Appendix A.1

Contact List

Lake Huron Primary Water Supply System
Distribution / Contact List

Project Name: RWS - EA and LH WSS Master Plan

Updated: September 15, 2025
Project Manager: Marcy McKillop (RWS); Neil Awde(AECOM)

Category	Contact Name	Title/Department	Email
Provincial Agencies			
MECP	Southwest Region	EA Notifications	eanotification.swregion@ontario.ca
Ministry of Citizenship and Multiculturalism (MCM)	Karla Barboza	Team Lead(A), Heritage Heritage Planning Unit Programs and Services	karla.barboza@ontario.ca
Ministry of Indigenous Affairs	Lise Chabot	Manager, Ministry Partnerships Unit	lise.Chabot@ontario.ca
Environmental Assessment and Permissions Branch			enviropermissions@ontario.ca
Ministry of Natural Resources and Forestry (MNRF)			SR.Planning@ontario.ca
HONI			SecondaryLandUse@HydroOne.com
Ministry of Municipal Affairs and Housing (EA Policy)	**Erick Boyd**	**Manager (Acting)**	erick.boyd@ontario.ca
Municipal			
City of London	Kelly Scherr	CAO (Water Boards) & Deputy City Manager	kscherr@london.ca
City of London	Ashley Rammeloo	Director - Water, Wastewater & Stormwater	arammelo@london.ca
City of London	Dan Huggins	Water Quality Manager	dhuggins@london.ca
City of London	Aaron Rozentaals	Division Manager - Water Engineering	arozenta@london.ca
Municipality of Strathroy-Caradoc	Mark Ortiz	Director of Engineering and Public Works	mortiz@strathroy-caradoc.ca
Municipality of Strathroy-Caradoc	Walter Easter	Manager of Public Works	weaster@strathroy-caradoc.ca
Municipality of Strathroy-Caradoc	Paul Zuberbuhler	Manager of Environmental Services	pzuberbuhler@strathroy-caradoc.ca
Municipality of Strathroy-Caradoc	Trisha McKibbin	CAO	tmckibbin@strathroy-caradoc.ca
Municipality of Middlesex Centre	Robert Cascaden	Director, Public Works and Engineering	cascaden@middlesexcentre.ca
Municipality of Middlesex Centre	Eric Joudrey	Manager of Environmental Services	joudrey@middlesexcentre.ca
Municipality of North Middlesex	Sam Shannon	Director of Infrastructure & Operations	samuels@northmiddlesex.on.ca
Municipality of North Middlesex	Brandon McLeod	Manager of Public Works	brandonm@northmiddlesex.on.ca
Municipality of South Huron	Don Giberson	Environmental Services Director	dgiberson@southhuron.ca
Municipality of South Huron	Alyssa Keller	Manager of Environmental Services	akeller@southhuron.ca
Municipality of South Huron	Rebekah Msuya-Collison	CAO	cao@southhuron.ca
Municipality of Lambton Shores	Ashley Farr	Director of Community Services	afarr@lambtonshores.ca
Municipality of Lambton Shores	Stephen McAuley	CAO	smcauley@lambtonshores.ca
Municipality of Lambton Shores	Nick Verhoeven	Director of Public Works	nverhoeven@lambtonshores.ca
Municipality of Lucan Biddulph	Jeff Little	Public Works Manager	jlittle@lucanbiddulph.on.ca
Municipality of Lucan Biddulph	Ron Reymer	CAO	rreymer@lucanbiddulph.on.ca
Municipality of Bluewater	Dave Kester	Manager of Public Works	publicworks@municipalityofbluewater.ca
Municipality of Bluewater	Laurie Spence Bannerman	CAO	cao@municipalityofbluewater.ca
Huron County	Gary Wood	EMC	gwood@huroncounty.ca
Lambton County	Jay vanKlinken	CEMC	jay.vanklinken@county-lambton.on.ca
Middlesex County	Bettina Weber	Primary CEMC for County & 7 Municipalities	bweber@middlesex.ca
Middlesex London Health Unit (MLHU)	Andrew Powell	Acting Manager, Safe Water	andrew.powell@mlhu.on.ca

Lake Huron Primary Water Supply System
Distribution / Contact List

Category	Contact Name	Title/Department	Email
Middlesex London Health Unit (MLHU)	Stephen Turner	Director, Environmental Health & Infectious Diseases	stephen.turner@mlhu.on.ca
Middlesex London Health Unit (MLHU)	Dr. Alexander Summers	Medical Officer of Health (MOH)	alexander.summers@mlhu.on.ca
Huron Perth Public Health	Lori Holmes	Public Health Manager - Environmental Health	lholmes@hpph.ca
Lambton County Health Unit	Andrew Taylor	General Manager, Public Health Services	andrew.taylor@county-lambton.on.ca
Conservation Authority			
St Clair Conservation Authority	Melissa Deisley	Director of Planning and Regulations	mdeisley@scrca.on.ca
Upper Thames River Conservation Authority	Karen Winfield	Planning and Regulations Resource Specialist	winfieldk@thamesriver.ca
Lake Huron Primary Water Supply System Board Members			
	Cathy Burghardt-Jesson		cbjesson@lucanbiddulph.on.ca
	Aina DeViet		deviet@middlesexcentre.ca
	Milt Dietrich		mdietrich@southhuron.ca
	Skylar Franke		sfranke@london.ca
	Colin Grantham		cgrantham@strathroy-caradoc.ca
	Steve Hillier		shillier@london.ca
	John Keogh		johnk@northmiddlesex.on.ca
	Steve Lehman		slehman@london.ca
	Paul Van Meerbergen		pvanmeerbergen@london.ca
	Peter Walden		pwalden@municipalityofbluewater.ca
	Jeff Wilcox		jwilcox@lambtonshores.ca
	John P Brennan		brennan@middlesexcentre.ca
	Chuck Daigle		chuckd@northmiddlesex.on.ca
	Anna Hopkins		ahopkins@london.ca
	Dave Maguire		dmaguire@lambtonshores.ca
	Dave Manders		dmanders@lucanbiddulph.on.ca
	Hadleigh McAlister		hmcalister@london.ca
	Aaron Neeb		aneeb@southhuron.ca
	Bill Whetstone		bwhetstone@municipalityofbluewater.ca
	Greg Willsie		gwillsie@strathroy-caradoc.ca
Contacts Added after Notice of Public Information Centre			
Municipality of South Huron		Chief Administrative Officer	cao@southhuron.ca
Municipality of Bluewater		Chief Administrative Officer	cao@municipalityofbluewater.ca

