear of 1409 Station Street) and Designated Greenfield Area according to the Growth Plan for the Greater Golden Horseshoe, 2019. The Growth Plan policies aim to build stronger, prosperous communities by directing growth to built-up areas, promoting transit-supportive densities and a healthy mix of residential and employment land uses, preserving employment areas, planning for community infrastructure, and supporting the conservation and protection of natural systems, prime agricultural areas, and cultural heritage.

Policy 2.2.2.1(a) requires a minimum of 50 percent of all new residential development to occur within the delineated built-up area.

Policy 2.2.2.3(b) encourages intensification generally throughout the built-up area and investment in services that will support intensification.

Policy 2.2.7.1 requires that new development in designated greenfield areas will be planned, designated and zoned that supports the development of complete communities, supports active transportation and encourages integration of transit services.



The minimum density target for designated greenfield areas is 50 jobs and persons per hectare (2.2.2.2(a)).

The proposed development will contribute to the creation of a complete community with a mix of residential land uses. The proposed sidewalks, walkway and bike lanes will provide connectivity to future neighbourhood parks, bike lanes and off-road trails. The development can be served by existing transit systems. The development of additional single detached and street townhouses on the 1409 Station Street property will intensify the Built-Up Area from its current single detached residential use. The varying built form (single detached, street and back to back townhouses) will support the formation of a vibrant neighbourhood. Adherence to the East Fonthill Urban Design Guidelines will assist in the creation of high quality residential construction. The proposed draft plan of subdivision has a density of approximately 80.9 persons and jobs per gross hectare ensuring that the overall 50 jobs and persons per hectare density is achieved. It is Planning staff's opinion that the applications are consistent with the policies of the Growth Plan for the Greater Golden Horseshoe.

Regional Official Plan, consolidated August 2015

The subject land is located within the Urban Area Boundary of the Town of Pelham and is designated Built-up Area (rear of 1409 Station Street) and Designated Greenfield Area in the Regional Official Plan.

Built-up Areas will be the focus of residential and employment intensification and redevelopment within the Region over the long term (Policy 4.G.8.1).

Designated Greenfield Areas will: accommodate a range of land uses; make a significant contribution to the growth of the respective urban area as a complete community; provide opportunities for integrated, mixed land uses; create street patterns that are fine grain and in grid pattern; support transit and active transportation within the area and to adjacent areas; ensure that greenfield development is sequential, orderly, and contiguous with existing built-up areas; and, ensure that the provision of municipal servicing is in accordance with the water and wastewater servicing master plans (Policy 4.C.5.1).

The Region will require a minimum combined gross density target of 50 people and jobs per hectare across all designated greenfield areas.



Policy 11.A.1 encourages the provision of a variety of housing types within urban communities and neighbourhoods to serve a variety of people as they age through their life cycle.

Policy 11.A.2 states the Region encourages the development of attractive, well designed residential development that: provides for active transportation; deemphasizes garages; emphasizes the entrance and point of access to neighbourhoods; is accessible to all persons; incorporates the principles of sustainability in building design; provides functional design solutions for waste collection and recycling; provides an attractive, interconnected and active transportation friendly streetscape; contributes to a sense of safety within the public realm; balances the need for private and public space; creates or enhances an aesthetically pleasing and functional neighbourhood; and, encourages a variety of connections between land uses based on diverse transportation modes, allowing people to move freely between the places where they live, work and play.

The proposed development provides a mix of housing types that contribute to the creation of a complete community. The street pattern will connect to existing and future neighbourhoods. Active transportation is supported through the sidewalks in a modified grid pattern, inclusion of bike lanes along Klager Avenue and McCaw Drive, as well as the pedestrian walkway providing access to the park and multi-use trail. The developer will also provide a pedestrian crossing of the watercourse to further support active transportation.

Municipal servicing will be in keeping with Regional and Town servicing plans. The 1409 Station Street property contained a single detached dwellings and its redevelopment will result in intensification and assist the Town in meeting the 15% intensification target. The minimum density target of 50 jobs and persons per hectare for greenfields is being achieved. The development will be serviced by municipal sewage and water services.

The building design will be energy efficient meeting the requirements of the Ontario Building Code. The development will be eligible for curbside Regional waste collection and the road network has been designed to accommodate the collection vehicles. The future building designs will be required to conform to the urban design guidelines for East Fonthill which encourage deemphasizing garages. For these reasons, it is Planning staff's opinion that the applications conform to the policies of the Regional Official Plan.



Town of Pelham Official Plan, 2014

The subject parcels are located within the East Fonthill Secondary Plan Area and designated EF- Medium Density Residential with a small portion of 1409 Station Street designated EF- Low Density Residential in the Town's Official Plan, 2014.

Permitted uses in the EF- Medium Density Residential designation are all forms of townhouse units; small scale apartment buildings; accessory apartments/secondary suites; live-work units; housing for seniors and/or special needs housing; accessory buildings and structures related to the primary residential dwelling unit; home occupations; places of worship; day nurseries; convenience retail and service commercial uses; parks, parkettes and open space linkages; and public uses and public and private utilities. Single and semi-detached dwellings may be permitted but may not constitute more than 15% of the total number of dwelling units within any individual draft plan of subdivision (B1.7.7.4.1(b)). Townhouse dwellings shall be developed at densities ranging from 20 units per net hectare up to 60 (Policy B1.7.7.4.2(a)). Permitted singles and semi-detached dwellings shall be developed at densities ranging from 20 units per net hectare up to 50 units per net hectare (Policy B1.7.7.4.29 (c)).

Permitted uses in the EF- Low Density Residential designation are single detached and semi-detached dwelling units; accessory apartments/secondary suites; accessory buildings and structures related to the primary residential dwelling unit; home occupations; places of worship; day nurseries; convenience retail and service commercial uses; parks, parkettes and open space linkages; and public uses and public and private utilities. Policy B.1.7.7.3.1(b) allows townhouses in the EF- Low Density Residential designation provided they are not more than 60% of the total number of dwelling units within any individual plan of subdivision.

The majority of the property is designated EF - Medium Density Residential. Section E5 Interpretation of Land Use Designation Boundaries of the Official Plan states that "The boundaries between lands uses designated on the Schedules to this Plan are approximate except where they meet with roads, railway lines, rivers, pipeline routes, transmission lines, lot lines or other clearly defined physical features and in these cases are not open to flexible interpretation. Where the general intent of the document in maintained, minor adjustments to the boundaries will not require amendment to this Plan." In this circumstance, the use of the small portion of the



EF – Low Density Residential designation for the EF-Medium Density designation use, i.e. street townhouse units are appropriate and can be supported given that an adequate area remains to the north where Low Density Residential uses can be appropriately located and based on the Interpretation of Land Use Designation Boundaries policies in the Official Plan, without the need for an Official Plan amendment.

The uses proposed in the draft plan of subdivision are permitted in the EF – Medium Density Residential designation. Single detached dwellings constitute approximately 12.4% of the total number of dwellings within the proposed subdivision meeting the requirement of Policy B1.7.7.4.1(b). The townhouses are proposed at a density of approximately 46.5 units per net hectare meeting the requirements of Policy B1.7.7.4.2(a). The single detached dwellings are proposed at a density of approximately 22.9 units per net hectare meeting the requirements of Policy B1.7.7.4.29 (c).

A portion of the property is also designated Highly Vulnerable Aquifer on Schedule B1. Policy C5.3 indicates to minimize risks posed by land uses on vulnerable groundwater areas, the following uses are prohibited on lands identified as Vulnerable Groundwater Area/Highly Vulnerable Aquifers: Generation and storage of hazardous waste or liquid industrial waste; New waste disposal sites and facilities, organic soil conditioning sites, and snow storage and disposal facilities; Underground and above-ground storage tanks that are not equipped with an approved secondary containment device; and, Storage of a contaminant listed in Schedule 3 (Severely Toxic Contaminants) to Ontario Regulation 347 of the Revised Regulations of Ontario, 1990, or its successor. For Committee's information, none of the prohibited uses, outlined in Policy C5.3, are proposed for the subject parcel.

The lands form part of Neighbourhood 1 on Schedule A4 'Structure Plan'. According to Policy B1.7.7.2 b)(i), Neighbourhood 1 shall achieve an overall minimum gross density of approximately 57 persons and jobs per gross hectare combined. Density calculations provided by the applicant indicate that the gross density of the development is approximately 80.9 persons and jobs per hectare. While this is substantially higher than the minimum gross density target for Neighbourhood 1, Planning staff advise that Appendix D to the Town of Pelham Official Plan contains the Development Yield/Density Calculations for East Fonthill. The expected density yield for the medium density designation was approximately 70 persons per gross



hectare. Using the net density assumptions by unit type in Appendix D, the proposed subdivision results in a density of approximately 68.8 persons per gross hectare which for all intents and purposes achieves the medium density target of 70 persons per gross hectare.

Policies B1.7.3.1(j), (k) and (l) speak to the importance of a well-designed, multimodal, connected modified grid street network. Further, Policy B1.7.4.1 states that development within the East Fonthill Secondary Plan Area shall be generally consistent with the Demonstration Plans attached to this Plan as Appendix A (Figure 4) and that refinements shall not require an amendment to the Official Plan, provided the intent and general design approach in the Demonstration Plans are achieved to the satisfaction of the Town.







Revisions to the draft plan of subdivision and road network have resulted in the development generally conforming to the Demonstration Plans in Appendix A and policies B1.7.3.1(j), (k) and (l).

Policy B1.1.5 requires that when considering a Zoning By-law amendment to permit a townhouse development, Council shall be satisfied that the proposal:

- a) Respects the character of adjacent residential neighbourhoods, in terms of height, bulk and massing;
- b) Can be easily integrated with surrounding land uses;
- c) Will not cause or create traffic hazards or an unacceptable level of congestion on surrounding roads; and
- d) Is located on a site that has adequate land area to incorporate required parking, recreational facilities, landscaping and buffering on-site.

In response to Policy B1.1.5, Planning staff are of the opinion that the development as proposed respects the character of adjacent residential neighbourhoods with respect to height, bulk and massing. All development will have to be consistent with the Urban Design Guidelines which will ensure that these items are considered in the design. The applicant has revised the subdivision plan to locate single detached dwellings next to adjacent residential uses which are primarily single detached dwellings. The back to back townhouses will located centrally within the development away from adjacent residential neighbourhoods. The future residential development of these properties was considered during the preparation of the East Fonthill Secondary Plan and supporting studies including traffic. Traffic congestion is not anticipated as a result of the townhouses. Finally, the size of the property for street and back to back townhouse dwellings is sufficient to incorporate parking, recreational areas, landscaping and buffering. While parking was a concern raised by Town staff and some Council members based on the previous draft plan, the applicant has provided a parking plan demonstrating that for 129 units, there are 140 garage spaces, 170 driveway spaces and 35 on-street spaces and 20 layby spaces along Summersides Boulevard (Figure 5). This is 2.4 on-site spaces per unit plus an additional 0.4 spaces per unit off-site for a total of 2.8 spaces per unit.





Official Plan Policy D5.3 requires that prior to the consideration of an application for Plan of Subdivision, Council shall be satisfied that: a) The approval of the development is not premature and is in the public interest; b) The lands will be appropriately serviced with infrastructure, schools, parkland and open space, community facilities and other amenities, as required; c) The density of the development is appropriate for the neighbourhood as articulated in the policies of these Plan that relate to density and intensification; d) The subdivision, when developed, will be easily integrated/connected with other development in the area through the use of roadways, natural corridor linkages and trails to accommodate active transportation; e) The subdivision conforms with the environmental protection and management policies of this Plan; and, f) The proposal conforms to Section 51 (24) of the Planning Act, as amended. This policy is similar to the requirements in Section 51(24) of the Planning Act, as amended.

Figure 5: Parking Plan



Analysis of Section 51(24) of the Planning Act and Policy D5.3 of the Town's Official Plan, 2014

Effect of Development on Matters of Provincial Interest

Planning staff have reviewed the applications to ensure that they are consistent with the Provincial Policy Statement, 2020 and conform to applicable Provincial plans. In Planning staff's opinion, the development addresses all matters of Provincial interest outlined in Section 2 of the Planning Act.

Whether the Proposed Subdivision is Premature or in the Public Interest

The proposed subdivision in not premature and is in the public interest.

Whether the Plan Conforms to the Official Plan and Adjacent Plans of Subdivision

The draft plan of subdivision conforms to the Official Plan and the East Fonthill Secondary Plan. The plan allows for connectivity to future plans of subdivision.

Suitability of Land for the Purposes of which it is to be Subdivided

The subject land is a Built-up Area within Fonthill's settlement area.

The density of the development is appropriate for the East Fonthill Secondary Plan – Neighbourhood 1 and lands designated Medium Density.

There are no changes to any environmental features as a result of the current applications.

The Number, Width, Location, Proposed Grades, Elevations of Highways, their Adequacy, and the Highways linking the Highways in the Proposed Subdivision with the Established Highway System

The subdivision will have access from Summersides Boulevard via Klager Avenue and Norgate Way which will connect with Meridian Way in the future. The proposed street networking provides connectivity to the established highway system, adjacent development and generally conforms to the street patterns depicted in the East Fonthill Demonstration Plans.



Grading and servicing will also be reviewed further and approved conditions of draft plan approval.

Dimensions and Shapes of the Proposed Lots

The proposed subdivision does not proposes regularly shaped lots that will allow the appropriate siting of the future dwellings, driveways, amenity and parking areas.

The Restrictions or Proposed Restrictions, if any, on the Land Proposed to be Subdivided or the Buildings and Structures Proposed to be Erected on it and the Restrictions, if any, on Adjoining Land

There are no restrictions on the land proposed to be subdivided or on adjoining land.

The development must conform to the proposed zoning by-law (as well as other municipal by-laws, where applicable).

Conservation of Natural Resources and Flood Control

The proposed draft plan of subdivision will not negatively impact the conservation of natural resources or flood control. Stormwater management plans will be reviewed and approved by Public Works as part of the draft plan conditions.

The Adequacy of Utilities and Municipal Services

Utility companies have been circulated the applications and no comments have been received to indicate that services are not adequate.

The Adequacy of School Sites

The development applications were circulated to the local school boards and no comments were received to indicate that the school sites are not adequate.

Adequacy of Parkland and Open Space, Community Facilities, and Other Amenities, as Required (D5.3)

The proposed development abuts the future neighbourhood park on the north and east sides which will be easily accessible to the development. Future park designs and programming will be coordinated and implemented by the Department of Recreation, Culture and Wellness. The Community Centre is also located near the proposed development.



The Area of Lane, if any, Within the Proposed Subdivision that, Exclusive of Highway, is to be Conveyed or Dedicated for Public Purposes

The draft plan proposes to dedicate a 3.0 metre walkway (Block 40) to the Town to provide a connection to the park and future pedestrian bridge over the watercourse.

Section 51(3) of the Planning Act permits the Town, in lieu of accepting conveyed or dedicated land, to require the payment of money by the owner of the land to the value of the land (five (5) percent of the land included in the plan) otherwise to be conveyed. The Town will provide the developer with a credit for the installation of the pedestrian bridge to be constructed on Town property toward the payment of parkland dedication.

The Extent to which the Plan's Design Optimizes the Available Supply, Means of Supplying, Efficient Use and Conservation of Energy

The design of the proposed development optimizes the available land supply and will aid in the efficient use and conservation of energy.

The Interrelationship between the Design of the Proposed Plan of Subdivision and Site Plan Control Matters Relating to any Development on the Land, if the Land is also Located Within a Site Plan Control Area designated under Subsection 41(2) of This Act.

The proposed dwelling units within the draft plan of subdivision do not require site plan control.

In Planning staff's opinion, the proposed draft plan of subdivision and zoning by-law amendment will conform to Section 51 (24) of the Planning Act and Policy D.5.3 of the Town's Official Plan, 2014.

As discussed above, it is Planning staff's opinion that the draft plan of subdivision and requested zoning provisions conform to the policies of the Town of Pelham Official Plan.

Zoning By-law 1136 (1987), as amended

The subject parcel is zoned Agricultural (A) which permits agricultural uses including greenhouses; seasonal or permanent farm help houses on farms larger than 10 hectares; one single detached dwelling on one lot; home occupations;



kennels; animal hospitals; uses, buildings and structures accessory to the foregoing permitted uses; and forestry and conservation uses.

The zoning by-law amendment application seeks approval to amend Zoning By-law No. 1136 (1987) from the Agricultural (A) zone to site specific R2 (*Residential 2*), RM1 (*Residential Multiple 1*) and OS (*Open Space*) zones. The Open Space zone will apply to the pedestrian trail proposed in the draft plan of subdivision as well as the surrounding parkland. The site specific zoning regulations are provided in Tables 1, 2 and 3.

Tab	ble	1:	Requested	Site	Specific	Zoning	Regulations	

Zoning Regulation	General Provisions	Requested Site Specific General Provisions
5.54 Definitions		Add definition: Back-to-back townhouse dwelling means a townhouse dwelling that contains dwelling units divided vertically from each other by common side walls and common rear walls.
5.55 Second Dwelling Unit		Add definition: Second Dwelling Unit means a second dwelling unit on a lot with a principle dwelling that is created through converting part of, or adding on to the existing dwelling that maintains an independent entrance, or within a detached accessory building (e.g.



		in-lav suite,	w suite, basement , coach house)		
6.1 Accessory Uses (a) General		Only unit i a sing detac dwell	Only one second dwelling unit is permitted per lot in a single detached, semi- detached or townhouse dwelling, provided:		
		i)	The maximum floor area does not exceed 60m2.		
		ii)	A maximum of one entrance is permitted to face a street, inclusive of the principle dwelling.		
		iii)	A minimum of one parking stall is required.		
		iv)	Compliance with the Ontario Building Code and Fire Code, as applicable.		
6.1 (b) Location	Except as otherwise provided herein, in a Residential zone any accessory building or structure which is not part of the main building shall be erected to the rear of	Detac locate with a setba lanew m set to int 0 m s	ched garages shall be ed in the rear yard a minimum rear yard ack of 6.0 m to vays, minimum 1.5 tback from end wall cerior side lot line or setback from		



	the required front yard and shall not be located closer to any lot line than 1.2 m (3.94 ft) or closer to any street than the required yard for the main building or structure. In all other zones any accessory building or structure which is not part of the main structure shall be erected to the rear of the front yard and shall not be located closer to any lot line than the required yard of the main building or structure.	common wall to interior side lot line
6.1(c) Maximum Height	3.7 m	3.7 m 6.0 m where the accessory building contains a second dwelling unit
6.1(d) Lot Coverage	10%	15%
6.2 Dwelling Units Below Grade	No dwelling unit shall in its entirety be located in a cellar. A dwelling unit, it its entirety, may be located in a basement provided that the floor	delete



	level of such basement is not more than 1.2 metres below the adjacent finished grade.	
6.16 (d) Parking Area Regulations Ingress and Egress	 (i) Ingress and egress, to and from the required parking spaces and areas, shall be provided by means of unobstructed driveways or passageways at least 3.0 m wide, where only one-way traffic is permitted, and have a minimum width of 7.5 m, but not more than 9.0 m in perpendicular width where two-way traffic is permitted. (ii) The maximum width of any joint ingress and 	 i) Ingress and egress, to and from required parking spaces and areas, shall be provided by means of unobstructed driveways or passageways at least 3 m wide, where only one- way traffic is permitted or if the number of residential units is three or less, and have a minimum width of 6.5 m, but not more than 8.0m in perpendicular width where two-way traffic is permitted. All uses fronting Summersides Boulevard shall be accessed from a
	egress driveway ramp measured along the street line shall be 9.0 m.	public or private laneway. ii) The maximum width of any joint ingress and egress driveway ramp measured along the street line shall be 8.0 m.
6.35 Yard Encroachments Permitted	Notwithstanding the yard provisions of this By-law to the contrary, unenclosed porches,	Notwithstanding the yard provisions of this By-law, unenclosed porches, balconies, steps and


(c) Unenclosed	balconies, steps and	patios, covered or
Porches, Balconies,	patios, covered or	uncovered shall not be
Steps & Patios	uncovered may project	permitted within 2 m of
	into any required yard	the front lot line or
	a maximum distance	exterior side lot line, and
	of 1.5 m provided	4.5 m of the rear lot line
	that, in the case of	provided that, such uses
	porches, steps or	are not more than 2.0 m
	patios, such uses are	above ground. Uncovered
	not more than 1.3 m	patios and decks shall not
	above ground. Patios	be permitted
	may project into any	p
	required rear vard	within 1.2 m of a rear or
	provided they are not	side lot line provided that,
	more than 0.6 m	such uses are not more
	above grade	than 0.3 m above ground.
	above grade.	
Zoning Regulation	Residential 2 (R2)	Requested Site Specific
		Regulations for Single
		Detached Dwellings
14.2(c) Maximum Lot	50%	delete
Coverage		
14.2(d) Minimum	65 m on either a	4 Ometres to building face
Front Vard	street or an internal	4.0metres to building face
	roadway	6.0 metres to a garage
	Toddway	
14.2(e) Minimum	1.5 m on one side and	1.2 metres
Interior Side Yard	3 m on the other side	
	where there is no	
	carport or garage	
	attached, or 1.5 m on	
	both sides where a	



	carport or garage is attached	
14.2(f) Minimum Exterior Side Yard	5 m from the side lot line or 15 m from the centre line of the road whichever is the greater	3.0 metres
14.2(g) Minimum Rear Yard	7.5 m	6 m
14.2(h) Maximum Height for a Dwelling	10.5 m	3 storey or 12m, whichever is greater
14.2(i) Minimum Ground Floor Area for a Dwelling	(i) one storey 93m2(ii) two or three storey55m2	(i) one storey 88m2 (ii) two or three storey 50m2

Zoning Regulation	Residential Multiple 1 – no requirements for back-to back townhouse dwellings	Requested Site Specific Regulations for Back-to Back Townhouse Dwellings
16.1(a) Permitted Uses		Add back-to-back townhouse dwellings
16.5(a) Minimum Lot Frontage		6.0 metres
16.5(b) Minimum Corner Lot Frontage		10.0 metres
16.5(c) Minimum Lot Area		110 m2 per dwelling unit



Zoning Regulation	Residential Multiple 1 – no requirements for back-to back townhouse dwellings	Requested Site Specific Regulations for Back-to Back Townhouse Dwellings
16.5(d) Minimum Front Yard		6.0 metres
16.5(e) Minimum Exterior Side Yard		3.0 metres
16.5(f) Minimum Interior Side Yard		2.0 metres or 0 metres to a common wall
16.5(g) Minimum Rear Yard		0 metres
16.5(h) Maximum Building Height		12.5 metres or 3 storeys, whichever is greater
16.5(i) Minimum Ground Floor Area for		(i) One storey 88m ²
Dweiling		(ii) Two or Three storey 22m ²

Zoning Regulation	Residential Multiple 1	Requested Site Specific Regulations for Street Townhouse Dwellings
16.3(a) Minimum Lot Frontage	6 m per dwelling unit, except that in the case of an interior lot containing a dwelling attached on one side only, the minimum lot	6.0 metres



Zoning Regulation	Residential Multiple 1	Requested Site Specific Regulations for Street Townhouse Dwellings
	frontage required shall be 9 m	
16.3(b) Minimum Corner Lot Frontage	14.0 m	7.5 metres
16.3(c) Minimum Lot Area	230m ² per dwelling unit	170 m² per dwelling unit
16.3(d) Minimum Front Yard	7.5 metres	3.0 metres to a dwelling6.0 metres to a garage
16.3(e) Minimum Exterior Side Yard	7.5 metres	3.0 metres
16.3(f) Minimum Interior Side Yard	3.0 metres	1.2 metres or 0 metres to a common wall
16.3(g) Minimum Rear Yard	7.5 metres	6.0 metres
16.3 (h) Maximum Building Height	10.5 metres	12 metres or 3 storeys, whichever is greater
16.3 (j) Planting Strips	1.5 m minimum in width shall be provided where the boundary of a (RM1) zone abuts an (R1) or (R2) zone	delete



The proposed zoning change will conform to the policies of the Official Plan. The zone standards will allow for efficient residential development while respecting the needs of future residents. In Planning staff's opinion, the proposed zoning change will apply good planning principles.

Submitted Reports:

The applicant provided copies of the following reports in support of the applications:

Stage 1, 2 and 3 Archaeological Assessments prepared by Mayer Heritage Consultants Inc.

The Stage 3 Archaeological Assessment recommended no further investigation and a letter was provided by the Ministry of Culture concurring with this recommendation.

Functional Servicing Report prepared by Upper Canada Consultants

The Functional Servicing Report makes recommendations for stormwater management, water and sanitary servicing. These recommendations will be required to be integrated into the engineering design for the subdivision which is required to be reviewed and approved by the Town as a condition of approval.

Planning Justification Report prepared by Upper Canada Consultants

The Planning Justification Report concludes that the proposed subdivision is efficient and well designed, compatible and appropriate development of the lands, represents good planning and conforms to Provincial Plans and local Plans and should be supported.

Digital copies of the reports are available by contacting the Planning Division.

Agency Comments:

On October 30, 2020 a public meeting notice was circulated to external agencies and internal departments regarding the proposed applications. Full versions of



comments received to date have been included in Appendix A to this report. The following is a summary of those comments:

Hydro One: No comments or concerns.

Bell: Requests conditions for easements.

Public Works: No objections subject to conditions of draft plan approval.

Niagara Region:

Regional staff have no objection to the proposed Zoning By-law Amendment and Draft Plan of Subdivision from a Provincial and Regional perspective subject to the conditions.

Pelham Active Transportation Committee:

Supportive of:

- Pedestrian bridge crossing over the watercourse
- Pathway to park
- Cycling infrastructure on Klager and McCaw

Requests that the Town:

• Ensure active transportation facilities move forward as identified in the Active Transportation Master Plan, particularly Map 10.

• The ATMP should be shared with the developers, as well as the Active Transportation Demonstration Plan in the East Fonthill Secondary Plan which provides more detail.

• Ensure safe crossing at the roundabout at Klager, particularly as traffic increases

• If fencing along lane/pathway, consider visibility

• Ensure lighting that meets accessibility needs (across bridge, on pathways)

Ideally, the PATC would like to see:

- Winter snow removal (heated trails/sidewalks)
- A trail or pathway on both sides of the waterway

• Signage to identify the multi-use paths, including distance in km, for example, to a location (e.g., Steve Bauer Trail) or markers to mark distance along a pathway.

• Benches or seating at certain vistas.



Planning:

The Demonstration Plans contained in Appendix A to the Official Plan, 2014 show a north-south road connection on the subject property connecting to properties to the north. Policies B1.7.3.1(j), (k) and (l) speak to the importance of a well-designed, multi-modal, connected modified grid street network. Further, Policy B1.7.4.1 states that development within the East Fonthill Secondary Plan Area shall be generally consistent with the Demonstration Plans attached to this Plan as Appendix A and that refinements shall not require an amendment to the Official Plan, provided the intent and general design approach in the Demonstration Plans are achieved to the satisfaction of the Town.

Public Comments:

On October 30, 2020 a public meeting notice was circulated to all property owners within 120 metres of the property's boundaries. In addition, public notice signs were posted facing Station Street and Summersides Boulevard. A public meeting was held on November 23, 2020. The following comments were received:

Randy Zwierschke & Marleah Proulx: Request that the laneway proposed behind their property be relocated due to noise and privacy concerns.

Stephen Kaiser: Supports the proposal as it fits the original vision for East Fonthill.

Warren Calvert: Concerned that there are no splash pads or playgrounds in the area for families, lack of seniors programming and activities, parking, narrow roads, narrow driveways, snow removal and the ability for firetrucks to access the development. Feels that the proposal is high density and is opposed to high density development.

Staff Comments:

Commenting agencies, departments and utilities offered no objections to the applications subject to conditions. All requested conditions of approval from agencies and utilities have been included in the recommended conditions contained in Appendix B to this report.

Comments from the Pelham Active Transportation Committee (PATC) are noted and items such as roundabout, sidewalk, fencing and lighting designs will be addressed as part of the detailed engineering design which is required as a condition of



approval. The engineering plans will be brought back to the PATC for review and comment when received.

Concerns originally noted by Planning staff regarding the need for a north-south road connection have been addressed through the revised draft plan of subdivision.

The changes to the draft plan of subdivision (removal of the laneway behind 1405 Station Street and replacement with single detached dwellings) have addressed the concerns of Randy Zwierschke and Marleah Proulx with respect to their privacy and potential noise impacts.

In response to the concerns raised by Mr. Calvert, Planning staff advise that the development of the parks is being planned and there will be consideration given to playgrounds and other amenities geared toward families with children. It is noted that a splash pad is planned for Marlene Stewart Streit Park and the lands are within walking distance to the Meridian Community Centre that provides recreational opportunities for families and is a designated seniors' centre with seniors programming available. Adequate parking will be available. The proposed roads and driveways meet the requirements of the Town, are of standard widths and will allow access for snowplowing and Fire and Emergency Services. The property is designated EF – Medium Density and the uses proposed (single detached and townhouse dwellings) are permitted in the Medium Density designation and are not considered high density uses and are consistent with the planned density approved through the East Fonthill Secondary Plan.

In summary, it is Planning staff's opinion that the proposed draft plan of subdivision and zoning by-law amendment are consistent with Provincial policy and plans, conform to the Regional and Town Official Plans and represent good planning and therefore, should be approved subject to the recommended conditions of draft plan approval contained in Appendix B.

Alternatives:

Council could choose not to approve the applications for draft plan of subdivision and amendment to the Zoning By-law.

Council could choose to approve the applications subject to modifications.



Prepared and Recommended by:

Shannon Larocque, MCIP, RPP Senior Planner

Barbara Wiens, MCIP, RPP Director of Community Planning and Development

Reviewed and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer



APPENDIX A

Conditions of Draft Plan Approval

Park Place South Plan of Subdivision (File No. 26T19-02-2020)

The headings inserted in these draft plan conditions are inserted for convenience only and shall not be used as a means of interpreting these draft plan conditions. The conditions of final approval and registration of the Park Place South Plan of Subdivision by Mountainview Homes (Niagara) Ltd. (file no. 26T19-02-2020) Town of Pelham are as follows:

DRAFT PLAN

- This approval applies to the Park Place South Draft Plan of Subdivision, Part of Lots 7, 8, 9, 13 & 14, Registered Plan 717; Part of Thorold Township Lots 166 & 167, Geographic Township of Thorold in the Town of Pelham, Regional Municipality of Niagara prepared by J.D Barnes Ltd. dated January 13, 2020 printed February 26, 2021 showing:
 - 16 single detached dwelling lots
 - Blocks 17-30 for 56 two-storey townhouses
 - Blocks 31-34 for 17 rear lane townhouses
 - Blocks 35-39 for 40 back to back townhouses
 - Block 40 for 3.0 metre walkway
 - Blocks 41-42 for future development
 - Blocks 43-50 for 0.3m reserves
 - 1.299 ha for right of way
- 2. This approval is for a period of three (3) years. Approval may be extended pursuant to Section 51 (33) of the *Planning Act R.S.O. 1990, c. P.13* but no extension can be granted once the approval has lapsed. If the Developer wishes to request an extension to the approval, a written explanation on why the extension is required, together with the resolution from the Region must be submitted for Town Council's consideration, prior to the lapsing date.
- 3. If final approval is not given to this draft plan within three (3) years of the approval date, and no extensions have been granted, approval will lapse under Section 51 (32) of the *Planning Act R.S.O. 1990, c. P.13*.
- 4. It is the Developer's responsibility to fulfill the conditions of draft plan approval and to ensure that the required clearance letters are forwarded by the appropriate agencies to the Town, quoting file number 26T19-02-2020 and referencing the conditions that are cleared.

AGREEMENTS AND FINANCIAL REQUIREMENTS

- 5. The Developer shall provide an electronic copy of the pre-registration plan, prepared by an Ontario Land Surveyor, and a letter to the Department of Community Planning and Development stating how all the conditions imposed have been or are to be fulfilled.
- 6. The Developer shall provide an electronic copy of the lot priority plan to the Department of Community Planning and Development.
- 7. The Developer shall agree to pay to the Town of Pelham all required processing and administration fees.
- 8. The Developer shall submit a Solicitor's Certificate of Ownership for the Plan of Subdivision of land to the Department of Community Planning and Development prior to the preparation of the Subdivision Agreement.
- 9. That the Subdivision Agreement between the Developer and the Town of Pelham be registered by the Municipality against the lands to which it applies in accordance with the *Planning Act R.S.O. 1990, c. P.13*.
- 10. That the Developer shall pay the applicable Town of Pelham, Niagara Region, and Niagara District Catholic School Board development charges in place at the time of the Building Permit issuance.
- 11. That the Developer agrees in writing to satisfy all of the requirements, financial and otherwise, of the Town of Pelham concerning the provision of roads, daylight triangles, lot reserves, road widenings, sidewalks, fire hydrants, streetlighting, the extension and installation of services, stormwater management and drainage including the upgrading of services and the restoration of existing roads damaged during the development of the Plan of Subdivision.
- 12. That the Developer agrees to pay their proportionate share of the costs associated with the establishment of the Singers Corner Municipal Drain.
- 13. That the Developer will not negatively impact trees on neighbouring properties.
- 14. That the Developer agrees to pay the required cost allocation for oversizing of the Storm Water Facility and Storm Sewer.
- 15. That the Developer agrees to construct a steel framed wood deck pedestrian crossing over the watercourse connecting the development to the trail on the north side of the watercourse to the satisfaction of the Town noting that a development permit is required from the Niagara Peninsula Conservation Authority.

LAND TRANSFERS AND EASEMENTS

- 16. That the Developer agrees to deed any and all easements that may be required for access utility and drainage purposes be granted to the appropriate authorities and utilities.
- 17. That the Developer shall provide the following 0.3m wide reserves to the Town of Pelham: Blocks 43 50. These must be free and clear of any mortgages, liens and encumbrances.

ZONING

- 18. That prior to final approval, the zoning by-law amendment application (File No. AM-08-20), which reflects the layout of the draft plan of subdivision has come into effect in accordance with the provisions of Section 34 of the *Planning Act R.S.O. 1990, c. P.13*.
- 19. The Developer shall submit to the Department of Community Planning and Development an electronic copy of the proposed draft plan and a letter prepared by an Ontario Land Surveyor to confirm zoning compliance.
- 20. That the Director of Community Planning and Development be provided with a surveyor's certificate showing lot frontages and net lot area for the final Plan of Subdivision.

ROADS

- 21. That all roads and laneways within the subdivision be conveyed to the Town of Pelham as public highways.
- 22. That the streets be named to the satisfaction of the Town of Pelham.
- 23. That the Developer provides detailed engineering design drawings for the roads, sidewalks and street lighting facilities required to service the subject lands in accordance with the East Fonthill Secondary Plan Area Urban Design Guidelines to the Director of Public Works for review and approval.
- 24. The Developer shall be responsible for the construction of all primary and secondary services, including sidewalks, boulevard plantings and sodding/hydroseeding, in accordance with the policies of the East Fonthill Secondary Plan Area Urban Design Guidelines.
- 25. That the Developer agrees to provide decorative street lighting to the satisfaction of the Director of Public Works.
- 26. That the Developer agrees to provide a detailed streetscape plan in accordance with the East Fonthill Secondary Plan Area Urban Design Guidelines to the satisfaction of the Director of Community Planning and Development and the Director of Public Works

illustrating street trees, on-street parking and driveway entrances.

- 27. That the Developer agrees to install sidewalk and grade and sod boulevards in accordance with the requirements of the East Fonthill Secondary Plan Area Urban Design Guidelines. All sidewalks shall be deemed to be Secondary Services and shall be completed within six (6) months of occupancy of each dwelling, except between November 15th and April 15th at which time the sidewalks must be installed as soon as possible, at the locations shown on the Plans and in accordance with the approved Subdivision Grade Control Plan or as amended by the Director of Public Works. The sidewalks are to be constructed in their entirety in block long sections.
- 28. That the Developer agrees to provide curb side parking in accordance with the East Fonthill Secondary Plan Area Urban Design Guidelines to the satisfaction of the Director of Public Works.
- 29. That the Developer agrees to provide lay-by parking on Summersides Boulevard in accordance with the East Fonthill Secondary Plan Area Urban Design Guidelines to the satisfaction of the Director of Public Works.
- 30. That the Developer agrees to pay for the north half of Summersides Boulevard abutting the subdivision lands as per the Summersides Boulevard Cost Sharing Agreement.
- 31. That prior to any construction taking place within the Town road allowance, the Developer shall obtain a Town of Pelham Temporary Works Permit. Applications must be made through the Department of Public Works.

MUNICIPAL SERVICES

- 32. Prior to any site alteration, or final approval, the Developer shall submit all supporting materials and engineering design, prepared by a qualified professional, as required by the Town or any applicable authority, and shall agree to implement the recommendations of the reports, studies and plans to the satisfaction of the Director of Public Works, and any other applicable authority.
- 33. That a Servicing Study Report indicating that the accepting servicing infrastructure (storm sewers, sanitary sewers, and water mains) can accommodate the additional flows and adequate fire flows are provided to the development be submitted to the Town of Pelham for review and to the satisfaction of the Director of Public Works and the Fire Chief.
- 34. That the Developer will provide the Town of Pelham with the proposed site servicing plans for the subject property. The Director of Public Works shall approve the plans prior to final approval of the subdivision.

- 35. That the Developer submit to the Town of Pelham for review and approval by the Director of Public Works a Geotechnical Study, prepared by a qualified engineer, that verifies the soil bearing capacity, recommends appropriate sewer pipe design, pipe bedding, backfill and roadway designs.
- 36. That the design of all Municipal and public utility services for the Subdivision be coordinated with adjacent development.
- 37. That the design drawings for the sanitary sewer and stormwater drainage systems to service this development be submitted to the Regional Public Works Department for review and approval. (Note: Any stormwater management facility that may be proposed for this development would require the direct approval of the Ministry of the Environment, Toronto). The Town of Pelham is responsible for the review and approval of watermains under the MOE Water License Program.
- 38. That prior to registration of this plan, the Developer must obtain Environmental Compliance Approval from the Ministry of Environment, Conservation and Parks for sewer and storm water management works needed to service the proposed development. Prior to installing the watermain to service the proposed development, the Developer must submit Ministry of Environment 'Form 1' Record of Watermain.
- 39. At the end of the project, the design engineer shall certify that all grading, storm sewers, and stormwater management controls have been constructed in general conformity to the approved drawings. Copies of the certification shall be circulated to the Town of Pelham and the Regional Municipality of Niagara.
- 40. That all foundation drainage be directed to a sump pump in each house discharging via storm laterals. Foundation drains will not be connected to the sanitary sewer system.
- 41. Roof water drainage from any structure or building shall be directed via downspouts discharging via splash pads (concrete or other suitable material) to grass surfaces. These splash pads shall extend a distance at least 1.2 metres away from the structure and must direct the flow away from the building, not onto walks or driveways, and not towards adjacent property.

STORMWATER MANAGEMENT, GRADING AND SEDIMENT AND EROSION CONTROL

- 42. That the subdivision agreement between the Developer and the Town of Pelham contain provisions whereby the Developer agrees to implement the approved stormwater management plan required in accordance with Condition 32.
- 43. That the Developer prepare a detailed subdivision grade control plan showing both existing and proposed grades and the means whereby major storm flows will be

accommodated across the site to be submitted to the Town of Pelham and Regional Municipality of Niagara Development Services Division for review and approval.

- 44. That prior to approval of the final plan or any on-site grading, the Developer submit to the Town of Pelham for review and approval two copies of a detailed stormwater management plan for the subdivision and the following plans designed and sealed by a suitably qualified professional engineer in accordance with the Ministry of the Environment documents entitled "Stormwater Management Planning and Design Manual (March 2003)" and "Stormwater Quality Guidelines for New Development (May 1991)", and in accordance with the Town of Pelham's Lot Grading and Drainage Policy, and the Town of Pelham's Stormwater Management Facility Standards:
 - a) Detailed lot grading and drainage plans, noting both existing and proposed grades and the means whereby overland flows will be accommodated across the site; and,
 - b) Detailed sediment and erosion control plans.

PUBLIC PARK

- 45. That the Developer shall install black wrought iron style fencing or acceptable alternative along the rear and exterior side yards of the lots backing on the park to the satisfaction of the Director of Community Planning and Development.
- 46. That the Developer shall convey land for park purposes as permitted in Section 51.1 of the *Planning Act R.S.O. 1990, c. P.13* or alternatively, the Town may accept cash-in-lieu of the conveyance and under the provisions of Section 51.1 (3) of the *Planning Act R.S.O. 1990, c. P.13* and pursuant to the Town Parkland Dedication By-law 3621(2015).

ARCHITECTURAL CONTROL

47. The Developer/Owner agrees to comply with the East Fonthill Secondary Plan Area Urban Design Guidelines and retain the services of a Design Architect. The submission of building permit application shall include the building's licensed Architect/Designer stamp and a statement on the submitted plans comply with the East Fonthill Secondary Plan Area Urban Design Guidelines.

UTILITIES

- 48. That the Developer shall co-ordinate the preparation of an overall utility distribution plan to the satisfaction of all affected authorities.
- 49. The Developer agrees that should any conflict arise with existing Niagara Peninsula Energy Inc. facilities or easements within the subject area, the owner shall be responsible for the relocation of any such facilities or easements at their own cost.

50. That the Developer shall enter into any agreement as required by utility companies for installation of services, including street lighting, all in accordance with the standards of the Town of Pelham. All utilities servicing the subdivision shall be underground. Upon installation and acceptance by the Town, streetlights and streetlight electrical supply system will be added to the Town's inventory.

CANADA POST

- 51. The Developer shall include on all offers of purchase and sale, a statement that advises the prospective purchaser that:
 - i) the home/business mail delivery will be from a designated Central Mail Box;
 - ii) the developer/owners be responsible for officially notifying the purchasers of the exact Centralized Mail Box locations prior to the closing of any home sales.
- 52. The Developer agrees to:
 - work with Canada Post to determine and provide temporary suitable Centralized Mail Box locations which may be utilized by Canada Post until the curbs, boulevards and sidewalks are in place in the remainder of the development;
 - ii) install a concrete pad in accordance with the requirements of and in locations to be approved by Canada Post to facilitate the placement of Community Mail Boxes;
 - iii) identify the pads above on the engineering servicing drawings. Said pads are to be poured at the time of the sidewalk and/or curb installation within each phase of the plan of subdivision;
 - iv) determine the location of all centralized mail receiving facilities in cooperation with Canada Post and to indicate the location of the centralized mail facilities on appropriate maps, information boards and plans. Maps are also to be prominently displayed in the sales office(s) showing specific Centralized Mail Facility locations.

NIAGARA REGION PLANNING AND DEVELOPMENT SERVICES DEPARTMENT

53. That a Stage 3 Archaeological Assessment, prepared by a licensed archaeologist, be submitted to the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) for review and approval for AgGt-265. The report must be accepted by the MHSTCI, to the satisfaction of Niagara Region, prior to clearance of this condition. If the consultant recommends / the MHSTCI requires further Archaeological Assessments, these report(s) must also be submitted to and accepted by the MHSTCI, to the satisfaction of Niagara Region, prior to clearing this condition. NOTE: No demolition, grading or other soil disturbances shall take place on the subject property prior to the issuance of a letter

from the MHSTCI confirming that all archaeological resource concerns have been mitigated and meet licensing and resource conservation requirements.

54. That the following clause be included in the subdivision agreement:

"Should deeply buried archaeological remains/resources be found on the property during construction activities, all activities impacting archaeological resources must cease immediately, notify the Archaeology Programs Unit of the Ministry of Heritage, Sport, Tourism and Culture Industries (416-212-8886) and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

In the event that human remains are encountered during construction, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (416-326-8800) must be contacted. In situations where human remains are associated with archaeological resources, MHSTCI should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act."

- 55. That the owner ensure that all streets and development blocks can provide an access in accordance with the Regional Municipality of Niagara policy and by-laws relating to the curb side collection of waste and recycling throughout all phases of development. If developed in phases, where a through street is not maintained, the owner shall provide a revised draft plan to reflect a proposed temporary turnaround/cul-de-sac with a minimum curb radius of 12.8 metres.
- 56. That the owner submits a written undertaking to the Niagara Region that draft approval of this subdivision does not include a commitment of servicing allocation by the Regional Municipality of Niagara as this servicing allocation will be assigned at the time of registration and any pre-servicing will be at the sole risk and responsibility of the owner.
- 57. That the owner submits a written undertaking to the Niagara Region that all offers and agreements of Purchase and Sale, which may be negotiated prior to registration of this subdivision, shall contain a clause indicating that a servicing allocation for this subdivision will not be assigned until the plan is registered, and a similar clause be inserted in the subdivision agreement between the owner and the Town.
- 58. That prior to final approval for registration of this plan of subdivision, the owner shall submit the design drawings [with calculations] for the sanitary and storm drainage systems required to service this development and obtain Ministry of the Environment, Conservation and Parks, Environmental Compliance Approval under the Transfer of Review Program.

59. That prior to approval of the final plan or any on-site grading, the owner shall submit a detailed stormwater management plan for the subdivision and the following plans designed and sealed by a qualified professional engineer in accordance with the Ministry of the Environment and Climate Change documents entitled Stormwater Management Planning and Design Manual, March 2003 and Stormwater Quality Guidelines for New Development, May 1991, or their successors to the Niagara Region for review and approval:

i. Detailed lot grading, servicing and drainage plans, noting both existing and proposed grades and the means whereby overland flows will be accommodated across the site; and

ii. Detailed erosion and sedimentation control plans.

60. That the subdivision agreement between the owner and the Town contain provisions whereby the owner agrees to implement the approved plan(s) required in accordance with the condition above.

Clearance of Conditions

FINAL APPROVAL

Subject to the conditions set forth herein, this Draft Plan is approved under Section 51 (31) of the *Planning Act R.S.O. 1990, c. P.13*. Final approval shall be granted by the Town

CLEARANCE OF CONDITIONS

Prior to granting final plan approval, the Department of Community Planning and Development requires written notice from applicable Town Departments and the following agencies indicating that their respective conditions

Town Department of Community Planning and Development for Conditions 5-22 (Inclusive), 45-47 (Inclusive),

Town Department of Public Works for Conditions 23-44 (Inclusive), 48 and 50

Niagara Peninsula Energy Inc. for Condition 49.

Canada Post for 51-52 (Inclusive)

Niagara Region Planning and Development Services Department for Conditions 53-60 (Inclusive)



COMMUNITY PLANNING & DEVELOPMENT DEPARTMENT Monday, March 22, 2021

Subject: Recommendation Report for Application AM-01-2021, 855 Chantler Road Zoning By-law Amendment

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0062 as it relates to AM-01-2021; and

THAT Council direct Planning staff to prepare the Zoning By-law Amendment for 855 Chantler Road for Council's consideration.

Background:

The purpose of this report is to provide Council with a recommendation regarding an application to amend Zoning By-law No. 1136 (1987) for the property known as 855 Chantler Road. The rezoning is a condition of consent approval granted by the Committee of Adjustment on February 2, 2021 for the severance of an existing dwelling that is surplus to the owners needs due to farm consolidation from the acquisition of additional farmland. The proposed zoning would rezone:

- Parts 1
 - From A (*Agricultural*) to a site-specific A (*Agricultural*) to amend the *maximum lot coverage and maximum height for accessory residential structures;* and
- Part 2
 - From *A* (*Agricultural*) to a site-specific agricultural purposes only, *A* (*Agricultural*) zone to amend the *minimum lot frontage* and prohibit further residential construction.

Location

The subject land is located on the north side of Chantler Road, lying west of Church Street (Figure 1). Locally known as 855 Chantler Road, in the Town of Pelham. The property currently supports one single detached dwelling, agricultural barns and productive farmland on 20.8 hectares. The subject lands are surrounded by:

- North Agricultural / key natural heritage features
- East Agricultural
- South Agricultural / rural residential dwellings / key natural heritage features
- West Agricultural

Figure 1: Subject Lands (855 Chantler Road)

Project Description and Purpose

An application for Zoning By-law Amendment was received for 855 Chantler Road to facilitate a surplus farm dwelling consent. The Committee of Adjustment conditionally approved the severance (Figure 2) on February 2, 2021 (file B4-2021P). The rezoning would amend the existing A zone to a site-specific A zone as well as rezone the retained lands (Part 2) for *agricultural-purposes only* (APO) to prevent further residential construction, consistent with Provincial, Regional and Town planning policies. The zoning by-law amendment is a condition of consent approval.





The site-specific zoning provisions are described in greater detail in this Report. The existing residential dwelling and southern most barn / silo on Part 1 are proposed to remain. However, the smaller barn and silo located just to the north will be removed.

Analysis:

Planning Act

Section 2 of the Act addresses matters of Provincial interest and requires municipal Councils to have regard to, among other matters:

- a) The protection of ecological systems, including natural areas, features and functions;
- b) The protection of the agricultural resources of the Province;
- d) The conservation of significant cultural, archaeological or scientific interest;
- e) The efficient use and conservation of energy and water;
- f) The adequate provision and efficient use of transportation, sewage & water services and waste management systems;
- g) The minimization of waste;
- h) The orderly development of safe and healthy communities;
- The protection of the financial and economic well-being of the Province and its municipalities;
- o) The protection of public health and safety;

- p) The appropriate location of growth and development;
- r) The promotion of built form that is well designed, encourages a sense of place, and provides for public spaces that are of high quality, safe, accessible, attractive and vibrant;
- s) The mitigation of greenhouse gas emissions and adaption to a changing climate.

Section 3 of the Act requires that, in exercising any authority that affects a planning matter, municipalities "shall be consistent with the policy statements" and "shall conform to the Provincial plans that are in effect on that date, or shall not conflict with them, as the case may be."

Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development, and sets the policy foundation for regulating the development and use of land. The PPS provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment.

PPS recognizes the diversity of Ontario and that local context is important. Policies are outcome-oriented, and some policies provide flexibility provided that provincial interests are upheld. PPS policies represent minimum standards.

The Provincial Policy Statement (PPS) designates the subject land within the 'Prime Agricultural Area'. The permitted uses (among others) include agricultural / agricultural related uses, limited residential development and home occupations. 'Prime Agricultural Areas' are defined as including associated Canada Land Inventory Class 4-7 lands as well as 'Prime Agricultural Lands' (Class 1-3 lands).

Policy 2.3.1 states that *prime agricultural areas* shall be protected for long-term agricultural use.

Policy 2.3.4.1 c) states that lot creation in *prime agricultural areas* is discouraged and may only be permitted for a residence surplus to a farming operation as a result of farm consolidation. Provided that, the new lot is limited to the size necessary to accommodate private water and sewage services and that new residential dwellings are prohibited on the remnant parcel of farmland created by the severance.

The applicant has indicated the rationale for the somewhat larger parcel size proposed for Part 1. Similar to the existing single detached dwelling, the existing

barns and silos are considered surplus to the consolidating farmer's business needs as their equipment is stored nearby.

Niagara Region Official Plan (Consolidated, August 2014)

The Regional Official Plan designates the subject land as 'Good General Agricultural Area'. The predominant use of land will be for agricultural of all types.

Policy 5.B.8.1 c) states consents to convey may be permitted for a residence surplus to a farming operation as a result of a farm consolidation provided new residential dwellings are perpetually prohibited on any vacant remnant parcel of land created by the severance. As a condition of severance the applicant must rezone the remnant farm parcel to preclude its use for residential purposes.

The proposed lot is 0.61 ha in size and contains one existing dwelling that is considered surplus to the applicant's farming needs purported in their application and the *Planning Justification Brief*. Specifically, the existing dwelling poses a financial burden to the applicant as it significantly raises the cost of property carrying costs, (i.e. debt servicing, property tax etc.).

Policy 10.C.2.1.13 states that *development* and *site alteration* shall only be permitted on lands containing *archaeological resources* or *areas of archaeological potential* if the significant *archaeological resources* have been *conserved* by removal and documentation, or by preservation on site.

Development, by definition, includes lot creation according to the PPS. Although the subject lands exhibits high potential for deeply buried archaeological resources according to the Town's Heritage Master Plan, Town Planning staff are comfortable waiving this fairly typical requirement. Under normal circumstances of lot creation, development is normally induced automatically, as a result of the default zoning provisions. For instance, the default 'Agricultural' zone stipulates one single detached dwelling is permitted, per lot. However, in this case, because an a*gricultural purposes only* zoning is required as a condition of severance approval, (to prohibit further residential construction), no deep excavation from building or servicing would result from the lot's creation, beyond that which is already currently permitted today.

Regional staff provided comments on the consent application (file B4-2021P) offered no objections pending the remnant lands (Pat 2) be rezoned to preclude further residential construction, and the Town is satisfied with any cultural heritage and Minimum Distance Separation requirements.

Pelham Official Plan (2014)

The Town of Pelham Official Plan is the primary planning document that will direct the actions of the Town and shape growth that will support and emphasize Pelham's unique character, diversity, cultural heritage and protect our natural heritage features.

The local Official Plan designates the subject land as 'Good General Agricultural' according to Schedule 'A'.

Policy B2.1.3.1 restricts lot creation in the *Good General Agricultural* area in an effort to maintain and protect agricultural resources of the Town, and by directing new residential growth to *urban settlement areas*. However, this policy does allow for the creation of one new lot if it is necessary to accommodate a surplus dwelling resulting from a farm consolidation in accordance with policy B2.1.3.3.

Policy B2.1.3.3 states applications to sever a surplus farm dwelling should provide for a maximum lot area of 0.4 ha. A larger lot size will be considered if an additional area is necessary to accommodate a private water and sewage disposal system. Furthermore, the consolidated farm parcel shall be zoned to preclude future residential use forever.

The proposed site-specific APO rezoning would facilitate the conditionally approved severance allowing for the disposal (selling off) of an existing residential dwelling that the applicant considers surplus to their farming needs. According to the application and *Planning Justification Brief*, this existing dwelling poses a financial burden to the applicant as it significantly raises the cost of property ownership carrying costs, (i.e. debt servicing, property tax etc.). The existing agricultural structures are also not needed due to their nature of business (cash cropping) and storage of farm equipment nearby.

Pelham Zoning By-law No. 1136 (1987)

The subject lands are currently zoned 'Agricultural' (A) according to Schedule 'A0' of the Zoning By-law. A site-specific Zoning By-law Amendment is required as a condition of severance approval to prohibit further residential construction on Part 2 and to address any zoning deficiencies that result from the severance. The following zoning tables outline the regulations at issue.

Part 1 – Regulations for buildings accessory to residential dwellings (Section 7.7)

Zone Regulation	A zone Default	Proposed
Maximum Lot Coverage	1%	6.4%
Maximum Building Height	3.7 m	Existing (as of the date of passing)

Part 2 – Permitted uses (Section 7.1)

• Agricultural purposes only to prohibit new residential construction.

Part 2 – Regulations for agricultural uses (Section 7.2)

Zone Regulation	A zone Default	Proposed
Minimum Lot Frontage	181 m	91 m

The minimum lot frontage reduction being sought is a technicality because of how Part 1 bisects Part 2 resulting in two (2) front lot lines, or lot frontages. Section 5 (Definitions) of the Zoning By-law does not address this particular lot geometry. Therefore, as a precautionary measure, the lot frontage reduction is being captured, despite the combined lot frontage of Part 2 exceeding section 7.2 (a).

Financial Considerations:

The applicant is responsible for all costs associated with the rezoning process.

Alternatives Reviewed:

Council could choose to not approve the proposed zoning by-law amendment, however that would mean that the consent could not be finalized as the proposed zoning by-law amendment is a condition of final consent approval.

Strategic Plan Relationship: Build Strong Communities and Cultural Assets

The efficient use and preservation of Prime Agricultural Land and resources supports the local and regional agricultural economy. The rezoning is required as a condition of severance approval which was granted by the Town's Committee of Adjustment on February 2, 2021. Allowing the consolidated farming business to dispose of (sell) the existing residential dwelling eases the financial burden normally associated with carrying expensive residential real estate (i.e. via debt servicing). This barrier to owning affordable agricultural land makes the purchasing of the retained farmland more attainable.

Consultation:

During the consent application review and the proposed zoning by-law amendment review process not adverse comments were received from Town departments or agencies. A public meeting to consider the proposed zoning by-law amendment application was held on March 8th, 2021 and no members of the public attended the public meeting other than the applicant and no public comments were received in writing.

Planning Staff Comments:

Planning staff reviewed aerial photography to understand the surrounding context. Planning staff have also reviewed the *Planning Justification Brief* submitted with the application.

The applicant (River Bend Farms) operates a long standing, registered farming business growing corn, soybeans and wheat crops. Approximately 370 hectares are owned by the applicant with another \pm 565 hectares being rented throughout the Township of Wainfleet and Town of Pelham. The personal residence of the applicant is within the Town of Pelham and their farming equipment is located nearby. The dwelling and barns located on the property are surplus to their needs.

As part of the applicant's submission, they provided a written submission outlining the difficulties associated with purchasing affordable farmland in Pelham. The disposal of the surplus farm dwelling will help address those affordability concerns.

It is noted that if any future livestock development were to be proposed on the retained lands (Part 2), they will be required to comply with the current MDS II setback requirements, (section 6.14 (b) of the Zoning By-law), however a livestock operation is not considered to be part of this proposal.

Other Pertinent Reports/Attachments:

Information Report 2021-0053, Zoning By-law Amendment Application AM-01-2021.

Prepared and Recommended by:

Barbara Wiens, MCIP, RPP Director of Community Planning and Development

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer



Subject: Re-endorsement of the Drinking Water Quality Management System Operational Plan and Policy S801-01

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0051, Drinking Water Quality Plan;

AND THAT Council re-endorse the Quality Management System Operational Plan;

AND THAT Council approve the revised Quality Management System Policy S801-01.

Background:

The Operational Plan (Appendix A) serves as a road map to the Town of Pelham's Drinking Water Quality Management System. The Operational Plan is one of the key components of the Drinking Water Licensing Program as required by the Ministry of Environment, Conservation and Parks (MECP). The Operational Plan addresses the 21 requirements of the Drinking Water Quality Management Standard (DWQMS).

The Operational Plan describes from a high level the Quality Management System (QMS), by providing a summary of the processes in place, and directs staff to the next level of documentation needed for more details. This documentation may include legislation, permits, operating and emergency procedures, lists, forms and records.

The Operational Plan is meant to be a dynamic, living document that is updated as needed, and re-endorsed by Council after a significant change.

The Operational Plan must be founded on the QMS Policy document S801-01. The Policy must be posted at the Town of Pelham Operations Centre and also available for viewing at the Town of Pelham Municipal Offices.

Analysis:

Although the changes to the Operational Plan are not necessarily substantial in scope, the incremental improvement to several Elements found within the plan were thought to be notable on a whole, and therefor triggered the re-endorsement of the plan through Council.

The proposed Quality Management System Policy S801-01 (Appendix B) was updated to the most recent policy format. The policy has been refined in a way to allow for its posting at Town Hall, and the Operations Centre as a single sheet. The intent of the policy has not changed.

The re-endorsement of the Quality Management System Operational Plan and approval of the updated S801-01 Policy satisfy the legislated requirements under the Drinking Water Quality Standard v2.0 (Feb-2017).

Financial Considerations:

There are no financial considerations attributed to this report.

Alternatives Reviewed:

There were no alternatives reviewed in the preparation of this report.

Strategic Plan Relationship: Strong Organization

The periodic re-endorsement of the Quality Management System is an effective method of ensuring Council, as owner of the drinking water system, understands the systems in place to provide a safe, consistent supply of drinking water to its consumers.

Consultation:

The Manager of Public Works was consulted in the preparation of this report.

Other Pertinent Reports/Attachments:

March 4, 2019 - How Might We Endorse the Quality Management System Policy & Operational Plan, and Approve the Water and Wastewater Long-Range Financial Plan?

Appendix A – Operational Plan

Appendix B – Proposed Policy Update S801-01

Prepared and Recommended by:

Jason Marr, P. Eng. Director of Public Works

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer The Corporation of the Town of Pelham Drinking Water Distribution System

Quality Management System

Operational Plan



Town of Pelham 20 Pelham Town Square P. O. Box 400 Fonthill, Ontario LOS 1E0

Revision #12 9 February 2021



Revision # 12

This Operational Plan (OP) contains information associated with the management and operation of the Town of Pelham's municipal drinking water distribution systems. The plan is limited to the management and operation of the Town's own water distribution system and does not include any process or procedures relating to private property, or to water treatment process, facilities or transmission/trunk mains owned and operated by the Regional Municipality of Niagara.

This OP has been developed in accordance with applicable provincial legislation relating to the Safe Drinking Water Act.

References

Director's Directions: Minimum Requirements for Operational Plans, July 2007, as amended

Drinking-Water Systems; Ontario Regulation 170/03, as amended

Drinking Water Quality Management Standard Final – Version 2.0 February 2017; Ministry of Environment, as amended

Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment, February 2017

Safe Drinking-Water Act; R.S.O. 2002, as amended

Revision Table

Revision Number	Date	Nature of Revisions	Ву
0-4	2009 through December 2013		-
5	February 2016	Re-working of entire document to update to new processes, legislative changes and updates to staffing and operational effectiveness.	-
6	May 24, 2017	 Updated references to procedures (PRO vs. PROC found within elements 12, 13, 16, 18) in response to Internal Audit finding 2016-IA-02 Revised Elements 2, 8, 14, 19 to remove duplicated/ unnecessary verbiage. Revised layout of the Operational Plan (removed columns). Updated the organizational chart to clarify the Operating Authority in response to findings (DWQMS)-05 and 2016-IA-11. Updated the title of the "Lead Hand" to "Supervisor of Water & Wastewater 	-



Revision # 12

Pelham Distribution System – Quality Management System
Operational Plan
Date: 9 February 2021

Clarified the QMS Representative's responsibilities associated with Management Review, in response to external audit finding, as identified within QMS PROC 020 Management Review General text editing throughout **Operational Plan** 7 18 January • Updated Element 6 in response to 2017-IA-A.C 2018 02 and staff observation regarding description of the source water treatment process; updated length of watermain as per conversation with R.C; Flow schematic updated to identify booster station and isolation valves • Clarified Section 10 as part of response to 2017-IA-04 OFI • Revision table updated to meet the requirements of QMS PROC 005 8 6 April 2018 Updated Element 15 to include details of A.C booster station maintenance agreement with Region of Niagara (addresses 2017-IA-05 and 2017 Infrastructure Review action item) • Updated Element 6 reference to MOU with Region of Niagara, as it was endorsed in April 2017. • Removed references to Appendix A and B, as all procedures and lists are referenced within the Operational Plan. • Updated the page numbering to match all other procedures and SOPs (i.e., x of x format). 9 9 October Included reference to DWQMS V. 2.0, 2017 R.C 2018 and Ministry Risk Assessment Hazards document. • Clarified QMS Policy locations (Element 2), commitment and endorsement requirements (Element 3), how disinfection residuals are maintained (Element 6), authorities of the MPW (Element 9, and process for tracking competencies (Element 10). Element 21 updated to document process for managing best management practices, corrective and preventive actions. • Update to Element 3 to include Top R.C. 10 28 February 2019 Management Endorsement within the

Operational Plan.



Pelham Distribution System – Quality Management System Operational Plan Date: 9 February 2021

Revision # 12

		 Updated CAO authorities and included responsibility and authority of the Senior Management Team (SMT) 	
11	23 January 2020	 Revised: Element 2 QMS policy electronic location Element 3 to document the process for ensuring OA awareness and tracking of QMS applicable legislative and regulatory requirements (in response to internal audit 2018-OFI-18). Element 6 clarification of Public Works as OA Removal of records and emergency plan bylaw references (also in appropriate QMS PROC) General editing throughout 	R.C.
12	9 February 2021	 Attributed Element 9 Engineering Group watermain commissioning responsibilities to Water Operator and MPW as a result of the 2020 Annual Calibration. Included Appendices A and B to support Elements 3 and 4, respectively. Revised reference from QMS PROC 026 to QMS FORM 005 replacement 	R.C.



Pelham Distribution System – Quality Management System **Operational Plan**

Revision # 12

Date: 9 February 2021

Table of Contents

element 1, Quality Management System	5
Element 2, Quality Management System Policy	5
element 3, Commitment and Endorsement	6
Element 4, Quality Management System Representative	6
Element 5, Document and Records Control	6
lement 6, Drinking Water System	7
lement 7, Risk Assessment	1
Element 8, Risk Assessment Outcomes1	1
Element 9, Organizational Structure, Roles, Responsibilities and Authorities	1
lement 10, Staff Competencies	5
lement 11, Personnel Coverage	7
Element 12, Communications	7
Element 13, Essential Supplies and Services	7
lement 14, Review and Provision of Infrastructure	7
Element 15, Infrastructure Maintenance, Rehabilitation and Renewal	8
element 16, Sampling, Testing and Monitoring1	9
element 17, Measurement & Recording Equipment Calibration & Maintenance	9
lement 18, Emergency Management	9
Element 19, Internal Audits	0
Element 20, Management Review	0
Element 21, Continual Improvement	0



Revision # 12

Element 1, Quality Management System

The Safe Drinking Water Act (2002) specifies the requirements for a Municipal Drinking Water Licensing Program, including requirements for the acquisition of a license to manage and operate a drinking water system. The development, implementation and accreditation of a Quality Management System (QMS), and the documentation of a corresponding Operational Plan, are key components of this licensing program.

The QMS OP is based on the DWQMS and documents the Town's QMS. Accreditation of the QMS by a third-party Accreditation Body is a requirement of the licensing program; within these accreditation audits, the Accreditation Body seeks to assess the Town's level of conformance with the requirements of the DWQMS.

The Town of Pelham's Quality Management System Operational Plan has been written in accordance with the requirements of the Drinking Water Quality Management Standard Version 2.0, February 2017.

This OP describes a summary of mechanisms in place to support the requirements of the DWQMS, and is supported by several procedures, documents, lists and forms, which are referenced within this OP.

Element 2, Quality Management System Policy

The Pelham Distribution System QMS Policy has been documented in \$801-01.

The QMS Policy is posted at the Town of Pelham Operations Centre and is also available for viewing at the Town of Pelham Municipal Offices.

The Policy is also communicated to the public through a posting on the Town's <u>website</u>, and is available upon request.


Pelham	Distribution System – Quality Management System Operational Plan
	Date: 9 February 2021

Element 3, Commitment and Endorsement

The Operational Plan shall be re-endorsed by the Town of Pelham Owner (Mayor & Council) via resolution to coincide with each new Council term (refer to Appendix A for the most recent endorsement); a copy of the Council resolution shall be kept together with the Operational Plan hardcopy at Town Hall. Throughout each Council's term, Council shall also be kept informed of updates and the core processes in place in the Town's QMS through the Town's infrastructure review and long-term planning process, Management Review, and annual regulatory reporting. Operating Authority (OA) Top Management endorsement can be found directly below. Minor updates to the Operational Plan do not require Owner re-endorsement. Significant changes to Pelham Distribution System (e.g., addition of disinfection equipment, change in Ownership of the Pressure Boosting Station) resulting in changes to the Operational Plan will be endorsed by the Owner.

\sim		E-0 0112.21
Jason Marr, Director of Public Works	Date	FEB. 112021
P		Feb. 9/2021
Ryan Cook, Manager of Public Works	Date	

The OA ensures awareness of all applicable legislative and regulatory requirements as a result of:

- Ministry inspections and other communication such as emails, memos, etc.
- Area Municipal QMS/Compliance Working Group (i.e., Regional QMS Representative quarterly meetings),
- Association (e.g., Ontario Municipal Water Association [OMWA] / Municipal Water and Wastewater Regulatory Committee [MWWRC]) communication including conferences and training, etc.

Relevant changes are discussed during Management Review and communicated via the Annual Report. Tracking of actions related to new and proposed legislation is done via Corrective Action QMS LIST 0006.

Element 4, Quality Management System Representative

The Manager of Public Works has been appointed as the QMS Representative for the Town of Pelham's QMS, and through the endorsement of this Operational Plan, has been authorized to carry out all the responsibilities associated with this role.

In addition to the other aspects and duties of his role, the QMS Representative is responsible for all items described under Element 9.

Refer to Appendix B for the Appointment Memo.



Element 5, Document and Records Control

The Document and Records Control Procedure 'QMS PROC 005' has been developed to outline processes for control of documentation and records within the scope of the QMS. This procedure describes how documents are kept current and how documents and records are kept legible and identifiable, retrieved, stored, protected, retained and disposed of.

Element 6, Drinking Water System

Ownership

The Pelham Distribution System is owned by the Corporation of the Town of Pelham.

Operating Authority

The Pelham Distribution System is operated by staff employed by the Corporation of the Town of Pelham's Public Works Department.

System Description

The Pelham Distribution System is a Class 2 water distribution subsystem. The system consists of approximately 84.5 km of watermain varying in size from 50mm to 400mm diameter providing water to approximately 12,000 residents within the general urban area.

The service area is approximately 14 km² and includes the Villages of Fonthill, Ridgeville and Fenwick. Drawing WTM-01, General Plan, maintained by the Engineering group, illustrates the extent and features of the distribution system and the limits of the service area.

The Pelham Distribution System receives treated drinking water from the Welland Water Treatment Plant (WTP) located on Cross Street in the City of Welland. The treatment plant is owned and operated by the Regional Municipality of Niagara. The plant receives its raw water from the Welland Recreational Canal. Treated water is transmitted to the Town by way of a 750mm diameter watermain to the Shoalts Drive Reservoir. The reservoir, which includes chlorination, is also Regionally-owned and operated. Water enters the Pelham Distribution System at the reservoir outlet. A memorandum of understanding for the supply of drinking water between the Regional Municipality of Niagara and the Town of Pelham was endorsed in April 2016 by the Director, Water and Wastewater Services (Regional Municipality of Niagara), and the Director of Public Works (Town of Pelham).

A short leg of watermain owned and operated by the City of Welland is geographically in road owned and operated by the Town of Pelham. The watermain and its appurtenances are not under ownership or authority of the Town of Pelham. Services from that main are billed from the City of Welland.



System Components

The distribution system has been continuously expanded to allow for urban development and additions to the service areas. The system consists of the following components (also shown on System General Plan) – numbers are approximate:

- (1) Watermain (approximately 84.5 km)
- (2) Fire hydrants = 506
- (3) Valves = 591
- (4) Service connections = 4728
- (5) Pressure reducing valves = 8 (operated by the Region of Niagara)
- (6) Pressure boosting station = 1 (serving Chestnut Ridge area; owned by the Town of Pelham, maintenance and operation has been contracted to the Region of Niagara)

System Pressure

The system operating pressure varies greatly throughout the service area due to the topography, and static pressure ranges from approximately 40 psi to 100 psi.

Water Source

The Pelham Distribution System receives all its water from the Welland WTP located on Cross Street in the City of Welland which is owned and operated by the Regional Municipality of Niagara. As such, The Pelham Distribution System relies upon the water originating from the Welland WTP by the Regional Municipality of Niagara to ensure the provision of safe drinking water. Primary disinfection is achieved by way of chlorination and ultraviolet light as enhancement, which renders any remaining potentially pathogenic organisms harmless. Secondary disinfection by way of chlorination at the Shoalts Drive Reservoir occurs prior to water being distributed to the Pelham Distribution System. The Town of Pelham maintains disinfection residuals through the flushing program; see QMS PROC 016 Sampling, Testing and Monitoring Procedure for details.

Treated water from the plant is transported by way of a 750mm diameter watermain to the Shoalts Drive Reservoir in Fonthill. The reservoir directs water to the Pelham Distribution System by way of 2 connections:

- (1) a 300mm diameter watermain to the Pelham Elevated Tank (owned and operated by the Regional Municipality of Niagara) at #177 Highway #20 West and
- (2) a 400mm direct connection to the Pelham Distribution System at Woodstream Boulevard.

The system relies on the ability of both the Welland WTP to supply water to the Shoalts Drive Reservoir and the reservoir to supply water to the Pelham Distribution System.

Common Event Driven Fluctuations and Resulting Operational Challenges

There are no common event-driven fluctuations or resulting operational challenges or threats concerning the water source.



Pelham Distribution System – Quality Management System Operational Plan
Date: 9 February 2021

Connected Systems

The Pelham Distribution System is also connected to the Welland Distribution System which is owned and operated by the City of Welland. There are 3 connections between the 2 systems however these connections are controlled by valves which have been set in their off positions since 1970. These connections are historical in nature as the supply source of water to the new urban areas developing in south and west Fonthill in the 1950s when this area was serviced by the Welland Water Works Commission. At that time, it was considered a single system.

Process Flow Chart

The following figures show the process flow chart for the Town of Pelham water distribution system, along with a general schematic of the system.



Figure 1 General schematic for the Town of Pelham water distribution system



Figure 2 Process Flow Chart for the Town of Pelham water distribution system





Element 7, Risk Assessment

The Town has developed a Risk Assessment Procedure 'QMS PROC 007' that outlines the process followed by the OA in completing risk assessments of the drinking water system.

Element 8, Risk Assessment Outcomes

Risk Assessment Outcomes are detailed within the Risk Assessment Outcomes List QMS LIST 001. Within the results table, Critical Control Points are identified along with their corresponding Critical Control Limits and procedures.

Procedures for monitoring, reporting, recording deviation and response are in place for many hazards identified, to respond to occurrences.

Element 9, Organizational Structure, Roles, Responsibilities and Authorities

Roles, responsibilities and authorities of the Owner, OA personnel, and personnel providing support services to the QMS (i.e., Engineering Group and Administrative Assistant) are shown in the tables below, and within Figure 3. Organizational charts for the Corporation in general are maintained through the Human Resources Department.

Mayor and Council (Owner)

Authorities
 To act on behalf of the Corporation of the Town of Pelham to ensure the continual supply of safe drinking water. To allocate necessary resources to ensure provision of safe drinking water,
regulations and continual improvement of

Chief Administrative Officer (CAO)

Responsibilities	Authorities
 Oversight of Top Management to ensure the provision of safe drinking water, compliance with applicable legislation and the continual improvement of the QMS. Review of operational and capital budgets relating to the distribution system. Liaise between Top Management and the Owner. 	 Final approval of proposed budgets from Director of Public Works to be considered by Council. May delegate responsibilities as required.



Date: 9 February 2021

Senior Management Team (SMT; members include CAO, Fire Chief, Town Clerk, Director of Public Works, Director of Corporate Services, Director of Recreation, Culture and Wellness, Director of **Community Planning and Development)**

Responsibilities		Authorities
٠	Review of operational and capital budgets	Review and approval of proposed budgets
	relating to the distribution system	from DPW to be approved by CAO

Director of Public Works (DPW) - (Top Management)

Responsibilities	Authorities
 SMT Member Oversight of water distribution systems and QMS. Determine departmental priorities based on findings of infrastructure review. Participate in Management Reviews. Report and make recommendations to Council with respect to the distribution systems and QMS. Prepare operational and capital budgets and provide resources necessary to operate and maintain drinking water. Ensure conformance with applicable legislation and regulations. 	 Make financial and administrative recommendations to Mayor and Council, through the SMT and CAO. Allocate provided resources. Hire personnel with approval from Chief Administrative Officer (CAO) and assistance from the Director of Human Resources. Approve changes to the QMS. Create and edit QMS documents. May delegate responsibilities as required.

Manager of Public Works (MPW) - (Top Management)

Responsibilities	Authorities
 Oversee water division operations and expenditures. Approve commissioning of new distribution system infrastructure. Oversee water main commissioning process to ensure conformance to Town's Operations Quality Standards. Report issues to the DPW as necessary. Ensure compliance with applicable legislation and regulations and 	 Authorities Manage Supervisor of Water & Wastewater and Water Operators. Make recommendations for improvement of operational programs, capital projects and QMS. Approve commissioning of new infrastructure. Approve changes to the QMS. Create and edit QMS documents. May delegate responsibilities as required.
 conformance to QMS. Participate in infrastructure and Management Reviews. Overall Responsible Operator (ORO) 	



Pelham Distribution System – Quality Management System **Operational Plan**

Revision # 12

Date: 9 February 2021

Supervisor of Water & Wastewater (SWW)

Responsibilities	Authorities
 Direct daily operations related to water and oversee activities ensuring conformance with applicable policies, procedures and current regulatory requirements. Respond to after-hours emergencies when on-call. Participate in infrastructure review. Operator In Charge (OIC) as designated, alternate ORO. 	 Schedule and direct daily operation and maintenance activities. Make recommendations for improvement of operational effectiveness and efficiency. May delegate responsibilities as required.

QMS Representative

Responsibilities	Authorities
 Administer the QMS by ensuring that processes and procedures needed for the QMS are established and maintained. Report to Top Management on the performance of the QMS and any need for improvement. Ensure that current versions of documents required by the QMS are being used at all times. Ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the system. Promote awareness of the QMS throughout the Town. Organize and convene Management Review. 	 Make recommendations with respect to improvement of the QMS. Create and edit QMS documents. May delegate responsibilities as required.

Water Operator

Responsibilities	Authorities
 Perform duties in accordance with QMS policies and procedures and in accordance with current regulatory requirements. Perform routine distribution system water quality sampling and field testing. Complete repairs to the water distribution systems. Oversee work undertaken on the active distribution systems by external contractors. 	 Operate and maintain the distribution system infrastructure.



Responsibilities		Authorities
٠	Complete appropriate logs and records.	
٠	OIC as designated, alternate ORO	
٠	Confirm water main commissioning process	
	to ensure conformance to Town's	
	Operations Quality Standards.	

Engineering Group (considered a support service to the Operating Authority)

Responsibilities	Authorities		
 Update and maintain Town Municipal Design Standards for distribution system. Update and maintain master servicing plans for the water distribution system. Provide project management services in regard to water distribution system infrastructure works. 	 Recommend changes to Design Standards to Top Management. Make amendments to water servicing plans for water distributions systems as required. Update distribution system infrastructure databases. 		

QMS Auditor (internal or external) (not on Figure)

Responsibilities			Authorities		
٠	Perform internal audits as prescribed.	٠	Review the QMS and report on non-		
•	Notify Town staff of non-conformances as		conformances and opportunities for		

Public Works Administrative Assistant (considered a support service to the Operating Authority)

Responsibilities	Authorities
 Assist in ensuring that current versions of documents required by the QMS are being used at all times. Maintain and track records of competencies of personnel with duties directly affecting drinking water. 	Release information and communication as required.



Figure 3 – Organizational reporting structure for water system relevant personnel.





Element 10, Staff Competencies

Competencies for operational personnel whose duties directly affect drinking water quality are described below.

Role	Required Competencies
Director Public Works	 Licensed Professional Engineer or Graduation from a recognized College or Technical Institute with an Advanced Diploma in Civil Engineering Technology. Certification by Professional Engineers Ontario. Minimum ten (10) years work related experience. Valid Class "G" drivers licence. Thorough understanding of DWQMS and QMS
Manager of Public Works	 Licensed Professional Engineer or Graduation from a recognized College, Technical Institute or University, with an Advanced Diploma in Civil Engineering Technology or equivalent. Minimum seven (7) years work related experience. Valid Class "G" drivers licence. Class II Water Distribution System certification. Understanding of DWQMS and QMS
Supervisor Water & Wastewater	 Class II Water Distribution System certification. Minimum four (4) years operations experience. Confined space entry training. Valid Class "G" drivers licence.
Water Operators	 Class II Water Distribution System certification (or plans to work towards this certification). Confined space entry training. Valid Class "G" drivers licence.

Required competencies for operational personnel are fulfilled by the following:

• Candidates applying for positions within the OA are interviewed and assessed based on technical knowledge and personnel skills relevant to that specific position. Reference checks are completed prior to hiring all new personnel.

• Records of competencies of personnel with duties directly affecting drinking water shall be maintained by the Public Works Administrative Assistant or designate

• QMS awareness training is provided to new operations personnel whose duties may directly affect drinking water. The OP is reviewed with the new personnel and his/her leader, or the QMS Representative, or the Director of Public Works & Utilities. This training covers the relevance of duties and how they affect drinking water quality. Records of awareness training



Pelham Distribu	tion System – Quality Management System
	Operational Plan
	Date: 9 February 2021

shall be recorded using 'QMS FORM 016 On-the-Job Training Report'. Relevance of staff duties that can affect safe drinking water is communicated during the review of the OP, in this section and in roles and responsibilities.