AECOM

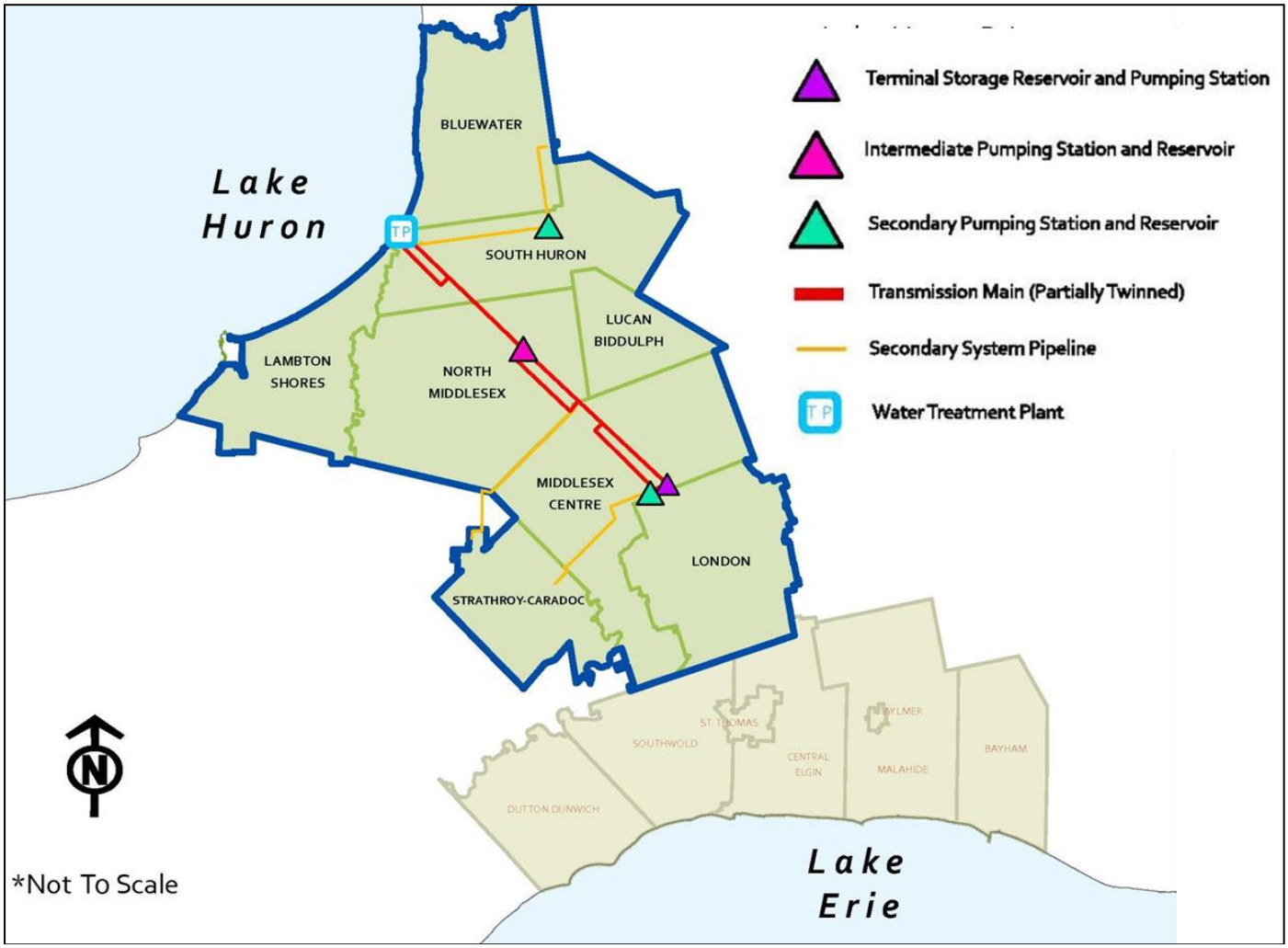
Appendix A.2

Notice of Study Commencement

Lake Huron
Primary Water Supply System

Lake Huron Primary Water Supply System
Master Plan
Notice of Study Commencement

The Lake Huron Primary Water Supply System (LHPWSS), through its consultant AECOM has initiated a Municipal Class Environmental Assessment (MCEA) Master Plan study to develop and assess a range of water servicing strategies to accommodate near, mid and long-term future growth, while maintaining the reliability and sustainability of the utility. See Map for existing infrastructure and member municipalities.



This MCEA Master Plan Study will document existing conditions, water demand forecasts, water modelling, and engage key stakeholders, the general public and Indigenous Communities and provide recommendations for the regional water system to address system growth and infrastructure needs to maintain levels of service

The Process

This study will be completed in accordance with the Ontario Environmental Assessment Act and will follow Approach #1 of the Municipal Engineers Association Municipal Class EA (as amended in 2020) Master Planning process. At the conclusion of the study, a suite of recommended water projects will be identified including the MCEA Schedule (Exempt, Schedule B or C) for any regional water supply system project(s). This Master Plan will be completed at a broad level of assessment, therefore requiring more detailed investigations at project specific level for any recommended Schedule B or C projects.

The LHPWSS invites anyone with an interest in the study to have an opportunity to provide feedback and help inform the decision-making process. A Virtual Public Information Centre (PIC) will be held in June 2025, to introduce the study, present existing conditions, the alternative servicing strategies, evaluation criteria, and the recommended servicing strategies including the associated water projects and schedule. Invitation notices to the PIC will be emailed to those on the mailing list and will be posted on the Project Webpage:

https://www.huronelginwater.ca/lake-huron-primary-water-supply-system-master-plan/

For more information or if you want to be placed on our mailing list for updates, please contact us at:

Marcy McKillop, P.Eng
Environmental Services Engineer
Regional Water Supply
Lake Huron and Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London ON, N5X 4E7
Tel:519-930-3505 x4976
Email: mmckillop@huronelginwater.ca

Paul Adams, CPT
Environmental Planner,
AECOM Canada ULC.
250 York Street, Suite 410
London ON, N6A 6K2
Tel: 519-636-6448
Email: paul.adams2@aecom.com

The personal information submitted in relation to this Master Plan is collected under the authority of the Municipal Act, 2001, S.O. 2001, c.25 and will be reviewed to provide subsequent Master Plan study development, communications and events. With the exception of personal information, all comments will form part of the public record for this Master Plan in accordance with the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's *Environmental Assessment Act.*

Questions about this collection should be addressed to Marcy McKillop, Environmental Services Engineer at 235 North Centre Road, Suite 200, London, ON N5X 4E7. Tel: 519-930-3505 ext. 4976, email: mmckillop@huronelginwater.ca

This Notice was Issued on February 14th 2025.

Adams, Paul (London ON)

From:	Marcy McKillop <mmckillop@huronelginwater.ca>
Sent:	February 14, 2025 10:39 AM
To:	karla.barboza@ontario.ca; lise.Chabot@ontario.ca; enviropermissions@ontario.ca; SR.Planning@ontario.ca; secondarylanduse@hydroone.com; erick.boyd@ontario.ca; RLieber; Denny Rodrigues; Austin Sherwin; Jackie Muller; Scherr, Kelly; Rammeloo, Ashley; Rozentals, Aaron; Huggins, Daniel; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler'; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao; afarr@lambtonshores.ca; Steve McAuley; nverhoeven@lambtonshores.ca; Jeff Little; Ron Reymer; Laurie Spence Bannerman; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; Cathy Burghardt-Jesson; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve; johnk@northmiddlesex.on.ca; Lehman, Steve; Van Meerbergen, Paul; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc:	RWS All Staff; Wan, Benny; Adams, Paul (London ON)
Subject:	Notice of Commencement - Lake Huron Primary Water Supply System Master Plan
Attachments:	LHPWSS Notice of Commencement AODA_.pdf

Good morning,

Please find attached the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

Further updates will be provided on the Master Plan website.

Subsequent Master Plan notices will be issued by email. Please let me know of any changes to project contacts, so the project contact list can be updated.

Best regards,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

AECOM

Appendix A.3

Public Information Centre

Lake Huron
Primary Water Supply System

Lake Huron Primary Water Supply System
Master Plan
Notice of Public Information Centre

The Lake Huron Primary Water Supply System (LHPWSS), through its consultant AECOM, is completing a Municipal Class Environmental Assessment (MCEA) Master Plan study to develop and assess a range of water servicing strategies to accommodate near, mid and long-term future growth, while maintaining the reliability and sustainability of the utility. See Map for existing infrastructure and member municipalities. A link to the project web page is provided below:

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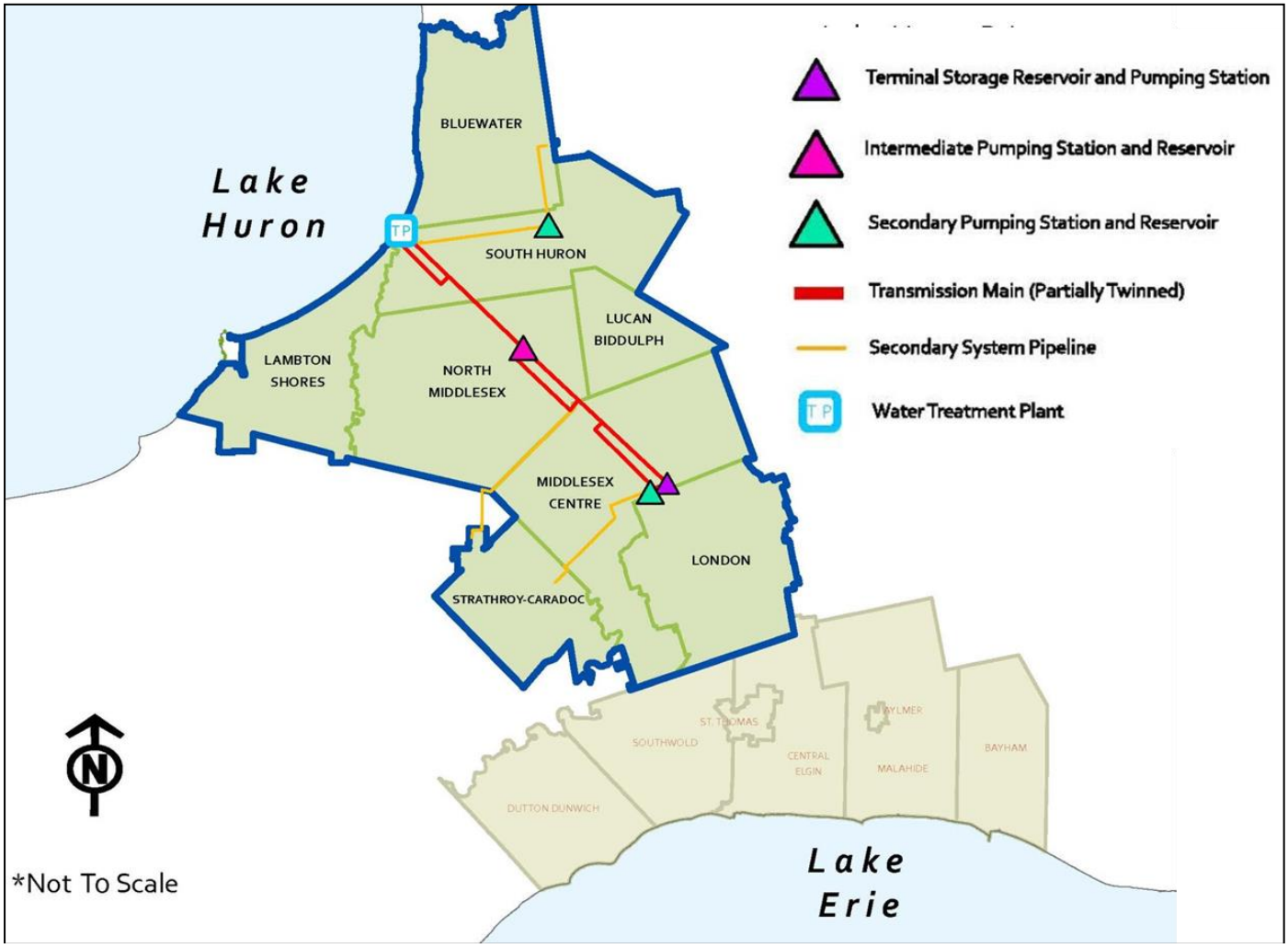