• Regular training is provided to all operations personnel whose duties may directly affect drinking water, to ensure core competencies are maintained and that as a minimum, the training requirements of applicable regulations are satisfied. Types of training include off-site training by technical experts or trained professionals and on-the-job orientation and training by experienced staff. The Administrative Assistant of Public Works or designate tracks all certification and all certification-related training process. External training is tracked in individual excel Training Files on the Public Works Drive. All hardcopy external training certificates are maintained in operator-specific training file folders. All on-the-job training conducted for Public Works personnel (e.g., DWQMS Awareness, on-the-job SOP training, emergency response review sessions) is documented using 'QMS FORM 016 On-the-Job Training Report' with copies maintained in the Tice Road filing cabinet and tracked in the excel Training Files.

Element 11, Personnel Coverage

'QMS PROC 011' Personnel Coverage Procedure and 'QMS SOP 004' Overtime Call-In Procedure (step 7.) have been developed describing how the Town ensures sufficient personnel are available for duties that directly affect drinking water.

Element 12, Communications

The QMS for the Pelham Distribution System requires that OA Top Management communicate relevant aspects of the QMS to various parties. This is outlined in the Communication Procedure 'QMS PROC 021'.

Element 13, Essential Supplies and Services

The Essential Supplies and Services Procedure 'QMS PROC 013' describes the procedure in place for ensuring the procurement and quality of essential supplies and services.

Element 14, Review and Provision of Infrastructure

A process for the annual review of the adequacy of infrastructure necessary to operate and maintain the drinking water system has been outlined in procedure 'QMS PROC 014' Review of Provision of Infrastructure.



Element 15, Infrastructure Maintenance, Rehabilitation and Renewal

The Town of Pelham's Public Works Department has established several infrastructure maintenance, rehabilitation and renewal programs to protect the integrity of its drinking-water system infrastructure and the quality of its drinking-water.

Key infrastructure items may include main, valves and valve chambers, hydrants, pressure reducing valves (PRVs), check valves, the booster station, Town-owned backflow devices, tools, software and other infrastructure.

Infrastructure Rehabilitation and Renewal Programs

The Town maintains a long-term forecast of major infrastructure maintenance, rehabilitation and renewal activities in the form of a 20-Year Capital Forecast to ensure that aging infrastructure (e.g., watermains or appurtenances) is replaced. The plan, along with other infrastructure review items, is reviewed once every calendar year during the Infrastructure Review (see QMS PROC 014 Review of Provision of Infrastructure). Top Management makes any recommendations for altering the forecast to the Owner during the Infrastructure Review and budget process. Alterations to the forecast may require Owner approval. The forecast may require periodic adjustment to account for unforeseen infrastructure failures. Decisions about rehabilitation versus renewal are steered by the DPW, with input from the MPW and relevant staff.

Infrastructure Maintenance

Maintenance of infrastructure related to drinking water is planned, carried out, documented and reviewed through the Work Order System, applicable forms, and excel logs, in combination with scheduled items through Microsoft Outlook for the MPW and SWW.

Planned maintenance is scheduled by the SWW using the work order system or assigned work logged through excel logs, and work is assigned to the Operators accordingly, at the start of each workday, where Operators generally review work assignments with the SWW. The MPW discusses any concerns directly with the SWW and the Operators when required. The process for handling this work and these field records is described in the Control of Documents and Records Procedure.

As identified in Element 6, operation and maintenance of the pressure boosting station, serving the Chestnut Ridge area, has been contracted to the Region of Niagara. Details of the agreement, including scheduled maintenance requirements (i.e., inspection and response to needed maintenance) have been detailed within the Maintenance Agreement, dated April 2010, Article 4, Section 4.2. The completion of maintenance activities is communicated to the MPW by the Region of Niagara's Water and Wastewater Services Division.

Unplanned maintenance is responded to under supervision of the SWW and recorded and reviewed in the same manner as planned maintenance. Observed need for infrastructure rehabilitation or renewal is discussed directly, and response and revisions are made accordingly.



Maintenance programs are communicated to the Owner through the budgeting process, the annual Ministry report review and other means, as described in 'QMS PROC 021 - Communications Procedure'.

The effectiveness of the maintenance program is monitored by the Director of Public Works & Utilities and the MPW, through preparation of the annual Council report and Ministry reports. The MPW also reviews general work orders and data results, Pre-Start Reviews (PSRs) and sampling data, as an indication of general effectiveness of the maintenance program.

Element 16, Sampling, Testing and Monitoring

Various sampling, testing and monitoring methods are used to monitor water quality and control drinking water processes to ensure compliance with applicable regulations and a continual supply of safe drinking water. The Sampling Testing and Monitoring Procedure QMS PROC 016 describes these programs, and points to specific sampling and testing SOPs for more detail.

Element 17, Measurement & Recording Equipment Calibration & Maintenance

Processes for ensuring the continued calibration and maintenance of measurement and recording equipment used in the operation of the Pelham Distribution System have been documented within 'QMS PROC 017 – Measurement and Recording Equipment Calibration and Maintenance'.

Element 18, Emergency Management

The DWQMS requires a procedure to maintain a state of emergency preparedness. The procedure is to include potential emergencies or service interruptions, emergency response and recovery processes, training and testing requirements for emergency response, responsibilities of the Owner and OA during emergencies, references to municipal emergency planning, an emergency communication protocol and a current emergency contact list.

The Emergency Management Procedure QMS PROC 018 details potential emergency situations, response procedures, procedure training and testing requirements, responsibilities during emergency situations, contact protocol, communications and an emergency contact list.

Emergency response procedures have been developed to reflect the needs of the Pelham Distribution System. These procedures are included in the Operations Manual for the system:

- Emergency Procedure / Form Drinking Water Advisory (QMS FORM 005)
- Emergency Procedure Watermain Break (QMS PROC 025)
- Emergency Procedure Response to Adverse Water Quality (QMS PROC 027)

The plan includes provisions for the extraordinary arrangements and measures that may have to be taken to protect the health, safety, welfare, environment and economic health of the residents, businesses and visitors of the Town of Pelham when faced with an emergency. It is



Pelham Distribution System – Quality Management Syste	m
Operational Pla	an
Date: 9 February 20	21

understood that the OA will refer to this Corporate Emergency Response Plan in situations where the magnitude of an emergency exceeds the OA's capabilities for response.

Included in the emergency management element is the Emergency Response Procedures Manual for water and wastewater systems compiled by the Regional Municipality of Niagara. The manual lists potential emergencies, responses and contact personnel.

Element 19, Internal Audits

'QMS PROC 019' documents the Town of Pelham's QMS Internal Auditing Program and associated processes including those relating to the planning, execution and documentation of QMS Internal Audits, recording of non-conformances, and reporting of results to Top Management and the Owner.

Element 20, Management Review

'QMS PROC 020 – Management Review' documents the processes for planning, completing and documenting an annual Management Review that evaluates the continuing suitability, adequacy and effectiveness of the QMS.

Element 21, Continual Improvement

The Town of Pelham as owner and operator of its water systems has established a QMS to meet the requirements of the Drinking Water Quality Management Standard Version 2.0 February 2017. The Town is committed to maintaining and continually improving upon its QMS. The MPW or designate is responsible for monitoring the status of Best Management Practices, corrective and preventive actions

Best Management Practices

Best Management Practices (BMPs) are to be reviewed and considered at least once every 36 months as part of the Management Review process, as per 'QMS PROC 020 – Management Review'. BMPs that are to be reviewed and considered may include, but are not limited to, those published by the Provincial Government and available via <u>www.ontario.ca/drinkingwater</u>, current drinking water industry or association-wide best practices, suggestions included within inspection reports, external or internal audits, staff suggestions, engineering or contractor-identified suggestions, etc. All identified BMPs are to be documented using QMS LIST 006. Reasoning for not implementing a BMP is to be documented within the Corrective Action List QMS LIST 006.

Corrective Actions

Corrective Actions are initiated through the identification of QMS nonconformances which may be identified in a variety of way including, but not limited to, internal/external DWQMS audits, Ministry inspections, operational checks, complaints, emergency situations, etc.



Pelham Distribution System – Quality Management System Operational Plan Date: 9 February 2021

All nonconformances are to be documented by the MPW or designate using the Corrective Action List QMS LIST 006. The MPW or designate is responsible for investigating, identifying and documenting the root cause and actions that will be taken to correct and prevent reoccurrence (i.e., corrective actions), including responsibilities and targeted timelines within the Corrective Action List QMS LIST 006. The MPW or designate is responsible for verifying corrective actions have been implemented. The effectiveness of corrective actions at correcting and preventing re-occurrence will be confirmed and details (e.g., records reviewed) documented within the Corrective Action List QMS LIST 006.

The MPW may utilize Town staff to implement corrective actions, to communicate actions and changes and to update QMS documents as required.

Preventive Actions

Preventive actions, actions taken to prevent a potential nonconformance from occurring, may be identified in a variety of ways. For example, in its budgetary planning process, the DPW reviews operational and capital budgetary needs, based partly on potential concerns such as infrastructure, operations, equipment, resources or water quality. Programs implemented as a result of these reviews may involve preventive actions (i.e., action items from infrastructure or Management Review). Preventive actions may also be identified through staff suggestions, internal/external DWQMS audit results (i.e., 'opportunities for improvement'), Ministry inspection suggestions, risk assessments outcomes, emergency training outcomes, etc.

All identified potential non-conformities/preventive actions are documented within the Corrective Action List QMS LIST 006. Top Management, or designate, is responsible for reviewing and determining whether preventive actions will be implemented. The outcome of the review, including actions, responsibility, and targeted timelines, is to be documented within the Corrective Action List QMS LIST 006. The MPW or designate is responsible for reviewing the actions taken, confirming they have been implemented and verifying they have been effective in preventing the occurrence of a non-conformity.





	C-04/2019			-	Pelha	AGA	n	8 March 4, 2019	46
REC	GULAR COU	NCIL			Vibrant - Creative -	Carring	t.		
0 9 8	M. Ciolfi R. Kore M. Junkin		¢ ¢ /	L. Haun M. Stewart	-715-	* #	B. Hildebrandt ⊯J. Wink	Z	

Agenda Number:	11.2.2
Title:	Endorsement of the Quality Management System Policy and Operational Plan and Approval of the Financial Plan
Date:	Monday, March 4, 2019

BE IT RESOLVED THAT the Public Works & Utilities Department Report for Endorsement of the Quality Management System Operational Plan, Policy, and Approval of the Financial Plan be received; and

THAT Council approve: Endorsement of the Quality Management System Policy and Operational Plan and Approval of the Drinking Water System Financial Plan.

			NY 1	11	
Recorded Vote	Request	ed By:	MAYOR	Λ	-
	Yea	Nay	Referred 🗆	Lost 🛙 Carried	6
M. Ciolfi	1	1	To:	Direction 🗆	
L. Haun			Amended		
B. Hildebrandt					
R. Kore			Declaration of Pecuniary Interest:		
M. Stewart		_			
J. Wink		-			
M. Junkin		_	Disclosed his/hea/their interest(s), vacate discussion and did not vote.	d his/hea/their seat(s), abstained from	



Appendix B – QMS Representative Appointment



Vibrant - Croative - Cantral

Memorandum

Public Works Department - Engineering

DATE:	December 15, 2015
TO:	Ryan Cook, Manager of Public Works
FROM:	Andrea Clemencio, Director of Public Works & Utilities
RE:	QMS Representative

This is to confirm that Ryan Cook, the Manager of Public Works, has been appointed by Top Management as the QMS Representative, and is authorized to fulfil these duties as detailed in the Operational Plan.



20 Petram Town Square P.O Box 400 Fonth0, CNLOS 1E0 pr 905,892,2507 r; 905,692,5055 petham.ca



Policy Name:	Policy No: S801-01
Committee approval date:	-
Council approval date:	-
Revision date(s):	February 28, 2021
Department/Division:	Public Works and Utilities

1. Purpose

To meet Drinking Water Quality Management Standard (DWQMS) V2.0 (Feb-2017) Element 2 requirements to establish a Quality Management System (QMS) Policy that provides the foundation for the Pelham Distribution System QMS.

2. Policy Statement

The Town of Pelham is committed to providing a safe, consistent supply of drinking water to its consumers. The Town has implemented and continues to maintain a Quality Management System (QMS) and will endeavour to continually improve the QMS through regular review, evaluation, and action.

The Town commits to complying with all applicable legislation and regulations in pursuit of high-quality water and efficient distribution.

Jason Marr, Director of Public Works

Date

Ryan Cook, Manager of Public Works

Date

3. Attachments

Council Resolution

Page 1 of 1



Subject: Gypsy Moth Population Assessments and Defoliation Forecast & 2021 Treatment Program Development

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0054 for information;

AND THAT Council direct staff to implement an aerial spray program based on Option 2 of the BioForest 2020 Gypsy Moth Monitoring Program Report.

Background:

In 2020 Council Approved the Gypsy Moth Management Policy S802-03 to address the periodic infestation of the European Gypsy Moth experienced in the Town of Pelham.

In the fall of 2020, through a competitive bid process the Town of Pelham awarded a three year contract to Lallemand Inc./BioForest (BioForest) to:

1) perform annual egg mass surveys,

2) prepare a detailed population assessment and forecast report, including management options,

- 3) develop aerial spray blocks in accordance to Policy S802-03,
- 4) coordinate an aerial spray program,
- 5) prepare an aerial spray summary report, and
- 6) implement a forest health volunteer program.

This report serves to fulfill the requirements of Policy S802-03 to inform Council of the results of the egg mass surveys and management recommendations prior to the implementation of any treatment program.

The 2020 Gypsy Moth Monitoring Program Report, prepared by BioForest, has been included as an attachment to this report (Appendix A).

Analysis:

While the report provides evidence that Pelham's gypsy moth population may have passed its peak and is on the decline, given the population levels and abundance of host species the Town is forecast to experience severe levels of defoliation throughout areas of Fenwick, and Fonthill as well as rural forested areas south of Fenwick and north/west of Fonthill.

The report provides three management options to protect the overall health of the Town's urban forest canopy:

1) "Do nothing", where the town does not intervene and allows the gypsy moth population to run its natural course,

2) targeted treatment of areas within the urban boundaries of Fenwick and Fonthill (with the option of adding forested areas adjacent to the urban boundaries),3) large-scale treatment including both urban and rural areas.

The 2021 Operating Budget includes \$150,000 for the Gypsy Moth treatment Program. The cost associated with coordination of the areal spray program and implementation of a scaled down forest health program is \$39,000. Program communications costs are expected to be similar to 2020 at \$5400. Based on preliminary pricing of \$920/ha for urban aerial treatment, the remaining \$105,600 will be utilized for the spraying of 114ha.

Due to the resources available, staff recommend that the Town of Pelham design an aerial spray program for the treatment of gypsy moth based on Option 2 of the BioForest, 2020 Gypsy Moth Monitoring Program Report.

Financial Considerations:

There are no financial considerations attributed to this report. An aerial spray program based on Option 2 can be implemented within the limits of the existing operating budget.

Alternatives Reviewed:

All three management options provided in the BioForest, 2020 Gypsy Moth Monitoring Program Report were considered in the preparation of this report.

As Council will recall, Policy S802-01 is based on the principals of Integrated Pest Management (IPM) and provides a process to address the periodic infestations of the gypsy moth, including the development of an aerial treatment program according to the most appropriate IPM strategy, and the available financial resources.

As staff are following the council approved policy, no further alternatives were considered in the preparation of this report.

Strategic Plan Relationship: Grow Revenue - Promote Cultural Assets and Protect Environment

The tree canopy within the municipal boundary is vital to the high quality of life within the Town of Pelham.

Consultation:

Lallemand Inc./BioForest provided; 2020 Gypsy Moth Monitoring Program Report

Other Pertinent Reports/Attachments:

Appendix A – BioForest Report – 2020 Gypsy Moth Monitoring Program Report Gypsy Moth Management Policy S802-03 Public Works Report 2021-0054

Prepared and Recommended by:

Jason Marr, P. Eng. Director of Public Works

Prepared and Submitted by:

David Cribbs, BA, MA, JD, MPA Chief Administrative Officer





2020 Gypsy Moth Monitoring Program

Town of Pelham 2020 Population Assessments and 2021 Forecasts

Prepared For:

JASON MARR DIRECTOR, PUBLIC WORKS 20 PELHAM TOWN SQUARE, PO BOX 400 FONTHILL, ON LOS 1E0

Prepared By:

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LALLEMAND PLANT CARE

Page 167 of 310

Table of Contents

Table of Figures	3
Introduction	4
Gypsy Moth Background	4
Gypsy Moth in North America	4
Gypsy Moth in Ontario	5
Biology and Life Cycle	6
Natural Controls	9
Hosts and Impacts	
Management Options: An Integrated Pest Management Approach	
Do Nothing	12
Gypsy Moth Management Options	12
Maintain or Enhance Tree Health	12
Low Population Strategies	12
Destroying Egg Masses	13
Sticky Barrier Bands	13
Burlap Barrier Bands	13
Homeowner Sprays	13
Ground treatments with TreeAzin® Systemic Insecticide	14
Ground/Aerial Application of <i>Bacillus thuringiensis</i> (Btk)	14
Potential Impacts of No Intervention	14
Population Assessment Methodologies	17
Intervention Thresholds	
Egg Mass Surveys in Forest vs. Urban Environments	
Objectives	19
Assessment of Gypsy Moth Populations in Pelham	19
History of Gypsy Moth Monitoring and Management in Pelham	19
2020 Gypsy Moth Egg Mass Surveys	19
2021 Gypsy Moth Defoliation Forecasts in Pelham	21
Results	22
Weather	31
Conclusions and Recommendations for 2021	32
Recommendations	

References	35
Appendix – A	

Table of Figures

Figure 1. Areas in Canada currently regulated for gypsy moth by the Canadian Food Inspection Agency (Source: CFIA 2021)
Figure 2. Gypsy moth defoliation mapped by Ontario Ministry of Natural Resources and Forestry, 2020 (Source: OMNRF, 2020)
Figure 3. Gypsy moth life cycle in Ontario
Figure 4. Gypsy moth defoliation (Source: Ontario Ministry of Natural Resources and Forestry)
Figure 5. Female gypsy moth laying eggs.
Figure 6. Gypsy moth larva killed by Entomophaga maimaiga (Source: Steven Katovich, USDA Forest Service,
Bugwood.org)
Figure 7. Gypsy moth larva killed by nucleopolyhedrosis virus
Figure 8. Large new egg mass measured by BioForest staff
Figure 9. Comparing relative size distribution of new egg masses in Pelham from 2019 and 2020
Figure 10. The average new egg mass size comparison 2019 to 2020
Figure 11. All gypsy moth egg mass monitoring plots surveyed in February 2021, Town of Pelham
Figure 12. All gypsy moth egg mass monitoring plots surveyed in February 2021 and all blocks sprayed in May-June
2020, Town of Pelham
Figure 13. All gypsy moth egg mass monitoring plots surveyed in February 2021 and all blocks sprayed in May-June
2020, Fonthill, Town of Pelham
Figure 14. All gypsy moth egg mass monitoring plots surveyed in February 2021 and all blocks sprayed in May-June
2020, Fenwick, Town of Pelham
Figure 15. Twenty-nine-year historical temperature normals (1981-2010) and 2020 monthly temperature averages for
Town of Pelham area
Figure 16. Twenty-nine-year historical precipitation normals (1981-2010) and 2020 monthly totals for the Town of
Pelham area

Introduction

Gypsy Moth Background

Gypsy Moth in North America

Gypsy moth (*Lymantria dispar*) is native to Europe and Asia and was introduced to North America from Europe in 1869. Interested in developing a silkworm industry in North America by crossing European gypsy moths with North American silkworms, Professor L. Trouvelot brought gypsy moths from France to Massachusetts. In 1870, a small number of gypsy moths escaped and, within 20 years, gypsy moth had become a serious regional pest.

Although the United States government has had a quarantine in place since the early 1900s, gypsy moth has been advancing slowly westward from the northeastern United States. In the United States, gypsy moth has spread from western Pennsylvania, through Ohio, Michigan, and Illinois and is now in central Wisconsin. It is estimated that gypsy moth is currently spreading at a rate of 21 km/year (USDA 2003). To address the gypsy moth invasion in the United States, the U.S. Forest Service has implemented the Slow the Spread (STS) project. The STS project is a large integrated pest management program that aims to eradicate or suppress colonies of gypsy moth detected along the expanding front of the population.

In Canada, the first gypsy moth was detected in British Columbia in 1912, but it did not become established. The first gypsy moth infestation in Canada happened in southwestern Quebec in 1924 and the second in New Brunswick in 1936. These eastern detections were the result of the expanding gypsy moth population in the northeastern United States. Intensive egg mass removal programs were used to eradicate both infestations. Since 1955, when gypsy moth was detected again in Quebec, gypsy moth has become established in southern Ontario, Quebec, Prince Edward Island, New Brunswick, and Nova Scotia (Natural Resources Canada 2003). In Canada, the Canadian Food Inspection Agency (CFIA) is responsible for preventing the introduction and spread of invasive pest species, including gypsy moth. Figure 1 (below) shows the areas of Canada that CFIA regulates for gypsy moth.



Figure 1. Areas in Canada currently regulated for gypsy moth by the Canadian Food Inspection Agency (Source: CFIA 2021).

Gypsy Moth in Ontario

Gypsy moth is a relatively new pest to Ontario. After its accidental release into Massachusetts in 1870, gypsy moth expanded its range over the next 100 years and was first detected in Ontario in 1969 on Wolfe Island, south of the city of Kingston. In 1981, the first major area of gypsy moth defoliation in the Province was detected near Kaladar in eastern Ontario. By 1985, gypsy moth was a serious problem throughout southeastern Ontario. As of 1996, the distribution of gypsy moth larvae includes the southern third of the Province and the northern boundary runs from North Bay to Sault Ste. Marie.

In Ontario, gypsy moth populations have peaked in 1985, 1991, and 2002, according to the 2019 Forest Health Conditions Report produced by the Ontario Ministry of Natural Resources and Forestry (OMNRF 2019). The last outbreak in Ontario, in 2008, was much less severe than previous ones.

In 2016, low populations of gypsy moth causing trace-to-light defoliation were reported in small areas in southern Ontario, indicating an upward trend (OMNRF 2016). In 2017, 10,866 hectares of moderate-to-severe defoliation were mapped covering large areas of Hamilton and Niagara Region, with smaller pockets in the Aylmer District near Guelph, Sarnia, and Windsor (Francis 2018). In 2018, the area mapped for moderate-to-severe defoliation increased to 14,937 hectares, with the population increasing and spreading northeast in the Aurora District. The southwestern population had decreased; however, pockets still persist throughout Burlington, Hamilton and Niagara Region, with a few pockets showing up westward along Lake Erie (Francis 2018). Results from 2020 provincial forest health surveys show the largest mapped increase in moderate-to-severe damage areas, from 47,203 hectares in 2019 to 586,385 hectares in 2020 (OMNRF 2020). A map created by the OMNRF which shows area of light to severe defoliation in southern Ontario can be seen in Figure 2. It is worth noting that the OMNRF does not conduct these aerial surveys over urban areas due to flight restrictions, therefore Mississauga is not included in this map.



Figure 2. Gypsy moth defoliation mapped by Ontario Ministry of Natural Resources and Forestry, 2020 (Source: OMNRF, 2020).

Biology and Life Cycle

Figure 3 presents the life cycle of the gypsy moth. Gypsy moth is in the order Lepidoptera, which consists of moths and butterflies, and has one generation per year with four life stages: egg, larva, pupa, adult. Gypsy moth eggs are laid in late July or early August. Weather, food sources, and factors such as diseases all affect the exact time that eggs are laid. Eggs are usually laid in dark, sheltered areas such as in bark crevices, on the underside of branches, or in leaf litter, although they can be also be found on a wide variety of surfaces such as rocks, buildings, lawn furniture, and automobiles. The eggs are covered with fine brown hairs from the female's abdomen, giving the egg mass the appearance of a small piece of chamois (OMNR, undated). Egg masses can vary in size from being about the size of a dime to being larger than a one-dollar coin and may contain from 100 to 1,000 eggs. Smaller egg masses tend to indicate that a gypsy moth population is in decline, while larger egg masses indicate a stable or growing population.

Fully formed, dormant larvae, or caterpillars, spend the winter inside the eggs. Generally, egg masses are resistant to drying and cold temperatures. However, if temperatures drop below -32° C for an extended period, egg masses above

the snow line may be susceptible to winter kill. Eggs below the snow line are likely able to avoid winter mortality (Leonard 1974). When temperatures are warm enough in late April or early May, buff-coloured larvae chew through the egg mass coverings and emerge. Shortly after emerging, the larvae turn black. If conditions are favourable, larvae, attracted by light, begin moving upward towards foliage. If conditions are not favourable, the larvae will remain clustered on the egg mass until conditions improve.

		Month											
Stage		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Egg													
Larva													
Pupa													
Adult													

Figure 3. Gypsy moth life cycle in Ontario.

Of the four life stages of the gypsy moth, the larval stage is the only one that feeds. As a larva develops, it passes through stages called instars, separated by molts during which the larva's skin is shed and replaced with a new one. The male gypsy moth has five larval instars, while the female has six. Depending on weather, the first larval instar lasts five to 10 days, the next three (male) or four (female) instars last about a week, and the fifth (male) and sixth (female) instars last about 10 to 15 days (OMNR, undated). First instar larvae are approximately 4 mm long. Full-grown larvae are hairy and range in length from 35 to 90mm and have pairs of five blue and six red dots along their backs.

First instar larvae are very lightweight and covered with an abundance of fine hairs. While feeding throughout the crown of a tree, the larvae spin silken threads that can be caught by the wind, dispersing the larvae to new host trees. This form of dispersal is known as "ballooning." Some larvae balloon several times before they start feeding (Liebhold et al. 1992). Ballooning generally transports larvae short distances, moving gypsy moth larvae up to 1km. Gypsy moth are generally dispersed greater distances by people moving objects such as firewood, recreational vehicles, Christmas trees, and boats that have larvae, pupae, or egg masses on them. Although people can inadvertently disperse all gypsy moth life stages, they most commonly transport egg masses.



Figure 4. Gypsy moth defoliation (Source: Ontario Ministry of Natural Resources and Forestry).

First instar larvae begin feeding by cutting small holes in the surface of leaves. As the larvae develop, they feed on the edge of leaves (Figure 4). The first three larval instars remain on the foliage and feed day and night. When populations are very low (i.e. fewer than 250 egg masses/ha), larvae in instars four through six feed at night and at dawn look for shelter where they spend the day protected from the sun and predators. At higher populations (i.e. more than 1,250 egg masses/ha), shelter becomes less important and all larvae feed in the day and night (Brooks and Hall 2005). When the host plant is depleted, larvae crawl to find another suitable host (USDA 1995a).

Gypsy moth larvae are active from approximately early May to mid-July. During that time, one larva is able to consume an average of $1m^2$ of foliage, which is roughly the equivalent of 10 to 15 entire red oak leaves (Nealis and Erb 1993). Males generally eat slightly less than $1m^2$ and females eat slightly more. Larvae in the last instar cause the most defoliation, consuming three quarters of the total amount of foliage that they eat (OMNR, undated). Sixth instar female larvae are the most ravenous feeders and are often twice the size of full-grown male larvae.

After feeding is complete around mid-July, pupation occurs in a cocoon that can be found in many places including trees, rocks, houses, boats, trailers, fences, picnic tables, and firewood. In 13 to 17 days, the moths emerge. Male moths usually emerge one to two days before females (USDA 1995a). Both sexes have wings, but only the male can fly. The female is too heavy bodied to fly, so gypsy moth relies on the larval stage for dispersal. The male moth is dark brown to beige, is medium-sized, flies during the day, and is a very erratic flyer. Dark wavy lines cross the male moth's forewings and its wingspan ranges from 35 to 40mm. The female is mostly white and has a wingspan between 60 to 70mm. Dark wavy lines also cross the female moth's forewings but, because the female is lighter in colour, these lines are more prominent.

To attract males, female moths emit a powerful pheromone, or sex attractant. Males have large feathery antennae for detecting the pheromone and can do so from about 1.5km away. Within about 24 hours of mating, the female lays eggs in a mass of 100 to 1000 on tree trunks, branches, houses, and fences and under rocks and forest floor debris (Figure 7). Since the female cannot fly, eggs are laid close to where pupation occurred. The female dies about one day after egg laying and the male survives about one week, after mating with several different females (Nealis and Erb 1993).



Figure 5. Female gypsy moth laying eggs.

Although in Europe and Asia there is evidence of cyclical outbreaks of gypsy moth, a clear pattern of outbreaks in North America has not yet been established (Liebhold et al 1994). However, gypsy moth populations do appear to exist in one of four phases: innocuous, release, outbreak, decline (Elkinton and Liebhold 1990). The innocuous phase is characterized by very low population levels. The release phase usually takes places over the course of one or two years and can result in population density increases of several orders of magnitude. During the outbreak phase, populations are high enough to cause noticeable defoliation and damage to host trees. After this point, high levels of gypsy moth mortality are observed usually due to starvation or disease and the population crashes. This is considered the decline phase.

Area-wide outbreaks can last up to ten years, but generally population densities in localized areas remain high for two to three years (Cloyd and Nixon 2001).

Natural Controls

Natural factors such as weather, predators, parasites, and pathogens significantly influence gypsy moth population densities.

Weather conditions can favour either low- or high-density populations. Extreme weather conditions characterized by prolonged periods of cold temperatures (colder than -32° C) can kill unprotected eggs, which can help to keep low density populations low or decrease high density populations. In contrast, warm, dry conditions tend to accompany increases in gypsy moth populations (Skaller 1985). Heavy rainfall during egg hatch may result in drowning of larvae; rainy weather during the first instar can delay migration and cause larvae to congregate on the underside of leaves (National Parks Service 2010). The conditions can also increase the duration of this instar.

Low density populations are normally kept in check by natural enemies such as predators and parasites (Brooks and Hall 2005). Predators that feed on gypsy moth larvae include about 40 species of birds such as vireos, chickadees, tanagers, orioles, robins, blue jays, grackles, starlings, blackbirds, and cuckoos (OMNR, undated); other insects; and small mammals such as skunks, white-footed mice, squirrels, and raccoons. Insect parasitoids kill gypsy moth by laying their eggs in gypsy moth eggs, larvae, and pupae.

At the start of a gypsy moth outbreak, natural enemies have little effect on the gypsy moth population (Brooks and Hall 2005). Populations increase when suitable conditions exist such as favourable weather and abundant foliage. Population decreases tend to happen in cooler, wetter conditions that favour pathogens. Gypsy moth is susceptible to a variety of naturally occurring infectious diseases that are caused by bacteria, fungi, and the nucleopolyhedrosis virus (NPV) (Campbell and Podgwaite 1971). Entomophaga maimaiga and NPV, the most significant natural enemies of gypsy moth, are capable of killing large numbers of gypsy moth larvae and represent the largest and most important factors in high density gypsy moth population crashes. E. maimaiga is a fungus that is specific to gypsy moth and is prevalent throughout low-to-high density gypsy moth populations. Although it is not completely clear how E. maimaiga first became established in North America, it was first recovered from North American gypsy moth in the northeastern United States in 1989. It was recovered from gypsy moth in southern Ontario in 1990. A late larva killed by *E. maimaiga* hangs vertically with its head pointed downward and its body tight to the trunk of the tree (Figure 6). An early larva killed by E. maimaiga generally remains on the foliage (Reardon and Hajek 1998). NPV was inadvertently introduced to North America with the gypsy moth or its parasites. Like E. maimaiga, NPV is specific to gypsy moth. NPV is often referred to as "wilt" due to the soft, limp appearance of the diseased larvae (Nealis and Erb 1993). A larva killed by NPV hangs on the tree in the shape of an inverted "V" (Figure 7).

No single natural enemy or combination of natural control agents can completely eliminate a gypsy moth population. Natural control agents can keep gypsy moth populations low, however, at times, outbreak conditions occur and the natural enemies are not able to control the growing gypsy moth populations (OMNR, undated).



Figure 6. Gypsy moth larva killed by Entomophaga maimaiga (Source: Steven Katovich, USDA Forest Service, Bugwood.org).



Figure 7. Gypsy moth larva killed by nucleopolyhedrosis virus.

Hosts and Impacts

Gypsy moth has been found on approximately 500 different tree species (OMNR, undated) and is a major defoliator of forest, ornamental, and orchard trees. Gypsy moth defoliates mainly hardwoods and some conifers. Table 1 lists the most common host species for gypsy moth and categorizes them by 'most preferred', 'preferred', and 'least preferred'.

A gypsy moth infestation can impact an area in a number of ways. In the short term, high populations of larvae cause defoliation that affects the aesthetic and recreational value of an infested area. Generally, leaf loss becomes noticeable when a tree sustains 30 to 40% defoliation. Also, in the short term, egg masses can be a nuisance because they can be laid on such a wide variety of surfaces including tree trunks, branches, rocks, logs, fences, picnic tables, and buildings. In the long term, a gypsy moth infestation can cause twig, branch and, in some cases, whole tree mortality, invasion from secondary pests such as rot, and thin tree canopies.

Several factors affect how a tree responds to gypsy moth defoliation including the amount of foliage removed, the weather, the number of years of repeated defoliation, the timing of defoliation in the growing season, the presence and number of other insects and diseases, and the health and vigor of the tree at the time of defoliation (OMNR, undated). For example, damage from gypsy moth may increase substantially if trees are growing on poor sites or if defoliation occurs during the same period as drought.

Most healthy trees can withstand a single year of moderate to severe defoliation, but two to three years of heavy defoliation (less than or equal to 50%) can result in branch or whole tree mortality. A tree's crown condition plays an important part in its ability to survive gypsy moth defoliation. A tree with less than 25% dead branches in its crown is more likely to survive defoliation than a tree with more than 50% dead branches in its crown (Gottschalk 1993). Trees that are diseased, crowded, or stressed may die after one or two years of defoliation (OMNR, undated).

Most Preferred	Preferred	Least Preferred	
Oak (all species)	Beech	Black ash	
Largetooth aspen	Yellow birch	Green ash	
Trembling aspen	Cherry (all species)	White ash	
White birch	Butternut	Black locust	
Grey birch	Chestnut	Mountain maple	
Basswood	White elm	Red spruce	
Tamarack	Eastern hemlock	White cedar	
Alder	Ironwood	Eastern red cedar	
Apple	Maple (most species)	Sumac	
Hawthorn	White spruce	Red mulberry	
Willow	Norway spruce	Tulip-tree	
Manitoba maple	Pine (all species)	Balsam fir	
Mountain ash	Hickory	Sycamore	
Carolina poplar	Black walnut	·	
Larch	Sassafras		
	Serviceberry		

Table 1. Most preferred, preferred, and least preferred gypsy moth tree hosts (Source: GM-06-105).

The impact of an outbreak on an area can be influenced by when the defoliation occurs. Defoliation that happens in mid-season can be more damaging than that which occurs in the spring because in mid-season, trees do not have time to replenish food reserves and new buds do not have time to harden before colder temperatures start (Gottschalk 1993).

Tree location can also play a role in how susceptible a tree is to gypsy moth defoliation. Gypsy moth generally prefers ridge top sites and steep, south or west facing slopes. These sites tend to have the tree species that gypsy moth prefers and the trees are often crooked, are low in vigour, and have deep fissures in their bark, providing good gypsy moth habitat. In the winter, the temperature on these sites rarely drops below -32° C, the threshold below which gypsy moth egg masses die. Therefore, more eggs survive to hatch in the spring. In the spring, these sites are not likely to be exposed

to late spring frosts that would kill young gypsy moth larvae. In the summer, these sites tend to be hot and dry, which helps gypsy moth larvae to survive and thrive (Gottschalk 1993).

Healthy, vigorous trees on lower, north or east facing slopes are likely going to be less susceptible to gypsy moth defoliation. These sites tend to have deep, fertile soils and tend not to be stressed by drought. Trees on these sites are often straight and fast-growing with smooth bark and healthy crowns, making them more resistant to gypsy moth damage (Gottschalk 1993).

The composition of trees in an area can affect the amount of damage that gypsy moth causes. For example, areas with mostly oak, birch, or poplar are more susceptible than areas with predominately sugar maple, ash, spruce, or pine (OMNR, undated).

Management Options: An Integrated Pest Management Approach

While definitions of Integrated Pest Management (IPM) vary, it is essentially a philosophy, concept and methodology for dealing with destructive insects and diseases affecting trees either in an urban environment or in the natural forest (Coulson and Witter 1984). Waters (1974) provides a good definition:

"IPM is the maintenance of destructive agents, including insects, at tolerable levels by the planned use of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable."

Components of an IPM strategy include pest surveys and monitoring, and a decision-making process based on surveys and other supportive data (Reardon et al. 1987). In the case of gypsy moth this could include:

- Egg mass densities and quality;
- Larval and pupal counts;
- Male moth captures;
- Defoliation estimates;
- Area affected;
- Stand susceptibility;
- Environmental sensitivity; and
- Parasite and disease incidence.

The decision-making process in an IPM strategy results from an evaluation of available treatment options and an analysis of impacts. Information requirements include knowledge of pest biology and population dynamics, tree impacts and stand dynamics. The final component of the IPM strategy is a benefit-cost analysis. In the urban forest everyone is a potential participant in the implementation process.

The options described in this report reflect the philosophy of an IPM system for gypsy moth control. The overall strategy is to maintain pest populations at tolerable levels in terms of tree impacts and effects on human health and safety. The tactics employed will be influenced by the status of the gypsy moth population at any point in time but, to be effective, strategies and tactics must be communicated and implemented.

The application of an IPM system will not eradicate gypsy moth from the forests and streets of the Town of Pelham. That is not the goal of an IPM system, and it would imply a degree of knowledge about this pest that scientists and pest management practitioners do not have. Outbreaks of this pests will most certainly occur again in the future. The objective of an IPM system is to reduce the frequency and severity of future outbreaks.

Do Nothing

The "Do Nothing" option is the one most often chosen for most pest outbreaks in Canada. A review of major pest outbreaks and control efforts in North America between 1985 and 1997 showed that of the 156,549,000 hectares infested by pests such as gypsy moth, spruce budworm and hemlock looper, only 13,841,000 hectares, or 9%, were actually treated with an aerial application of an insecticide (Hayes et al. 1998). Doing nothing is always an option to be considered and may be the most practical option in specific areas of the current gypsy moth population.

Pest outbreaks come and go. Based on the historical record of gypsy moth in North America and Ontario, it is likely that the current outbreak in the Town of Pelham will collapse naturally over the next several years. As described earlier in this report, predators, parasites and pathogens will bring about a significant decrease in gypsy moth populations to low endemic levels. The pest will exist at these low population levels until conditions allow for another rapid rise to outbreak levels.

Potential consequences of the "Do Nothing" option are described in the section of this report entitled *Potential Impacts of No Intervention.* It should be noted, however, that the nuisance factor resulting from gypsy moth/human contacts and experiences in the outbreak will be variable but frequent in some areas, forcing residents to respond with their own management efforts. This is a concern because in some cases residents will choose to mitigate impacts to their properties by applying pesticides on their own or through a commercial tree care company. The end result of potentially hundreds of property owners taking their own control measures is a significant increase in the overall use of pesticides within the Town of Pelham, and the consequent increased risk of exposure for users, bystanders and the environment. Homeowners with a lack of sufficient training or knowledge of pesticide application may also apply pesticides incorrectly. Thus, in urban and suburban areas, the "Do Nothing" option may actually result in an increase in pesticide use. Other innovative control measures employed by homeowners may not be very effective and some may actually cause more harm than good to trees.

Gypsy Moth Management Options

Maintain or Enhance Tree Health

Trees stressed by other factors such as drought or disease are more vulnerable to defoliation caused by insect pests such as gypsy moth, or to attack by secondary pests such as the two-lined chestnut borer and *Armillaria* root rot. Therefore, efforts should be made to maintain or improve tree vigour and property owners should be encouraged to consider the following (McManus et al. 1979):

- Maintain good soil conditions to encourage the development of the tree's fine feeder roots. Many activities such as construction, cutting and filling, paving, changing grades and tree removal can have harmful effects on soil/moisture relations;
- In wooded areas or in transition zones between lawns and forested areas, keep the forest floor as natural as possible. Oaks thrive under acidic soil conditions, so removal of the organic acid-rich leaf litter can be harmful;
- Maintain the natural layers of leaf litter to reduce drying in the surface soils where most of the tree's feeder roots occur. This will also provide natural habitat for mice and shrews, predators of gypsy moth larvae and pupae;
- Mulching isolated trees growing on lawns will also improve growing conditions. Mulch out to the edge of the canopy drip line to reduce competition from grasses which compete for soil moisture and nutrients;
- Water trees during periods of drought. A light pruning will thin the crown and reduce moisture demands.

Low Population Strategies

During periods when gypsy moth populations are low, homeowners can mitigate future outbreaks by:

- Cleaning yards of objects that may provide shelter for gypsy moth larvae, pupae and egg masses (e.g. dead branches and trees, stumps, and debris such as boxes, tires, containers etc.);
- Diversifying the tree species in an area to reduce the proportion of preferred gypsy moth host species. Select tree species most compatible with the local climate and soil conditions to encourage tree vigour.

Destroying Egg Masses

Finding and destroying egg masses is a management technique that homeowners can use to reduce gypsy moth damage on their properties. Finding egg masses on trees is easiest from fall until early spring when the leaves are off the trees. Egg masses can be found on tree trunks, under branches, on rocks, woodpiles, fences, or almost any other surface. Egg masses can be scraped into a container of soapy water (e.g. one teaspoon of detergent in 1 litre of water) and soaked for one week or scraped into containers of household bleach or ammonia. Egg masses should not be simply scraped onto the ground because this will not prevent them from hatching. It is important to wear gloves when removing and destroying egg masses because many people are sensitive to the hairs that cover egg masses.

Sticky Barrier Bands

Barrier bands intercept early instar larvae crawling up and down trees. Barriers can be created using sticky material applied to bands wrapped around tree trunks. To make barrier bands, wrap duct tape (sticky side towards bark) or tar paper around the trunk of a tree in overlapping bands about 1.5m from the ground. The total width of the band should be at least 12.5cm. Press the band into the bark crevices so that the larvae cannot crawl underneath the band. Tuck the edges of the tape or paper into the bark and apply a vegetable-based sticky material to the band. Do not apply sticky substances directly to the tree trunk. Sticky substances can kill thin-barked trees and will leave permanent dark stains on all trees. Avoid petroleum-based products because they may cause swelling and cankering on thin-barked trees. The small insects will get caught in the sticky material as they crawl on the trees. Replace the sticky bands as they get covered with larvae and dirt. Larvae can be destroyed by dropping them in buckets of soapy water (e.g. one teaspoon of detergent in 1 litre of water) and letting them soak for one week. For gypsy moth, it is important to wear gloves when removing and destroying larvae because many people are sensitive to the larval hairs. Barrier bands can be removed when they are no longer catching larvae or when the larvae have pupated.

Burlap Barrier Bands

Burlap bands wrapped around trees is a control method that takes advantage of the movement of gypsy moth larvae during the day. Fourth, fifth and sixth instar larvae do most of their feeding at night and seek protection from the sun and predators during the day by, in some cases, crawling to the ground for shelter in dead leaves and underbrush. Burlap bands wrapped around trees will intercept larval movement and the larvae will seek shelter in the bands. The larvae can then be removed from the bands and destroyed.

Hiding bands can be made using cloth or burlap. Bands should be 30 to 45cm wide and fastened to trees at chest height. Use twine to loosely tie the middle of the bands to the trees and fold the tops of bands over the bottoms. Bands must be checked, and larvae removed daily because the bands will neither kill the larvae nor keep them from crawling back up the tree. Late afternoon is the best time to remove larvae. Larvae can be destroyed by dropping them into buckets of soapy water (e.g. one teaspoon of detergent in 1 litre of water) and letting them soak for one week. It is important to wear gloves when removing and destroying larvae because many people are sensitive to the larval hairs. Burlap banding is a popular method of control but, if done improperly, can cause more damage to trees than gypsy moth. For example, foil and plastic wrap should never be wrapped around a tree in place of burlap or cloth because they can scar or kill the tree.

Homeowner Sprays

Homeowners can use insecticides for small scale treatment of shrubs and small trees on their properties to protect them from gypsy moth defoliation. Insecticides registered in Canada for control of gypsy moth include *Bacillus*

thuringiensis (Btk), carbaryl, pyrethrin, phosmet, and permethrin. Homeowners should follow all pesticide label instructions or call a licensed applicator to perform the treatment where necessary.

Ground treatments with TreeAzin® Systemic Insecticide

Ground treatments with TreeAzin[®] will help to reduce feeding pressure from gypsy moth on individual trees. The product targets the larvae as they feed on the foliage, and as it is applied systemically through the trees' vascular system via micro-injection technology, there is no exposure risk to the public. Treatments must be applied post-bloom and at the time when gypsy moth eggs are starting to hatch.

Ground/Aerial Application of *Bacillus thuringiensis* (Btk)

Bacillus thuringiensis var. *kurstaki* (Btk) is the most common commercial product used to control large-scale gypsy moth infestations and has been extensively used in previous aerial control programs against gypsy moth in both Canada and the United States. This product targets only Lepidoptera larvae feeding at the time, and is non-toxic to birds, animals, humans, honeybees, fish, and most other insects. The spray must be applied while the early instar larvae are actively hatching and feeding on the foliage, usually early to mid-May. Within about two to three hours of consuming the product, the larvae stop feeding and die within a few days (City of Regina 2016). Ground applications tend to be most effective when the spray is able to cover a high percentage of the canopy – effectiveness tends to decrease significantly if spray equipment does not reach the upper canopy.

In terms of environmental safety, Btk is considered to be a very safe option. It is a naturally occurring bacteria found in the soil, not a chemical, and it works by producing proteins that are toxic to larvae. It degrades rapidly in the environment (within 1 to 4 days) due to sunlight and other microorganisms, so the exposure window is limited. It does not travel into the soil beyond 25 cm, therefore there are no concerns with leaching into groundwater (Perez 2015). In fact, pest control products containing Btk have been registered for use in Canada for 40 years and it is the most widely used pest control product in the world and can be used on certified organic farms.

Btk specifically targets immature insects (larvae) in the Lepidoptera family. An extensive literature exists on the consequences of non-target organisms to Btk, including reports of several long-term field studies. The data have been reviewed periodically (e.g. Melin and Cozzi 1990, Otvos and Vanderveen 1993) and the range of non-target species that have been found to be susceptible to direct toxic action of Btk has remained small. Spring feeding Lepidoptera species (leafrollers, fruitworms, cankerworms, and budmoths) may be affected and species richness may be locally and temporarily reduced following a spray event. Significant Lepidoptera species such as monarchs and swallowtails are not affected as they are not in the susceptible life stage when the spray is applied.

According to the World Health Organization, Btk has been sprayed over populated areas in several countries including the USA, Canada, and New Zealand. Some of these applications have been followed by public health surveillance programs and in general no (or very few) harmful effects have been reported among residents of the sprayed communities. A large epidemiological study conducted by the University of British Columbia concluded that "the largescale spray program of Btk in the lower mainland for control of the Asian and European gypsy moth did not cause any measurable increase in serious community unwellness that could be attributed to the spray" (Otvos and Vanderveen 1993).

Potential Impacts of No Intervention

Despite its arrival in North America in 1869, gypsy moth is a relatively new pest in the forests of Canada. It joins a number of other native insect pests, such as the forest tent caterpillar (*Malacosoma distria*) and the spring and fall cankerworms, as a potential defoliator of many different tree species and is, therefore, another potential stress on our forests.
The urban environment, while in many ways similar to forested environments, generally involves several unique features that influence pest problems (Coulson and Witter 1984) and consequently management strategies. For example, in urban environments:

- The diversity of valued host species is generally greater;
- Host trees consist of both native and exotic species;
- There is usually a greater range of age-class of host trees;
- Mature, and often senescent trees are especially valued.

Urban trees are under considerable stress. The urban forest is subject to a wide variety of disturbance factors that generally reduce tree vigour and increase susceptibility to pests. These disturbances include road construction, transmission line clearing, building construction, sidewalks, driveways, poor soil nutrients, compaction, high salinity and pH, and photochemical oxidation. Therefore, predicting the full impacts of a gypsy moth outbreak in the natural forest is different than in the urban setting.

Environmental Impacts

Environmental impacts of a gypsy moth outbreak will be greatly influenced by a number of factors including urban canopy composition, forest age, stand vigour, soils, and climate. Some general observations from previous outbreaks are:

- Generally, areas of mature to overmature forests with a high composition of host tree species will be the most heavily impacted by gypsy moth defoliation;
- Vigourous trees can usually withstand severe defoliation for a few years. Eventually, however, these trees will become more susceptible to attack by secondary pests such as two-lined chestnut borer (*Agrilus bilineatus*), oak decline, *Armillaria* root rot, etc.;
- Heavy defoliation over large areas of urban forest reduces water use by the trees and can result in increased fluctuations in run-off (Benoit and Lachance 1990);
- In heavily defoliated areas, sunlight falls directly onto ground vegetation and soils, raising temperatures. This may drive away predators such as snakes, lizards and frogs and may cause root damage and increase the effects of drought;
- Some thin-barked tree species may be damaged by the sudden increase in sunlight penetration;
- The aesthetic value of treed areas within the city is lessened and their utility as windbreaks and privacy barriers is reduced;
- Several years of heavy defoliation may kill host trees and, therefore, reduce the proportion of susceptible host trees in an area. This is a slow process, but may ultimately reduce the susceptibility of the stand by increasing the proportion of less susceptible tree species;
- Less favoured food species and understory vegetation may benefit indirectly from gypsy moth defoliation through increases in light, moisture and nutrients (Campbell 1979). Conversely, increased light, moisture and nutrient availability in the understory can provide the right conditions to allow for the spread of invasive understory species such as buckthorn (*Rhamnus cathartica*), garlic mustard (*Alliaria petiolata*), dog strangling vine (*Vincetoxicum rossicum*), etc.;
- Gypsy moth infestations can have positive and negative effects on wildlife. Defoliation of the overstory can
 result in more growth of shrubs, grasses, and herbs, which provides additional habitat for some wildlife species.
 In some cases, however, defoliation may reduce or compromise habitat for some wildlife species. For example,
 defoliation may make bird eggs vulnerable to predation due to the reduction in protection from a tree's foliage
 (Gottschalk 1993);

• Outbreaks can also impact waterways. For example, increases in frass, or droppings, and leaves into streams can reduce the quality of the water. Loss of canopy cover due to gypsy moth defoliation can cause the temperature of streams to increase, which can have harmful effects on organisms in the streams (Gottschalk 1993).

Human Health Impacts

During low population periods there is little human exposure to gypsy moth life stages. However, as populations increase, children and others who spend a lot of time outdoors can be affected in a number of ways (USDA 1995b):

- Allergic reactions in some people to the gypsy moth larval hairs, the hairs that coat egg masses, and wing scales have been reported;
- Rashes or other skin irritations from contact with larvae;
- Eye irritation;
- Respiratory tract irritations;
- Some individuals may be psychologically affected by high numbers of caterpillars or adverse effects of the outbreak on local aesthetics;
- Safety hazards may be created when larvae and their droppings make walkways and roads slippery;
- Dead or dying trees caused by gypsy moth defoliation can pose a hazard as tree crowns deteriorate and dead limbs break and fall to the ground.

Damage caused by gypsy moth in the urban environment can result in an increase in factors that can indirectly harm human health. These include:

- Increased air pollution;
- Local climate extremes;
- Increased noise pollution.

Economic Impacts

Gypsy moth outbreaks can impact local or regional economies. Outdoor activities can be reduced significantly when populations of either pest are high, thus impacting recreation and tourism businesses. Repeated defoliations can affect the aesthetics of an area, reducing the numbers of visitors for periods of several years beyond the duration of the outbreak. Property owners may incur costs for:

- Treating gypsy moth with a pesticide;
- Removing larvae or their droppings;
- Removing egg masses;
- Repainting buildings;
- Pruning or removing declining or dead trees;
- Replacing damaged or dead trees and shrubs;
- Increased liability for damage or injuries sustained from falling trees and branches.

Studies have also shown the contribution of trees to the overall property value of a residence. In an early study, Payne (1971) evaluated the contribution of trees to property values of homes in Massachusetts and found that they contributed an average of 7% and as much as 15% to the value of a residence. More recent valuations can be found in Miller (1996) and Pandit et al. (2013).

Economic impacts to the Town of Pelham could include:

- Increased tree removal and replacement costs;
- Loss of aesthetics in parks and woodlands resulting in reduced usage;

- Increased tree inspection costs;
- Increased tree pruning and maintenance costs;
- Potential liability costs for damage to property and personal injury.

Population Assessment Methodologies

A variety of sampling methods have been developed for assessing gypsy moth populations and forecasting potential damage to host trees. Gypsy moth is a difficult insect to sample accurately because of its association with many host species, the activity of the insect during the larval stage, and the dramatic fluctuations between low endemic and high outbreak populations over a relatively short period of time (Nealis and Erb 1993). Another factor that can complicate gypsy moth population assessments and forecasts is the tendency of early instar larvae to disperse by ballooning over the landscape, often in large numbers. This can result in areas suffering high defoliation rates even though egg mass densities were low, or in some cases, non-existent.

Sampling methods have been developed for each stage of the gypsy moth life cycle.

Larvae: Burlap or sticky bands placed around the main stem of the tree can be used to trap gypsy moth larvae and pupae. Gypsy moth larvae seek shelter under the bands during the later feeding stages and often will pupate under these bands. Larval densities can vary greatly from day to day, and even during the day. Weather, tree species, larval density, and larval development can affect numbers, therefore, this method is not considered a reliable method for population assessment.

Larvae can also be sampled from foliage collected from the tree canopy. The accuracy of this method has not been assessed but can be used to determine the presence or absence of gypsy moth larvae, especially during the early instars.

A third method for assessing gypsy moth larvae populations is the collection of frass in containers placed on the ground (Liebhold and Elkinton 1988a and Liebhold and Elkinton 1988b). This is the most accurate method but is a time-consuming process that requires some expertise and therefore is usually restricted to research and not reliable in an urban environment because of potential sample tampering by pedestrians.

Adults: Female gypsy moth adults do not fly but attract the male moths by releasing a powerful airborne attractant called a pheromone. This pheromone has been synthetically reproduced and is used to lure male moths to a variety of sticky or bucket-like traps. This is an effective method for detecting the presence of low-level gypsy moth populations and is widely used in the United States and Canada (Gage et al. 1990). Because this pheromone is so efficient, gypsy moth pheromone traps are less effective during periods of high populations when they tend to become saturated with moths, making it difficult to develop relationships between trap catches and subsequent populations and forecasted host damage.

Egg Masses: Gypsy moths lay their eggs in masses of up to 1,000 eggs on the stems and branches of trees, as well as on the forest floor and man-made objects in July and August each year. They will remain in the egg mass until hatch begins sometime in April or May the following year. This provides the longest period for assessing gypsy moth populations and is considered the most reliable method. Egg masses are easily counted, especially following leaf fall in the autumn, and old egg masses are generally easily distinguishable from new egg masses, allowing for more accurate counts of the current year population. Egg mass size can also be measured and is a good indicator of outbreak status – large egg masses (greater than 30mm) indicate a healthy, increasing population and small egg masses (less than 20mm) indicate a decreasing population (Nealis and Erb 1993). Moore and Jones (1987) provide a simple equation for estimating the number of eggs per mass based on a measure of egg mass length.

A number of sampling methods have been developed for estimating egg mass densities and forecasting host defoliation in the following year:

- 1. **Walkthroughs:** Observers count all egg masses visible during a walkthrough of an area. This method can be used as a quick survey tool but is often imprecise and is usually followed-up with a more detailed survey.
- Fixed-area plots: Observers count all egg masses within a standardized area. Results can be extrapolated into numbers per hectare, which allows comparison between years. In the United States, the fixed-area plot (5.4m radius) of 1/40 acres (0.01ha) is the most commonly used. In Ontario, the 10m by 10m Modified Kaladar Plot (MKP) has been used since the gypsy moth was detected in the Kaladar region of eastern Ontario in the early 1980s.

Intervention Thresholds

Intervention thresholds are defined by the management objectives and could include nuisance abatement, foliage protection, and prevention of tree mortality or a combination of these objectives. The relationships between egg mass density and subsequent damage (defoliation) will guide the manager in establishing these thresholds, which in turn will determine when and where treatments are needed. Some helpful guidelines for hardwood forests include:

- Damage is not noticeable from the air until defoliation levels reach about 30%;
- Growth loss in trees begins when defoliation reaches about 40%;
- Re-foliation occurs when about 60% of the trees' foliage is lost. This can cause a reduction in the tree's overall health and survival.

Managers may choose to modify tolerance thresholds to lower levels if these neighbourhoods have been subjected to other stresses that may predispose trees to mortality, or if unusually high value or specimen trees are involved (Liebhold et al. 1994). General stand condition and vigour can be influenced by tree age and human-related disturbances to the environment that negatively affect tree health.

Tree mortality is of course normal in any environment, and typically averages between 1 to 2% per year in natural forests, and 5% or more in the urban environment (Nowak et al. 2004). Insect and disease outbreaks can accelerate tree mortality, thus reducing the benefits to residents and the urban environment. Damage to forests can be increased when insect outbreaks occur during periods of environmental stress. Short- and long-term climate changes can increase stress levels on trees making them more susceptible to pests such as the gypsy moth.

The density at which gypsy moths become a nuisance in residential or recreational areas is not well established. The sight of one or two larvae may be intolerable for some individuals, while others may be comfortable with much higher populations. According to Liebhold et al (1994) an intervention threshold of 600 egg masses per hectare has been widely used in the past for intervention in both general forest and residential areas. While this value may be justified for reducing certain nuisance impacts (such as service calls or resident complaints), it may not be justified for other management objectives (Liebhold et al 1994).

In this discussion of management intervention thresholds, it must be noted and understood that it is impossible for managers to predict defoliation levels without a certain amount of error.

Egg Mass Surveys in Forest vs. Urban Environments

Definitions of urban and suburban environments may vary but Fleischer et al. (1992) defined these areas as having a minimum of one house per ten acres (4.04ha). With the exclusion of some municipal parks, this would apply to most of the areas surveyed within the urban areas of the Town of Pelham. Use of fixed-area plots is the most accurate method for assessing gypsy moth densities and is the most frequently used method in forest environments. Generally, groups or clusters of three to five MKPs were used in Ontario to estimate average egg mass densities and forecast defoliation in specific areas. In urban or suburban environments, however, the 10m by 10m fixed-area plot may not be practicable when egg mass surveys are limited to street trees, and when access to private property and backyards is a constraint.

The urban environment is influenced by man-made objects and the distribution of gypsy moth egg masses is more clumped than in the forest (Fleischer et al. 1992). This probably reflects the distribution of preferred host species and the discontinuous nature of treed areas in urban environments. Sample methods for urban and suburban environments need to reflect this difference in egg mass distribution.

BioForest has developed the **'Modified MKP'**, a version of the original MKP that is more suited to the constraints of the urban and suburban environment. The Modified MKP uses five trees in close proximity to each other, which would be typical of the number of mature trees found in a 0.01ha fixed-area MKP plot. One tree, preferably a mature oak, is selected to be the plot center and the four next closest appropriate host trees are surveyed as one "plot".

Objectives

The objectives of this report are to provide the Town of Pelham with 1) an assessment of 2020 gypsy moth egg mass densities and convert these into forecasts of expected host damage and defoliation for 2021, 2) provide short- and long-term management options applying a philosophy of Integrated Pest Management (IPM), and 3) specific recommendations for management in the affected areas in 2021. All options will be considered and evaluated.

Assessment of Gypsy Moth Populations in Pelham

History of Gypsy Moth Monitoring and Management in Pelham

In 2009, the Town of Pelham partnered with Trees Unlimited and Zimmer Air to implement control measures when gypsy moth populations reached outbreak levels. Those measures were successful in reducing the population to acceptable levels.

In 2017, the Town began receiving concerns from citizens regarding the re-emergence of gypsy moths and in the spring of 2018 the Town conducted an aerial spray in Hillcrest Park (6.47 hectares). Throughout the summer of 2018, staff continued to receive reports and concerns regarding gypsy moth activity throughout the urban boundary. Trees Unlimited was again contracted to conduct egg mass surveys in early 2019, and 17 residential, park and cemetery properties were surveyed. Six of the properties surveyed had severe defoliation forecasts (Canboro Road at Concord Street, Hillcrest Park, Pancake Lane south to Beechnut Court, Oak Lane, Kunda Park, and Fonthill Cemetery). In response, the Town sprayed 161.2 hectares of public and private property within the urban boundary. Post spray surveys conducted in all treated areas indicated a significant reduction in caterpillars and tree defoliation (with some exceptions). In 2019, BioForest crew established a grid based surveying approach, aiming to obtain good coverage and fair representation through the areas of concern for the Town of Pelham. A total of 133 plots and a total of 665 trees were surveyed. In the spring of 2020, the Town sprayed approximately 120 hectares of public and private property within the urban boundaries of Fenwick and Fonthill, including a buffer along Canboro Road between both urban areas. Post spray defoliation surveys conducted indicated a significant reduction in tree defoliation.

2020 Gypsy Moth Egg Mass Surveys

The 2020 gypsy moth egg mass surveys were conducted from February 8th – 26th, 2021. All 2019 plots were resurveyed, and no new plots were added. For a detailed description of plot establishment and distribution, see the 2019 Gypsy Moth Monitoring Program report (BioForest 2020). Plot trees were surveyed by examining the trunk and scanning the entire tree, from base to crown, using binoculars. At least two opposite sides of each tree were surveyed. All egg masses observed on the tree, both old and new, were recorded.

The total number of egg masses on each tree were summed. In a separate count, egg masses that were easily distinguishable as old or new were tallied. As many intact egg masses within reach were measured and recorded as old or new, in order to obtain 2020 egg mass size data.

All gypsy moth egg mass data was entered and managed in a Microsoft Excel database. In addition, a point shapefile of all plots was created in ArcMap. All plot centers were drawn in ArcMap and categorized based on the adjusted number of egg masses present within that plot and the defoliation forecast for 2021. The predicted defoliation values were obtained using a USDA defoliation prediction model (Gansner et al. 1985) based on egg mass counts.

Gypsy moth egg mass age (new vs. old ratio): The proportion of new and old egg masses is an indicator of population vigor. A low proportion of old egg masses (i.e. less than 25% old) indicates a healthy, building population while a high proportion of old egg masses (i.e. more than 50% old) suggests a population in decline (Liebhold et al. 1994). Crews distinguished the age of all egg masses on each tree trunk and summed both old and new egg masses observed for each grid cell.

In 2020, approximately **67%** of egg masses surveyed by BioForest crews were new. This is nearly a 10% increase from 2019 (58%). The percentage of new egg masses, though higher than 2019, still represents a moderate proportion of new egg masses and may indicate that this population has passed its peak and is on the decline.

Gypsy moth egg mass size: The actual size of the egg mass is a vital statistic for assessing gypsy moth populations. Larger egg masses (more than 500 eggs per mass, greater than 30mm) indicate a healthy, increasing population whereas smaller egg masses are characteristic of a decreasing population (less than 20mm in size) (Nealis and Erb 1993). The number of eggs per mass can be estimated by measuring the length of egg masses in the field.



Figure 8. Large new egg mass measured by BioForest staff.

Within each property surveyed, BioForest crews measured as many egg masses as possible to provide more information on the infestation status.

In 2020, **30%** of all new egg masses measured were considered to be "large" (25mm or greater) (Figure 9). Comparing to 2019's baseline data of **84%**, this is a significant decrease in the percentage of large egg masses. The average size of new egg masses in 2020 was 25.0mm (n=723), significantly smaller than 2019 (33.5mm) (Figure 10), which potentially indicates that this population has passed its peak and is on the decline.



Figure 9. Comparing relative size distribution of new egg masses in Pelham from 2019 and 2020.



Figure 10. The average new egg mass size comparison 2019 to 2020.

Natural controls: BioForest crews observed a small number of caterpillars affected by *E. maimaiga* and NPV during the egg mass surveys. Egg mass predation (attacks) by birds and small mammals was evident at many locations throughout the survey, as well as evidence of parasitism. For example, small pinholes in egg masses indicated the presence of the tiny parasitic wasp, *Ooencyrtus kuvanae*. These predators and parasites will help to reduce gypsy moth populations.

2021 Gypsy Moth Defoliation Forecasts in Pelham

Gypsy moth forecast surveys using egg mass densities to predict defoliation are difficult to conduct in the urban environment. Most of the methodologies developed to date are suitable for continuous forested environments but are not easily adapted to the city where tree species and tree densities can vary considerably and where access is often limited. In 2021, BioForest crews conducted surveys in residential neighbourhoods on public trees, in a selection of

parks and along rural roads to assess egg mass densities and egg mass size. A 2021 forecast map was developed based on a calculation of the density of gypsy moth egg masses per hectare, the standard measure for temporal and spatial comparisons of populations and defoliation forecasts in forests.

Gypsy moth defoliation is difficult to predict with a high degree of probability. As noted earlier, populations are subject to a wide variety of biotic and abiotic factors that complicate the forecasting process. Some degree of defoliation is likely to occur in all areas where egg masses have been observed. However, the data collected in the 2020 surveys does indicate clear areas that are likely to be affected in 2021. It should be noted that the forecasts presented in this report are based **only** on observed egg masses occurring on public trees in residential neighbourhoods, within those parks and along those rural roads that were surveyed. Private property was not surveyed, except for a few front yard or private woodlot trees where necessary.

The 2020 survey focused on resurveying all plots from 2019. It is likely that other areas of the Town, including parks, natural areas and large private property that were not included in this survey are also harbouring gypsy moth populations, just not yet reported. Depending on the composition and geographic characteristics of these areas (i.e. species, age class, slopes, etc.), they could potentially be a breeding ground for gypsy moth populations next year and into the future.

Table 2 illustrates the egg mass density thresholds that were used for defoliation forecasts, and the anticipated management impacts associated with each level of defoliation. It is important to remember, however, that these are just estimations and that the actual level of defoliation and damage is dependent on a variety of other factors such as tree condition, previous years' defoliation, presence of other pests, etc.

Table 2. Gypsy moth defoliation predictions based on egg mass densities per hectare and associated management impacts.Thresholds derived from USDA defoliation prediction model developed by Gansner et al. 1985.

Egg Mass Density (Em/Ha)	Defoliation Forecast	Defoliation Forecast Range (%)	Management Impacts
0	Nil	0 to 5	None
1 to 1,250	Light	6 to 25	Up to 20% Defoliation
1,251 to 3,750	Moderate	26 to 65	Nuisance and Aesthetics; Noticeable Defoliation
3,751 to 5,000	Heavy	66 to 90	Wildlife and Recreation; Growth Loss
> 5,001	Severe	91 to 100	Tree Mortality

Results

Figure 11 and 12 provide an overview of the location of all plots surveyed in 2020 and the 2021 defoliation forecasts for each plot surveyed. Figure 13 and 14 show close up maps of Fonthill and Fenwick, the urban areas within Pelham.



Figure 11. All gypsy moth egg mass monitoring plots surveyed in February 2021, Town of Pelham.



Figure 12. All gypsy moth egg mass monitoring plots surveyed in February 2021 and all blocks sprayed in May-June 2020, Town of Pelham.



Figure 13. All gypsy moth egg mass monitoring plots surveyed in February 2021 and all blocks sprayed in May-June 2020, Fonthill, Town of Pelham.



Figure 14. All gypsy moth egg mass monitoring plots surveyed in February 2021 and all blocks sprayed in May-June 2020, Fenwick, Town of Pelham.

The 2021 defoliation forecast results for the entire area surveyed (Figure 12) show high gypsy moth egg mass densities, or moderate to severe defoliation forecasts (represented by yellow, orange, and red dots on the map), occur in 100 plots out of 133, or 75% of plots with the majority of those being severe (76 plots). Light defoliation (represented by the light green dots on the map) is forecasted in 28 out of 133 plots, or 21%, and no defoliation (represented by the dark green dots on the map) is forecasted in 5 plots, or 4%.

The most severe defoliation is anticipated to occur: south of Fenwick (Sumberland Road, Balfour Street, Cream Street, and Foss Road) and throughout Fenwick, with the exception of Sandra Drive, Sunset drive, and Cream Street between Welland Road and Canboro Road; between Fenwick and Fonthill (along Welland Road and Canboro Road, particularly in proximity to Effingham Street and Cream Street, and Pancake Lane); northwest of Fonthill (Effingham Street, Kilman Road, Moore Drive, Centre Street, Haist Street, and Metler Road), and; the northern border and mid-western area of Fonthill (Pancake Lane, Berkwood Place, Canboro Road, Haist Street).

Table 3. Summary of grids and plots surveyed in 2020 for the Town of Pelham Gypsy Moth Egg Mass Surveys. Asterisk (*)denotes plots located in the 2020 spray zones.

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	al Adjusted Total 2020 New Egg 3 Egg Masses (Em/Ha)		2021 Defoliation Forecast
Fenwick	73	73.3*	1159 Maple Street	1,028	433	43,284	Severe
	63	63.5	1050 Church Street	335	314	31,406	Severe
	64	64.1	663 Welland Road	336	299	29,867	Severe
	63	63.2	1090 Balfour Street	235	220	22,031	Severe
	63	63.4	999 Church Street	231	217	21,656	Severe
	74	74.2*	1284 Cream Street	378	151	15,120	Severe
	74	74.1*	612 Memorial Drive	359	144	14,360	Severe
	73	73.2*	746 Canboro Road	330	139	13,895	Severe
	74	74.4*	688 Canboro Road	212	85	8,480	Severe
	73	73.4*	726 Memorial Drive	157	66	6,611	Severe
	73	73.6	1229 Maple Street	121	51	5,095	Severe
	73	73.5*	1115 Garner Ave	120	51	5,053	Severe
	73	73.1*	90 Sandra Drive	55	23	2,316	Moderate
	74	74.3	1144 Cream Street	35	14	1,400	Moderate
	74	74.5*	1160 Sunset Drive	18	7	720	Light
Average						14,753	Severe
Fonthill	78	78.5*	38 Pancake Lane	515	235	23,486	Severe
	88	88.2*	Hillcrest Park	688	160	15,993	Severe
	99	99.3	6 Shorthill Place	221	151	15,137	Severe
	78	78.3*	22 Berkwood Place	286	130	13,042	Severe
	88	88.11	173 Canboro Road	545	127	12,669	Severe
	78	78.4*	1183 Haist Street	273	124	12,450	Severe
	99	99.2	23 Shorthill Place	154	105	10,548	Severe
	88	88.1*	15 Blackwood Cresent	439	102	10,205	Severe
	79	79.1*	43 Stella Street	177	74	7,428	Severe
	109	109.2	Across 1708 Pelham Street	75	57	5,657	Severe
	98	98.4*	16 Marlene Steward Drive	140	56	5,600	Severe

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	Adjusted Total Egg Masses	2020 New Egg Masses/Hectare (Em/Ha)	2021 Defoliation Forecast
	78	78.6*	72 Millbridge Cresent	111	51	5,062	Severe
	78	78.2*	18 Rolling Meadows Boulevard	103	47	4,697	Heavy
	99	99.1	5 Leslie Place	68	47	4,658	Heavy
	88	88.7*	10 Oak Lane	200	46	4,649	Heavy
	68	68.3	1081 Deborah Street	63	43	4,302	Heavy
	80	80.2	220 Merritt Road	43	43	4,300	Heavy
	88	88.12	7 Highland Avenue	180	42	4,184	Heavy
	68	68.5	88 Woodside Square	58	40	3,961	Heavy
	98	98.1	18 Peachtree Park	49	33	3,267	Moderate
	68	68.4	1 Arbor Circle	44	30	3,005	Moderate
	78	78.1*	55 Rolling Meadows Boulevard	60	27	2,736	Moderate
	78	78.8	13 Deer Park Cresent	57	26	2,599	Moderate
	100	100.2	11 Scottdale Court	25	25	2,500	Moderate
	69	69.3	27 Tanner Drive	33	23	2,250	Moderate
	79	79.4	11 FallingBrook Drive	46	19	1,930	Moderate
	88	88.6*	8 Brucewood Street	75	17	1,743	Moderate
	88	88.13	127 Daleview Cresent	42	10	976	Light
	99	99.4	Trail behind 10 Elm Avenue	13	9	890	Light
	89	89.1	1 Petronella Parkway	16	8	838	Light
	79	79.5	2 Pancake Lane	17	7	713	Light
	68	68.2	1077 Edward Avenue	10	7	683	Light
	88	88.3*	Hillcrest Park	27	6	628	Light
	68	68.6	Along trail behind Maureen Court	7	5	478	Light
	69	69.1	88 Woodside Square	7	5	477	Light
	79	79.2	57 Stella Street	11	5	462	Light
	88	88.8	42 Strathcona Drive	19	4	442	Light
	88	88.9	28 Concord Street	19	4	442	Light
	99	99.7	33 Park Lane	6	4	411	Light
	69	69.4	Behind 52 Woodside Square	6	4	409	Light
	89	89.2	14 Donahugh	7	4	367	Light
	88	88.4*	Hillcrest Park	13	3	302	Light
	100	100.1	1 Stonegate Place	3	3	300	Light
	99	99.5	Trail behind 1532 Pelham Avenue	4	3	274	Light
	88	88.5*	Hillcrest Park	11	3	256	Light
	79	79.6	90 Merritt Road	5	2	210	Light
	89	89.4	1 emmett Street	4	2	210	Light
	99	99.6	20 Pelham Town Square	2	1	137	Light
	68	68.1	1077 Edward Avenue	2	1	137	Light
	79	79.3	Across 1253 Pelham Street	2	1	84	Light
	89	89.3	1353 Pelham Street	1	1	52	Light
	69	69.2	15 Manson Drive	0	0	0	Nil

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	Adjusted Total Egg Masses (Em/Ha)		2021 Defoliation Forecast
	78	78.7	Bheind 19 Parkhill Road	0	0	0	Nil
	80	80.1	1304 Rice Road	0	0	0	Nil
Average						3,671	Moderate
Rural	44	44.1	617 Sumberland Road	1,168	1,168	116,800	Severe
	67	67.2	273 Welland Road	1,767	1,132	113,208	Severe
	117	117.1	1974 Effingham Street	1,287	1,026	102,619	Severe
	125	125.2	461 Kilman Road	1,184	908	90,764	Severe
	107	107.2	Across 307 Moore Drive	918	787	78,686	Severe
	77	77.1	1139 Effingham Street	941	704	70,438	Severe
	75	75.1*	546 Memorial Drive	1,601	691	69,115	Severe
	98	98.2	1636 Haist Street	991	661	66,067	Severe
	87	87.1*	250 Canboro Road	1,151	576	57,550	Severe
	115	115.3	1951 Centre Street	717	574	57,360	Severe
	118	118.2	1936 Haist Street	885	558	55,818	Severe
	118	118.1	Across 155 Metler Road	840	530	52,980	Severe
	75	75.3*	554 Canboro Road	1,210	522	52,236	Severe
	107	107.1	1770 Effingham Street	594	509	50,914	Severe
	43	43.4	595 Balfour Street	459	459	45,900	Severe
	126	126.1	350 Kilman Road	554	443	44,320	Severe
	98	98.3	1615 Haist Street	658	439	43,867	Severe
	77	77.2	1160 Effingham Street	577	432	43,191	Severe
	54	54.1	Across 586 Foss Road	464	425	42,533	Severe
	75	75.5	Across 1116 Centre Road	421	379	37,890	Severe
	77	77.3	230 Pancake Lane	499	374	37,353	Severe
	63	63.3	925 Balfour Street	394	369	36,938	Severe
	115	115.2	1934 Centre Street	454	363	36,320	Severe
	116	116.1	1951 Centre Street	404	323	32,320	Severe
	117	117.2	205 Metler Road	403	321	32,133	Severe
	54	54.2	770 Groen Road	348	319	31,900	Severe
	44	44.2	631 Sumberland Road	294	294	29,400	Severe
	34	34.1	Across 310 Cream Street	293	293	29,300	Severe
	53	53.3	910 Foss Road	281	281	28,100	Severe
	125	125.3	591 Kilman Road	353	271	27,061	Severe
	115	115.1	1951 Centre Street	333	266	26,640	Severe
	97	97.1	245 Hwy 20 West	664	266	26,560	Severe
	67	67.1	1005 Effingham Street	386	247	24,730	Severe
	43	43.5	625 Balfour Street	245	245	24,500	Severe
	107	107.3	315 Moore Drive	253	217	21,686	Severe
	104	104.2	1780 Cream Street	281	213	21,332	Severe
	53	53.1	764 Foss Road	188	188	18,800	Severe
	108	108.1	Across 1861 Haist Street	239	181	18,050	Severe

Location	Grid	Plot	Plot Centre Address	Total Adjusted Total Egg Egg Masses		2020 New Egg Masses/Hectare (Em/Ha)	2021 Defoliation Forecast
	109	109.1	1747 Pelham Street	234	234 177 17,650		Severe
	87	87.2	250 Hwy 20 West	441	176	17,640	Severe
	104	104.3	1732 Cream Street	228	173	17,308	Severe
	54	54.3	586 Foss Road	177	162	16,225	Severe
	106	106.1	345 Tice Road	396	158	15,840	Severe
	118	118.3	1925 Hansler Street	242	153	15,263	Severe
	43	43.2	716 Sumbler Road	146	146	14,600	Severe
	43	43.1	775 Sumbler Road	129	129	12,900	Severe
	106	106.2	345 Tice Road	150	128	12,750	Severe
	43	43.3	725 Balfour Street	92	92 9,200		Severe
	104	104.1	1895 Cream Street	121	92	9,186	Severe
	63	63.1	961 Balfour Street	63	59	5,906	Severe
	125	125.4	485 Kilman Road	76	58	5,826	Severe
	86	86.3*	353 Canboro Road	150	57	5,727	Severe
	105	105.1	1797 Centre Street	50	45	4,500	Heavy
	53	53.2	725 Balfour Street	44	44	4,400	Heavy
	33	33.2	Behind 701 Webber Road	36	36	3,600	Moderate
	86	86.1*	451 Canboro Road	85	32	3,245	Moderate
	83	83.1	740 Hwy 20 W	50	25	2,500	Moderate
	33	33.1	Behind 700 Chantler Road	21	21	2,100	Moderate
	75	75.4	1165 Centre Street	15	14	1,350	Moderate
	75	75.2*	491 Canboro Road	28	12	1,209	Light
	125	125.1	2180 Centre Street	11	8	843	Light
	94	94.1	653 Hwy 20 W	12	7	720	Light
	68	68.7	940 Haist Street	0	0	0	Nil
	86	86.2*	451 Canboro Road	0	0	0	Nil
Average						31,185	Severe

Fonthill

Public and private trees mostly along the mid-western area of Fonthill (Pancake Lane and Haist Street) and the along the northern border (Haist Street) will potentially experience severe levels of defoliation in 2021 (Figure 13). The average new egg mass size in Fonthill in 2020 was 26.8mm (n=97).

Fenwick

Public and private trees throughout the community of Fenwick will potentially experience severe levels of defoliation (Figure 14). There is not a significant amount of forested area throughout Fenwick, but new egg masses were observed on a wide variety of species and appeared on both large diameter and small diameter trees on both public and private property. Given the density of egg masses, combined with the severe defoliation that was forecasted for 2020, trees will possibly experience a decline in 2021 if they are defoliated for another consecutive year. The average new egg mass size for Fenwick in 2020 was 32.3mm (n=40).