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This study is being completed in accordance with the Ontario Environmental Assessment Act following Approach #1 of the Municipal Engineers Association Municipal Class EA (as amended in 2020) Master Planning process. At the conclusion of the study, a suite of recommended projects will be identified including the MCEA Schedule (Exempt, Schedule B or C). This Master Plan is being completed at a broad level of assessment, therefore requiring more detailed investigations at project specific level for any recommended Schedule B or C projects.

A Virtual Public Information Centre (PIC) will be held on June 18th 2025, to introduce the study, present existing conditions, the alternative servicing strategies, evaluation criteria, and the servicing strategies including the associated recommended projects and schedule.

Date: June 18th, 2025
Time: 6:00 pm
Format: Zoom Webinar Presentation followed by a question period

To Register for this PIC please send an email request to: Paul.Adams2@aecom.com.

For more information or if you want to be placed on our project contact list for updates, please contact us at:

Marcy McKillop, P.Eng.
Environmental Services Engineer
Regional Water Supply
Lake Huron and Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London ON, N5X 4E7
Tel:519-930-3505 x4976
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Paul Adams, CPT
Environmental Planner,
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250 York Street, Suite 410
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This Notice was Issued on June 3rd 2025.

Adams, Paul (London ON)

From:	Marcy McKillop <mmckillop@huronelginwater.ca>
Sent:	June 3, 2025 4:49 PM
To:	RLieber; Denny Rodrigues; Austin Sherwin; Jackie Muller; Scherr, Kelly; Rammeloo, Ashley; Rozentals, Aaron; cbailey@london.ca; Huggins, Daniel; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler'; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao; afarr@lambtonshores.ca; Steve McAuley; nverhoeven@lambtonshores.ca; Jeff Little; Ron Reymer; Laurie Spence Bannerman; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; Cathy Burghardt-Jesson; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve; johnk@northmiddlesex.on.ca; Lehman, Steve; Van Meerbergen, Paul; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
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Environmental Services Engineer, Regional Water Supply

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T: 519-930-3505 ext. 4976
E: mmckillop@huronelginwater.ca
https://huronelginwater.ca
www.facebook.com/RegionalWaterSupply

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From: Marcy McKillop
Sent: Friday, February 14, 2025 10:39 AM
To: karla.barboza@ontario.ca; lise.Chabot@ontario.ca; enviropermissions@ontario.ca; SR.Planning@ontario.ca; secondarylanduse@hydroone.com; erick.boyd@ontario.ca; Randy Lieber; Denny Rodrigues <drodrigues@ocwa.com>; Austin Sherwin; Jackie Muller <jmuller@ocwa.com>; Scherr, Kelly <kscherr@london.ca>; Rammeloo, Ashley <arammelo@london.ca>; Rozentals, Aaron <arozenta@london.ca>; Huggins, Daniel <dhuggins@london.ca>; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler' <pzuberbuhler@strathroy-caradoc.ca>; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey <joudrey@middlesexcentre.ca>; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao; afarr@lambtonshores.ca; smcauley@lambtonshores.ca; nverhoeven@lambtonshores.ca; jlittle@lucanbiddulph.on.ca; Ron Reymer <rreymer@lucanbiddulph.on.ca>; Laurie Spence Bannerman <cao@municipalityofbluewater.ca>; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; cbjesson@lucanbiddulph.on.ca; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve <shillier@london.ca>; johnk@northmiddlesex.on.ca; Lehman, Steve <slehman@london.ca>; Van Meerbergen, Paul <pvanmeerbergen@london.ca>; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna <ahopkins@london.ca>; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc: RWS All Staff; Wan, Benny <Benny.Wan@aecom.com>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
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Environmental Services Engineer, Regional Water Supply

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E: mmckillop@huronelginwater.ca
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The Lake Huron and Elgin Area Primary Water Supply Systems serve communities and people within the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron. We honour and respect the history, languages and culture of the diverse Indigenous people who call this territory home. This region is currently home to many First Nations, Inuit and Métis. We are grateful to have the opportunity to work and live in this territory.

Adams, Paul (London ON)

From: Don Giberson <dgiberson@southhuron.ca>
Sent: June 5, 2025 4:41 PM
To: Adams, Paul (London ON)
Subject: FW: Notice of Public Information Centre - Lake Huron Primary Water Supply System Master Plan
Attachments: LHPWSS Notice of PIC.pdf

Paul,

Can you please register me for the virtual Public Information Centre.....and add me to your project contact list to receive updates on behalf of the Municipality of South Huron.

Don Giberson
General Manager of Infrastructure and Development
Municipality of South Huron
519-235-0310 Ext226
dgiberson@southhuron.ca

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: Tuesday, June 3, 2025 4:49 PM
To: Randy Lieber <rlieber@ocwa.com>; Denny Rodrigues <drodrigues@ocwa.com>; Austin Sherwin <asherwin@ocwa.com>; Jackie Muller <jmuller@ocwa.com>; Scherr, Kelly <kscherr@london.ca>; Rammeloo, Ashley <arammelo@london.ca>; Rozentals, Aaron <arozenta@london.ca>; cbailey@london.ca; Huggins, Daniel <dhuggins@london.ca>; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler' <pzuberbuhler@strathroy-caradoc.ca>; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey <joudrey@middlesexcentre.ca>; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; Don Giberson <dgiberson@southhuron.ca>; Alyssa Keller <akeller@southhuron.ca>; Rebekah Msuya-Collison <cao@southhuron.ca>; afarr@lambtonshores.ca; Steve McAuley <smcauley@lambtonshores.ca>; nverhoeven@lambtonshores.ca; Jeff Little <jlittle@lucanbiddulph.on.ca>; Ron Reymer <rreymer@lucanbiddulph.on.ca>; Laurie Spence Bannerman <cao@municipalityofbluewater.ca>; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; Cathy Burghardt-Jesson <cbjesson@lucanbiddulph.on.ca>; deviet@middlesexcentre.ca; Councillor Dietrich <mdietrich@southhuron.ca>; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve <shillier@london.ca>; johnk@northmiddlesex.on.ca; Lehman, Steve <slehman@london.ca>; Van Meerbergen, Paul <pvanmeerbergen@london.ca>; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna <ahopkins@london.ca>; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; Councillor Neeb <aneeb@southhuron.ca>; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc: RWS All Staff <rws-staff@huronelginwater.ca>; Wan, Benny <Benny.Wan@aecom.com>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
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Best regards,

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The Lake Huron and Elgin Area Primary Water Supply Systems serve communities and people within the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron. We honour and respect the history, languages and culture of the diverse Indigenous people who call this territory home. This region is currently home to many First Nations, Inuit and Métis. We are grateful to have the opportunity to work and live in this territory.