Rural Areas

Rural, forested property south of Fenwick, between Fenwick and Fonthill, as well as northwest of Fonthill are also at risk of severe defoliation in 2021. Surveys in these areas were conducted primarily along roadways along the perimeter of these properties, in order to not trespass on private land (unless homeowners were on-site and gave permission), therefore the forecasts are representative of edge populations, which can be higher than more interior forests (Bellinger et al 1989). It is possible that these perimeter plots are an over-representation of the counts throughout the property, however the counts are so extreme (ranging from 0 all the way up to 116,800 egg masses per hectare) that it is very possible that interior counts are still high. The average new egg mass size for the rural areas in 2020 was 24.5mm (n=606).

Weather

Cool, wet conditions tend to favour the build-up of both NPV and *E. maimaiga*, and therefore, this is usually associated with a decrease in gypsy moth populations in the following year. Conversely, hot, dry conditions typically suppress the build-up of both NPV and *E. maimaiga*. Environment Canada weather data from the Welland-Pelham area indicate that in 2020, spring and summer temperatures were above normal in March and June, and below normal in April and May (Figure 15), and precipitation was above normal in March and April and below normal in May and June (Figure 16). In May and June 2020, the total precipitation amount was 66% of the normal total. The lower-than-normal precipitation amounts would not be favourable to NPV and *E. maimaiga*, therefore, it is likely that 2020 larval mortality due to natural pathogens was low. This is likely a contributing factor to the currently high levels of gypsy moth seen throughout the Town, and the province in general. As of December 2020, winter temperatures have also been higher than normal, therefore overwintering larval survivorship is expected to be good. A few days of -30°C temperatures would have a significant effect on those larvae; however, this is very rare in southern Ontario. A late frost (post-larval emergence) could also reduce the populations but it is impossible to predict the likelihood of this occurring.

Extreme larval populations, as seen throughout Pelham, are not sustainable. In combination with the right environmental conditions, such high host presence allows NPV to proliferate and spread more effectively throughout the gypsy moth population. This could potentially lead to a population crash in 2022 if conditions are right. But again, there is no way to predict the likelihood of this happening at this point in time.



Figure 15. Twenty-nine-year historical temperature normals (1981-2010) and 2020 monthly temperature averages for Town of Pelham area.



Figure 16. Twenty-nine-year historical precipitation normals (1981-2010) and 2020 monthly totals for the Town of Pelham area.

Conclusions and Recommendations for 2021

The objectives of this report are to provide the Town of Pelham with 1) an assessment of 2020 gypsy moth egg mass densities and convert these into forecasts of expected host damage and defoliation for 2021, 2) provide short- and long-term management options applying a philosophy of Integrated Pest Management (IPM), and 3) specific recommendations for management in the affected areas in 2021.

Based on the gypsy moth data collected during February 2021, the Town has potential to experience severe levels of defoliation throughout Fenwick, the mid-western and northern areas of Fonthill as well as forested areas south of Fenwick, northwest of Fonthill and in between Fenwick and Fonthill. It is possible the defoliation will extend beyond the areas surveyed, especially north of Kilman Road west of Effingham Street throughout these continuous heavily forested areas of the Natural Heritage Environmental Conservation areas.

At a high-level comparison, 2021 defoliation forecasts appear relatively unchanged from the 2020 forecasts. However, a closer look into the data reveals that more than 50% of plots recorded a decline in egg mass densities between 2019 and 2020 (Table 3).

In the rural area, **38%** of plots (24 out of 64) saw a decrease in egg mass density. Rural plots 53.3, 75.1, 75.3, 67.2, and 87.1 saw the greatest decline in egg mass density, with an average of 60% decline between these plots. Additionally, average egg mass size decreased between 2019 (30.9mm) and 2020 (24.5mm).

In Fenwick, **90%** of plots (14 out of 15) saw a decrease in egg mass density. Plots 73.4 and 73.2 saw the greatest declines within the Fenwick urban boundary, with 2020 egg mass densities approximately 87% lower than what was calculated in 2019. Both plots were located within the 2020 spray zones. Average egg mass size in Fenwick stayed relatively the same between 2019 (32.3mm) and 2020 (32.2mm).

In Fonthill, **57%** of plots (31 of 54) saw a decrease in egg mass density. Plots 78.4, 78.5, and 88.2 saw the greatest decline within the Fonthill urban boundary, with 2020 egg mass densities approximately 70% lower than what was calculated in 2020. These three plots are also located in the 2020 spray zones. Average egg mass sizes in Fonthill had the largest decrease from 2019 (36.5mm) to 2020 (26.8mm), a decline of nearly 10mm.

The overall average egg mass density for the Town of Pelham decreased by a quarter from 2019 (24,103 em/ha) to 2020 (18,161 em/ha), roughly 6,000 egg masses per hectare. This data potentially shows that gypsy moth populations in the area have passed their peak and is on the decline.

A moderate proportion (**67%**) of gypsy moth egg masses observed in February 2021 were new, which was slightly larger then 2019 (58%), but remain below levels for what is considered a healthy population (75%). Of these new egg masses, a small proportion (**30%**) were considered to be large, a significant drop from 2019 (84%). This provides further evidence that populations are potentially passing their peak and are on the decline.

Approximately 120 hectares were sprayed in the spring of 2020, mainly focusing on municipal properties within the urban boundaries of Fenwick and Fonthill, including along Canboro Road between both urban areas. Of the plots located within the spray zones **100%** (31 out of 31) saw a decline in egg mass density. As part of the spray program, trees within and outside of the spray blocks were evaluated for defoliation approximately one month, post-spray. Of the 100 trees that were evaluated for defoliation within the spray blocks, a significant majority of branches (84.3%) and trees (94%) had less than 5% defoliation. None of the trees had more than 25% defoliation, and only 1% of branches evaluated had more than 25% defoliation. For comparison purposes, seven sites that were not sprayed (but were forecasted to experience severe defoliation by the 2019 egg mass surveys) were also evaluated for defoliation. The majority of branches (57%) and trees (51.4) exceeded 50% defoliation.

The results of the defoliation surveys confirm that the 2020 aerial spray program was successful at protecting trees from severe defoliation within the spray blocks, and some residual effects from the spray have resulted in lower egg mass densities within the spray blocks. Since gypsy moth is such an established pest in the southern Ontario landscape, it is not possible to eradicate it from the area, nor is this the goal of Integrated Pest Management (IPM). However, the 2020 aerial spray program does appear to have suppressed populations within the spray blocks with some degree of efficacy. The main objective of gypsy moth management is to protect overall tree/forest health by mitigating the negative effects of multiple consecutive years of defoliation, and ultimately help trees to survive throughout the outbreak. The 2020 spray program was effective at achieving this objective within the spray zones, however, given the population levels seen in Pelham in combination with the abundant host availability, it is unsurprising that many plots throughout the Town have severe defoliation forecasts again for 2021. Many factors – including the age of the outbreak in the Niagara Region, declines seen in egg mass densities and egg mass sizes between 2019 and 2020, and evidence of egg parasitism – suggest that Pelham's gypsy moth population may have passed it peak and may be on the decline. However, it has not yet collapsed completely, and the 2020 survey data indicates that areas throughout the Town will potentially experience severe levels of defoliation in 2021.

Recommendations

The Town has three management options for 2021 which are outlined below: 1) "Do Nothing", where the Town does not intervene and allows the gypsy moth population to run its natural course, 2) targeted treatment of areas within urban boundaries of Fonthill and Fenwick, with the option of adding the forested areas directly adjacent to the urban boundaries, or 3) large-scale treatment including areas within urban boundaries of Fonthill and Fenwick as well as rural regions of the Town.

Option 1: The Town takes no action on public trees and executes a strong communication and engagement program throughout the communities of Fenwick and Fonthill, as well as rural landowners. Landowners should be educated on what their treatment options are (ground treatments with Btk or TreeAzin[®], manual egg mass removal, or burlap banding) as well as the pros and cons associated with each option, focusing on cost and efficacy. Communication should be executed through a variety of avenues in order to reach as many people as possible. A combination of public open houses, direct mailings/letter drop-off/door hanger, website and social media (Twitter, Facebook, Instagram) will reach a wide audience. Open houses should be hosted on multiple evenings in early spring (March/April), and distributed

materials should include a gypsy moth fact sheet and options summary, burlap band and twine, as well as information on what the Town is doing. This option requires much less time and fewer resources than the subsequent options, however with a population as severe as this it is very unlikely that management on private property alone would control the current outbreak. As a result, varying levels of defoliation will still occur and there is the risk that the gypsy moth population will persist for another year, thus prolonging the cost of management. Additionally, since this is likely the second or third year of high population levels, some decline in tree health may start to be observed such as branch dieback or reduced vigor, and tree mortality in some cases. Finally, given the political context of the gypsy moth issue over the past few years, this option may not be acceptable.

The consequences associated with inaction may result in overall tree health decline and further expenses required due to hazard tree removal, service requests, pruning, etc. as a result of a persisting and severe gypsy moth population and all of the impacts described under the section "Potential Impacts of No Intervention". The upside of this approach is the reduced immediate cost to the Town in 2020.

Option 2: The Town implements a targeted aerial spray program within the urban boundaries of Fonthill and Fenwick, supported by a strong public outreach and communications program as described in Option 1, targeted towards private landowners with moderate-to-severe defoliation forecast plots located on their property. An aerial spray program including both public and private property would be the most effective method of controlling the gypsy moth population and reducing the risk to tree health in Fonthill and Fenwick. The downside of such a program includes significant staff time and upfront costs associated with organization, communication and implementation. The upside would be the immediate and dramatic reduction in gypsy moth populations, reduced number of resident complaints, and preservation of tree health. This approach may be cost-prohibitive if Pelham is the sole municipality undertaking an aerial spray program. However, there may be the opportunity to work with other southern Ontario municipalities who are also interested in a spray program to achieve some cost-effectiveness through cooperation. Private landowners located outside of the spray blocks, especially those with moderate-to-severe forecast plots on their property, should be communicated with in a similar manner as described below in Option 1. They should be encouraged to take action on their property using one of the management options available to the public.

High value trees (i.e. significant and/or mature trees) that have high 2020 egg mass counts, but do not get included in the spray blocks, should be considered as candidates for alternative control methods such as ground treatments with Btk or TreeAzin[®], manual egg mass removal, or burlap banding. These measures will help to mitigate the effects of gypsy moth defoliation on these individual trees.

This option could limit the spray to public property, however, due to the landscape nature of this pest it is possible that the sprayed public areas could be re-infested by populations in neighbouring untreated private areas. This option could also include the treatment of forested areas directly adjacent to the urban boundaries in order to provide more comprehensive and effective landscape control and avoid re-infestation from properties just on the other side of the geographical urban/rural boundary.

Option 3: The Town implements a large-scale, extensive aerial spray program within the urban boundaries of Fonthill and Fenwick, as well as throughout rural areas of Pelham that have high defoliation forecasts. The downside of such a program include all those mentioned in Option 2, though the cost increases due to the inclusion of rural areas.

Regardless of the option selected, timely and comprehensive communication with the public about the Town's plan and the expected role of private landowners is key to a successful program. If left untreated, the current gypsy moth outbreak has the potential to impact a significant component of Pelham's urban forest. Therefore, given the results from the 2020 egg mass surveys in combination with the historical gypsy moth activity in the area, the Town should strongly consider implementing a gypsy moth-focused tree protection program in 2021, with the goal of reducing unacceptable levels of defoliation and mitigating the overall impact to the health and sustainability of Pelham's urban forest.

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Appendix – A

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	Adjusted Total Egg Masses	2020 Egg Masses/Hectare (Em/Ha)	2021 Defoliation Forecast	2019 Egg Masses/Hectare (Em/Ha)	Difference from 2019- 2020
Fenwick	73	73.3*	1159 Maple Street	1,028	433	43,284	Severe	93,450	-50,166
	63	63.5	1050 Church Street	335	314	31,406	Severe	58,154	-26,748
	64	64.1	663 Welland Road	336	299	29,867	Severe	39,914	-10,048
	63	63.2	1090 Balfour Street	235	220	22,031	Severe	24,674	-2,643
	63	63.4	999 Church Street	231	217	21,656	Severe	23,843	-2,187
	74	74.2*	1284 Cream Street	378	151	15,120	Severe	38,838	-23,718
	74	74.1*	612 Memorial Drive	359	144	14,360	Severe	62,292	-47,932
	73	73.2*	746 Canboro Road	330	139	13,895	Severe	78,525	-64,630
	74	74.4*	688 Canboro Road	212	85	8,480	Severe	32,111	-23,631
	73	73.4*	726 Memorial Drive	157	66	6,611	Severe	74,175	-67,564
	73	73.6	1229 Maple Street	121	51	5,095	Severe	1,875	+3,220
	73	73.5*	1115 Garner Ave	120	51	5,053	Severe	47,775	-42,722
	73	73.1*	90 Sandra Drive	55	23	2,316	Moderate	52,350	-50,034
	74	74.3	1144 Cream Street	35	14	1,400	Moderate	1,696	-296
	74	74.5*	1160 Sunset Drive	18	7	720	Light	12,634	-11,914
Average						14,753	Severe	42,820	-28,067
Fonthill	78	78.5*	38 Pancake Lane	515	235	23,486	Severe	78,992	-55,506
	88	88.2*	Hillcrest Park	688	160	15,993	Severe	46,832	-30,838
	99	99.3	6 Shorthill Place	221	151	15,137	Severe	10,739	+4,398
	78	78.3*	22 Berkwood Place	286	130	13,042	Severe	35,332	-22,289
	88	88.11	173 Canboro Road	545	127	12,669	Severe	35,461	-22,792
	78	78.4*	1183 Haist Street	273	124	12,450	Severe	42,871	-30,422
	99	99.2	23 Shorthill Place	154	105	10,548	Severe	6,774	+3,774
	88	88.1*	15 Blackwood Cresent	439	102	10,205	Severe	26,786	-16,581
	79	79.1*	43 Stella Street	177	74	7,428	Severe	11,530	-4,103
	109	109.2	Across 1708 Pelham Street	75	57	5,657	Severe	2,750	+2,907
	98	98.4*	16 Marlene Steward Drive	140	56	5,600	Severe	25,200	-19,600
	78	78.6*	72 Millbridge Cresent	111	51	5,062	Severe	15,167	-10,105
	78	78.2*	18 Rolling Meadows Boulevard	103	47	4,697	Heavy	19,112	-14,415
	99	99.1	5 Leslie Place	68	47	4,658	Heavy	1,817	+2,840
	88	88.7*	10 Oak Lane	200	46	4,649	Heavy	10,438	-5,789
	68	68.3	1081 Deborah Street	63	43	4,302	Heavy	3,335	+967
	80	80.2	220 Merritt Road	43	43	4,300	Heavy	300	+4,000
	88	88.12	7 Highland Avenue	180	42	4,184	Heavy	11,475	-7,290
	68	68.5	88 Woodside Square	58	40	3,961	Heavy	2,274	+1,687
	98	98.1	18 Peachtree Park	49	33	3,267	Moderate	6,300	-3,033
	68	68.4	1 Arbor Circle	44	30	3,005	Moderate	2,198	+806

Table 4. Comparison of egg mass density from 2019 to 2020. Asterix (*) indicates plots located in 2020 spray zones

Town of Pelham: 2020 Gypsy Moth Monitoring Program Final Report

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	Adjusted Total Egg Masses	2020 Egg Masses/Hectare (Em/Ha)	2021 Defoliation Forecast	2019 Egg Masses/Hectare (Em/Ha)	Difference from 2019- 2020
	78	78.1*	55 Rolling Meadows Boulevard	60	27	2,736	Moderate	24,197	-21,461
	78	78.8	13 Deer Park Cresent	57	26	2,599	Moderate	3,945	-1346
	100	100.2	11 Scottdale Court	25	25	2,500	Moderate	267	+2,233
	69	69.3	27 Tanner Drive	33	23	2,250	Moderate	4,860	-2,610
	79	79.4	11 FallingBrook Drive	46	19	1,930	Moderate	1,526	+404
	88	88.6*	8 Brucewood Street	75	17	1,743	Moderate	4,286	-2,542
	88	88.13	127 Daleview Cresent	42	10	976	Light	1,141	-164
	99	99.4	Trail behind 10 Elm Avenue	13	9	890	Light	0	+890
	89	89.1	1 Petronella Parkway	16	8	838	Light	509	-329
	79	79.5	2 Pancake Lane	17	7	713	Light	113	+600
	68	68.2	1077 Edward Avenue	10	7	683	Light	985	-303
	88	88.3*	Hillcrest Park	27	6	628	Light	1,175	-547
	68	68.6	Along trail behind Maureen Court	7	5	478	Light	76	+402
	69	69.1	88 Woodside Square	7	5	477	Light	0	+477
	79	79.2	57 Stella Street	11	5	462	Light	0	+462
	88	88.8	42 Strathcona Drive	19	4	442	Light	622	-180
	88	88.9	28 Concord Street	19	4	442	Light	1,244	-803
	99	99.7	33 Park Lane	6	4	411	Light	0	+411
	69	69.4	Behind 52 Woodside Square	6	4	409	Light	810	-401
	89	89.2	14 Donahugh	7	4	367	Light	318	+48
	88	88.4*	Hillcrest Park	13	3	302	Light	2,869	-2,566
	100	100.1	1 Stonegate Place	3	3	300	Light	67	+233
	99	99.5	Trail behind 1532 Pelham Avenue	4	3	274	Light	0	+274
	88	88.5*	Hillcrest Park	11	3	256	Light	449	-194
	79	79.6	90 Merritt Road	5	2	210	Light	0	+210
	89	89.4	1 emmett Street	4	2	210	Light	191	+19
	99	99.6	20 Pelham Town Square	2	1	137	Light	83	+54
	68	68.1	1077 Edward Avenue	2	1	137	Light	227	-91
	79	79.3	Across 1253 Pelham Street	2	1	84	Light	0	+84
	89	89.3	1353 Pelham Street	1	1	52	Light	318	-266
	69	69.2	15 Manson Drive	0	0	0	Nil	0	0
	78	78.7	Bheind 19 Parkhill Road	0	0	0	Nil	526	-526
	80	80.1	1304 Rice Road	0	0	0	Nil	0	0
Average						3,671	Moderate	8,268	-4,597
Rural	44	44.1	617 Sumberland Road	1,168	1,168	116,800	Severe	83,000	+33,800
	67	67.2	273 Welland Road	1,767	1,132	113,208	Severe	184,342	-71,134
	117	117.1	1974 Effingham Street	1,287	1,026	102,619	Severe	52,465	+50,153
	125	125.2	461 Kilman Road	1,184	908	90,764	Severe	33,577	+57,187
	107	107.2	Across 307 Moore Drive	918	787	78,686	Severe	65,726	+12,960
	77	77.1	1139 Effingham Street	941	704	70,438	Severe	85,237	-14,798
	75	75.1*	546 Memorial Drive	1,601	691	69,115	Severe	213,120	-144,005

Town of Pelham: 2020 Gypsy Moth Monitoring Program Final Report

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	Adjusted Total Egg Masses	2020 Egg Masses/Hectare (Em/Ha)	2021 Defoliation Forecast	2019 Egg Masses/Hectare (Em/Ha)	Difference from 2019- 2020
	98	98.2	1636 Haist Street	991	661	66,067	Severe	25,855	+40,212
	87	87.1*	250 Canboro Road	1,151	576	57,550	Severe	124,912	-67,362
	115	115.3	1951 Centre Street	717	574	57,360	Severe	28,920	+28,440
	118	118.2	1936 Haist Street	885	558	55,818	Severe	61,742	-5,924
	118	118.1	Across 155 Metler Road	840	530	52,980	Severe	82,129	-29,149
	75	75.3*	554 Canboro Road	1,210	522	52,236	Severe	136,320	-84,084
	107	107.1	1770 Effingham Street	594	509	50,914	Severe	9,078	+41,837
	43	43.4	595 Balfour Street	459	459	45,900	Severe	54,900	-9,000
	126	126.1	350 Kilman Road	554	443	44,320	Severe	30,100	+14,220
	98	98.3	1615 Haist Street	658	439	43,867	Severe	40,745	+3,121
	77	77.2	1160 Effingham Street	577	432	43,191	Severe	16,770	+26,421
	54	54.1	Across 586 Foss Road	464	425	42,533	Severe	9,600	+32,933
	75	75.5	Across 1116 Centre Road	421	379	37,890	Severe	8,080	+29,810
	77	77.3	230 Pancake Lane	499	374	37,353	Severe	20,713	+16,639
	63	63.3	925 Balfour Street	394	369	36,938	Severe	34,062	+2,876
	115	115.2	1934 Centre Street	454	363	36,320	Severe	40,380	-4,060
	116	116.1	1951 Centre Street	404	323	32,320	Severe	15,150	+17,170
	117	117.2	205 Metler Road	403	321	32,133	Severe	19,826	+12,307
	54	54.2	770 Groen Road	348	319	31,900	Severe	11,500	+20,400
	44	44.2	631 Sumberland Road	294	294	29,400	Severe	22,900	+6,500
	34	34.1	Across 310 Cream Street	293	293	29,300	Severe	1,600	+27,700
	53	53.3	910 Foss Road	281	281	28,100	Severe	117,100	-89,000
	125	125.3	591 Kilman Road	353	271	27,061	Severe	3,664	+23,397
	115	115.1	1951 Centre Street	333	266	26,640	Severe	31,500	-4,860
	97	97.1	245 Hwy 20 West	664	266	26,560	Severe	33,702	-7,142
	67	67.1	1005 Effingham Street	386	247	24,730	Severe	22,263	+2,467
	43	43.5	625 Balfour Street	245	245	24,500	Severe	60,525	-36,025
	107	107.3	315 Moore Drive	253	217	21,686	Severe	9,852	+11,834
	104	104.2	1780 Cream Street	281	213	21,332	Severe	12,347	+8,984
	53	53.1	764 Foss Road	188	188	18,800	Severe	15,100	+3,700
	108	108.1	Across 1861 Haist Street	239	181	18,050	Severe	7,850	+10,200
	109	109.1	1747 Pelham Street	234	177	17,650	Severe	5,463	+12,187
	87	87.2	250 Hwy 20 West	441	176	17,640	Severe	59,126	-41,486
	104	104.3	1732 Cream Street	228	173	17,308	Severe	3,726	+13,582
	54	54.3	586 Foss Road	177	162	16,225	Severe	3,900	+12,325
	106	106.1	345 Tice Road	396	158	15,840	Severe	27,072	-11,232
	118	118.3	1925 Hansler Street	242	153	15,263	Severe	14,774	+489
	43	43.2	716 Sumbler Road	146	146	14,600	Severe	45,525	-30,925
	43	43.1	775 Sumbler Road	129	129	12,900	Severe	9,675	+3,225
	106	106.2	345 Tice Road	150	128	12,750	Severe	2,017	+10,733
	43	43.3	725 Balfour Street	92	92	9,200	Severe	38,025	-28,825

Town of Pelham: 2020 Gypsy Moth Monitoring Program Final Report

Location	Grid	Plot	Plot Centre Address	Total Egg Masses	Adjusted Total Egg Masses	2020 Egg Masses/Hectare (Em/Ha)	2021 Defoliation Forecast	2019 Egg Masses/Hectare (Em/Ha)	Difference from 2019- 2020
	104	104.1	1895 Cream Street	121	92	9,186	Severe	2,211	+6,975
	63	63.1	961 Balfour Street	63	59	5,906	Severe	31,486	-25,580
	125	125.4	485 Kilman Road	76	58	5,826	Severe	1,438	+4,388
	86	86.3*	353 Canboro Road	150	57	5,727	Severe	17,963	-12,236
	105	105.1	1797 Centre Street	50	45	4,500	Heavy	1,500	+3,000
	53	53.2	725 Balfour Street	44	44	4,400	Heavy	1,000	+3,400
	33	33.2	Behind 701 Webber Road	36	36	3,600	Moderate	700	+2,900
	86	86.1*	451 Canboro Road	85	32	3,245	Moderate	11,398	-8,153
	83	83.1	740 Hwy 20 W	50	25	2,500	Moderate	4,107	-1,607
	33	33.1	Behind 700 Chantler Road	21	21	2,100	Moderate	0	+2,100
	75	75.4	1165 Centre Street	15	14	1,350	Moderate	240	+1,110
	75	75.2*	491 Canboro Road	28	12	1,209	Light	5,440	-4,231
	125	125.1	2180 Centre Street	11	8	843	Light	325	+519
	94	94.1	653 Hwy 20 W	12	7	720	Light	2,314	-1,594
	68	68.7	940 Haist Street	0	0	0	Nil	0	0
	86	86.2*	451 Canboro Road	0	0	0	Nil	835	-835
Average						31,185	Severe	33,077	-1,892



Subject: Update on Pedestrian Safety When Crossing Pelham Street at Church Hill

Recommendation:

BE IT RESOLVED THAT Council receive Report #2021-0100-Public Works entitled "Update on Pedestrian Safety When Crossing Pelham Street at Church Hill" for information purposes

Background:

The pedestrian crossing signal at Church Hill and Pelham Street continues to be a safety concern, along with the ones at Pelham Street and Pancake Lane/John Street and Pelham Street and Bacon Lane/Spruceside Crescent, as no solution has yet been approved for implementation.

In 2019 Associated Engineering completed a review of the operational effectiveness at all three (3) intersections on Pelham Street that are currently controlled by Intersection Pedestrian Signals; Pelham Street and Church Hill; Pelham Street and Pancake Lane/John Street; and Pelham Street and Bacon Lane/Spruceside Crescent. The focus of the review was to determine whether the intersection pedestrian signals are warranted and whether there are any operations or safety issues associated with them.

2019 Associated Engineering's Review of Intersection Pedestrian Signals

The 2019 review completed by AE resulted in the following findings:

The three intersection pedestrian signals on Pelham Street are not currently warranted based on November 2018 traffic counts. This determination is a result of the gap analysis completed which indicates that there is a sufficient amount of available safe gaps for pedestrians to cross the roadway without the benefit of the intersection pedestrian signals.

Pelham Street an Church Hill Pedestrian Signal

(1) the Pelham Street and Church Hill pedestrian crossing should have a parking restriction, on both sides of Pelham Street, within 30 metres of the

crossing including the installation of the corresponding parking prohibition signs.

(2) the three intersection pedestrian signals should have the existing crosswalk markings removed and replaced with markings specified in Section 6.2.4.4 of Book 15, "Crosswalk lines must be solid white parallel retro reflective lines 10 cm to 20 cm wide, extending entirely across the pavement"; and

(3) Install Ra-9a signs on the south side of the intersection as specified in Table 9 of Book 15, "Do Not Cross Here Sign" (Ra-9a).

Pelham Street and Pancake Lane/John Street Pedestrian Signal

(1) Consider installing parking prohibition signs on both sides of Pelham Street within 30 metres of the crossing.

(2) Remove the existing crosswalk markings and replace with markings specified in Section 6.2.4.5, Figure 12 of Book 15 (ladder markings for increased awareness); and

(3) Install Ra-9a signs on the north side of the intersection as specified in Table 9 of Book 15, "Do Not Cross Here Sign" (Ra-9a).

Pelham Street and Bacon Lane/Spruceside Crescent Pedestrian Signal

(1) Consider installing parking prohibition signs on both sides of Pelham Street within 30 metres of the crossing.

(2) Remove the existing crosswalk markings and replace with markings specified in Section 6.2.4.5, Figure 12 of Book 15 (ladder markings for increased awareness); and

(3) Install Ra-9a signs on the north side of the intersection as specified in Table 9 of Book 15, "Do Not Cross Here Sign" (Ra-9a).

In 2018, Trans-Plan Transportation Engineering was engaged to study the intersection, its pedestrian and vehicle traffic, sightlines, past reports, and to

make recommendations on improving safety, especially related to Council suggestions of a 3-way stop at Church Hill and Pelham Street. The results of the safety study included the following observations and recommendations:

1. The Trans-Plan review noted previous important recommendations from a former Fonthill Traffic Study (R&R, 2009), as follows:

Historical and recent spot speed surveys suggested that drivers on these roads generally disregard speed limits, endangering pedestrians. The study noted that installing traffic signals would help to slow traffic and likely reduce the probability and severity of collisions involving right of way conflicts, as well as improving safety conditions for pedestrians. Future modifications for the existing 45 on-street parking spaces on Pelham Street should be reviewed and analyzed_in order improve sightlines at the cross streets of Pelham Town Square, Church Hill, and Regional Road 20.

2. The Trans-Plan review also noted observations from a 2017 intersection review (Rusit & Associates, 2017), as follows:

A signalized intersection at Church Hill would be below the minimum separation distance to the northerly existing signalized intersection at Highway 20. The intersection spacing is 179 m, which is below the minimum spacing requirement of 215 m for signalized intersections in urban settings. The findings also indicate that installing new traffic signals at the intersection would improve left turn movements from Pelham Town Square to Pelham Road. It was also noted from field observations that southbound vehicle queues on Pelham Road extend approximately 150m from the Church Hill intersection to the north; thereby impacting the intersection at Hwy 20.

3. 91 pedestrians crossed Pelham Street in an 8-hour test duration. Due to the comparatively higher number of retail and commercial uses located to the north of the intersection, compared to the south of the intersection, the pedestrian crossing volumes at or near the north leg are generally higher. For the full 8-hour period, excluding midblock crossings, 27 pedestrians complied with the PPS and 13 pedestrians did not, resulting in a compliance of 67.5 percent.

4. During the study, two near-misses were observed by the consultant as follows: (1) a woman crossing the street with an infant at the PPS (during

walk phase) was almost struck by a vehicle exiting from an on-street parking space located within the intersection, and (2) a senior crossing the street at the PPS (during walk phase) was almost struck by a southbound vehicle making U-turn within the intersection.

5. The on-street parking causes sightline issues for vehicular and pedestrian movements within the intersection. There is adequate visibility for eastbound traffic on Churchill approaching the intersection for vehicles travelling northbound and southbound along Pelham Street; however, when vehicles are parked along the west side of Pelham Street, the visibility becomes limited.

6. Regarding vehicle queuing, all vehicles tend to clear the intersection after each cycle (of the PPS). No vehicles were observed to experience lengthy delays at Church Hill when making eastbound left and right turns at the intersection. During afternoon hours, southbound vehicles stacked up to 63m while the PPS was activated. This stacking is anticipated to be 35m should a 3-way stop be implemented under future conditions, and 33m for a signalized intersection.

7. There has only been one collision reported within the past three years at the Pelham Street and Church Hill intersection. Therefore, no further vehicle collision analyses were conducted.

8. Both methods of intersection control (3-way stop or traffic signals) would operate acceptably (under current or future conditions); however, from the warrant analysis (using OTM guidelines), neither control type is warranted due to low pedestrian crossing volumes and due to comparatively low volumes of traffic entering the intersection from Church Hill.

9. Based on the investigation, and the unwarranted traffic signal or 3-way stop conditions and guidance from Book 5 of the Ontario Traffic Manual the consultant recommended the following:

(1) Remove on-street public parking within a minimum of 10m from the intersection (and within the intersection), and

(2) Introduce a raised crosswalk to enhance the PPS crossing location and

improve pedestrian safety.

Analysis:

Although staff recognizes that all recommendations made by the consultants would help improve safety at the signalized pedestrian signals, staff is recommending to leave the pedestrian crossings in place seeing that they are operating and functioning satisfactorily, and that the Town has already incurred the capital cost for the installation.

Staff also recommends that the minor safety improvements, identified in the consultant's reports, be implemented. These improvements include: (1) Additional Signage; and (2) Pavement Markings in accordance with Book 15. The costs for the above minor modifications can be absorbed in the 2021 Operating Budget.

In addition, Staff is recommending further consideration towards the installation of raised crosswalks and implementing parking prohibitions to improve sightlines and driver awareness of pedestrian movements. These improvements will require Council approval and the costs would need to be included in the 2022 Capital Budget request.

Council may choose to direct Staff to undertake any safety measures they feel would be more appropriate. However, based on the Consultants analysis, the minimum recommended course of action is to improve Safety Related Signage and Pavement Markings at the crossings.

The reconstruction of Pelham Street, between Port Robinson Road and Pancake Lane, includes the area of the Signalized Pedestrian Crossing at the intersection of Pelham Street and Pancake Lane. There is currently no provision made for changing or updating this crossing in the proposed works except for the minor safety improvements recommended as part of the Associated Engineering report. These improvements will be included in the design for Pelham Street.

In addition, the signalized pedestrian crossings at Bacon Lane / Spruceside and Pelham Street will be reviewed during the detailed design assignment for Phase 3 and 4 of the Pelham Street Reconstruction project. Niagara Region has also requested the Town's permission to timing changes to the Pelham Street and Church Hill Intersection Pedestrian Signal (IPS). Currently when a pedestrian pushes the button, there is a 10 second delay before the signal changes to yellow for the traffic on Pelham. This gives the driver some reaction time in order to stop at the signal or proceed through if he is too close to the crossing to stop safely. This has been in place since this signal went in in 2013. The Region is considering dropping this down to a 5 second delay, which has been done at a couple of other IPS's in the Region without any problems. The purpose of this reduction in timing is to reduce the sequence change times and mitigate the acceleration by drivers to get through the signal before they change to red.

In consultation with the Region's transportation safety staff, converting the signals to the newer 'PXO' (pedestrian crossover) style is possible. The PXO style involves rapid flashing lights mounted on the poles, not the overhead arms, visible from all directions. The crossover also requires specific signs and pavement markings. Legislation about these crossovers changed in January 2016, and resulted in the improved crossing design, seen most recently in West Lincoln. This would likely improve drivers being able to see the activated lights, at a reasonably low cost, since the lights would be mounted on both the east and west poles, rather than on the overhead arms.

Financial Considerations:

The approximate costs for installation of the raised crosswalk is roughly estimated at \$40,000, and for removal of the on-street parking stalls is \$7,500.

New PXO installations are estimated at \$20,000, but since hydro, poles, arms and other hardware are already present at this intersection, some of this cost could be reduced. The Region previously secured a small amount of funding for driver education regarding the new PXOs, which may also be beneficial in education of both drivers and pedestrians in Pelham. When the PXO was installed in West Lincoln, the Niagara Regional Police were also requested to educate and monitor compliance for the first few days of use, which proved successful.

The raised crosswalk, parking stall removal and PXO conversion would be

considered in the 2022 capital budget request.

Alternatives Reviewed:

Council could consider the installation of a fully signalized intersection or a stop controlled intersection. Both methods of intersection control (3-way stop or traffic signals) would operate acceptably (under current or future conditions); however, based on a warrant analysis (using OTM guidelines), neither control type is warranted due to low pedestrian crossing volumes and due to comparatively low volumes of traffic entering the intersection from Church Hill.

Council may consider implementing parking prohibitions on Pelham Street in the vicinity of the signalized pedestrian crossings in order to improve sightlines. This would impact the number of usable parking spaces in the downtown business area of Fonthill.

Council may consider removing the signalized pedestrian crossings or replace the systems with a PXO system.

Strategic Plan Relationship: Risk Management

Maintaining a safe and efficient transportation network is important in providing for the safe movement of vehicular and pedestrian traffic.

Other Pertinent Reports/Attachments:

Appendix A – Signalized Cross Walk Location Plan

Appendix B – Review of Intersection Pedestrian Signals (Associated Engineering)

Appendix C - Trans-Plan Transportation Traffic and Safety Review of Pedestrian Priority Signal (Pelham and Church Hill).

Consultation:

Consultation was undertaken with the following parties in the preparation of this report:

- 1) Associated Engineering Review of Intersection Pedestrian Signals
- 2) Trans-Plan Transportation Engineering Traffic & Safety Review of
- Pedestrian Priority Signal, Pelham Street and Church Hill
- 3) Niagara Region Transportation and Engineering

Legal Consultation, If Applicable:

N/A

Prepared and Recommended by:

Derek Young, Manager of Engineering

Jason Marr, P. Eng., Director of Public Works

Approved and Submitted by:

David Cribbs, Chief Administrative Officer


Page 217 of 310



Traffic & Safety Review of Pedestrian Priority Signal

Pelham Street and Church Hill Fonthill, Ontario

Prepared for Town of Pelham

March 2018

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February 9, 2018

Ms. Andrea Clemenico Director, Public Works Town of Pelham 20 Pelham Town Square, P.O Box 400 Foothill, ON LOS 1E0

Project file: TPI-2017P148

Re: Pelham Street and Church Hill, Fonthill, Ontario, Pedestrian Priority Signal Review

Dear Ms. Clemenico,

TRANS-PLAN is pleased to submit this traffic and safety review to the Town of Pelham for the pedestrian priority signal located at the Church Hill and Pelham Street in Fonthill, Ontario.

Our review includes current traffic counts and surveys at the study area intersections along Pelham Street and a detailed review of the PPS, including a pedestrian crossing study, driver sight distance review, vehicle queuing study, a vehicle collision history review and all-way stop and traffic signal warrant reviews. Traffic operations were also reviewed in our Synchro traffic analysis model for existing and future conditions. The results of our all-way stop and traffic signal warrant analyses indicate that neither control type is warranted for the intersection. Given the survey and analysis results and observations (as well as the Town's By-law requirements), we suggest that on-street parking be removed within a minimum of 10m from the intersection at the approaches. A raised crosswalk design would also enhance the PPS crossing location for increased vehicle – pedestrian safety.

Sincerely,

Anil Seegobin, P.Eng. Partner, Engineer

Trans-Plan Transportation Inc. Transportation Consultants



TABLE OF CONTENTS

Transmittal Letter

1.	INTR	ODUCTION1
2.	BACK	GROUND REVIEW
	2.1	Town Comments2
	2.2	R&R Associates Inc. Study Findings
	2.3	Paradigm Study Findings2
	2.4	Rusit and Associates Study Findings2
3.	EXIS	TING TRAFFIC CONDITIONS
	3.1	Study Area
	3.2	Road Network
	3.3	Transit Services
	3.4	Existing Traffic Counts4
	3.5	Pedestrian Crossing Survey
	3.6	On-street Parking at Intersection5
	3.7	Vehicle Queuing Survey6
	3.8	Vehicle Collision Review
	3.9	Driver Sight Distance Review
4.	FUTL	JRE TRAFFIC CONDITIONS
	4.1	Background Growth Rate7
	4.2	Planned Background Developments7
	4.3	Capacity and Vehicle Queuing Analysis7
	4.4	All-way Stop Control Warrant Analysis9
	4.5	Traffic Signal Warrant Analysis9
5.	SUM	MARY AND RECOMMENDATIONS 11
	5.1	Summary11
	5.2	Recommendations



Appendix A – Background Information
Appendix B – Intersection Drawing of Pedestrian Priority Signal
Appendix C – Turning Movement Counts and Signal Timing
Appendix D – Vehicle Queueing and Pedestrian Crossing Surveys
Appendix E – Driver Sight Distance Review
Appendix F – Capacity and Queue Analysis Sheets
Appendix G – Level of Service Definitions
Appendix H – All Way Stop and Signal Warrant Analysis

List of Tables

Table 2 – Pedestrian Survey at Pelham Street PPS 5
Table 3 – Pedestrian Crossing Observations 5
Table 4 – Vehicle Queuing Study Results 6
Table 5 – Site Trip Generation
Table 6 – Capacity Analysis Results, Pelham Street and Church Hill, All-way Stop and Signalized Control. 8
Table 7 – Vehicle Queue Analysis Results, Pelham Street and Church Hill, All-way Stop and Signalized Control 8
Table 8 – All-way Stop Warrant Analysis for a Minor Road Intersection 9
Table 9 – Weekday 8-Hour Volume Counts
Table 10 – Traffic Signal Warrant Analysis Results, Pelham Street and Church Hill 10
Table 11 – Signal Warrant based on Pedestrian Volumes, Pelham Street and Church Hill



List of Figures

Figure 1 – Study Area Map	. 13
Figure 2 – Looking North along Pelham Street from Southwest corner of Church Hill	. 14
Figure 3 – Study Area Roadway Characteristics	. 15
Figure 4 – Existing Traffic Volumes, Weekday AM and PM Peak Hours	. 16
Figure 5 – Traffic Volume Background Growth, Weekday AM and PM Peak Hours	. 17
Figure 6 – Development Traffic Volumes, Weekday AM and PM Peak Hours	. 18
Figure 7 – 2023 Total Traffic Volumes, Weekday AM and PM Peak Hours	. 19
Figure 8 – Example of Raised Asphalt Crosswalk	. 20





1. INTRODUCTION

Trans-Plan has been retained by Town of Pelham's Public Works Department to complete a review of the Pedestrian Priority Signal (PPS) at the intersection of Pelham Street and Churchill in Fonthill, and to advise on the recommended control type / improvements for the intersection. This assessment includes the following studies and tasks:

- a review of background documentation, including:
 - Fonthill Traffic Study, Final Report, R&R Associates Inc., September 2009
 - Traffic Brief, 1440 Pelham Street, Paradigm, February 6, 2017
 - Safer Pedestrian Crossing on Pelham Street, Town of Pelham Public Works, June 5, 2017
 - Committee of the Whole (CoW) Meeting Minutes, June 5, 2017
 - Memo re: Stacking of Southbound Vehicles on Pelham Street, Rusit and Associates LTD, July 31, 2017
- traffic surveys and an assessment of the existing roadway network conditions along Pelham Street, including operations of the PPS, including:
 - Turning movement counts for the study area intersections
 - Vehicle queue and delay study at the Pelham Street and Church Hill intersection
 - Collision history review at the Pelham Street and Church Hill intersection
 - A pedestrian crossing survey for volumes, compliance and observations of safety issues
 - A driver sight-distance review for vehicles exiting Church Hill onto Pelham Street
- a review of any planned development applications and roadway improvements along Pelham Street to obtain future traffic conditions
- an analysis of future operating conditions along Pelham Street using Synchro and SimTraffic analysis software, to review traffic level-of-service, capacity and queuing (modelling the Pelham Street and Church Hill intersection as an all-way stop and signalization control)
- a warrant analysis, using the Ontario Traffic Manual guidelines, based on the future traffic volumes, to review traffic control for the intersection as a PPS, all-way stop or signalization)
- recommendations for traffic improvements and/or mitigation measures at the Pelham Street and Church Hill intersection based our review and traffic assessment

This study was requested because ever since the installation of the PPS, the Town has received continued safety complaints from numerous parties, including (what has been described as) near misses with Town staff attempting to cross with the light activated. Public Works recommended that the PPS be changed to a full signalized intersection. Council has not approved the recommendation (when it was brought forward to the CoW on June 5, 2017), and instead requested a three-way stop be installed at the intersection. Town staff; however, are of the opinion that a three-way stop may not be the best option in consideration of spacing to adjacent intersections and traffic progression through the downtown area.





2. BACKGROUND REVIEW

2.1 Town Comments

Since the installation of the PPS in year 2015, the main issue noted by the Town is that it consistently stops all vehicles heading both northbound and southbound on Pelham Street; however, it does not consistently stop all vehicles making eastbound left turns from Church Hill onto Pelham. Drivers approaching northbound onto Pelham Street from Church Hill may not see the traffic signal on the north leg of Pelham due to the placement of the PPS. Therefore, in the case of a red light when the traffic signal is activated, drivers proceeding to make a rushed left turn must be cautious of pedestrians crossing in both directions of the intersection.

An installation of a temporary Pilot Pedestrian Cross Over (PXO) was installed over the summer of 2017 by the Town for a duration of two weeks. The main objective of the installation was to simulate a mid-block crossing, observe the effect of pedestrians crossing the roadway and the drivers' responses to the activation of the flashing lights. Overall, the Pelham Active Transportation Committee did not choose to proceed with the mid-block crossing pilot as another alternative to the PPS as a result of safety issues and visibility issues of the sign when the adjacent on-street parking spots were occupied.

Excerpts from previous studies in the study area are provided in Appendix A and are summarized as follows:

2.2 R&R Associates Inc. Study Findings

The R&R Associates study included observations and traffic count data. The total number of vehicles per day (VPD) on Pelham Street is 10,251 and on Church Hill is 2,847. Historical and recent spot speed surveys suggested that drivers on these roads generally disregard speed limits, endangering pedestrians. The study noted that installing traffic signals would help to slow traffic and likely reduce the probability and severity of collisions involving right of way conflicts, as well as improving safety conditions for pedestrians. Future modifications for the existing 45 on-street parking spaces on Pelham Street should be reviewed and analyzed in order improve sightlines at the cross streets of Pelham Town Square, Church Hill, and Regional Road 20.

2.3 Paradigm Study Findings

The findings from the Paradigm Transportation Solutions Limited study recommended a pedestrian signal be installed at the Pelham Street and Church Hill intersection with the following stipulations; the on-street parking lane, within 30m of the signalized intersection, should be removed to alleviate sightline problems for both the northbound and southbound directions. Signage should be included to warn drivers of the new signal and pedestrian activity. This will help to protect pedestrians crossing at the new signal. Paradigm also recommended that designated bicycle routes (i.e. shared auto and cycle lanes) be added along Pelham Street to improve safety for cyclists.

2.4 Rusit and Associates Study Findings

The findings from the Rusit & Associates Ltd. study noted that a signalized intersection at Church Hill would be below the minimum separation distance to the northerly existing signalized intersection at Highway 20. The intersection spacing is 179m, which is below the minimum of spacing requirement of 215m between signalized intersections (in urban settings). The findings also indicate that installing new traffic signals at





the intersection would improve left turn movements from Pelham Town Square to Pelham Road. It was also noted from field observations that southbound vehicle queues on Pelham Road extend approximately 150m from the Church Hill intersection, as far as the Highway 20 intersection.

3. EXISTING TRAFFIC CONDITIONS

3.1 Study Area

Fonthill is a community in the town of Pelham, Ontario. The study area, for analysis of the Pelham Street and Church Hill intersection, includes Pelham Street from College Street to Highway 20. The site location is shown in Figure 1 and a photograph of the PPS is shown in Figure 2. The surrounding area contains a number of retail, commercial and restaurant uses which stretch between Pelham Town Square Street and College Street, as well as the Fonthill Baptist Church.

3.2 Road Network

Based on discussions with Town's staff and a review of the Town's By-law #89-2000 for speed limits, the study area roadways are described as follows:

Highway 20 is a provincial highway under the jurisdiction of Niagara Region. Highway 20 generally runs in a northeast-to-southwest direction, connecting to Highway 406 to the east. Highway 20 has two travel lanes per direction in the vicinity of the site. The posted speed limit on Pelham Street, in the vicinity of the site, is 50 km/h (with some road sections reduced to 40 km/h).

Pelham Street is classified as an arterial road under the jurisdiction of the Town of Pelham. It consists of two travel lanes, one in each direction and generally runs in a north-south direction. At the Highway 20 signalized intersection, there are exclusive left turn lanes at the approaches. The posted speed limit on Pelham Street is 50 km/h.

Pelham Town Square is a local road under the jurisdiction of the Town of Pelham. It consists of two travel lanes, one in each direction. The roadway curves around Peace Park to the east of the study area. Pelham Town Square has an assumed speed limit of 40 km/h.

Church Hill is classified as a local street under the jurisdiction of the Town of Pelham. It contains two travel lanes and generally runs in an east-west direction. The assumed speed limit on Church Hill is also 40 km/h. The north leg of the intersection has the PPS and the west leg of the intersection has a stop control.

College Street is classified as a local street under the jurisdiction of the Town of Pelham. It contains two travel lanes and generally runs in an east-west direction. The assumed speed limit on College Street is assumed to be 50 km/h.

The study area roadway characteristics are shown in Figure 3. A drawing of the Pelham Street and Church Hill intersection, showing the PPS, is provided in Appendix B.

3.3 Transit Services

Pelham Transit provides morning / midday / evening bus service within the study area. The nearest bus stops are located at the Pelham Street and College Street intersection. Services times are approximately every 40 minutes during weekdays from approximately 7:00am to 6:00pm.





3.4 Existing Traffic Counts

To determine existing operating conditions in the study area, Trans-Plan conducted intersection turning movement counts (TMCs) for the study area roadways. Additionally, Trans-Plan obtained current signal timing plans and historical AADT traffic data (2009 and 2017) from the town of Pelham. Table 1 provides a summary of the dates, count hours and peak hours obtained for each intersection counted. Detailed TMC data and current signal timing plans provided by the Town are included in Appendix C.

Intersection	Count Date	Count Hours	Peak Hours	
Pelham Street and	Tuesday,	7:00 am -9:00 am	8:00 am - 9:00 am	
Highway 20	February 6, 2017	3:00 pm - 6:00 pm	4:30 pm - 5:30 pm	
Pelham Street and	Tuesday,	7:00 am -9:00 am	8:00 am - 9:00 am	
Pelham Town Square	February 6, 2017	3:00 pm - 6:00 pm	4:30 pm - 5:30 pm	
Dolbam Street and	Wodposday	7:00 am - 9:00 am	8:00 am - 9:00 am	
	lopuony 17, 2010	11:00 am - 2:00 pm	11:30 am - 12:30 pm	
	January 17, 2010	3:00 pm - 6:00 pm	4:30 pm - 5:30 pm	
Dolbam Street and	Wednesday	7:00 am - 9:00 am	8:00 am - 9:00 am	
	lopuory 17, 2010	11:00 pm - 2:00 pm	11:15 am - 12:15 pm	
Cullege Street	January 17, 2018	3:00 pm - 6:00 pm	4:30 pm - 5:30 pm	

Table 1 – Intersection Turning Movement Count Details

The Pelham Street and Church Hill intersection was counted for 8 hours for all-way stop and signal warrant purposes. The traffic volumes counted were increased and balanced between intersections, where appropriate, for consistency. The existing weekday AM and PM peak hour traffic volumes are shown in Figure 4.

3.5 Pedestrian Crossing Survey

A pedestrian crossing survey at the Pelham Street and Church Hill intersection (for east-west crossings) was conducted on January 18, 2018 for 8 hours in duration. The weather conditions were sunny, with a temperature of approximately -9 degrees C. The purpose was to obtain volumes and classification (i.e. adult, child, seniors and those with accessible needs) of pedestrians crossing, compliance with the PPS and to make observations of pedestrian crossing issues. Pedestrians crossing both upstream and downstream of the PPS (i.e. J-walking) were also recorded. The summary results are shown in Table 2. Detailed results for pedestrian volumes and classifications are provided in Appendix D.





	Number of Pedestrian Crossings at Pelham Street								
Location	AM Peak Hour MD Peak Hour PM		PM Peak Hour	Total 8 Hours					
North leg of Pelham St	3	11	8	37					
At PPS (during "do not walk" phase")	5	10	10	27					
At PPS when pedestrian signal is activated (during walk phase)	1	2	3	13					
South leg of Pelham St	2	3	5	14					
Total volumes (pedestrians)	11	26	26	91					

Table 2 – Pedestrian Survey at Pelham Street PPS

Due to the comparatively higher number of retail and commercial uses located to the north of the intersection, compared to the south of the intersection, the crossing volumes at or near the north leg are generally higher. For the full 8-hour period, excluding midblock crossings, 27 pedestrians complied with the PPS and 13 pedestrians did not, resulting in a compliance of 67.5 percent. Additionally, the following observations were noted at the crossing, as summarized in Table 3. There were two "near misses" observed involving vehicle-pedestrian conflicts at the PPS during our 8-hour surveys.

Table 3 – Pedestrian Crossing Observations

Crossing Direction	Time	Description
NW corner to NE corner	1:35 pm	Woman crossing the street with infant at the PPS (during walk phase) was almost struck by vehicle exiting from an on-street parking space located within the intersection
NW to NE corner of Pelham Street	4:17 pm	Senior crossing street at the PPS (during walk phase) was almost struck by a southbound vehicle making U-turn within the intersection

3.6 On-street Parking at Intersection

In reference to the Town of Pelham Zoning Parking requirements (except found in Appendix D), a vehicle cannot park within 10m (33ft) of an intersection. Previously referred to Figure 2 shows the on-street parking bay on the east side of Pelham Street within the intersection. As noted in previous studies and from our review of pedestrian crossings, the on-street parking bay conflicts with vehicle and pedestrian movements within the intersection.

Vehicles are also not permitted to park within 3m (10 ft.) or within 1.5m (5 ft.) of a laneway, driveway or a curb-cut. On the east side of Pelham Street, vehicles were observed to block the driveway of the restaurant (Volcanos Pizzeria).





3.7 Vehicle Queuing Survey

Table 4 shows our recordings of peak hour vehicle queuing (number of vehicles and estimated queue lengths in metres) when the PPS walk phase was activated.

Pelham Street	Available	Maximum Observed Vehicle Queue During Peak Hour					
	Storage Length	(number of vehicles / length [m])					
Direction	(11)	AM	MD	PM			
Northbound	100 ¹	4 veh / 28 m	3 veh / 21 m	7 veh / 35 m			
Southbound	90 ²	6 veh / 42 m	5 veh / 35 m	9 veh / 63 m			
Eastbound	n/a	2 veh / 18 m	1 veh / 7 m	3 veh / 21 m			

Table 4 – Vehicle Queuing Study Results

Notes: (1) Distance from south leg of Pelham Street and Church Hill to the Meridian Credit Union driveway.

(2) Distance from the PPS to Pelham Town Square.

From our observations of vehicle queuing at the intersection, all vehicles tend to clear the intersection after each cycle. No vehicles were observed to experience lengthy delays at Church Hill when making eastbound left and right turns at the intersection.

3.8 Vehicle Collision Review

Based on correspondence with the Town, there has only been one collision reported within the past three years at the Pelham Street and Church Hill intersection. Therefore, no further vehicle collision analyses were conducted.

3.9 Driver Sight Distance Review

Driver sight distance was reviewed at the Pelham Street and Church Hill intersection for a driver making an eastbound left or right turn from Church Hill. During busier times of the day, vehicles parked near the intersection on the west side of Pelham Street limit sightlines for turning vehicles at the intersection. When the on-street parking bays are empty, the available sight distance from the extension of the curb line at the west leg of the intersection (from Church Hill) is 100 m looking northbound along Pelham Street and 350 m looking southbound. As per the Transportation Association of Canada (TAC) manuals (and the town of Pelham, Municipal Design Engineering Design standards, Section 2.1.1), the required sight distance is 85 to 140 m, which is met by the available sight distance (when vehicles are not parked on-street, on the west side of the intersection). Excerpts of the applicable standards and the detailed driver sight distance review are provided in Appendix D.

4. FUTURE TRAFFIC CONDITIONS

Future traffic volumes were determined based on a review of planned development applications received by the Town and estimates of background traffic volume growth in the study area. Detailed information is provided in Appendix E. For analysis purposes of future conditions, a five-year study horizon is assumed.





4.1 Background Growth Rate

An annual growth rate of 2.0% per year was applied to existing traffic volumes on Pelham Street to obtain future traffic volumes in the weekday AM and PM peak hours. The existing traffic volumes with the growth rate applied are shown in Figure 5.

4.2 Planned Background Developments

Based on discussions with the Town, the only notable development in the study area is 1440 Pelham Street, Fonthill. The development is to contain an additional 12 residential units to add onto the existing commercial floors beneath the residential units to construct four-storey mixed use building. As shown in **Error! Reference source not found.**, trips for the background development were generated by using the Institute of Transportation Engineers (ITE) Trip Generation manuals, 9th Edition, trip rates for the proposed building on Pelham Street. The background development traffic volumes are shown in Figure 6.

Land LISe		Size	Weekday AM Peak Hour			Weekday PM Peak Hour		
Lund 050		0120	WOOK	<i>uy mini</i> i ci		Weekuuyi Mireukiibu		
			In	Out	Total	In	Out	Total
				Out	Totul	111	Out	Totui
Residential								
Residential								
Condominium Units		12						
Condominium	Units.	12						
ITE Codo 230		Distribution	17%	020/	100%	67%	220/	100%
TIL COUE 230		DISTIDUTION	1770	0370	10070	0770	3370	10070
Equation		$\ln(T)$	$\ln(T) = 0.901 n(Y) + 0.26$			$\ln(T) = 0.92 \ln(Y) + 0.22$		
		Lyuation		$LII(1) = 0.00LII(\Lambda) + 0.20$		$LII(I) = 0.02LII(\Lambda) + 0.02LII(\Lambda)$		J+0.3Z
		Data	0.12	0 6 2	0.75	0.61	0.20	0 0 2
		Kale	0.15	0.02	0.75	0.01	0.30	0.92
		Trinc)	7	0	7	1	11
		THPS	Z	1	9	/	4	11

Table 5 – Site Trip Generation

Source: ITE Trip Generation, 9th Edition, Land Use Code 230 (Residential Condominium/Townhouse)

The background development (at 1440 Pelham Street) is expected to generate a total of 9 two-way trips in the weekday AM peak hour and 11 total trips in the PM peak hour.

Traffic volumes generated by the background development were added to the future background traffic volumes (existing volumes plus estimated traffic growth) to obtain future total traffic volumes for the weekday AM and PM peak hours. The future total traffic volumes for the 2023 horizon year are shown in Figure 7.

4.3 Capacity and Vehicle Queuing Analysis

A capacity and vehicle queuing analysis was performed for the study area intersections using Synchro analysis software. The intersection of Pelham Street and Church Hill was modeled as both an unsignalized (all-way stop-controlled) and as a signalized intersection. Capacity and Queue analysis sheets and Level of Service (LOS) definitions are provided in Appendix F and Appendix G, respectively. The capacity analysis and queue results are further summarized in Table 6 and Table 7, respectively.





Intersection	2023 Total Traffic Conditions									
Movement	Unsignali	Unsignalized Condition (Stop Control)				Signalized Condition				
	AM Pea	k Hour	PM Pea	k Hour	AN	l Peak H	our	PN	l Peak H	our
	Delay	LOS	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Pelham Street and Church Hill					0.38	6	A	0.48	6	А
Eastbound Left	10	В	12	В	0.41	17	В	0.40	16	В
Eastbound Right	15	В	22	С	0.37	4	А	0.49	5	А
Northbound Left	10	В	28	D	0.17	3	А	0.50	5	А

Table 6 – Capacity Analysis Results, Pelham Street and Church Hill, All-way Stop and Signalized Control

For all-way stop controlled intersections, individual movements operating above an LOS of E or above are generally considered critical. Signalized intersections operating at an overall volume-to-capacity (v/c) ratio of 0.90 or above are typically considered critical. The results of our analysis indicate that from a traffic capacity / level-of-service perspective, the intersection could function as either all-way stop controlled or as signalized controlled (with reserve capacity).

Table 7 – Vehicle Queue Analysis Results, Pelham Street and Church Hill, All-way Stop and Signalized Control

Intersection	Distance to	95th Percentile Vehicle Queues						
Pelham Street and Church Hill Street	Nearest Upstream Intersection	Future 2023 To (Unsignalized -	otal Conditions - Stop Control)	Future 2023 Total Conditions (Signalized)				
	(m)	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour			
Eastbound Left / Right	205	16	13	21	20			
Northbound Left / Through	101	26	38	56	88			
Southbound Left / Through	58	19	35	20	33			

For all-way stop control, the critical intersection vehicle queues in the peak hours are approximately 16m, 26m and 35m for the eastbound, northbound and southbound movements, respectively. Vehicle queues are expected to be fairly minimal and are not likely to block any upstream intersections.

For signalized control, the critical intersection vehicle queues in the peak hours are approximately 21m, 88m and 33m for the eastbound, northbound and southbound movements, respectively. Vehicle queues are not likely to block any upstream intersections. The queues for signalized control (or for a PPS) would likely be longer than for stop control due to the length of time vehicles would be required to wait in queue for the green / walk phase for east-west movements from Church Hill.





4.4 All-way Stop Control Warrant Analysis

The warrant for an all-way stop control at the Pelham Street and Church Hill intersection was reviewed based on requirements noted in the OTM guidelines, Book 5. Weekday traffic volumes were obtained from the intersection TMC and conducted by Trans-Plan on Wednesday, January 18, 2018. The critical peak hour reviewed was 5:00pm to 6:00pm, where a total of 904 vehicles were recorded for all approaches (829 vehicles approaching from Pelham Street and 75 vehicles approaching from Church Hill). The warrant results are summarized in Table 8. The supporting data is contained in Appendix H.

All-Way Stop Minimum Volume Warrant for Church Hill					
Total Vehicle Volume (peak hour > minimum)	Volume Split (peak hour < maximum)			
Minimum	Minimum Peak Hour		Peak Hour		
350	904	75/25	92/8		

Table 8 – All-way Stop Warrant Analysis for a Minor Road Intersection

To warrant an all-way stop, the total vehicle volumes (from all approaches) must exceed 350 vehicles and the directional split (major road / minor road) must exceed 75 / 25. Although the volumes are met (904 vehicles vs. 350 vehicles), the directional split is not met (25 vehicles vs. 8 vehicles). An all-way stop control at the intersection is therefore, not warranted.

We note that stop signs should only be used where warranted since they can cause substantial inconvenience to motorists. As noted from our review of on-line Department of Transportation documents and experience working with municipalities, improper signing and ignoring the warrants create dangerous conditions for both drivers and pedestrians. Engineering studies indicate that the inappropriate installation of extra stop signs (within a road network) may cause additional problems, such as:

- drivers accelerating between intersections to make up for time lost at the stop sign
- increased rear-end collisions
- a redistribution of traffic onto side streets
- noise pollution and wasted fuel (due to deceleration and acceleration)
- non-compliance issues (i.e. drivers ignoring the inappropriately placed stop signs due to a lack of cross-street traffic)

4.5 Traffic Signal Warrant Analysis

A signal warrant analysis was completed based on the OTM guidelines, Book 12 – Traffic Signals. Weekday traffic volumes were obtained from Wednesday, January 18, 2018 TMC and conducted by Trans-Plan. The AM peak hour occurred between 11:00 am and 12:00pm and the PM peak hour occurred between 17:00 pm and 18:00 pm. The all-approach volumes and count hours assessed are shown in Table 9 and the signal warrant analysis results are shown in Table 10. The supporting data is contained in Appendix H.





Table 9 – Weekday 8-Hour Volume Counts

			AM					PM
			Peak					Peak
Hour Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Existing Traffic Volumes	417	750	770	768	647	823	893	922
Percent of Peak Hour	54%	97%	100%	83%	70%	89%	97%	100%

Table 10 – Traffic Signal Warrant Analysis Results, Pelham Street and Church Hill

Signal Warrant Results	Future 2022 Total Conditions				
	Required	Satisfied	Warrant		
			Met?		
1 – Minimum Vehicular Volume	100%	41%	No		
2 – Delay to Cross Traffic	100%	60%	No		
Combination Warrant (1 & 2)	80%	41%	No		
Overall Result			No		

Our results indicate that a traffic signal at Pelham Street and Church Hill intersection would not be warranted on a weekday under future conditions. The minimum vehicular volume is 41% out of the required 100% under Justification 1, the delay to cross traffic is 60% out of the required 100% under Justification 2, and the combination warrant is 41% out of the required 80% under the Combination Warrant.

As shown in Table 11, the number of pedestrian crossings (for the 8-hour period) was also reviewed to see if warrants would be met for a traffic signal.

8 Hour Vehicular		Net 8 Hour Pedestrian Volume				
Volu	me V ₈	< 200 200 - 275 276 - 475 476 - 1000		>1000		
Justification 6A	< 1,440	78 pedestrians counted: Not Justified				

Table 11 – Signal Warrant based on Pedestrian Volumes, Pelham Street and Church Hill

The 8-hour pedestrian volume count is 78 pedestrians, which is less than the minimum threshold of 1,440 pedestrians over the count period. A traffic signal is not warranted at the Pelham Street and Church Hill intersection.





5. SUMMARY AND RECOMMENDATIONS

This review of the Pedestrian Priority Signal (PPS) at the intersection of Pelham Street at Church Hill in Fonthill is summarized as follows:

5.1 Summary

- Trans-Plan reviewed background documentation and conducted current traffic counts and surveys at the study area intersections. The following surveys and results are noted:
 - Pedestrian Crossing Study: 91 pedestrians crossed either at or in the vicinity the PPS during the 8hour count period. Of the 40 pedestrians that crossed at the PPS, 27 crossed during the "walk" phase, resulting in a fairly low compliance rate of 67.5 percent.
 - Pedestrian Crossing Observations: two vehicle-pedestrian conflicts were observed; the issue for one of the incidents resulted from a vehicle exiting the on-street parking near the PPS.
 - Vehicle Queue Study: there were no issues of vehicle queues at the Pelham Street at Church Hill intersection extending to upstream / downstream intersections. Vehicles tend to clear after each cycle.
 - Collision History Review: there was only one reported collision that occurred at the Pelham Street at Church Hill intersection; based on collisions, the intersection would not be susceptible to correction by adding all-way stop control or signalized control.
 - Driver Sight Distance Review: there is adequate visibility from the approach at Church Hill to see vehicles travelling in the northbound and southbound directions along Pelham Street; however, when vehicles are parked along the west side of Pelham Street, the visibility becomes limited.
- To establish future operating conditions for a five-year study horizon, roadway traffic was increased by 2% per year and traffic for the one notable background development, 1440 Pelham Street, was included in our traffic model.
- Synchro analysis software was used to model the intersection as both all-way stop control and as signalized control. Both methods of intersection control would operate acceptably; however, from our warrant analysis (using OTM guidelines), neither control type is warranted due to low pedestrian crossing volumes and due to comparatively low volumes of traffic entering the intersection from the minor street, Church Hill.

5.2 Recommendations

Despite the traffic signal warrant analysis not being met according to the provisions of OTM, there are very rare cases where the engineer's study finds no satisfaction of numerical warrants, but finds other special conditions that result in a conclusion that a signal is the best solution compared to other possible alternatives. According to the conditions of the intersection, the OTM indicates "should not" rather than a "shall not" for the very reasons discussed above. It is important to note that a politically dictated unwarranted signal installation (or all-way stop installation) may not be the best recommended solution.

Installing an all-way stop control for the Pelham Street and Church Hill intersection, when not warranted, may lead to other unintended consequences, such as non-compliance issues.





Another traffic signal warrant analysis could be conducted again over the summer/spring season, as there is a greater chance of higher pedestrian volumes crossing at the PPS due to warmer weather conditions; however, given the 8-hour volumes of 78 pedestrians in the winter and the required volume of 1,440 pedestrians, it is unlikely that the warrant would be met.

We agree with the Town's comment that drivers approaching northbound onto Pelham Street from Church Hill may not see the traffic signals on the north leg of Pelham due to the placement of the PPS; however, (in addition to the existing stop sign for the eastbound approach) we suggest adding enhancements to the crossing location to address this. Our traffic and safety recommendations at the Pelham Street at Church Hill intersection are as follows:

- Remove on-street public parking within a minimum of 10m from the intersection (and within the intersection)
- Introduce a raised crosswalk to enhance the PPS crossing location and improve pedestrian safety. An example is provided in Figure 8.

Respectfully submitted,

Anil Seegobin, P.Eng. Partner, Engineer

Trans-Plan Transportation Inc. Transportation Consultants





Pedestrian Priority Signal Review Pelham Street and Church Hill Fonthill, Town of Pelham, ON

Figure 1 – Study Area Map



Source: Google Maps





Pedestrian Priority Signal Review Pelham Street and Church Hill Fonthill, Town of Pelham, ON

Figure 2 – Looking North along Pelham Street from Southwest corner of Church Hill



Source: Google Maps





Pedestrian Priority Signal Review Pelham Street and Church Hill Fonthill, Town of Pelham , ON

Figure 3: Study Area Roadway Characteristics





Pedestrian Priority Signal Review

Pelham Street and Church Hill Fonthill, Town of Pelham , ON

Figure 4: Existing Traffic Volumes, Weekday AM and PM Peak Hours





Figure 5: Development Traffic Volumes, Weekday AM and PM





Figure 6: Growth Traffic Volumes, Weekday AM and PM





Figure 7: 2023 Total Traffic Volumes Weekday AM and PM





Pedestrian Priority Signal Review Pelham Street and Church Hill Fonthill, Town of Pelham, ON

Figure 8 – Example of Raised Asphalt Crosswalk



Source: Google Images





APPENDICES

- Appendix A Background Information
- Appendix B Intersection Drawing of Pedestrian Priority Signal
- Appendix C Turning Movement Counts and Signal Timing
- Appendix D Vehicle Queueing and Pedestrian Crossing Surveys
- Appendix E Driver Sight Distance Review
- Appendix F Capacity and Queue Analysis Sheets
- Appendix G Level of Service Definitions
- Appendix H All Way Stop and Signal Warrant Analysis







Safer Pedestrian Crossing on Pelham Street June 5, 2017



Figure 2 Pilot crossing October 2016

Pilot PXO observations:

- Video, drone footage, photos, staff, public and PATC observations were reviewed, and compared to that from the PPS.
- The PXO stopped most vehicles travelling north/south with the activation of the flashing lights.
- Some of the vehicles stopped if the lights were not activated but a pedestrian stood at the road side.
- A few vehicles stopped if the lights were activated but no pedestrian was there.
- On-street parking made visibility difficult for pedestrians and drivers. Without the pedestrian using 'body language' to indicate an intention to cross, especially when parking spaces were occupied, it was sometimes difficult for the driver to see the pedestrian.
- In addition, the conflict with driveway accesses and Pelham Town Square made moving vehicles a challenge for the pedestrian to stay aware.
- PXOs, with or without flashing lights, require some degree of driver and pedestrian education (eye contact from pedestrian to driver, pedestrian showing intention to cross by standing/waiting/motioning)





Safer Pedestrian Crossing on Pelham Street June 5, 2017

- Signage and flashing lights would be recommended to increase visibility of a mid-block PXO.
 (PXOs can also be built in other formats, depending on the number of lanes, traffic direction and location of crossing).
- The Pelham Active Transportation Committee did not strongly support the mid-block crossing pilot, and did not feel it was a safer option than the fully signalized intersection.
- Stacking/lineup of vehicles stopped for the PXO crossing, when activated, was not observed to be excessive in morning or evening rush hour time, due to its short duration.
- The 2009 Fonthill Traffic Study (by R and R Associates Inc.) does suggest that future modifications to on-street parking on Pelham Street consider the need for proper sight lines at the intersections of Church Hill and of Pelham Town Square (p. 86). No corrections to sight lines were made with the Pelham Street reconstruction project.

PPS observations

- The PPS consistently stops all vehicles travelling north/south with the red light, but does not consistently stop all vehicles turning north onto Pelham from Church Hill.
- The time settings for the activation of the PPS and the crossing time appear to be adequate, and are consistent with those across the Region.
- Stacking/lineup of vehicles stopped for the crossing light, when activated, is not excessive in morning or evening rush hour time. However, the 2009 Fonthill Traffic Study notes that the signal, based on 2009 volumes, does not meet minimum spacing standards for proximity to Highway 20.
- The report suggests a three lane cross section for Pelham between Highway 20 and Church Hill to improve safety, and also suggests calming measures be considered to slow speeds, reduce volumes and reduce pedestrian/traffic conflicts in the downtown core (it notes the collisions recorded to 2009 in this commercial area are directly related to accesses, side streets and parking movements). Sight lines due to on-street parking were also identified as needing correction. To date, a two-way signal was installed, rather than three, and no calming measures or sight line improvements have been made.
- Installation of a new PXO mid-block, with pedestrian-activated side-mounted amber beacon lights (type C) was quoted at approximately \$12,000 at a Southern Ontario municipality in 2016. Both of these mid-block options were not considered further at this time, due to the existing conflict with on-street parking, traffic speeds and sight lines.





Safer Pedestrian Crossing on Pelham Street June 5, 2017

- A 3-way stop at the intersection could be considered, instead of traffic signals, but stacking of vehicles, especially during rush hours, is anticipated to be considerable, and could affect sightlines for drivers and those using on-street parking to park and exit their vehicles.

Although the pilot PXO was considered an innovative attempt to overcome crossing challenges, without additional larger-scale calming and sight line correction measures for the downtown core, a mid-block crossing may prove unsuccessful as an improvement.

As the creative problem solving process led staff to identify safer pedestrian crossing on Pelham Street as the challenge, the boxed solution is to fully signalize the intersection at Church Hill and Pelham Street. This capital cost can be considered with the 2018 Road Capital Budget request.

The Challenge:

How might we allow pedestrians to cross Pelham Street safely in the downtown core?

How might we calm the downtown core to allow safer crossing of pedestrians and traffic from accesses and side streets?

Our Recommended Solution:

BE IT RESOLVED that Committee of the Whole receive the Public Works Report 'Safer Pedestrian Crossing on Pelham Street' for information.

Rationale:

Installation of a fully signalized intersection will reduce the risk of pedestrian collision at an existing pedestrian crossing.

Measure of Success:

These include: Fewer near-miss reports by pedestrians, the public, the PATC and staff, at the intersection of Church Hill and Pelham Street, and a safer, calmer downtown core.



8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

The following discussion lists the conclusions drawn from background data, field inventories and subsequent analyses of traffic data and collision history within the Fonthill Traffic Study primary and secondary study areas.

- 1. Based on field inventories conducted on March 24, and 25, 2009, a review of the available departure sight distance at the STOP controlled (two-way and all-way) intersections concluded that the majority of the two-way STOP controlled intersections currently have differing degrees of restricted sight lines, due in most part, to a variety of obstructions within the sight triangles (i.e. trees, bushes, signs, hydro poles, the presence of parked vehicles and building structures). Notable intersections where restricted sight lines are more problematic include Pelham Street at Pelham Town Square (westbound direction) and Station Street at Hurricane Road (northbound direction). In most cases, the recommended sight lines can be improved by removing obstacles within the sight triangles.
- Roadways carrying the heaviest two-way 24 hour traffic volumes included Regional Road 20 (17,700 vpd), Pelham Street (10,251 vpd), Rice Road (4,940 vpd), Pelham Town Square (3,967 vpd), Port Robinson Road (3,188 vpd), Church Hill (2,847 vpd), Pancake Lane (2,794 vpd), and Station Street (2,077 vpd).
- 3. Historical and recent spot speed surveys (conducted on April 2, 2009) indicated that drivers traveling on Town and Region roads generally disregard posted speed limits. The average percentage compliance for all roadways combined, was found to be 38 percent with a median value of 42 percent compliance.
- 4. The operational performance of the existing intersections (signalized and unsignalized) within the study area indicated that the majority of intersections are operating at acceptable levels of service with reasonable delays with the exception of a number of critical movements at several intersections. Notable delays are experienced within the Regional Road 20 corridor in the eastbound (morning peak hour) and westbound (afternoon peak hour) directions due to the higher volumes of traffic exiting and entering Fonthill during peak times with only one through lane in each direction to accommodate the traffic volumes. Due to the lack of available gaps in through traffic, left turn manoeuvres are problematic for Pelham Town Square westbound (AM and PM peak hour), and Hurricane Road southeastbound (all peak hours). Several driveways accesses also experience poor levels of service and longer delays for left turning traffic; however, traffic queues are accommodated within the private sites in each case.
- 5. The operational performance of the existing intersections (signalized and unsignalized) within the study area <u>including remedial measures and programmed roadway improvements</u> indicated that through movements within the Regional Road 20 corridor will be improved; however, the eastbound (AM peak hour) and westbound (PM peak hour) through movements at the intersection of Pelham Street and Regional Road 20 will experience lower levels of service and longer delays due to the sheer volume of traffic utilizing only one lane in each direction. The length of the eastbound traffic queues may cause blockages from time to time of the Canboro Road/Regional Road 20 intersection during the morning peak hour. Left turn manoeuvres at the unsignalized intersections will be improved; however, the

unsignalized intersection at Hurricane Road and Regional Road 20 will still experience longer delays during the afternoon peak hour.

- 6. The potential installation of traffic signal control at the Church Hill/Pelham Street intersection can be accommodated. Although signal spacing between Regional Road 20 and Church Hill does not meet minimum standards, from a traffic operations perspective (based on existing 2009 traffic volumes), a traffic signal at this location will operate effectively. Suggested improvements in conjunction with a new traffic signal at this location include a three lane cross section from Regional Road 20 to south of Church Hill and signal coordination with the existing traffic signals at Regional Road 20.
- 7. A review of traffic control warrants for Port Robinson Road-Brock Street/Pelham Street (potential for the installation of traffic signals), Pancake Lane-John Street/Pelham Street (potential for the installation of traffic signals), Hurricane Road/Station Street (potential for the installation of an All-way STOP control), and Station Street/Port Robinson Road (review of current All-way STOP control) indicated that, based on the collected traffic data, none of the aforementioned intersections currently meet warrants. In the case of a new traffic signal installation at the Port Robinson Road-Brock Street/Pelham Street intersection, additional factors should be considered as part of the justification process beyond the traffic signal warrant including safety issues, traffic operations, physical, and strategic considerations. From a safety perspective, the installation of traffic signals may help slow traffic (based on a review of the spot speed survey on Pelham Street), reduce the probability and severity of collisions involving right-of-way conflicts, and provide a safe crossing for pedestrians and school children. From a traffic operations perspective, new traffic signals would improve traffic operations without exhibiting any detrimental affects to either the intersection or transportation network as a whole.
- 8. There are a number of Context Sensitive Solutions and traffic calming principles and practices that could be applied to the revitalization of the downtown core encompassing elements associated with roadside design, the traveled way, and intersections. Traffic calming, focused on measures that could be considered to slow traffic speeds, reduce traffic volumes, and reduce pedestrian/traffic conflicts within the downtown core could also be applied where warranted.
- 9. Based on a review of reported collision data, 135 collisions occurred in the study area of which about 21% occurred at the intersections and about 18% were intersection related. The remaining collisions were either non-intersection related or occurred at a private driveway, parking lot, or other location. There were no fatal collisions reported. Four percent were non-reportable, 14% were non-fatal injuries, and 82% were property damage only collisions. From a statistical significance point of view, only the section of Regional Road 20 from Pelham Street to Station Street was determined to be of concern. The majority of collisions that occurred within the Regional Road 20 corridor were single motor vehicle and rear end collisions (52%) with the remainder being made up of sideswipe, turning movement, or overtaking type collisions. In most cases, the collision experience at each of the intersections and roadway segments was similar to or less than that of the Ontario average collision experience. The two main safety issues are likely to be managing speed along Regional Road 20 and Pelham Street, as motorists transition from rural to urban conditions, and managing access and parking in the commercial part of the study On Pelham Street, south of Regional Road 20, the collisions recorded in the area. commercial area are directly related to accesses, side streets, and parking movements.

- a. Provision of a new north-south pedestrian sidewalk along the west side of Pelham Street from Elizabeth Drive to Brock Street, as a minimum, to tie into the future signalized intersection configuration at the intersection of Pelham Street and Brock Street/Port Robinson Road;
- Provision of a new east-west sidewalk facility with the reconstruction of Brock Street and Elizabeth Drive to ensure pedestrians have safer access to local residential neighbourhoods;
- c. Upgrading of existing sidewalk facilities (east side of road) and provide additional sidewalk on the west side of Station Street with the future upgrading of the roadway. A future sidewalk on the west side of Station Street could be tied into future upgrades to the Steve Bauer Trail in this location;
- d. Cycling on Town roads and on existing trail facilities is currently permitted and should be further encouraged through the provision of wider pavements and/or on- and off-street cycling facilities where practical; and
- e. Formalize and provide connectivity for the Steve Bauer Trail from Regional Road 20 to Port Robinson Road.
- 6. The installation of a new traffic signal at the Port Robinson Road-Brock Street/Pelham Street intersection would need to be justified based on other factors, beyond a strictly technical justification (i.e. traffic signal warrant), including safety issues, traffic operations, physical, and strategic considerations.
- 7. The future installation of a new traffic signal at the Church Hill/Pelham Street intersection could be accommodated from a traffic operations perspective and would provide a safe crossing location for pedestrians within the downtown area. It is recommended that, as part of a future traffic signal installation at this location, the roadway cross section elements on Pelham Street between Regional Road 20 and Church Hill be reviewed along with the need to coordinate the existing traffic signal timings at Regional Road 20 with the future traffic signal timings at Church Hill.

The built urban environment along Pelham Street is highly supportive to pedestrian travel. The complete street design allows the Town to increase its capacity to hold special events and festivals while maximizing on-street parking during non peak periods. January 2017 count data indicates low pedestrian volumes; could be the result of the winter season.