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Sent: Friday, February 14, 2025 10:39 AM
To: karla.barboza@ontario.ca; lise.Chabot@ontario.ca; enviropermissions@ontario.ca; SR.Planning@ontario.ca; secondarylanduse@hydroone.com; erick.boyd@ontario.ca; Randy Lieber; Denny Rodrigues <drodrigues@ocwa.com>; Austin Sherwin; Jackie Muller <jmuller@ocwa.com>; Scherr, Kelly <kscherr@london.ca>; Rammeloo, Ashley <arammelo@london.ca>; Rozentals, Aaron <arozenta@london.ca>; Huggins, Daniel <dhuggins@london.ca>; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler' <pzuberbuhler@strathroy-caradoc.ca>; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey <joudrey@middlesexcentre.ca>; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao; afarr@lambtonshores.ca; smcauley@lambtonshores.ca; nverhoeven@lambtonshores.ca; jlittle@lucanbiddulph.on.ca; Ron Reymer <rreymer@lucanbiddulph.on.ca>; Laurie Spence Bannerman <cao@municipalityofbluewater.ca>; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; cbjesson@lucanbiddulph.on.ca; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve <shillier@london.ca>; johnk@northmiddlesex.on.ca; Lehman, Steve <slehman@london.ca>; Van Meerbergen, Paul <pvanmeerbergen@london.ca>; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna <ahopkins@london.ca>;

dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc: RWS All Staff; Wan, Benny <Benny.Wan@aecom.com>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Notice of Commencement - Lake Huron Primary Water Supply System Master Plan

Good morning,

Please find attached the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

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Best regards,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
T: 519-930-3505 ext. 4976
E: mmckillop@huronelginwater.ca
https://huronelginwater.ca
www.facebook.com/RegionalWaterSupply

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Adams, Paul (London ON)

From:	Marcy McKillop <mmckillop@huronelginwater.ca>
Sent:	June 3, 2025 4:49 PM
To:	RLieber; Denny Rodrigues; Austin Sherwin; Jackie Muller; Scherr, Kelly; Rammeloo, Ashley; Rozentals, Aaron; cbailey@london.ca; Huggins, Daniel; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler'; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao; afarr@lambtonshores.ca; Steve McAuley; nverhoeven@lambtonshores.ca; Jeff Little; Ron Reymer; Laurie Spence Bannerman; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; Cathy Burghardt-Jesson; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve; johnk@northmiddlesex.on.ca; Lehman, Steve; Van Meerbergen, Paul; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc:	RWS All Staff; Wan, Benny; Adams, Paul (London ON)
Subject:	Notice of Public Information Centre - Lake Huron Primary Water Supply System Master Plan
Attachments:	LHPWSS Notice of PIC.pdf

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Cc: RWS All Staff; Wan, Benny <Benny.Wan@aecom.com>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
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Adams, Paul (London ON)

From: Jeff Little <jlittle@lucanbiddulph.on.ca>
Sent: June 3, 2025 5:20 PM
To: Adams, Paul (London ON)
Subject: Virtual Public Information Centre

Hi Paul,

I will attend on behave of Lucan Biddulph.

If you can register me that would be great.

Thank you,

JEFF LITTLE
DIRECTOR OF PUBLIC WORKS / TOWNSHIP OF LUCAN BIDDULPH
270 MAIN ST. PO BOX 190, LUCAN, ON N0M 2J0
P: 519-227-4491 EXT 3124 C: 519-494-8228

Adams, Paul (London ON)

From: Eric Joudrey <joudrey@middlesexcentre.ca>
Sent: June 4, 2025 9:18 AM
To: Adams, Paul (London ON)
Subject: Lake Huron Primary Water Supply System _ PIC

Hi Paul

Can you please sign me up and send the link for the Lake Huron Primary Water Supply System Master Plan Notice of Public Information Centre scheduled for June 18.

Thanks,

Eric Joudrey
Environmental Services Manager

Municipality of Middlesex Centre
22280 Komoka Road, Komoka Ontario, N0L 1R0
Tel: 519.666.0190 Ext. 5255 | | joudrey@middlesexcentre.ca
middlesexcentre.ca

Adams, Paul (London ON)

From:	Jay vanKlinken <jay.vanklinken@county-lambton.on.ca>
Sent:	June 4, 2025 2:25 PM
To:	Adams, Paul (London ON)
Subject:	FW: Notice of Public Information Centre - Lake Huron Primary Water Supply System Master Plan
Attachments:	LHPWSS Notice of PIC.pdf

Hi there,

I would like to be registered to attend the Public Information Centre on June 18. Thanks!

Jay vanKlinken
Emergency Management Coordinator
County of Lambton
519-845-0809 ext. 5332 | jay.vanklinken@county-lambton.on.ca

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: Tuesday, June 3, 2025 4:49 PM
To: Randy Lieber <rlieber@ocwa.com>; Denny Rodrigues <drodrigues@ocwa.com>; Austin Sherwin <asherwin@ocwa.com>; Jackie Muller <jmuller@ocwa.com>; Scherr, Kelly <kscherr@london.ca>; Rammeloo, Ashley <arammelo@london.ca>; Rozentals, Aaron <arozenta@london.ca>; cbailey@london.ca; Huggins, Daniel <dhuggins@london.ca>; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler' <pzuberbuhler@strathroy-caradoc.ca>; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey <joudrey@middlesexcentre.ca>; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao <cao@southhuron.ca>; afarr@lambtonshores.ca; Steve McAuley <smcauley@lambtonshores.ca>; Nick Verhoeven <nverhoeven@lambtonshores.ca>; Jeff Little <jlittle@lucanbiddulph.on.ca>; Ron Reymer <rreymer@lucanbiddulph.on.ca>; Laurie Spence Bannerman <cao@municipalityofbluewater.ca>; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; Jay vanKlinken <jay.vanklinken@county-lambton.on.ca>; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; Andrew Taylor <andrew.taylor@county-lambton.on.ca>; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; Cathy Burghardt-Jesson <cbjesson@lucanbiddulph.on.ca>; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve <shillier@london.ca>; johnk@northmiddlesex.on.ca; Lehman, Steve <slehman@london.ca>; Van Meerbergen, Paul <pvanmeerbergen@london.ca>; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna <ahopkins@london.ca>; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc: RWS All Staff <rws-staff@huronelginwater.ca>; Wan, Benny <Benny.Wan@aecom.com>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Notice of Public Information Centre - Lake Huron Primary Water Supply System Master Plan

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

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Adams, Paul (London ON)

From:	Karen Winfield <winfieldk@thamesriver.ca>
Sent:	June 4, 2025 3:59 PM
To:	Adams, Paul (London ON); mmckillop@huronelginwater.ca
Cc:	Julie Welker; Olivia Orsini; Laura Biancolin; Eric Gaskin; Cari Ramsey; Joe Gordon
Subject:	Webinar Registration Request (June 18th) - Lake Huron Primary Water Supply System Master Plan
Attachments:	LHPWSS Notice of PIC.pdf

Hi Paul,

Please register me for the June 18th PIC webinar for the Lake Huron Primary Water Supply System Master Plan.

Thank-you,

Karen Winfield
Planning & Regulations Resource Specialist
1424 Clarke Road London, Ontario, N5V 5B9
519.451.2800 Ext. 237
winfieldk@thamesriver.ca
www.thamesriver.ca

UPPER THAMES RIVER
CONSERVATION AUTHORITY

- All UTRCA emails are changing from **@thamesriver.on.ca** to **@thamesriver.ca**. Please update your address book and any distribution lists, to ensure emails from our new addresses reach you. We will continue to receive emails sent to our old email addresses.

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From: Marcy McKillop
Sent: Friday, February 14, 2025 10:39 AM
To: karla.barboza@ontario.ca; lise.Chabot@ontario.ca; enviropermissions@ontario.ca; SR.Planning@ontario.ca; secondarylanduse@hydroone.com; erick.boyd@ontario.ca; Randy Lieber; Denny Rodrigues <drodrigues@ocwa.com>; Austin Sherwin; Jackie Muller <jmuller@ocwa.com>; Scherr, Kelly <kscherr@london.ca>; Rammeloo, Ashley <arammelo@london.ca>; Rozentals, Aaron <arozenta@london.ca>; Huggins, Daniel <dhuggins@london.ca>; mortiz@strathroy-caradoc.ca; weaster@strathroy-caradoc.ca; 'Paul Zuberbuhler' <pzuberbuhler@strathroy-caradoc.ca>; tmckibbin@strathroy-caradoc.ca; cascaden@middlesexcentre.ca; Eric Joudrey <joudrey@middlesexcentre.ca>; samuels@northmiddlesex.on.ca; brandonm@northmiddlesex.on.ca; dgiberson@southhuron.ca; akeller@southhuron.ca; cao; afarr@lambtonshores.ca; smcauley@lambtonshores.ca; nverhoeven@lambtonshores.ca; jlittle@lucanbiddulph.on.ca; Ron Reymer <rreymer@lucanbiddulph.on.ca>; Laurie Spence Bannerman <cao@municipalityofbluewater.ca>; publicworks@municipalityofbluewater.ca; gwood@huroncounty.ca; jay.vanklinken@county-lambton.on.ca; bweber@middlesex.ca; andrew.powell@mlhu.on.ca; stephen.turner@mlhu.on.ca; alexander.summers@mlhu.on.ca; lholmes@hpph.ca; andrew.taylor@county-lambton.on.ca; mdeisley@scrca.on.ca; winfieldk@thamesriver.ca; cbjesson@lucanbiddulph.on.ca; deviet@middlesexcentre.ca; mdietrich@southhuron.ca; sfranke@london.ca; cgrantham@strathroy-caradoc.ca; Hillier, Steve <shillier@london.ca>; johnk@northmiddlesex.on.ca; Lehman, Steve <slehman@london.ca>; Van Meerbergen, Paul <pvanmeerbergen@london.ca>; pwalden@municipalityofbluewater.ca; jwilcox@lambtonshores.ca; brennan@middlesexcentre.ca; chuckd@northmiddlesex.on.ca; Hopkins, Anna <ahopkins@london.ca>; dmaguire@lambtonshores.ca; dmanders@lucanbiddulph.on.ca; hmcalister@london.ca; aneeb@southhuron.ca; gwillsie@strathroy-caradoc.ca; bwhetstone@municipalityofbluewater.ca
Cc: RWS All Staff; Wan, Benny <Benny.Wan@aecom.com>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Notice of Commencement - Lake Huron Primary Water Supply System Master Plan

Good morning,

Please find attached the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

Further updates will be provided on the Master Plan website.

Subsequent Master Plan notices will be issued by email. Please let me know of any changes to project contacts, so the project contact list can be updated.

Best regards,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
T: 519-930-3505 ext. 4976
E: mmckillop@huronelginwater.ca
https://huronelginwater.ca
www.facebook.com/RegionalWaterSupply

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Adams, Paul (London ON)

From: Oke, Ted <ted.oke@fcc-fac.ca>
Sent: June 5, 2025 7:31 AM
To: Adams, Paul (London ON)
Subject: Virtual mtg for Lake Huron Primary Water Supply System Master Plan

Good morning
Could you send me an invite for the above meeting
Thanks

Ted Oke, P.Ag.
Territory Relationship Manager/ Directeur des relations d'affaires de territoire
FCC I FAC
286 Huron Street W, PO Box 1501/ 286, rue Huron O, CP 1501
Clinton ON N0M 1L0
Cell. : 519-440-7382
fcc.ca / fac.ca
FCC social media / Médias sociaux FAC

DREAM. GROW. THRIVE.
RÊVER. BÂTIR. RÉUSSIR.

Adams, Paul (London ON)

From: Lynn Rosales <lrosales@aamjiwnaang.ca>
Sent: June 5, 2025 10:08 AM
To: Marcy McKillop; Janelle Nahmabin; Courtney Jackson; James Wrightman
Cc: Adams, Paul (London ON); Ryan Armstrong
Subject: RE: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Aanii/Hi Marcy,

Confirming receipt of the Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre, the information will be reviewed to determine the need for Consultation.

Miigwech/Thank You
Lynn Rosales
Environment Coordinator

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: Thursday, June 5, 2025 8:34 AM
To: Janelle Nahmabin <chief@aamjiwnaang.ca>; Courtney Jackson <cjackson@aamjiwnaang.ca>; James Wrightman <jwrightman@aamjiwnaang.ca>; Lynn Rosales <lrosales@aamjiwnaang.ca>
Cc: Adams, Paul (London ON) <Paul.Adams2@aecom.com>; Ryan Armstrong <rarmstrong@huronelginwater.ca>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Aanii,

Please find attached a letter regarding the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan.

Miigwech,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
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From: Marcy McKillop
Sent: Tuesday, February 25, 2025 4:16 PM
To: jnahmabin@aamjiwnaang.ca; Courtney Jackson <cjackson@aamjiwnaang.ca>; Cathleen O'Brien <cobrien@aamjiwnaang.ca>
Cc: Adams, Paul (London ON) <Paul.Adams2@aecom.com>; Ryan Armstrong <rarmstrong@huronelginwater.ca>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Commencement

Aanii,

Please find attached a letter regarding the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

Miigwech,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

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Adams, Paul (London ON)

From: Al Day <lutahawit@execulink.com>
Sent: June 5, 2025 5:02 PM
To: 'Marcy McKillop'
Cc: 'Ryan Armstrong'; Adams, Paul (London ON)
Subject: RE: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good Afternoon Marcy

On behalf of the On^yota a:ka Lotiyaneshu, how do I become more informed and involved with process?

Thank you
Al

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 9:03 AM
To: Al Day <lutahawit@execulink.com>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Sheko:li Loyane Day,

Please find attached a letter regarding the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan.

Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

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235 North Centre Road, Suite 200
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currently home to many First Nations, Inuit and Métis. We are grateful to have the opportunity to work and live in this territory.

From: Marcy McKillop
Sent: Tuesday, February 25, 2025 4:52 PM
To: Al Day <lutahawit@execulink.com>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Commencement

Sheko:li Loyane Day,

Please find attached a letter regarding the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

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Adams, Paul (London ON)

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 5:15 PM
To: Al Day
Cc: Ryan Armstrong; Adams, Paul (London ON)
Subject: RE: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good afternoon Al,

Feel free to contact me tomorrow/Friday at 226-688-8176 and we can further discuss the Master Plan for the Lake Huron Primary Water Supply System.

Best regards,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

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235 North Centre Road, Suite 200
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From: Al Day <lutahawit@execulink.com>
Sent: Thursday, June 5, 2025 5:02 PM
To: Marcy McKillop <mmckillop@huronelginwater.ca>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; 'Adams, Paul (London ON)' <Paul.Adams2@aecom.com>
Subject: RE: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good Afternoon Marcy

On behalf of the On^yota a:ka Lotiyaneshu, how do I become more informed and involved with process?

Thank you
Al

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 9:03 AM
To: Al Day <lutahawit@execulink.com>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Sheko:li Loyane Day,

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Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
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From: Marcy McKillop
Sent: Tuesday, February 25, 2025 4:52 PM
To: Al Day <lutahawit@execulink.com>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Commencement

Sheko:li Loyane Day,

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Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

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Adams, Paul (London ON)

From: Jana George <Jana.George@threefires.com>
Sent: June 6, 2025 1:47 PM
To: Marcy McKillop; Kimberly.Bressette@kettlepoint.org; verna.george@kettlepoint.org
Cc: Ryan Armstrong; Consultation; Adams, Paul (London ON)
Subject: Re: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good afternoon Marcy,

Thank you for providing information on the upcoming PIC for the Lake Huron Primary Water Supply System Master Plan. We appreciate your efforts to keep us informed and look forward to receiving future updates as the project progresses.

Thank you,

Three Fires GROUP

Jana George
Consultation & Monitoring Coordinator
Email: jana.george@threefires.com

A-9119 W Ipperwash Rd
Kettle & Stony Point First Nation
Ontario N0N 1J1
www.threefires.com

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 8:58 AM
To: Kimberly.Bressette@kettlepoint.org <Kimberly.Bressette@kettlepoint.org>; Jana George <Jana.George@threefires.com>; verna.george@kettlepoint.org <verna.george@kettlepoint.org>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Aanii,

Please find attached a letter regarding the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan.

Miigwech,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
T: 519-930-3505 ext. 4976
E: mmckillop@huronelginwater.ca
https://huronelginwater.ca
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From: Marcy McKillop
Sent: Tuesday, February 25, 2025 4:30 PM
To: Kimberly.Bressette@kettlepoint.org; jordan.george@kettlepoint.org; verna.george@kettlepoint.org
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Commencement

Aanii,

Please find attached a letter regarding the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

Miigwech,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
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Adams, Paul (London ON)

From: Al Day <lutahawit@execulink.com>
Sent: June 6, 2025 11:16 PM
To: 'Marcy McKillop'
Cc: 'Ryan Armstrong'; Adams, Paul (London ON)
Subject: RE: Elgin Area Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good Evening Marcy

I ended up being in an extended meeting today.

Can I call you Monday afternoon after my City Hall meeting in the morning?

Thank you
Al

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 5:42 PM
To: lutahawit@execulink.com
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Elgin Area Primary Water Supply System - Master Plan - Notice of Public Information Centre

Sheko:li Loyane Day,

Please find attached a letter regarding the Notice of Public Information Centre for the Elgin Area Primary Water Supply System Master Plan.

Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
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the history, languages and culture of the diverse Indigenous people who call this territory home. This region is currently home to many First Nations, Inuit and Métis. We are grateful to have the opportunity to work and live in this territory.

From: Marcy McKillop
Sent: Monday, February 24, 2025 4:24 PM
To: lutahawit@execulink.com
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Elgin Area Primary Water Supply System - Master Plan - Notice of Commencement

Sheko:li Loyane Day,

Please find attached a letter regarding the Notice of Commencement for the Elgin Area Primary Water Supply System Master Plan.

Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
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London, Ontario N5X 4E7
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Adams, Paul (London ON)

From: Corey Regier <CRegier@ocwa.com>
Sent: June 9, 2025 8:15 AM
To: Adams, Paul (London ON)
Subject: Lake Huron Primary Water Supply System Master Plan

Please register me for this meeting.

Lake Huron Primary Water Supply System Master Plan
A virtual Public Information Centre will be held on Wednesday, June 18, 2025 at 6 pm EST.