Street furniture located along both sides of Pelham Street in proximity to the site driveway connections and the municipal roadway, Pelham Town Square, intersections have the potential to limit the available sightlines for motorists.

The Town is currently reviewing pedestrian safety at the pedestrian actuated traffic control signal at the Church Hill intersection with Pelham Street. The Town will consider the recommendations from the safety review for possible implementation.

To support multi-modal transportation within the Town of Pelham and through the Town from a Regional perspective, the provision of identifiable cycling infrastructure could be considered by the Town.

Recommendations

Based on the forgoing the following is recommended:

- On-street parking within 30 metres of the pedestrian signal at Church Hill be removed.
- The Town consider the need for stop control on the site driveway approach to Pelham Street. The requirement for stop sign control on private driveways should be applied consistently throughout the Town.
- Both site driveway connections be signed with Do Not Enter signage to support the one-way operation.
- Signage be provided on the driveway approaches near the building corners to warn drivers of potential pedestrian activity
- No improvements to the existing form of two-way stop control is recommended at the Pelham Street intersections with Pelham Town Square and Church Hill.
- The Town should implement the recommendations from the safety review of the pedestrian actuated traffic control signal.
- The Town consider utilizing an alternative colour of paving stones to identify driveway connections to Pelham Street.
- ▶ The two on-street parking spaces across the site's frontage be removed.
- The Town consider designating Pelham Street as a signed bicycle route. Pavement markings and signage should confirm to the OTM.

Based on the findings of this study, no other roadway or traffic control improvements are required or recommended to accommodate the future traffic within the study area.

Paradigm Transportation Solutions Limited | Page 251 of 310



25 Meadowvale Dr. Unit #6, Fonthill, ON, LOS 1E4

ierfinofrank@gmail.com 289 607 0018

July 31 2017

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Town of Pelham 20 Pelham Square P.O. Box 400 Fonthill, Ontario LOS 1E0

Re: Stacking of Southbound Vehicles on Pelham Street (Between Church Hill and Highway 20) Pelham Street Town of Pelham

Attention: Derek Young, C. Tech. Supervisor of Engineering

Dear Mr. Young

We have reviewed the stacking of vehicles driving southbound on Pelham Street and Traffic report provided below for Fonthill Traffic.

No.	Description	Issued	Received
1.	Fonthill Traffic Study Final Report by	September, 2009	July 20, 2017
	R & R Associates Inc.		

From our review of the Fonthill Traffic Report I have the following comments.

- 1) The OTM 13 recommends a minimum distance between signalized intersections of 215 metres for roads posted 60km/hr. The distance between Highway 20 and Church Hill is 179m, which does not meet this minimum spacing of 215m between signalized intersections.
- 2) The installation of new traffic lights at Church Hill and South Pelham Road will slightly improve the traffic operations of left turn movements from Pelham Town Square to South Pelham Road for PM peak hour conditions from LOS F to LOS E.
- 3) The review of Traffic Queues for PM peak hour for the southbound 95th percentile on South Pelham Road at Church Hill intersection for the through movement was estimated to be 48 metres. Based on my field observations the queuing reaches Highway 20 on South Pelham Road (estimated queuing of 150 metres) on South Pelham Road at the Church Hill intersection during the PM peak hour conditions. See attach photos for queuing on South Pelham Road.
APPENDIX B

Intersection Drawing of Pedestrian Priority Signal





Turning Movement Counts and Signal Timing Plans



Turning Movement Count - Details Report (15 min)

Location	Highway 20 @ Pelham Street
Municipality	PELHAM
Count Date	Thursday, June 08, 2017

Pelham Street Highway 20 North Approach South Approach East Approach West Approach Time Period LT ΤH RT U-Turn TOT LT ΤH RT U-Turn TOT LT ΤH RT U-Turn TOT LT ΤH 07:00 07:15 07:15 07:30 07:30 07:45 07:45 08:00 Hourly Total 08:00 08:15 08:15 08:30 08:30 08:45 08:45 09:00

Hourly Total	27	66	26	0	119	109	40	205	0	354	114	267	12	0	393	18	534	66	0	618
11:00 11:15	12	12	5	0	29	36	16	38	0	90	35	84	7	0	126	5	94	18	0	117
11:15 11:30	8	14	4	0	26	32	9	35	0	76	46	92	2	0	140	6	101	19	0	126
11:30 11:45	11	11	6	0	28	29	20	35	0	84	37	104	6	0	147	4	91	16	0	111
11:45 12:00	6	25	7	0	38	24	16	22	0	62	45	102	5	0	152	8	115	19	0	142
Hourly Total	37	62	22	0	121	121	61	130	0	312	163	382	20	0	565	23	401	72	0	496
12:00 12:15	12	20	5	0	37	27	11	45	0	83	40	80	7	0	127	5	105	16	0	126
12:15 12:30	9	13	3	0	25	31	13	40	0	84	37	72	9	0	118	7	104	19	0	130
12:30 12:45	13	11	6	0	30	21	6	35	0	62	36	82	8	0	126	6	94	18	0	118
12:45 13:00	7	15	8	0	30	31	12	31	0	74	38	97	7	0	142	6	102	26	0	134
Hourly Total	41	59	22	0	122	110	42	151	0	303	151	331	31	0	513	24	405	79	0	508
13:00 13:15	9	18	2	0	29	29	15	43	0	87	41	81	7	0	129	5	96	23	0	124
13:15 13:30	7	9	6	0	22	23	11	23	0	57	49	72	6	0	127	1	123	25	0	149
13:30 13:45	12	12	3	0	27	37	12	36	0	85	45	100	7	0	152	6	91	20	0	117
13:45 14:00	11	13	10	0	34	24	9	43	0	76	48	85	7	0	140	2	92	12	0	106
Hourly Total	39	52	21	0	112	113	47	145	0	305	183	338	27	0	548	14	402	80	0	496
15:00 15:15	6	18	1	0	25	31	13	37	0	81	57	72	5	0	134	5	102	12	0	119
15:15 15:30	7	12	6	0	25	38	19	36	0	93	58	118	5	0	181	5	112	25	0	142
15:30 15:45	10	17	3	0	30	35	21	40	0	96	54	107	5	0	166	9	119	20	0	148
15:45 16:00	6	24	8	0	38	30	12	20	0	62	41	116	5	0	162	12	126	32	0	170
Hourly Total	29	71	18	0	118	134	65	133	0	332	210	413	20	0	643	31	459	89	0	579

Friday, January 5, 2018

Page 1 of 2

RT

U-Turn

TOT

					Pe	lham S	treet								High	way 20)			
		1	North A	pproacl	n			South	Approa	ach		I	East Ap	proach	ı		Wes	t Appro	bach	
Time Period	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:00 16:15	7	15	10	0	32	26	12	34	0	72	53	113	8	0	174	9	123	26	0	158
16:15 16:30	8	18	4	0	30	33	18	42	0	93	66	125	5	0	196	5	119	25	0	149
16:30 16:45	6	20	7	0	33	31	23	46	0	100	62	116	2	0	180	8	114	30	0	152
16:45 17:00	9	16	8	0	33	48	16	43	0	107	54	114	6	0	174	10	104	23	0	137
Hourly Total	30	69	29	0	128	138	69	165	0	372	235	468	21	0	724	32	460	104	0	596
17:00 17:15	13	26	6	0	45	23	13	27	0	63	76	131	3	0	210	8	128	26	0	162
17:15 17:30	8	14	8	0	30	27	14	31	0	72	71	136	5	0	212	5	112	39	0	156
17:30 17:45	5	20	8	0	33	31	14	27	0	72	68	116	6	0	190	6	89	36	0	131
17:45 18:00	3	18	6	0	27	40	18	34	0	92	57	134	2	0	193	7	107	18	0	132
Hourly Total	29	78	28	0	135	121	59	119	0	299	272	517	16	0	805	26	436	119	0	581
Grand Total	252	497	193	0	942	929	401	1211	0	2541	1397	2917	156	0	4470	181	3519	655	0	4355
Truck %	3%	4%	5%	0%	4%	2%	3%	3%	0%	3%	4%	6%	1%	0%	5%	2%	5%	4%	0%	5%



Location	Highway 20 @ Pelham Street
Municipality	PELHAM
GeoID	00504
Count Date	Thursday, 08 June, 2017





Location	Highway 20 @ Pelham Street
Municipality.	PELHAM
Traffic Cont.	Traffic signal
Major Dir	East west

GeoID	00504
Count Date.	Thursday, 08 June, 2017
Count Time.	07:00 AM — 09:00 AM
Peak Hour	08:00 AM — 09:00 AM





Location	Highway 20 @ Pelham Street
Municipality.	PELHAM
Traffic Cont.	Traffic signal
Major Dir	East west

GeoID	00504
Count Date.	Thursday, 08 June, 2017
Count Time.	03:00 PM — 06:00 PM
Peak Hour	04:30 PM — 05:30 PM





Existing Traffic Volumes

Figure 3

Participant Interview Solutions Dumited

J0000L



Turning Movement Count Diagram Intersection: Pelham St. and College St.

Municipality: Fonthill, Ontario

Intersection ID: Date: Thursday January 18, 2018

MD Peak Hour: 11:15 to 12:15



PM Peak Hour: 16:45 to 17:45

AM Peak Hour: 8:00 to 9:00



Total 8-Hour Count







Turning Movement Count Diagram Intersection: Pelham St. and Church Hill Municipality: Fonthill, Ontario

AM Peak Hour: 8:00 to 9:00



Intersection ID:

Date: Thursday January 18, 2018

MD Peak Hour: 11:30 to 12:30



PM Peak Hour: 16:30 to 17:30



Total 8-Hour Count

	S)				ASE n/a n/a n/a n/a			0 0 0 0					0 0 0 0	Offset
					n/a		0	0	0	0	0	0	0	
					n/a		0	0	0	0	0	0	0	Offset
	IAM RD (IPS)) PM	PED PHASE		17	2	10	0	17	3	2	
ЧН	RCH HILL & PELH	me		11/2013 1:59:49	NBD & SBD THRU PELHAM	RD.	35	30	S	0	35	4.1	3.2	
Signal Code: CHRF	Intersection: CHU	Municipality: pelhi	Owner: city	Last Modified: 11/	Timing	Parameters	Min Green	Walk	Ped Clearance	Vehicle Ext.	Max Green	Yellow	All Red	

		Offset
Minimum Cycle	64.3	0
Pedestrian Cycle	64.3	
Maximum Cycle	64.3	0
Operation	SA	
Installed On:		

----/---/---

Count Date:

FA = Fully Actuated ----/---/---

SA = Semi Actuated

FT = Fixed Time

*Note: you need to change the paper orientation from Portriat to Landscape Copyright 2001 © Regional Niagara

Signal Code: 020P	LH					
Intersection: RR2	0 (HIGHWAY 20)	& PELHAM RD.				
Municipality: pelh	me					
Owner: region						
Last Modified: 1/5	/2018 8:53:59 A	Μ				
Timine		EBD & WBD	NBD & SBD			
Darameters		THRU	THRU PELHAM	n/a	n/a	n/a
		HIGHWAY 20	RD.			
Min Green	9	10	8	0	0	0
Walk	0	8	13	0	0	0
Ped Clearance	0	14	19	0	0	0
Vehicle Ext.	2.5	2.2	2.2	0	0	0
Max Green	30	40	30	0	0	0
Yellow	З	4.1	4.1	0	0	0
All Red	0	2.8	2.4	0	0	0

		Offset
Minimum Cycle	31.4	0
Pedestrian Cycle	67.4	
Maximum Cycle	116.4	0
Operation	FA	
Installed On:		

8/1/2017

11/12/2014 **Count Date:**

FA = Fully Actuated

SA = Semi Actuated

FT = Fixed Time

*Note: you need to change the paper orientation from Portriat to Landscape Copyright 2001 © Regional Niagara

2018-01-05

APPENDIX D Vehicle Queueing a

Vehicle Queueing and Pedestrian Crossing Surveys

Vehicle Queue Study at PPS

Date: 17-Jan-18 Location: Pelham Street and Church Hill Weather: Sunny, Clear -9 Surveyor: D. Selcuk, Trans-Plan



Peak	Time (when PPS was activated)	Northbound	Southbound	Eastbound
	7:25 AM	1	2	0
	7:55 AM	2	1	1
	8:25 AM	2	3	0
AM Peak	8:45 AM	4	6	2
	9:35 AM	3	3	0
MD Peak	11:35 AM	3	5	1
	12:40 AM	1	4	1
	1:10 PM	1	2	0
	1:20 PM	2	2	2
	2:30 PM	3	1	0
	2:40 PM	1	0	0
	3:10 PM	2	4	1
	3:45 PM	5	3	2
PM Peak	4:55 PM	7	9	3
	5:15 PM	4	2	0
	5:50 PM	4	5	1
	6:45 PM	2	1	0

Pedestrian Study around PPS

Date: 17-Jan-18 Location: Pelham Street and Church Hill Weather: Sunny, Clear -9 Surveyor: D. Selcuk, Trans-Plan



Time	Age	Origin	Destination		Cross	ing Delay		Comments
7:15	A	SE	NE	4sec				
7:30	S	SE	NE		7 sec			
7:45	A	SW	NW		8 sec			
	A	NW	NE	4sec				Lwelk porth of Church Hill
8:00	A	NW	NE					J walk north of Church Hill
0.05	A	NE	NW	F				5 Walk Horth Or Charch Hill
8:05	A	NE	NW	5 Sec	0			
8:10	A	SW	NVV NE		8 sec			and a state of the Rock and an
8:13	A	NW	NE	F	8 sec			crossed while light green
8:20	A	IN VV	SW	5 Sec		12		
8:25	A	INE.	JE		0.000	12 Sel		
	1	INVV	INE		A 260			
	21	SVV	INVV	<0	0.000			
0.20	Z1 T	INVV		<0	7 000			
0.30	Δ	INE.	JE NE		7 SEL			Lwolk porth of Church Hill
0.40	A T	SW	NE SE	-5	7 SEC			J walk south of Church Hill
0.45	Т	NW	NE	<5		12 coc		5 Walk South of Charch Thin
0.40	Т	SW	INE NW			12 Sec		
0.47	Δ	SW		4 coc		11		
0.00	A	NE	SE	4 Set	7 000			
0.00	A		SE SE		/ Sec			
0.00	A 2A		SE SW	~5	o sec			I walk south of Church Hill
7.UU 11.00	2A A	JE NW	JVV NE	<0	7 500			orossed while groop light
11.00	20	NW/	NE		8 car			crossed while green light
11.12	ΔA Δ	NW/	NE		10 300			crossed while green light
11.10	Α	NIW/	NE		0			crossed while green light
11.20	Δ	NW/	NE		7			crossed while green light
11.30	25	NW	SW		7	18		crossed write green light
11.30	Δ	NIW	NE	<5		10		I walk porth of Church Hill
11:43	Δ	NE	NW	3				I walk north of Church Hill
11.50	Δ	NE	NW	4				I walk north of Church Hill
11:56	S	NE	NW	5				crossed while green light
12.01	Δ	NW	NE	5	6			L walk north of Church Hill
12:03	A	NE	NW	5	0			crossed while areen light
12:18	A	SW	SE	0	7			J walked south of church Hill
12:10	S	NW	NE		,	11		crossed while green light
12:22	A	NF	NW		10			crossed while green light
12:23	A	SW	SE			15		J walked south of church Hill
12:28	S	SE	NW			17		J walked south of church Hill inter
12:30	S	SW	NW		8			
12:34	А	NE	NW		9			J walked north of Church Hill
12:40	S	NE	NW				24	
12:41	А	NE	NW		8			J walked north of Church Hill
12:42	S	NW	NE			13		J walked north of Church Hill
12:44	2S	SW	NW		10			
12:48	A	NE	NW	<5				J walked north of Church Hill
12:55	S	NE	NW	5				J walked north of Church Hill
1:01	S	NW	NE		10			J walked north of Church Hill
1:04	S	NW	NE			12		J walked north of Church Hill
1:08	A + C	NW	NE			15		
1:10	A	NE	NW				30	
1:12	A	NE	NW				27	
1:12	Т	SW	NW			12		
1:16	T	NW	NE			11		crossed while green light
1:17	S	NW	NE			12		crossed while green light
1:20	A	NE	NW					crossed while green light
1:25	A	NE	NW		10			crossed while green light
1:30	A	NW	NE		8			crossed while green light
1:36	2S	SW	NW			14		
1:37	2A	SE	SW			11		J walked south of Church Hill
1:45	S	NE	NW	<u> </u>	6			crossed while green light
1:46	A	NW	NE	4				crossed while green light
1:47	S	NE	NW		7			J walked north of Church Hill
1:50	A	NW	NE	5				crossed while green light
1:52	A	NE	NW	3				J walked north of Church Hill
1:55	A	SW	SE	3				J walked south of Church Hill
1:56	A	NW	NE	4	,			crossed while green light
1:5/	A	NW	NE		6			crossed while green light
1:58	S	NW	NE		8			J walked north of Church Hill



3:00	A	NE	NW		6			J walked north of Church Hill
3:03	A	NE	NW		7			J walked north of Church Hill
3:05	А	NE	NW		7			J walked north of Church Hill
3:08	S	NW	NE		6			J walked north of Church Hill
3:15	S	NE	NW	5				J walked north of Church Hill
3:20	S	SE	SW	4				J walked south of Church Hill
3:21	S	SE	NF		8			
3.25	A	NW	SW			11		
3.25	Δ	SW	SE			12		I walked south of Church Hill
3:30	S	NF	NW			14		I walked south of Church Hill
3.33	T	NE	NW				23	5 Martod Soditr of Orla of Thir
3.33	Δ	NE	NW		10		25	I walked porth of Church Hill
2.20	A	NE	NIM	2	10			I walked north of Church Hill
2.44	2.1	NE	NIM	3			20	5 Walked Horth of Charch Hill
2.44	21	NIA/	CW/		7		20	
3.44	21	INW CW	500		/		21	Lucellord could of Church Hill
3:45	A	SW	SE				21	J walked south of Church Hill
3:40	A	SE NIM	SW		10		30	J Walked South of Church Hill
3:50	A	INW	INE		10	- 11		crossed while green light
3:58	A	SW	INVV			10		
4:58	A	NW	NE			19		
4:04	S	SW	SE		8		07	J walked south of Church Hill
4:20	Ś	NE	NW			40	25	
4:30	S	SW	NW			10		
4:32	S	NE	NW			10		
4:32	S	SW	SE			10		
4:32	A	NE	NW	4				J walked north of Church Hill
4:37	2C	SW	NW		7			
4:38	2C	NW	NE	5				J walked north of Church Hill
4:43	A	SW	SE			18		J walked south of Church Hill
4:45	S	NE	NW		9			crossed while green light
4:47	A	NW	NE		7			J walked north of Church Hill
4:48	A	NE	NW		6			J walked north of Church Hill
4:48	S	NW	SW		7			
4:50	S	NE	NW				21	
4:52	A	NW	NE	4				J walked north of Church Hill
4:55	S	NE	NW		6			J walked north of Church Hill
4:56	S	NE	SW			12		J walked south of Church Hill
5:00	S	NE	NW			12		walked while green light
5:03	A	NW	NE			10		J walked north of Church Hill
5:15	A	NE	NW	4				walked while green light
5:16	Т	NE	NW				32	
5:17	T	NE	NW			20		
5:19	2S	NW	NE				33	
5:22	Т	NE	NW	3				J walked north of Church Hill
5:25	Т	SE	SW		9			walked while areen light
5:25	2A	NW	NE			12		walked while green light
5:25	A	NW	NF			18		<u>-</u>
5:26	S	NW	NE		8			J walked north of Church Hill
5:27	Ā	NF	NW		10			J walked north of Church Hill
5:27	A	NW	NF		9			J walked north of Church Hill
5:28	A	NW	NE		-	12		J walked north of Church Hill
5.27	A	NF	NW			15		I walked north of Church Hill
5:40	A	NW	NF	5				walked while green light
5:42	Δ	NW/	NE	5				walked while green light
5.50	Δ	NW/	NE	5			31	wancu while green light
6.45	M	NE	NIM				25	
0.40	A	INE	INVV				20	
<u> </u>			-					
<u> </u>								
						1		

Т **APPENDIX E**

Driver Sight Distance Review

Location:Church Hill and Pelham StreetDate:Wednesday, January 18, 2017Time:12:00pmWeather:Clear ~-10CSurveyorsD., Selcuk

Sight Distance Study

	Loo	oking South	h from Chur	ch Hill
		Looking s	outh from cu	rb
Available Sight	Reason	Criteria	Required Sight	Requirement Met? (Y / N)
	Vertical	2.1.1	85-140	Y
300	Curve	TAC	160	Y

	Lo	oking Sout	h from Chur	ch Hill		
Looking south from stop line						
Available Sight Distance (m)	Reason	Criteria	Required Sight Distance (m)	Requirement Met? (Y / N)		
2.25	Vertical	2.1.1	85-140	Y		
320	Curve	TAC	160	Y		

	Lo	oking nout	h from Chur	ch Hill				
	Looking north from stop line							
Available Sight Distance (m)	Reason	Criteria	Required Sight Distance (m)	Requirement Met? Y / N)				
60	Vertical	2.1.1	85-140	Ν				
00	Curve	TAC	160	Ν				

	Lo	oking north	n from Churo	ch Hill
		looking n	orth from cur	b
Available Sight Distance (m)	Reason	Criteria	Required Sight Distance (m)	Requirement Met? (Y / N)
100	Vertical	2.1.1	85-140	Y
100	Curve	TAC	160	Ŷ

Number of Lanes	2
Posted Speed Limit:	50 km/h
Design Speed:	50 km/h



Looking South from Curb



Looking South from Stop Line



Figure 1.2.5.1 Elements of Passing Sight Distance²¹

Minimum passing sight distance equals the addition of d_1 through d_4 . Table 1.2.5.5 shows the minimum passing sight distances for various design speeds.

Table 1.2.5.5	Minimum Passing
	Sight Distance ²¹

Design Speed	Assume (kr	d Speeds n/h)	Minimum Passing
(km/h)	Passed Vehicle	Passing Vehicle	Distance (m) (rounded)
30	29	44	220
40	36	51	290
50	44	59	350
60	51	66	410
70	59	74	490
80	65	80	550
90	73	88	610
100	79	94	680
110	85	100	730
120	91	106	800
130	97	112	860

These "minimum" passing sight distances were derived from field studies carried out between 1938 and 1941²¹. Subsequent studies⁴ have shown these values to be generally conservative for modern drivers and vehicles, but the "minimum" passing sight distances have not been reduced by AASHTO.

It has been suggested⁵ that required passing sight distance is successively longer for a passenger car passing a passenger car, a passenger car passing a truck, a truck passing a passenger car and a truck passing a truck, but that all of these required distances are less than those given as "minimums" by AASHTO (Table 1.2.5.5). A comparison of these requirements is shown on Figure 1.2.5.2, which reproduces results of modelling research⁵. In presenting these results, the authors commented that:

> "neither (their) models nor the current AASHTO.... models have any direct demonstrated relationship to the safety of passing manoeuvres on twolane road. Such demonstrated safety relationships are needed before any change in passing.... criteria can be reasonably contemplated".

	Laneway	Local Road	Collector Road	Arterial
Minimum Grade				
	0.4%	0.4%	0.5%	0.5%
With Durbs	0.6%	0.6%	0.6%	0.6%
Maximum Grade	8.0%	8.0%	6.0%	5%
Maximum Grade for Through Roads at Intersection	3.5%	3.5%	3.0%	3.0%
Maximum Grade for Stop Roads at Intersection	2.5%	2.5%	1.5%	1.5%
Minimum Curb Radius at Intersection with Arterial Road	9m	9m	13m	15m
Minimum Curb Radius at Intersection with Collector Road	9m	9m	13m	15m
Minimum Curb Grade	0.40%	0.40%	0.50%	0.50%
Minimum Curb Grade at Radius of Intersections	0.80%	0.80%	0.80%	0.80%
Cul-de-Sac Minimum Outside Curb Radius	N/A	15m	N/A	N/A
R.O.W. (minimum)	7.5m	20m	20m *	30m
Pavement Width (measured curb face to curb face)	6.0m	8.5m	10.40m 12.60m	
		14.0m	14.80m	
Minimum Centreline Radius	60m **	60m **	85m	
Design Speed	15 kph	50 kph	50 to 60 kph	60 to 80 kph
Vertical Curve				
Minimum sight stopping distance	65m	65m	85m	85 to 140
LVC=KA (MTC Manual)				
K. for Sag	12	12	20	9 or 16
K. for Crest	8	8	15	13 or 36
Superelevation	None	None	None	None
	70-110° at local, 80-100°	70-110° at local, 80-100°		
Intersection Angle	at collector and arterial	at collector and arterial	80-100°***	00∘
	***	***		
Minimum Intersection Spacing	34m	80m	120m	250m
Minimum Stopping Sight Distance	1	65m	85m	

2.1.1 Design Criteria

* * *

Town may request 22.0 m R.O.W. Except at 90° corners for crescents and courts. All streets are to intersect at 90° unless existing road alignments or property restrictions required otherwise.

2. ROADS AND STREETSCAPE

Page 273 of 310

Page 9

APPENDIX F

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Capacity and Queue Analysis Sheets



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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ب	ef.		
Sign Control	Stop			Stop	Stop		
Volume (vph)	76	47	78	393	446	115	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	83	51	85	427	485	125	
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total (vph)	134	512	610				
Volume Left (vph)	83	85	0				
Volume Right (vph)	51	0	125				
Hadj (s)	-0.07	0.07	-0.09				
Departure Headway (s)	6.5	5.2	5.0				
Degree Utilization, x	0.24	0.74	0.84				
Capacity (veh/h)	516	673	709				
Control Delay (s)	11.5	21.6	28.4				
Approach Delay (s)	11.5	21.6	28.4				
Approach LOS	В	С	D				
Intersection Summary							
Delay			23.8				
HCM Level of Service			С				
Intersection Capacity Utiliza	ation		72.5%	IC	CU Level of	Service	
Analysis Period (min)			15				

<Background 2022> Unsignalized AM Peak Hour

Intersection: 3: Church Hill Street & Pelham Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	20.2	29.6	27.3
Average Queue (m)	10.4	15.6	11.6
95th Queue (m)	16.3	26.0	19.2
Link Distance (m)	205.1	100.9	57.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

	≯	\mathbf{r}	1	†	Ļ	∢	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			ا	¢		
Sign Control	Stop			Stop	Stop		
Volume (vph)	76	47	78	393	446	115	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	83	51	85	427	485	125	
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total (vph)	134	512	610				
Volume Left (vph)	83	85	0				
Volume Right (vph)	51	0	125				
Hadj (s)	-0.07	0.07	-0.09				
Departure Headway (s)	6.5	5.2	5.0				
Degree Utilization, x	0.24	0.74	0.84				
Capacity (veh/h)	516	673	709				
Control Delay (s)	11.5	21.6	28.4				
Approach Delay (s)	11.5	21.6	28.4				
Approach LOS	В	С	D				
Intersection Summary							
Delay			23.8				
HCM Level of Service			С				
Intersection Capacity Utilization	on		72.5%	10	CU Level of	Service	С
Analysis Period (min)			15				

<Background 2022> Unsignalized PM Peak Hour

3/12/2018

Intersection: 3: Church Hill Street & Pelham Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	16.0	45.6	41.3
Average Queue (m)	9.7	24.0	21.0
95th Queue (m)	12.7	38.2	35.1
Link Distance (m)	205.1	100.9	57.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Signalized Intersection

Timings 3: Church Hill Street & Pelham Street

	٦	1	1	ŧ	
Lane Group	EBL	NBL	NBT	SBT	
Lane Configurations	Y		र्स	¢Î	
Volume (vph)	81	51	345	180	
Turn Type		Perm			
Protected Phases	4		2	6	
Permitted Phases		2			
Detector Phase	4	2	2	6	
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	
Total Split (s)	20.0	20.0	20.0	20.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	Max	Max	Max	
Act Effct Green (s)	7.4		27.0	27.0	
Actuated g/C Ratio	0.20		0.74	0.74	
v/c Ratio	0.33		0.33	0.16	
Control Delay	11.4		5.0	3.9	
Queue Delay	0.0		0.0	0.0	
Total Delay	11.4		5.0	3.9	
LOS	В		А	А	
Approach Delay	11.4		5.0	3.9	
Approach LOS	В		А	А	
Intersection Summary					
Cycle Length: 40					
Actuated Cycle Length: 36.7					
Natural Cycle: 40					
Control Type: Semi Act-Unco	ord				
Maximum v/c Ratio: 0.33					
Intersection Signal Delay: 5.7	7			lr	ntersection LOS: A
Intersection Capacity Utilizati	on 48.1%			IC	CU Level of Service A
Analysis Period (min) 15					

Splits and Phases: 3: Church Hill Street & Pelham Street

<↑ ₀2	ø4		
20 s	20 s		
↓ ø6			
20 s			

	۶	\mathbf{r}	1	Ť	Ļ	~		
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	Y			स्	ĥ			
Volume (vph)	81	33	51	345	180	19		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0			4.0	4.0			
Lane Util. Factor	1.00			1.00	1.00			
Frt	0.96			1.00	0.99			
Flt Protected	0.97			0.99	1.00			
Satd. Flow (prot)	1728			1851	1838			
Flt Permitted	0.97			0.95	1.00			
Satd. Flow (perm)	1728			1765	1838			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	88	36	55	375	196	21		
RTOR Reduction (vph)	31	0	0	0	5	0		
Lane Group Flow (vph)	93	0	0	430	212	0		
Turn Type			Perm					
Protected Phases	4			2	6			
Permitted Phases			2					
Actuated Green, G (s)	5.0			25.3	25.3			
Effective Green, g (s)	5.0			25.3	25.3			
Actuated g/C Ratio	0.13			0.66	0.66			
Clearance Time (s)	4.0			4.0	4.0			
Vehicle Extension (s)	3.0			3.0	3.0			
Lane Grp Cap (vph)	226			1166	1214			
v/s Ratio Prot	c0.05				0.12			
v/s Ratio Perm				c0.24				
v/c Ratio	0.41			0.37	0.17			
Uniform Delay, d1	15.3			2.9	2.5			
Progression Factor	1.00			1.00	1.00			
Incremental Delay, d2	1.2			0.9	0.3			
Delay (s)	16.5			3.8	2.8			
Level of Service	В			А	А			
Approach Delay (s)	16.5			3.8	2.8			
Approach LOS	В			А	А			
Intersection Summary								
HCM Average Control Del	ау		5.6	H	CM Level	of Service	А	
HCM Volume to Capacity	ratio		0.38					
Actuated Cycle Length (s)			38.3	Sı	um of lost	time (s)	8.0	
Intersection Capacity Utiliz	zation		48.1%	IC	U Level o	of Service	А	
Analysis Period (min)			15					
c Critical Lane Group								

<Background 2022> Signalized AM Peak Hour

Intersection: 3: Church Hill Street & Pelham Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	22.2	79.1	27.3
Average Queue (m)	12.8	25.9	7.3
95th Queue (m)	20.6	56.2	19.8
Link Distance (m)	205.1	100.9	57.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Lane Group EBL NBL NBT SBT Lane Configurations 1 1 1 1 Volume (vph) 76 78 393 446 Turn Type Perm Perm 1 1 Protected Phases 4 2 6 1 Permitted Phases 2 0 2 0 Detector Phase 4 2 2 6 Switch Phase 3 2 0 20.0		٦	1	1	Ļ	
Lane Configurations Y Image: A state of the state of	Lane Group	EBL	NBL	NBT	SBT	
Volume (vph) 76 78 393 446 Turn Type Perm Perm Protected Phases 2 6 Switch Phase 4 2 2 Detector Phase 4 2 2 Switch Phase 4 2 2 Minimu Initial (s) 4.0 4.0 4.0 Minimu Initial (s) 20.0 20.0 20.0 Total Split (s) 20.0 20.0 20.0 20.0 Total Split (s) 50.0% 50.0% 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 1.0 Lead-Lag Eeacl-Lag Optimize? Recall Mode None Max Max Act Laffet Green (s) 7.4 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3	Lane Configurations	۰Y		र्स	¢Î,	
Turn Type Perm Protected Phases 4 2 6 Permitted Phases 2 2 Detector Phase 4 2 2 Winimum Initial (s) 4.0 4.0 4.0 Minimum Split (s) 20.0 20.0 20.0 Total Split (s) 20.0 20.0 20.0 Total Split (s) 20.0 20.0 20.0 Total Split (s) 20.0 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 Lead-Lag U 4.0 4.0 Lead-Lag Optimize? Recall Mode None Max Max Act Lift Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 V/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3	Volume (vph)	76	78	393	446	
Protected Phases 4 2 6 Permitted Phases 2 Detector Phase 4 2 2 6 Switch Phase 4.0 4.0 4.0 4.0 Minimum Initial (s) 4.0 4.0 4.0 20.0 <	Turn Type		Perm			
Permitted Phases 2 Detector Phase 4 2 2 6 Switch Phase	Protected Phases	4		2	6	
Detector Phase 4 2 2 6 Switch Phase	Permitted Phases		2			
Switch Phase Minimum Initial (s) 4.0 4.0 4.0 Minimum Split (s) 20.0 20.0 20.0 20.0 Total Split (s) 20.0 20.0 20.0 20.0 Total Split (s) 50.0% 50.0% 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 Lost Time (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 Lead/Lag Yellow Time (s) 4.0 Lead-Lag Optimize? Yellow Time (s) 4.0 Recall Mode None Max Max Max Actuated g/C Ratio 0.20 0.73 0.73 Vic Ratio 0.34 0.44 0.46 0.46 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <t< td=""><td>Detector Phase</td><td>4</td><td>2</td><td>2</td><td>6</td><td></td></t<>	Detector Phase	4	2	2	6	
Minimum Initial (s) 4.0 4.0 4.0 Minimum Split (s) 20.0 20.0 20.0 20.0 Total Split (s) 20.0 20.0 20.0 20.0 Total Split (s) 50.0% 50.0% 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 Lead/Lag Lead/Lag Lead/Lag Lead/Lag Lead/Lag Lead/Lag Optimize? Recall Mode None Max Max Max Act Effct Green (s) 7.4 26.3 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 0.73 V/c Ratio 0.34 0.44 0.46 26.3 26.3 Queue Delay 10.3 6.8 6.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.3 20.	Switch Phase					
Minimum Split (s) 20.0 20.0 20.0 20.0 Total Split (s) 20.0 20.0 20.0 20.0 Total Split (%) 50.0% 50.0% 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 1.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Recall Mode None Max Max Act Effct Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 V/c Ratio 0.34 0.44 0.46 Octorol Delay 10.3 6.8 6.3 Queue Delay 10.3 6.8 6.3 Oueue Delay 10.3 6.8 6.3 LOS B A A A A A A Intersection Summary Cycle Length: 40	Minimum Initial (s)	4.0	4.0	4.0	4.0	
Total Split (s) 20.0 20.0 20.0 20.0 Total Split (%) 50.0% 50.0% 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Recall Mode None Max Max Max Act Effct Green (s) 7.4 26.3 26.3 26.3 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 0.73 V/C Ratio 0.44 0.46 Control Delay 10.3 6.8 6.3 20 20.0	Minimum Split (s)	20.0	20.0	20.0	20.0	
Total Split (%) 50.0% 50.0% 50.0% 50.0% Yellow Time (s) 3.5 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 1.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Recall Mode None Max Max Max Act Effct Green (s) 7.4 26.3 26.3 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 0.73 0.73 V/c Ratio 0.34 0.44 0.46 0.46 0.0	Total Split (s)	20.0	20.0	20.0	20.0	
Yellow Time (s) 3.5 3.5 3.5 3.5 All-Red Time (s) 0.5 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 Lead/Lag	Total Split (%)	50.0%	50.0%	50.0%	50.0%	
All-Red Time (s) 0.5 0.5 0.5 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 Lead/Lag	Yellow Time (s)	3.5	3.5	3.5	3.5	
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Recall Mode None Max Max Max Act Effct Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 V/c Ratio 0.20 0.73 0.73 0.73 V/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 0.0 0.0 0.0 0.0 10.3 6.8 6.3 0.44 0.46 0.46 0.46 0.46 0.46 0.46 0.46 0.46 0.46 0.0<	All-Red Time (s)	0.5	0.5	0.5	0.5	
Total Lost Time (s) 4.0 4.0 4.0 Lead/Lag Lead-Lag Optimize? Recall Mode None Max Max Act Effct Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 v/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach LOS B A A Intersection Summary Cycle Length: 36.1 Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection LOS: A Intersection LOS: A Intersection LOS: A Intersection Signal Delay: 6.9 Intersection LOS: A ICU Level of Service C	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Lead/Lag Lead-Lag Optimize? Recall Mode None Max Max Act Effct Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 V/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach LOS B A A Intersection Summary Cycle Length: 36.1 A Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection Signal Delay: 6.9 Intersection LOS: A Intersection LOS: A	Total Lost Time (s)	4.0	4.0	4.0	4.0	
Lead-Lag Optimize?Recall ModeNoneMaxMaxAct Effct Green (s)7.426.326.3Actuated g/C Ratio0.200.730.73v/c Ratio0.340.440.46Control Delay10.36.86.3Queue Delay0.00.00.0Total Delay10.36.86.3LOSBAAApproach Delay10.36.86.3Approach LOSBAAIntersection SummaryVVCycle Length: 40AAActuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordIntersection LOS: AMaximum v/c Ratio: 0.46Intersection LOS: AIntersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Lead/Lag					
Recall Mode None Max Max Max Act Effct Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 v/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 Approach LOS B A A Actuated Cycle Length: 36.1 A A Natural Cycle: 50 Control Type: Semi Act-Uncoord V Maximum v/c Ratio: 0.46 Intersection LOS: A Intersection LOS: A Intersection Capacity Utilization 72.5% ICU Level of Service C	Lead-Lag Optimize?					
Act Effct Green (s) 7.4 26.3 26.3 Actuated g/C Ratio 0.20 0.73 0.73 v/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach LOS B A A Intersection Summary Cycle Length: 36.1 A Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection Signal Delay: 6.9 Intersection LOS: A Intersection LOS: A Intersection Capacity Utilization 72.5% ICU Level of Service C	Recall Mode	None	Max	Max	Max	
Actuated g/C Ratio 0.20 0.73 0.73 v/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach LOS B A A Intersection Summary Cycle Length: 40 A Actuated Cycle Length: 36.1 Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection LOS: A Intersection LOS: A Intersection Signal Delay: 6.9 Intersection LOS: A ICU Level of Service C	Act Effct Green (s)	7.4		26.3	26.3	
v/c Ratio 0.34 0.44 0.46 Control Delay 10.3 6.8 6.3 Queue Delay 0.0 0.0 0.0 Total Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 LOS B A A Approach Delay 10.3 6.8 6.3 Approach Delay 10.3 6.8 6.3 Approach Delay 10.3 6.8 6.3 Approach LOS B A A Intersection Summary Cycle Length: 40 Actuated Cycle Length: 36.1 Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection LOS: A Intersection LOS: A Intersection Signal Delay: 6.9 Intersection LOS: A ICU Level of Service C	Actuated g/C Ratio	0.20		0.73	0.73	
Control Delay10.36.86.3Queue Delay0.00.00.0Total Delay10.36.86.3LOSBAAApproach Delay10.36.86.3Approach Delay10.36.86.3Approach LOSBAAIntersection SummaryVVCycle Length: 40Actuated Cycle Length: 36.1VNatural Cycle: 50Control Type: Semi Act-UncoordVMaximum v/c Ratio: 0.46Intersection LOS: AIntersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	v/c Ratio	0.34		0.44	0.46	
Queue Delay0.00.00.0Total Delay10.36.86.3LOSBAAApproach Delay10.36.86.3Approach LOSBAAIntersection SummaryCycle Length: 40Actuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Control Delay	10.3		6.8	6.3	
Total Delay10.36.86.3LOSBAAApproach Delay10.36.86.3Approach LOSBAAIntersection SummaryCycle Length: 40Actuated Cycle Length: 36.1Actuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Queue Delay	0.0		0.0	0.0	
LOSBAAApproach Delay10.36.86.3Approach LOSBAAIntersection SummaryCycle Length: 40Actuated Cycle Length: 36.1Actuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordControl Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection LOS: AIntersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Total Delay	10.3		6.8	6.3	
Approach Delay10.36.86.3Approach LOSBAAIntersection SummaryCycle Length: 40Actuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection Signal Delay: 6.9Intersection Capacity Utilization 72.5%ICU Level of Service C	LOS	В		А	А	
Approach LOSBAAIntersection SummaryCycle Length: 40Actuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%Icu Level of Service C	Approach Delay	10.3		6.8	6.3	
Intersection SummaryCycle Length: 40Actuated Cycle Length: 36.1Natural Cycle: 50Control Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Approach LOS	В		А	А	
Cycle Length: 40 Actuated Cycle Length: 36.1 Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection Signal Delay: 6.9 Intersection LOS: A Intersection Capacity Utilization 72.5% ICU Level of Service C	Intersection Summary					
Actuated Cycle Length: 36.1 Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection Signal Delay: 6.9 Intersection Capacity Utilization 72.5% ICU Level of Service C	Cycle Length: 40					
Natural Cycle: 50 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.46 Intersection Signal Delay: 6.9 Intersection Capacity Utilization 72.5% ICU Level of Service C	Actuated Cycle Length: 36.1					
Control Type: Semi Act-UncoordMaximum v/c Ratio: 0.46Intersection Signal Delay: 6.9Intersection Capacity Utilization 72.5%ICU Level of Service C	Natural Cycle: 50					
Maximum v/c Ratio: 0.46Intersection LOS: AIntersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Control Type: Semi Act-Unco	ord				
Intersection Signal Delay: 6.9Intersection LOS: AIntersection Capacity Utilization 72.5%ICU Level of Service C	Maximum v/c Ratio: 0.46					
Intersection Capacity Utilization 72.5% ICU Level of Service C	Intersection Signal Delay: 6.9)			lr	ntersection LOS: A
	Intersection Capacity Utilizati	on 72.5%)		IC	CU Level of Service C
Analysis Period (min) 15	Analysis Period (min) 15					