Thanks,
Corey Regier
Maintenance & Distribution Team Lead
Ontario Clean Water Agency
Lake Huron Primary Water Supply System
71155 Bluewater Hwy. Grand Bend, ON
Cell - 519 494 1236
Office - 519 238 8466 Ext 239

Lake Huron
Primary Water Supply System

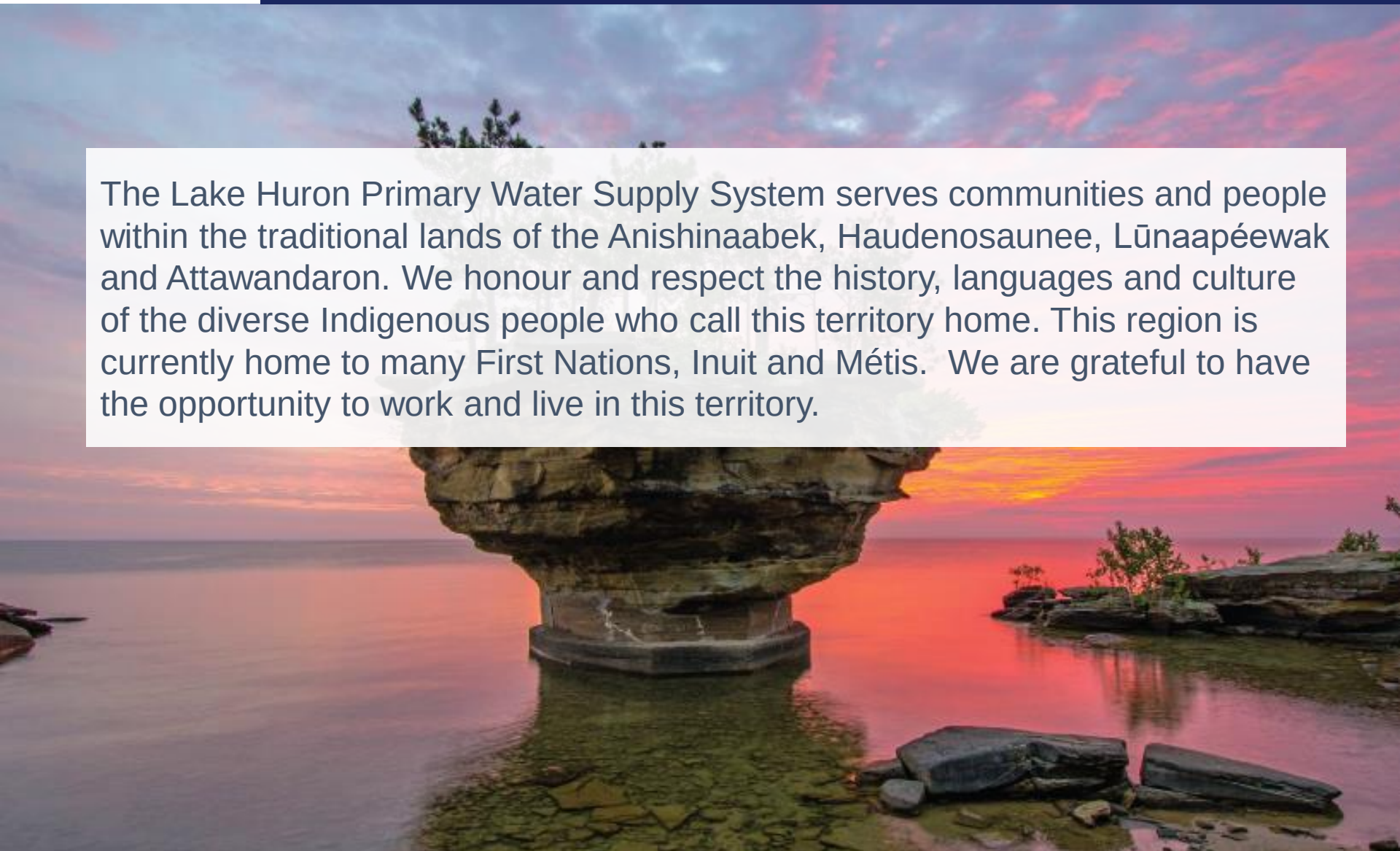
Lake Huron Primary Water Supply System Master Plan

Public Information Centre

June 18th, 2025, 6 p.m.

Lake Huron
Primary Water Supply System

Land Acknowledgement



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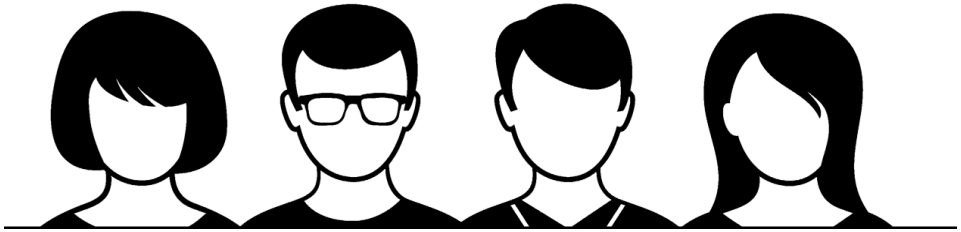
Project Team Introductions

Marcy McKillop
Lake Huron Primary Water Supply System
Environmental Services Engineer

Ryan Armstrong
Lake Huron Primary Water Supply System
Asset Management Coordinator

Billy Haklander
Lake Huron Primary Water Supply System
Senior Manager – Capital Programs



Benny Wan
AECOM
Senior Technical Director – Hydraulic Modelling

Paul Adams
AECOM
Environmental Assessment Planner

Matt Simons
AECOM
Process Engineer

Tracey McKenna
AECOM
Public Information Centre Facilitator

Lake Huron
Primary Water Supply System

Background

- Lake Huron water treatment, transmission and storage facilities were originally constructed in the 1960's by the Ontario Water Resources Commission
- The province operated and maintained this infrastructure until 2000 when ownership of the regional water system was transferred to the municipalities served by the infrastructure, through the *Water and Sewage Systems Transfer Act*
- The Transfer Order establishes that each municipality that benefits from the regional water system has an undivided interest in the system
- No division of shareholdings or capacity allocation of the system between the municipalities served.

- Multi-barrier approach to drinking water protection

Engagement Guidelines

- All attendees cameras and microphones will be disabled for the duration of the Public Information Centre, including the Q&A session. The chat function has been disabled.

- Please use the Q&A button to submit a question at any time. All questions will be treated as anonymous.

- All questions will be answered after the presentation, during the Q&A Session. The facilitator may combine similar questions during the Q&A session. Feel free to submit any follow-up questions as needed.

- This meeting is being recorded and will be posted online by June 20 at: **https://www.huronelginwater.ca/lake-huron-primary-water-supply-system-master-plan/**

Lake Huron
Primary Water Supply System

Agenda

- Introductions and purpose.
- Presentation (approximately 45 minutes).
- Questions and answer period.

Lake Huron
Primary Water Supply System

Public Information Centre Purpose

- Meet the Project Team.
- Introduce the Master Plan.
- Overview of the Municipal Class Environmental Assessment process.
- Review Problem and Opportunity.
- Present Servicing Strategy Options,
- Review recommendations.
- Obtain feedback.

Municipal Class Environmental Assessment

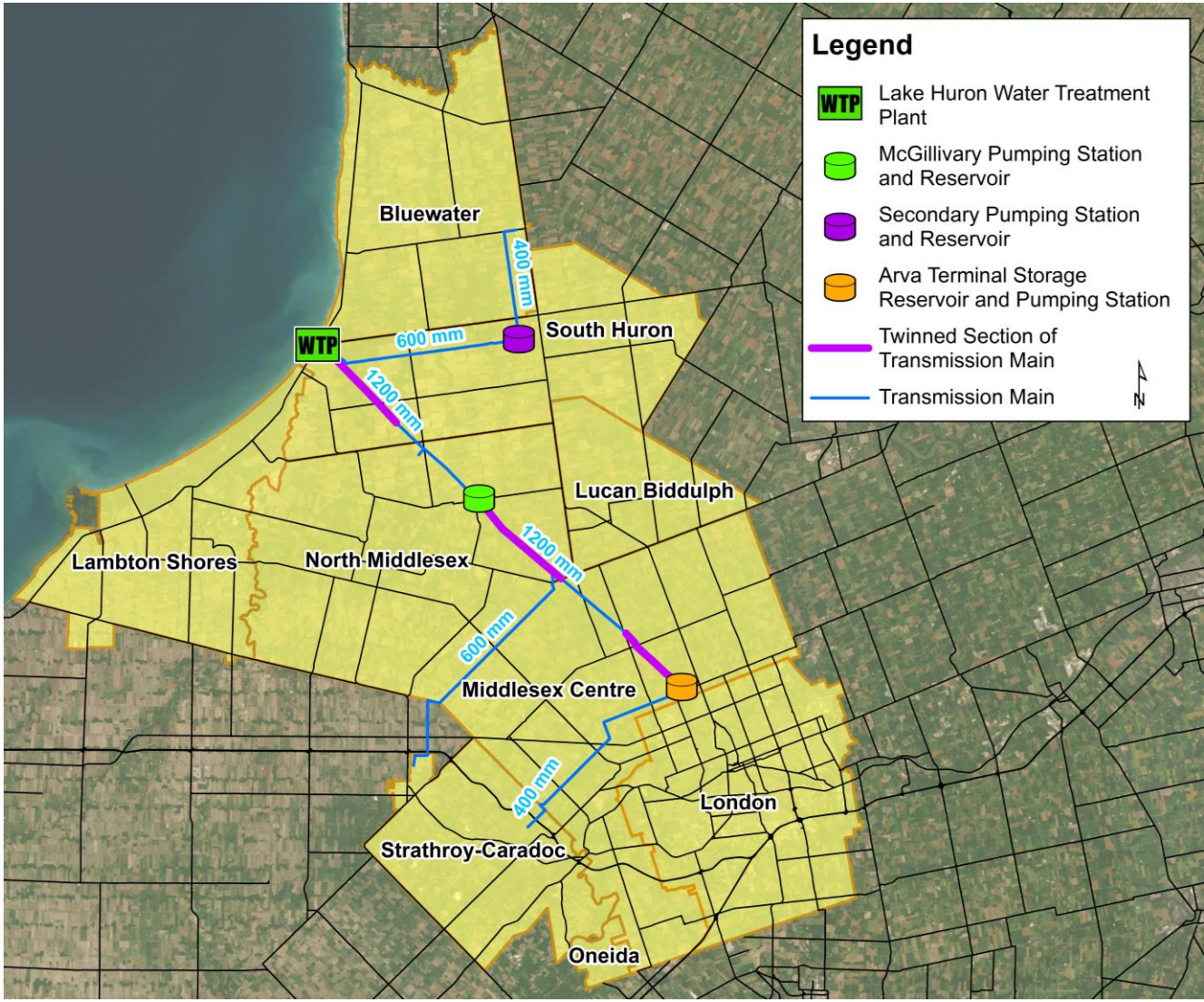
- The Lake Huron Primary Water Supply System has elected to follow the Municipal Class Environmental Assessment process for this Master Plan
- This study is following the Master Plan Approach #1 process.
- Master Plans using Approach #1 follow Phases 1 and 2 of Municipal Class Environmental Assessment Process

- A Master Plan Report identifying all required projects, including Schedule B and C projects, will be prepared for public review and comment.
- The Master Plan is updated every 5 years.

Lake Huron
Primary Water Supply System

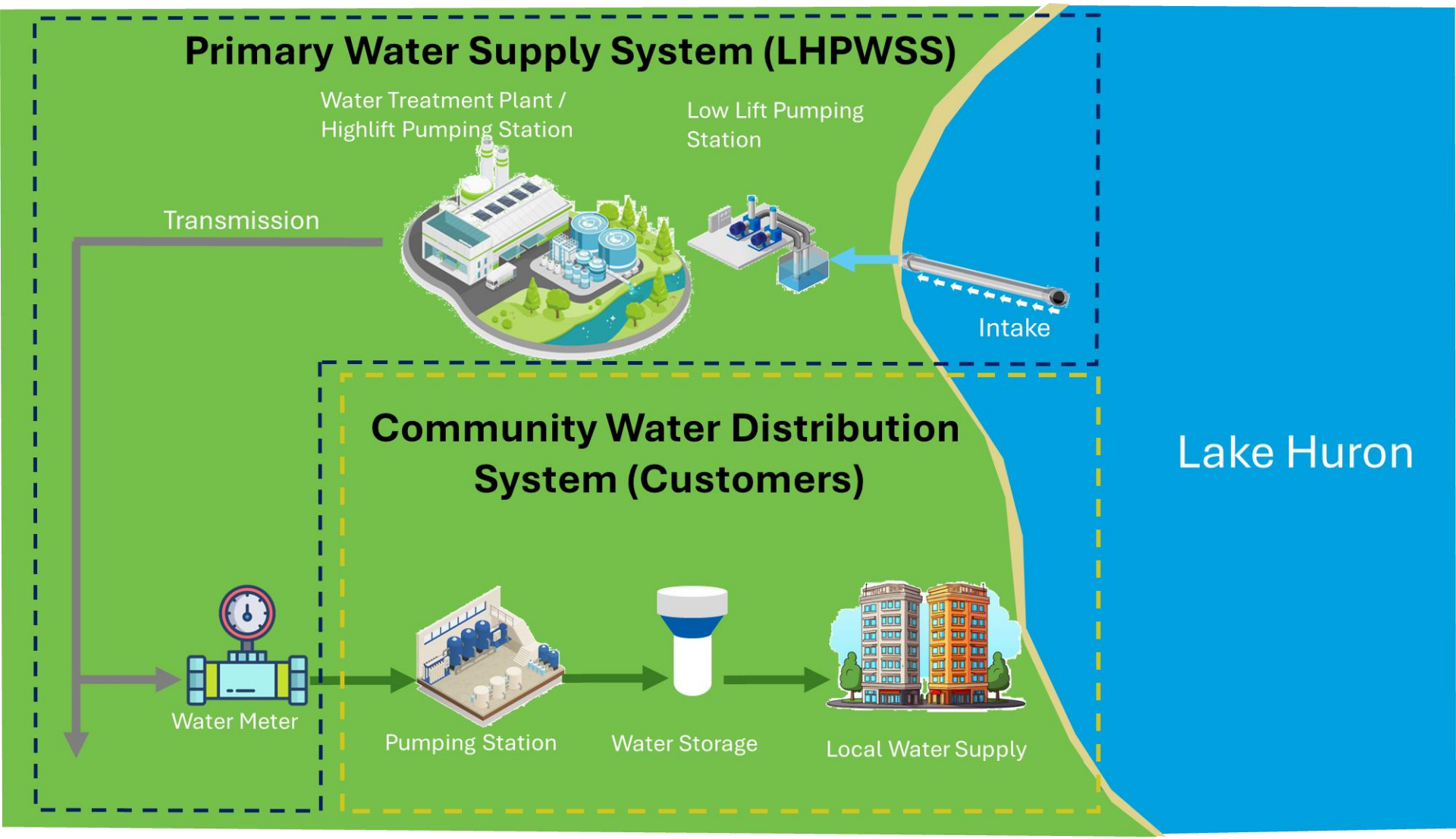
System Overview

- The Lake Huron Primary Water Supply System supplies drinking water to:
  - City of London,
  - Municipality of Bluewater,
  - Municipality of Lambton Shores,
  - Municipality of Lucan-Biddulph,
  - Municipality of Middlesex Centre,
  - Municipality of North Middlesex,
  - Municipality of South Huron, and
  - Municipality of Strathroy-Caradoc.
- Works are ongoing to provide Oneida Nation of the Thames with drinking water (2026).