Splits and Phases: 3: Church Hill Street & Pelham Street

™ ₀2	ø 4				
20 s	20 s				
↓ ø6					
20 s					

Synchro 7 - Report Page 1

	∕	\mathbf{r}	1	1	Ŧ	~	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			<u>ل</u>	î,		
Volume (vph)	76	47	78	393	446	115	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0			4.0	4.0		
Lane Util. Factor	1.00			1.00	1.00		
Frt	0.95			1.00	0.97		
Flt Protected	0.97			0.99	1.00		
Satd. Flow (prot)	1714			1847	1811		
Flt Permitted	0.97			0.85	1.00		
Satd. Flow (perm)	1714			1590	1811		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	83	51	85	427	485	125	
RTOR Reduction (vph)	44	0	0	0	13	0	
Lane Group Flow (vph)	90	0	0	512	597	0	
Turn Type			Perm				_
Protected Phases	4			2	6		
Permitted Phases			2				
Actuated Green, G (s)	5.0			24.7	24.7		
Effective Green, g (s)	5.0			24.7	24.7		
Actuated g/C Ratio	0.13			0.66	0.66		
Clearance Time (s)	4.0			4.0	4.0		
Vehicle Extension (s)	3.0			3.0	3.0		
Lane Grp Cap (vph)	227			1042	1187		
v/s Ratio Prot	c0.05				c0.33		
v/s Ratio Perm				0.32			
v/c Ratio	0.40			0.49	0.50		
Uniform Delay, d1	15.0			3.3	3.3		
Progression Factor	1.00			1.00	1.00		
Incremental Delay, d2	1.1			1.7	1.5		
Delay (s)	16.1			5.0	4.9		
Level of Service	В			А	А		
Approach Delay (s)	16.1			5.0	4.9		
Approach LOS	В			A	A		
Intersection Summary							
HCM Average Control Dela	ау		6.1	H	CM Level	of Service	А
HCM Volume to Capacity r	ratio		0.48				
Actuated Cycle Length (s)			37.7	Si	um of lost	time (s)	8.0
Intersection Capacity Utiliz	ation		72.5%	IC	CU Level o	f Service	С
Analysis Period (min)			15				
c Critical Lane Group							

<Background 2022> Signalized PM Peak Hour

3/12/2018

Intersection: 3: Church Hill Street & Pelham Street

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	22.5	99.8	35.2
Average Queue (m)	11.8	42.4	20.7
95th Queue (m)	20.2	87.7	33.4
Link Distance (m)	205.1	100.9	57.8
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		3	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

APPENDIX G

Т

Level of Service Definitions

LEVEL OF SERVICE ANALYSIS AT SIGNALIZED INTERSECTIONS

To assist in clarifying the arithmetic analysis associated with traffic engineering, it is often useful to refer to "Level of Service". The term Level of Service implies a qualitative measure of traffic flow at an intersection. It is dependent upon vehicle delay and vehicle queue lengths at the approaches. Specifically, Level of Service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period. The following table describes the characteristics of each level:

Level of Service	Features	Stopped Delay per Vehicle
А	At this level of service, almost no signal phase is fully utilized by traffic. Very seldom does a vehicle wait longer than one red indication. The approach appears open, turning movements are easily made and drivers have freedom of operation.	$\frac{(sec)}{\leq 5.0}$
В	At this level, an occasional signal phase is fully utilized and many phases approach full use. Many drivers begin to feel somewhat restricted within platoons of vehicles approaching the intersection.	$> 5.0 \text{ and } \le 15.0$
С	At this level, the operation is stable though with more frequent fully utilized signal phases. Drivers feel more restricted and occasionally may have to wait more than one red signal indication, and queues may develop behind turning vehicles. This level is normally employed in urban intersection design.	> 15.0 and <u><</u> 25.0
D	At this level, the motorist experiences increasing restriction and instability of flow. There are substantial delays to approaching vehicles during short peaks within the peak period, but there are enough cycles with lower demand to permit occasional clearance of developing queues and prevent excessive backups.	$>$ 25.0 and \leq 40.0
E	At this level, capacity is reached. There are long queues of vehicles waiting upstream of the intersection and delays to vehicles may extend to several signal cycles.	$> 40.0 \text{ and } \le 60.0$
F	At this level, saturation occurs, with vehicle demand exceeding the available capacity.	> 60.0
APPENDIX H

All-way Stop and Signal Warrant Analysis

Input Dat	ta She	et		Analysis	Sheet	Results	Sheet	Proposed	d Collisio	on GO TO	Justificati	on:	
What are the in	tersecting	roadways?	Pe	elham Street	t and Churc	h Hill						-	•
What is the direction of the Main Road street? North-South When was the data collected? refer OTM PG.70 When was the data collected? Image: Collected in the strength in the str													
Justification	Justification 1 - 4: Volume Warrants												
a Number of	a Number of lanes on the Main Road?												
b Number of	lanes on th	e Minor Roa	ad?	2 or more	•								
c How many	c How many approaches? 3 •												
d What is the	operating	environment	t?	Rural	-	Popu	lation < 10,000	AND	Speed >=	70 km/hr			
e What is the	eight hour	vehicle volu	ume at the i	ntersection?	(Please fill	in table be	low)						
	Main No	orthbound A	pproach	Minor E	astbound A	oproach	Main So	uthbound Ap	proach	Minor Westbound Approach			Pedestrians
Hour Ending	LT	тн	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	Road
8:00	13	253	0	0	0	0	0	93	15	7	0	31	2
9:00	43	400	0	0	0	0	0	184	30	18	0	64	6
12:00	37	308	0	0	0	0	0	253	93	30	0	44	0
13:00	42	294	0	0	0	0	0	242	91	37	0	51	6
14:00	23	224	0	0	0	0	0	243	90	28	0	37	1
4:00	39	307	0	0	0	0	0	307	69	26	0	66	5
5:00	30	315	0	0	0	0	0	364	89	22	0	56	14
6:00	43	289	0	0	0	0	0	411	86	21	0	54	18
Tatal	070	0.000	0	0	•	0	0	0.007	500	400	•	400	50

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zo	Zone 1		Zo	Zone 2		Zone 3 (if needed)		Zone 4 (if needed)	
	Assisted	Ur	nassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Total
Total 8 hour pedestrian volume	4		47		25	2	0	0	2	
Factored 8 hour pedestrian volume		55		25		4		2		
% Assigned to crossing rate										
Net 8 Hour Pedestrian Volume at Crossing							0			
Net 8 Hour Vehicular Volume on Street Being Crossed										

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zo	ne 2	Zone 3 (if	needed)	Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Total
Total 8 hour pedestrian volume	4	47	0	25	2	0	0	2	
Total 8 hour pedestrians delayed greater than 10 seconds	0	0	0	0	0	0	0	0	
Factored volume of total pedestrians	5	5	25		4		2		
Factored volume of delayed pedestrians		0		0		0		0	
% Assigned to Crossing Rate	0	%	0%		0%		0%		
Net 8 Hour Volume of Total Pedestrian	5								0
Net 8 Hour Volume of Delayed Pedestr	ans								0

Analysis Sheet Res

Results Sheet Proposed Collision

Page 2912/09/fi8310

Input Sheet	Analysis Sheet	Proposed Collision

GO TO Justification:

Intersection: Pelham Street and Church Hill

Count Date: refer OTM PG.70

Summary Results

	Justifi	cation	Compliance	Signal J	Justified?
1. Minimum Vehicular	A T	Fotal Volume	96 %	5	
Volume	вс	Crossing Volume	41 %	Faire-A	1
2. Delay to Cross	AN	Main Road	95 %		
Traffic	BC	Crossing Road	60 %	Rec.1	
3. Combination	AJ	Justificaton 1	41 %		
	в Ј	Justification 2	60 %	Record.	
4. 4-Hr Volume			27 %		
5. Collision Expe	rience		0 %		V
				1	1
6. Pedestrians	A V	/olume	Justification not met		
	B Delay Justification not met				Record

• At the intersection of a County or Regional road with a King's Highway in a rural area.

The use of STOP signs should be considered:

- At the intersection of a County or Regional road with a King's Highway in a built-up area;
- At the intersection of a city street or township road with a King's Highway;
- At the intersection of a minor street or road with a through street or highway;
- At unsignalized intersections in a signalized area, except where they would interfere with traffic signal progression;
- At intersections where the application of the normal right hand rule or yield control would be unduly hazardous; and
- At intersections which have experienced a record of collisions of the type which are susceptible to correction by STOP control (see stop collision warrant below).

Stop Collision Warrant

STOP sign control may be warranted where three or more right angle or turning collisions per year have occurred over a period of three years and methods of reducing the collision experience, such as sight line improvements, street lighting, parking prohibitions, enforcement, geometric revisions, or YIELD sign controls, have been tried or considered, and found to be inadequate.

All-way Stop Controls

In some circumstances, it may be appropriate to install STOP signs on all approaches to an intersection. This results in an all-way stop condition. All-way STOP sign controls disrupt the flow of traffic and introduce delays to all drivers within the intersection and should only be considered at the intersection of two relatively equal roadways having similar traffic volume demand and operating characteristics (see minimum volume warrants below). The approaches should be directly opposing (i.e., not offset), should preferably approach at right angles (i.e., no skewed approaches) and have an equal number of lanes.

All-way stop controls should be considered only under the following situations:

- As an interim measure, where traffic control signals are warranted but cannot be implemented immediately. For information on traffic signal control, refer to Book 12 (Traffic Signals);
- At locations having a high collision frequency where less restrictive measures have been tried and found inadequate (see all-way stop collision warrant below); or
- As a means of providing a transition period to accustom drivers to a change in intersection rightof-way control from one direction to another. Installation under this warrant must be in conformance with the Amendment of Intersection Control, discussed under Special Considerations at the end of Section 2.

All-way Stop Minimum Volume Warrant (Arterial and Major Roads)

All-way stop control may be considered on major roads where the following conditions are met:

• The total vehicle volume on all intersection approaches exceeds 500 vehicles per hour for each of any eight hours of the day;

- The combined vehicular and pedestrian volume on the minor street exceeds 200 units per hour (all vehicles plus pedestrians wishing to enter the intersection) for each of the same eight hours, with an average delay to traffic on the minor street (either vehicles or pedestrians wishing to enter the intersection) of greater than 30 seconds; and
- The volume split does not exceed 70/30. Volume on the major street is defined as vehicles only. Volume on the minor street includes all vehicles plus any pedestrians wishing to cross the major roadway.

All-way Stop Minimum Volume Warrant (Minor Roads)

All-way stop control may be considered on minor roads where the following conditions are met:

- Total vehicle volume on all intersection approaches exceeds 350 for the highest hour recorded; and
- Volume split does not exceed 75/25 for threeway control or 65/35 for four-way control. Volume is defined as vehicles only.

All-way Stop Collision Warrant

For the purposes of this warrant, a high accident frequency is an average of four collisions per year over a three-year period. Only those accidents susceptible to relief through multi-way stop control must be considered (i.e., right angle and turning type collisions). Included in this warrant are those locations where visibility problems exist which limit the safe approach speed to less than 15 km/h, thereby creating an unreasonable accident potential. Special advance warning or overhead flashing lights may be necessary to augment the control if vertical or horizontal alignment is a factor.

Inappropriate Use of All-way Stop Control

All-way stop controls should not be used under the following conditions:

- Where the protection of pedestrians, school children in particular, is a prime concern. This concern can usually be addressed by other means;
- · As a speed control device;
- On roads where progressive signal timing exists;
- On roads within urban areas having a posted speed limit in excess of 60 km/h;
- At intersections that are not roundabouts having less than three, or more than four, approaches;
- At intersections that are offset, poorly defined or geometrically substandard;
- On truck or bus routes, except in an industrial area or where two such routes cross;
- On multi-lane approaches where a parked or stopped vehicle on the right will obscure the STOP sign;
- Where traffic would be required to stop on grades;
- As a means of deterring the movement of through traffic in a residential area;

ЛЕМО		•	
		Subject:	Review of Intersection Pedestrian Signals
		Project:	Traffic Studies
_		From:	Jeff Suggett, M. Sc.
Associated Engineering	GLOBAL PERSPECTIVE. LOCAL FOCUS.	To:	Ryan Cook, Town of Pelham
	1	Date:	February 27, 2019 File: 2018-5290

Ryan:

The purpose of this memorandum is to report findings of our review of operations at three (3) intersections on Pelham Street that are currently controlled by Intersection Pedestrian Signals; Pelham Street and Church Hill; Pelham Street and Pancake Lane/John Street; and, Pelham Street and Bacon Lane/Spruceside Crescent. This is in response to the Town's request that Associated Engineering (AE) investigate whether the intersection pedestrian signals are warranted and whether there are any operations or safety issues associated with them.

1 **DESCRIPTION / BACKGROUND**

The intersections being reviewed all intersect with Pelham Street south of Regional Road 20 within a space of approximately 1.6 kilometres. The intersection of Pelham Street and Church Hill is located closest to Regional Road 20 and in the built-up area of the Community of Fonthill. The intersections of Pelham Street and Pancake Lane/John Street and Pelham Street and Bacon Lane/Spruceside Crescent are located further south in a mainly residential area.

Each intersection has an intersection pedestrian signal. The intersecting road is controlled by a stop sign and the main road (Pelham Street) is controlled by the signals. Painted crosswalks are provided across the main road and pedestrians can cross with the right-of-way when the display shows the "Walk" indication.

Previous Studies

In previous studies recently completed by AE for the Town of Pelham, a traffic operations assessment was conducted at the intersections of Pelham Street and Church Hill/Pelham Street and Pelham Town Square. The intersections of Pelham Street and Pancake Lane/John Street and Pelham Street and Bacon Lane/Spruceside Crescent were evaluated for the need for regular traffic signals (traffic signal warrant).

Pelham Street and Church Hill

The recommendation of the previous study indicated that consideration be made to enhance pedestrian safety within the vicinity of the intersection by prohibiting vehicle parking on Pelham Street within 30 metres of the signal (i.e., 30 metres from the crossing). Observations showed that legally parked vehicles were obscuring sightlines for both pedestrians crossing and vehicles approaching this intersection.

Pelham Street and Pancake Lane/John Street

The recommendation of the previous study indicated that regular traffic signals are not justified based on the typical vehicular volumes entering the intersection, which were too low to meet the two (2) warrant criteria of the Ontario Traffic Manual Book 12: Traffic Signals (Book 12) - only 61% and 72% met.





Memo To: Ryan Cook, Town of Pelham February 27, 2019 - 2 -

Pelham Street and Bacon Lane/Spruceside Crescent

The recommendation of the previous study indicated that regular traffic signals are not justified based on the typical vehicular volumes entering the intersection, which were too low to meet the warrant criteria of Book 12 – only 40% and 50% met.

Intersection Pedestrian Signals Justification

According to *Ontario Traffic Manual Book 12– Traffic Signals* (Book 12)¹, the need for an Intersection Pedestrian Signal is determined based on the traffic volume on the road, pedestrian volumes and the amount of pedestrian delay (inability for pedestrians to find safe gaps - Justification 6), as presented in Figures 22 and Figure 23 of Book 12. Higher traffic volumes will result in a reduction in gap availability, making it more difficult for a pedestrian to safely cross the roadway. A review of Figure 22 provided in Book 12 indicate the warranting conditions for an Intersection Pedestrian Signal are not met, based on the traffic counts undertaken in November 2018, as there is insufficient pedestrian volume, as shown in **Appendix A**. While not formally evaluated, it was also noted that there are insufficient pedestrian crossing volumes for an intersection pedestrian signal to be justified (based on Figure 23), as pedestrian volumes fall well below the minimum threshold (200 pedestrians crossing in an eight-hour period).

2 DATA REVIEW / FIELD VISITS

In order to gain insights into pedestrian crossing behaviour and overall gap availability, a gap study was undertaken at each location to determine the number of safe gaps a pedestrian would have to cross the roadway. The methodology used was adapted from the *Crossing Guard Guide* produced by the *Ontario Traffic Council*².

Gap studies at each of the study intersections were requested from Pyramid Traffic Inc. and were conducted on Wednesday, January 16, 2019 during the AM-, Mid- and PM-peak hours for each location for a total study time of three (3) hours. The study involved collecting information about vehicle gaps on Pelham Street, of the number of pedestrians crossing and whether pedestrians were pushing the button (compliance) or crossing without the benefit of the traffic signal (non-compliance). Gap availability was only collected during periods of time when the signal was green on Pelham Street (allowing traffic to proceed). The gap study field sheets are provided in **Appendix B**.

The summary of the gap study results is shown in **Table 2-1** at each location. A safe gap is defined as the period of time a pedestrian would require to safely cross the road, in consideration of a 1.0 m/s walking speed and the total width of the crosswalk (with a 4 second perception-reaction time). During each 5-minute period assessed at all locations, there was a minimum of 4 safe gaps (when the signal was green). The average number of safe gaps per 5-minute periods (for the periods when the signal was green) ranged between 5.5 - 7.2.

¹ Ontario Traffic Manual Book 12 – Traffic Signals, Ontario Ministry of Transportation, 2012

² Crossing Guard Guide, Ontario Traffic Council, 2017



Memo To: Ryan Cook, Town of Pelham February 27, 2019

- 3 -

Location	Safe Gap (seconds)	Average Safe Gaps per 5 Minute Period (With Green Signal)	Total Pedestrians Crossing in 3 Hours	Number of Pedestrians that Pushed Button	Number of Pedestrians that did not Push Button
Pelham Street and Church Hill	12	7.2	27	10	17
Pelham Street and Pancake Lane/John Street	14	5.5	6	3	3
Pelham Street and Bacon Lane/Spruceside Crescent	14	6.6	4	1	3

Table 2-1 Gap Study Summary

The results of the gap studies show that pedestrian crossing volumes at all locations are relatively low and that the average number of safe gaps per 5 minutes is adequate. This suggests that under free flow conditions, during the peak hour periods reviewed, there is sufficient gap availability to cross Pelham Street. If the intersection pedestrian signal was absent, pedestrians would still have no difficulty crossing the roadway.

The number of pedestrians crossing the location at Church Hill was noted to be 27 pedestrians over the 3-hour period reviewed, or roughly one every six minutes. It was noted that there were a very small number of pedestrians crossing the other two locations. A total of 6 and 5 pedestrians respectively, crossed Pelham Street at the Pancake Lane/John Street and Bacon Lane/Spruceside Crescent locations. The higher number of pedestrians at the Church Hill location is expected, given the built-up nature of the surrounding area. The other two locations are in a residential area (single family dwellings) with no elementary schools in the immediate area.

The final key observation made with the gap study was the lack of use of the push button. At the three locations combined, less than half of the pedestrians pressed the push button. This further confirms the lack of need for an intersection pedestrian signal. It also emphasized the need for the public to be further educated on the legal, correct and appropriate use of intersection pedestrian signal.



Memo To: Ryan Cook, Town of Pelham February 27, 2019 - 4 -

2.1 Other Field Observations

Additional field observations were made on Friday, February 1, 2019 to review sightlines at each location, traffic signs, pavement markings and the condition and operation of the signal and signal hardware. Pictures illustrating the crosswalks at each of the Study intersections is provided in **Figure 2-1**.



Pelham Street and Church Hill

Pelham Street and Pancake Lane/John Street



Pelham Street and Bacon Lane/Spruceside Crescent Figure 2-1 Views of Crosswalks

Observations during the field visit on February 1st reaffirm that visibility for pedestrians and vehicles at Pelham Street and Church Hill was obscured as documented in our previous study. This is due to the presence of legally parked vehicles (2hour parking permitted) within the functional area of the intersection on the Pelham Street approaches. Visibility was adequate at the intersections of Pelham Street and Pancake Lane/John Street and Pelham Street and Bacon Lane/Spruceside Crescent on the north and south approaches to the intersection pedestrian signals.



Memo To: Ryan Cook, Town of Pelham February 27, 2019 - 5 -

Observations made during the field visit regarding traffic signs, pavement markings and the condition and operation of the signals were compared with the requirements of *Ontario Traffic Manual Book 15: Pedestrian Crossing Treatments* (Book 15) and the components for intersection pedestrian signals specified in *Table 9*. Each location met most of the requirements or desirable components, however a number of common deficiencies to each location were not met. Table 9 of Book 15 is provided in **Figure 2-2**.

Required Components Optional Components Desirable Components Traffic Signal Heads as required School Crossing Guard • Raised refuge island (for road • • cross-sections with more than Approach Markings (Stop Line, • • Pedestrian Count Down Signals two lanes and two-directional No-Passing zone, and Turn • Pedestrian Countdown Signal traffic) with mandatory: Lanes markings, as required) Information Sign Pavement markings on . • Crosswalk Markings . Auxiliary Signal Heads approaches to obstructions Advanced Stop Bar at Crosswalk . Type 12 Signal Head (300 mm ٠ Keep Right Sign (Rb-25, with mandatory Stop Here on red / amber / green lens) Rb-125) Red Signal Sign (Rb-78) Ladder Crosswalk Markings . Object Marker Sign (Wa-• Stop Here On Red sign (Rb-78) 33L) Textured Crosswalk . on the near side of an IPS with vehicle and pedestrian heads Stopping prohibition for a Raised Crosswalk installed on the far side minimum of 30 m on each Cross on Walk Signal Only Sign approach to the crossing, and Pedestrian Control Indications (RA-7) 15 m following the crossing with AODA compliant Cross Other Side Sign (Ra-9) Parking and other sight Pedestrian Signal Pushbuttons and Pedestrian Pushbutton obstructions prohibition within Do Not Cross Here Sign (Ra-9a) . Symbol Sign (Ra-12) at least 30 m of crossings • No Right Turn on Red sign (Rb-Stop sign (Ra-1) on the cross 79) street for IPS • Pedestrian Must Push Button to Receive Walk Signal (Ra-13) Safety elements including Barricades, Pedestrian Fencing, Gates, Walls, Bollards, and Barriers

Table 9: Components for Intersection and Mid-block Pedestrian Signals

Figure 2-2

Book 15 Requirements for Intersection Pedestrian Signals



Memo To: Ryan Cook, Town of Pelham February 27, 2019 - 6 -

The existing crosswalk pavement markings are not appropriate and are for those used at rural supervised school crosswalks as shown in Figure 45 of *Ontario Traffic Manual Book 11: Markings and Delineation* (Book 11). The appropriate markings are specified in Section 6.2.4.4 of Book 15 and consist of solid white lines spaced a minimum of 2.5 metres apart. As an option and for enhancement purposes, ladder crosswalk markings can be utilized as specified in section 6.2.4.5, Figure 12 of Book 15. The Ontario Traffic Manual illustrations are provided in **Figures 2-3 and 2-4**.







There are no signed parking or stopping prohibitions within 30 metres of the crosswalk approaches and 15 metres beyond the crosswalk. This is to ensure clear sightlines for drivers approaching the intersection (on Pelham Street or turning from the crossing roadway) and for pedestrians crossing Pelham Street.

There are no signs that reinforce to pedestrians the appropriate side to cross (i.e., the Ra-9a), given that the proportion of non-compliance is high (observations from the gap studies). An illustration of the Ra-9a "Cross Other Side" sign is provided in **Figure 2-5**.



Memo To: Ryan Cook, Town of Pelham February 27, 2019

- 7 -



Figure 2-5 Ra-9a "Cross Other Side" Sign

Other site-specific issues observed include:

- Short-term parking (2 hours) permitted on both sides of Pelham Street within the 30 metre approaches to the crosswalk at Church Hill as documented earlier in this report and;
- Accessibility issues at Pelham Street and Bacon Lane/Spruceside Crescent with respect to the push-button location. It was noted at the time of the site visit that snow had not been cleared near the steel pole to which the push-button was installed (south-east corner) which made access difficult. A picture is provided in **Figure 2-6**.



Memo To: Ryan Cook, Town of Pelham February 27, 2019

- 8 -



Figure 2-6 Push-Button Accessibility south-east corner of Pelham Street and Bacon Lane/Spruceside Crescent

3 CONCLUSIONS/RECOMMENDATIONS

A review of the warranting conditions for the three intersection pedestrian signals indicates that they are not currently warranted based on the November 2018 traffic counts. In addition, the gap analysis indicates that there is a sufficient amount of available safe gaps for pedestrians to cross the roadway without the benefit of the intersection pedestrian signals. However, given the capital investment put into their installation, it is recommended that they remain in place, and measures be undertaken to improve their safety and conformance to Book 15 as well as educating the public on their correct use. To enhance safety and conform to engineering guidelines as well as to maximize their use and encourage compliance, the following site-specific (and general) measures are recommended at each of the following pedestrian signals:

Pelham Street and Church Hill

- 1. Prohibit vehicle parking on both sides of Pelham Street within 30 metres of the crossing and install the corresponding parking prohibition signs;
- 2. Remove existing crosswalk markings and replace with markings specified in Section 6.2.4.4 of Book 15 (the existing crosswalk surface is textured so ladder markings are not recommended);



Memo To: Ryan Cook, Town of Pelham February 27, 2019

- 9 -

 Install Ra-9a signs on the south side of the intersection as specified in Table 9 of Book 15 under "Optional Components".

Pelham Street and Pancake Lane/John Street

- 1. Consider installing parking prohibition signs on both sides of Pelham Street within 30 metres of the crossing;
- 2. Remove the existing crosswalk markings and replace with markings specified in Section 6.2.4.5, Figure 12 of Book 15 (ladder markings for increased awareness).
- 3. Install Ra-9a signs on the north side of the intersection as specified in Table 9 of Book 15 under "Optional Components".

Pelham Street and Bacon Lane/Spruceside Crescent

- 1. Consider installing parking prohibition signs on both sides of Pelham Street within 30 metres of the crossing;
- 2. Remove the existing crosswalk markings and replace with markings specified in Section 6.2.4.5, Figure 12 of Book 15 (ladder markings for increased awareness);
- 3. Install Ra-9a signs on the north side of the intersection as specified in Table 9 of Book 15 under "Optional Components".

General Measures

- 1. Ensure that during snow clearing operations, the area around the pedestrian push-button poles is cleared adequately to remain accessible to all users;
- 2. Develop an education program or initiative that teaches the proper use of intersection pedestrian signals. This can be achieved through the production and distribution of brochures or other media and/or delivery of presentations to the public.

Respectfully submitted, Associated Engineering (Ont.) Ltd.

Jeff Suggett, M. Sc. Acting Manager, Transportation

Dow DiFro

Domenic Di Flavio, Dipl. T. Senior Transportation Planner



Geoff Burn, P. Eng. Division Manager

APPENDIX A – Ontario Traffic Manual Book 12, Figures 22 and 23



Figure 22 – Justification 6 – Pedestrian Volume

Pelham Street and Church Hill
 Pelham Street and Pancake Lane/John Street
 Pelham Street and Bacon Lane/Spruceside Crescent





APPENDIX B – Gap Study Summary Field Sheets

Date: Wednesday, January 16, 2019 Intersection: Pelham St @ Church Hill Crossing Width: 8

Driection of Travel: North-South Safe Gap: 12 Weather: Overcast

Pedestrian #'s

Time	Gaps When Signal is Green	Time When Signal is Red	Pressed Button	Did Not Press Button
8:00 - 8:05	/,/,/,/,/,32,/,/,/,/,12,23,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/	25,	1,	1,
8:05 - 8:10	18,21,/ ,/ ,/ ,12,/ ,23,13,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,			
8:10 - 8:15	/,/,/,20,13,17,/,/,/,/,/,/,25,/,/,/,12,/,/,/,18,/,/,/,14,/,/,/,17,17,/,/,/,//,///			
8:15 - 8:20	/,/,/,/,17,/,/,16,/,/,17,/,/,14,/,17,/,/,/,/,/,/,14,/,/,/,/,/,/,/,/,15,/,/,/,13,			
8:20 - 8:25	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
8:25 - 8:30	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,///////	25,	2,	
8:30 - 8:35	, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,			1,
8:35 - 8:40	/,14,13,/,/,/,/,12,17,18,/,/,13,/,/,18,/,/,/,/,/,/,/,/,14,/,/,18,/,20,/,/,			1,
8:40 - 8:45	/,/,/,12,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/	25,	1,	
8:45 - 8:50	/,/,/,13,/,/,/,/,/,/,/,20,/,/,/,/,/,/,/,/,/,/,/,			1,
8:50 - 8:55	/,17,/,/,/,/,/,16,/,/,/,/,/,/,/,/,/,/,/,/,/,			
8:55 - 9:00	/,/,/,/,/,/,/,/,/,/,13,/,/,/,/,12,/,/,/,/,14,/,/,/,/,/,/,/,/,/,/,/,/,/,/,			
		Total:	4	4
11:45 - 11:50	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/	25,	1,	1,
11:50 - 11:55	/,			1,
11:55 - 12:00	/,/,/,/,21,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/	25,	1,	
12:00 - 12:05	/,/,16,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/	25,	1,	
12:05 - 12:10	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,//,///,////			1,
12:10 - 12:15	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,//,//,/			
12:15 - 12:20	/,/,/,/,/,/,/,14,/,/,19,12,/,/,15,15,/,/,/,/,15,13,/,/,/,/,/,15,15,/,/,/,/,15,15,/,/,/,15,15,/			1,
12:20 - 12:25	14,/,/,/,/,/,/,/,/,13,/,/,/,/,/,/,/,/,/,/,			
12:25 - 12:30	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			1,1,
12:30 - 12:35	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,//,////			1,
12:35 - 12:40	16,/,/,/,/,/,/,/,/,/,/,22,/,/,/,15,/,/,14,/,/,/,/,/,/,/,/,/,23,/,/,/,/,/,/,/,/,/,			
12:40 - 12:45	/,	25,25,	1,1,	
		Total:	5	7
16:15 - 16:20	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			1,
16:20 - 16:25	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
16:25 - 16:30	12, 1/, 1/, 1/, 1/, 1/, 1/, 1/, 1/, 1/, 1/			
16:30 - 16:35	/,/,/,/,/,/,/,13,/,/,/,/,/,/,/,/,/,/,/,/			
16:35 - 16:40	/,			1,
16:40 - 16:45	,),),),),),),),),),),),),),			1,
16:45 - 16:50	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,////			
16:50 - 16:55	/,13,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/			1,
16:55 - 17:00	/,			1,
17:00 - 17:05	/,/,/,/,/,/,/,15,13,/,/,/,/,23,/,/,/,/,/,/,/,/,/,/,/,/,/,/			1,
17:05 - 17:10	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,////			
17:10 - 17:15	/,	25,	1,	
		Total: Pa	ge 307	of 810

Date: Wednesday, January 16, 2019 Intersection: Pelham St @ Pancake Ln Crossing Width: 10

Driection of Travel: North-South Safe Gap: 14 Weather: Overcast

			Pedestrian #'s		
Time	Gaps When Signal is Green	Time When Signal is Red	Pressed Button	Did Not Press Button	
8:00 - 8:05	/ ,/ ,23,18,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,				
8:05 - 8:10	, /, /, /, /, /, /, /, /, /, /, /, /, /,				
8:10 - 8:15	, /, /, /, /, /, /, /, /, /, /, /, /, /,				
8:15 - 8:20	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
8:20 - 8:25	, ا,				
8:25 - 8:30	, 24,21, ا,				
8:30 - 8:35	, ا,				
8:35 - 8:40	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
8:40 - 8:45	/,				
8:45 - 8:50	15,/,/,14,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,				
8:50 - 8:55	/,15,/,/,/,/,/,/,35,/,/,/,/,/,/,/,/,/,/,/,/	25,	1,	2,1,	
8:55 - 9:00	, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,				
		Total:	1	3	
11:15 - 11:20	/ ,/ ,19,/ ,14,/ ,20,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,				
11:20 - 11:25	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
11:25 - 11:30	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
11:30 - 11:35	, 1, /, /, /, /, /, /, /, /, /, /, /, /, /,				
11:35 - 11:40	27, /, /, /, /, /, /, /, /, /, /, /, /, /,			1,	
11:40 - 11:45	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
11:45 - 11:50	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
11:50 - 11:55	/,36,37,/,/,/,/,/,/,/,/,/,/,/,/,/,17,/,/,/,14,/,/,14,/,/,/,/,/,/,18,	25,	1,		
11:55 - 12:00	/ ,/ ,14 ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
12:00 - 12:05	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
12:05 - 12:10	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
12:10 - 12:15	/,24,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,//,////				
		Total:	2	0	
16:30 - 16:35	, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,				
16:35 - 16:40	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
16:40 - 16:45	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
16:45 - 16:50	/ ,/ ,/ ,15,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,				
16:50 - 16:55	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
16:55 - 17:00	, /, /, /, /, /, /, /, /, /, /, /, /, /,				
17:00 - 17:05	, , , , , , , , , , , , , , , , , , ,				
17:05 - 17:10	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/				
17:10 - 17:15	, ا,				
17:15 - 17:20	16,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,				
17:20 - 17:25	///////////////////////////////////////				

Page 308 of 310

Total:

Date: Wednesday, January 16, 2019 Intersection: Pelham St @ Bacon Ln Crossing Width: 10

Driection of Travel: North-South Safe Gap: 14 Weather: Overcast

Total:

0

3

			Pedest	rian #'s
Time	Gaps When Signal is Green	Time When Signal is Red	Pressed Button	Did Not Press Button
8:00 - 8:05	/,/,/,/,30,/,/,/,25,22,/,/,/,/,/,/,/,/,/,/,/,/,/,/			
8:05 - 8:10	25,/,/,/,20,/,/,/,8,/,22,/,/,/,/,/,/,/,/,/,/,/,/,/,			
8:10 – 8:15	/,24,/,/,20,14,/,/,/,17,/,/,15,/,/,/,/,/,/,/,/,14,/,/,/,14,/,/,/,/,/,/			
8:15 - 8:20	/,/,9,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/			
8:20 - 8:25	/,15,/,/,/,1,7,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/			
8:25 - 8:30	/,			
8:30 - 8:35	/,15,/,27,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,			
8:35 - 8:40	7, ا, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,			
8:40 - 8:45	, /, /, /, /, /, /, /, /, /, /, /, /, /,			
8:45 - 8:50	/,/,/,14,/,/,/,/,16,14,17,/,/,/,/,/,/,/,/,/,15,/,/,/,/,/,/,/,/,/,			
8:50 - 8:55	, /, /, /, /, /, /, /, /, /, /, /, /, /,			
8:55 - 9:00	/,/,/,29,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/			
		Total:	0	0
13:00 - 13:05	/,/,/,/,22,/,15,/,/,16,/,/,/,/,20,/,14,/,/,/,/,/,/,18,15,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,			1,
13:05 - 13:10	/,/,/,17,/,/,/,28,/,29,/,/,/,/,/,/,/,/,/,/,/,/,/,23,17,/,25,			
13:10 - 13:15	/,/,/,/,18,/,/,18,/,/,23,29,/,14,/,/,17,/,/,/,/,28,/,/,22,			
13:15 - 13:20	20,/,/,/,17,/,/,/,15,/,/,/,18,/,/,/,/,/,/,/,/,/,40,/,/,16,			
13:20 - 13:25	/,/,14,/,/,/,/,21,/,/,/,/,20,/,/,/,40,/,/,/,/,25,/,			1,1,
13:25 - 13:30	/,41,/,/,28,/,/,/,22,/,/,/,27,/,/,/,/,14,/,/,/,/,/,/,/,/,/,/,/,/,////////			
13:30 - 13:35	/,/,/,/,/,/,23,/,/,17,/,/,18,/,21,/,26,/,/,22,/,/,17,/,16,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,			
13:35 - 13:40	/,/,16,/,/,/,/,14,/,/,/,21,/,/,/,/,/,/,/,/,32,/,/,36,/,/,/,/,16,			
13:40 - 13:45	/,			
13:45 - 13:50	/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,//,////			
13:50 - 13:55	////16,17/,14,14,19,18,19///////////////////////////////			1

16:30 - 16:35	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
16:35 - 16:40	, <i>ا</i> , <i>ا</i> , <i>ا</i> , <i>ا</i> , <i>ا</i> , <i>ا</i> , <i>l</i>			
16:40 - 16:45	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
16:45 - 16:50	, ا,		1,	
16:50 - 16:55	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
16:55 - 17:00	/,			
17:00 - 17:05	/,			
17:05 - 17:10	/ , / , / , / , / , / , / , / , / , / ,			
17:10 - 17:15	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
17:15 - 17:20	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			
17:20 - 17:25	/,/,24,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/,/			
17:25 - 17:30	/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/ ,/			-
		Total:	Page 1309	of ₀ 31

THE CORPORATION OF THE TOWN OF PELHAM BY-LAW #4331(2021)

Being a by-law to adopt, ratify and confirm the actions of the Council at its regular meeting held on the 22nd day of March 2021.

WHEREAS Section 5 (3) of the Municipal Act, S.O. 2001, Chapter M.25, as amended, provides that, except if otherwise authorized, the powers of Council shall be exercised by by-law;

AND WHEREAS it is deemed desirable and expedient that the actions of the Council as herein set forth be adopted, ratified and confirmed by by-law;

NOW THEREFORE COUNCIL OF THE CORPORATION OF THE TOWN OF PELHAM ENACTS AS FOLLOWS:

- (1) (a) The actions of the Council at its meeting held on the 22nd day of March, 2021, including all resolutions or motions approved, are hereby adopted, ratified and confirmed as if they were expressly embodied in this by-law.
 - (b) The above-mentioned actions shall not include:
 - (I) any actions required by law to be taken by resolution, or
 - (II) any actions for which prior Ontario Municipal Board approval is required, until such approval is obtained.
- (2) The Mayor and proper officials of the Corporation of the Town of Pelham are hereby authorized and directed to do all things necessary to give effect to the above-mentioned actions and to obtain approvals where required.
- (3) Unless otherwise provided, the Mayor and Clerk are hereby authorized and directed to execute and the Clerk to affix the seal of the Corporation of the Town of Pelham to all documents necessary to give effect to the above-mentioned actions.
- (4) THAT this by-law shall come into force on the day upon which it is passed.

READ, ENACTED, SIGNED AND SEALED THIS 22nd DAY OF MARCH 2021 A.D.

MAYOR MARVIN JUNKIN

DEPUTY CLERK, HOLLY WILLFORD