Lake Huron
Primary Water Supply System

Typical Water Supply System

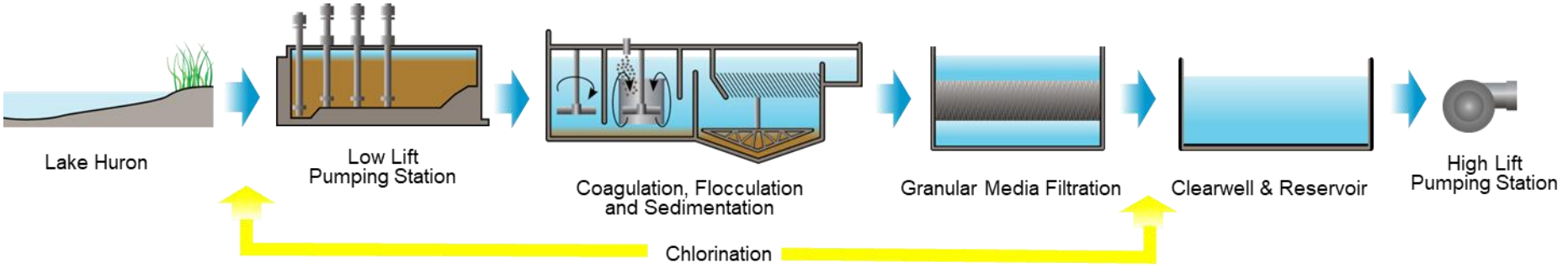


Lake Huron
Primary Water Supply System

Lake Huron Water Treatment Plant

Lake Huron
Primary Water Supply System

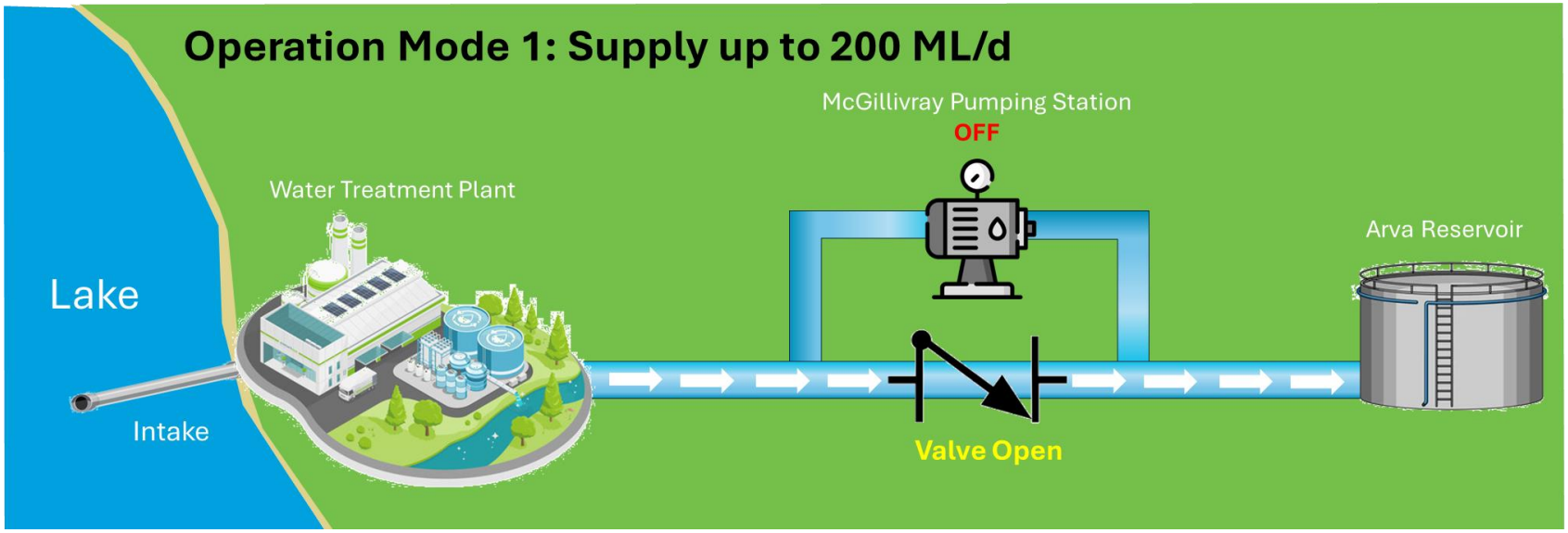
Water Treatment Process

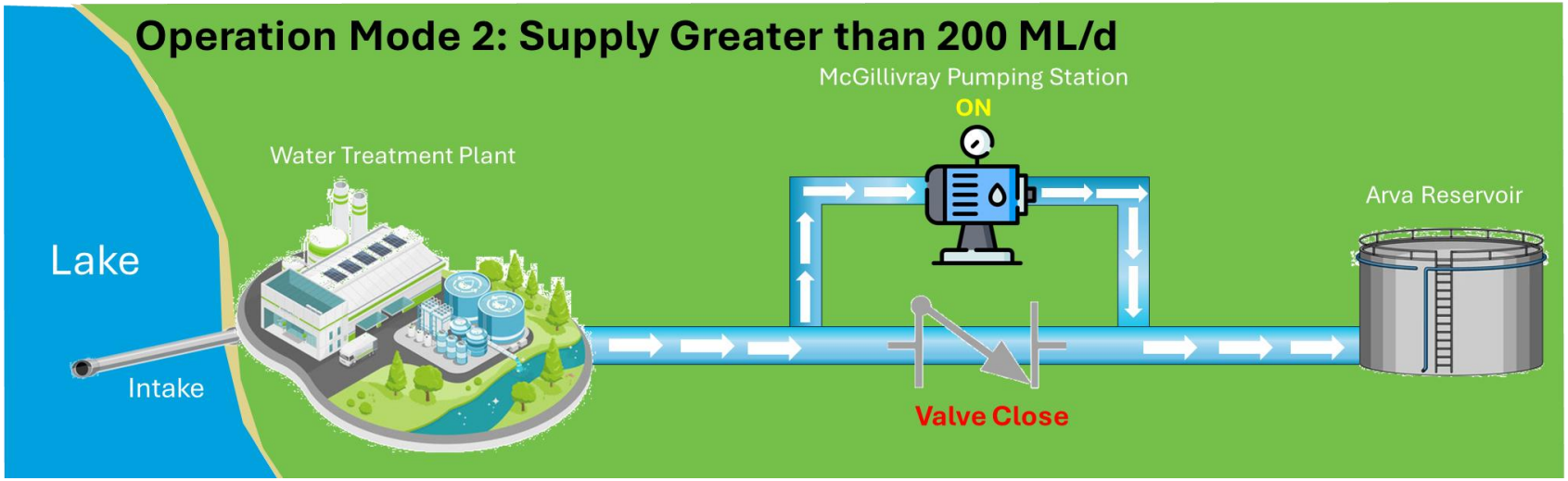


- The Lake Huron Water Treatment Plant has a rated capacity of 340 ML/d. It is a conventional water treatment plant with coagulation, flocculation, sedimentation, dual media filtration and chlorination.
- Solids captured in the sedimentation process and backwashes of granular media filtration are collected at an onsite residue management facility, dewatered and disposed of at a landfill.
- The treatment system and water quality is continuously monitored using analyzers and computerized Supervisor Control and Data Acquisition (SCADA) system.
- A range of chemicals are used in various treatment processes.
- The facility is operated and maintained in accordance with Municipal Drinking Water Licence and provincial regulations

Lake Huron
Primary Water Supply System

Lake Huron Primary Water Supply System – Pumping and Transmission Operation





Lake Huron
Primary Water Supply System

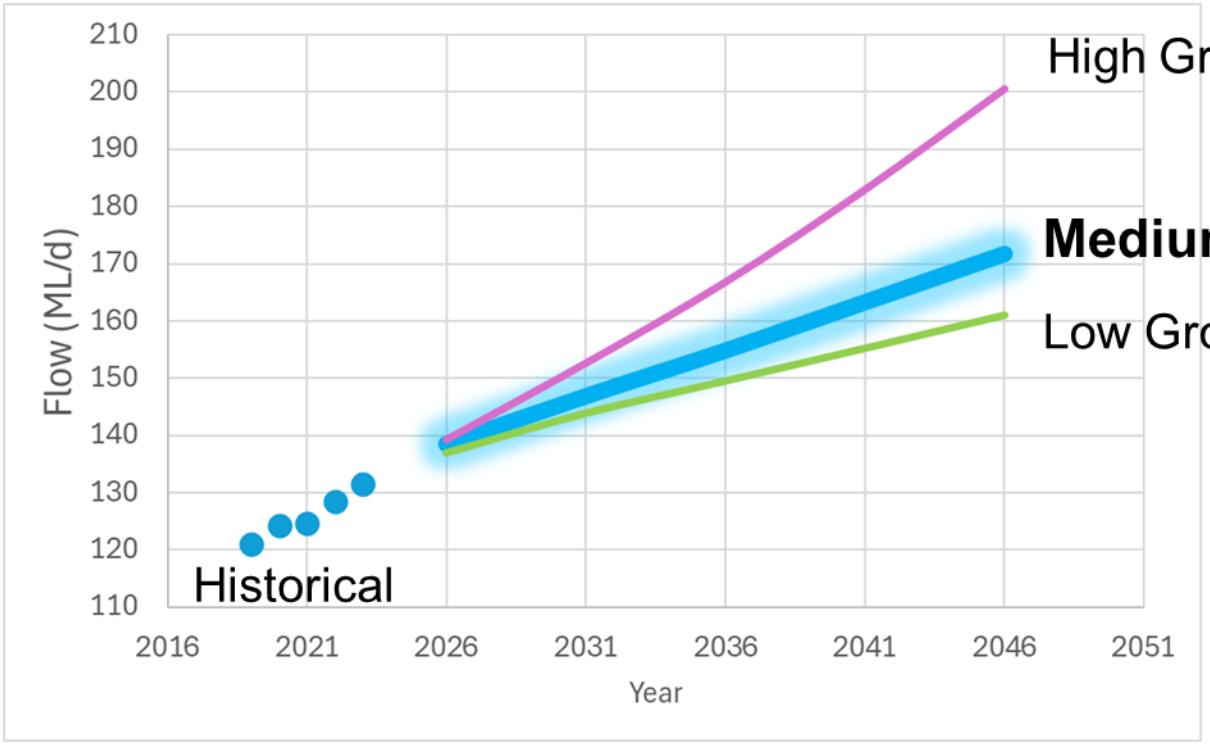
Problem Opportunity Statement

- Develop and assess a range of water system strategies considered to support existing servicing and account for reasonably expected near, mid, and long-term future growth projections to the **planning horizon of 2046**, including servicing to new communities.
- Determine operational challenges based on the system hydraulics review related to projected future demands and growth-related requirements for treatment, pumping, transmission infrastructure.
- Review and confirm the utility's operational storage needs.
- Assess primary transmission pipeline redundancy, including the approximate 19 kilometres of non-twinned transmission main, and investigate alternative solutions.

Lake Huron
Primary Water Supply System

System Demand Forecast – Growth Scenarios

Year	2026	2031	2036	2041	2046
Average Day Demand Projected Flow – Medium Growth Scenario (in Millon Litres per day)	139	147	155	163	172



Confirm supply capability in LHPWSS to meet projected growth in water supply

Lake Huron
Primary Water Supply System

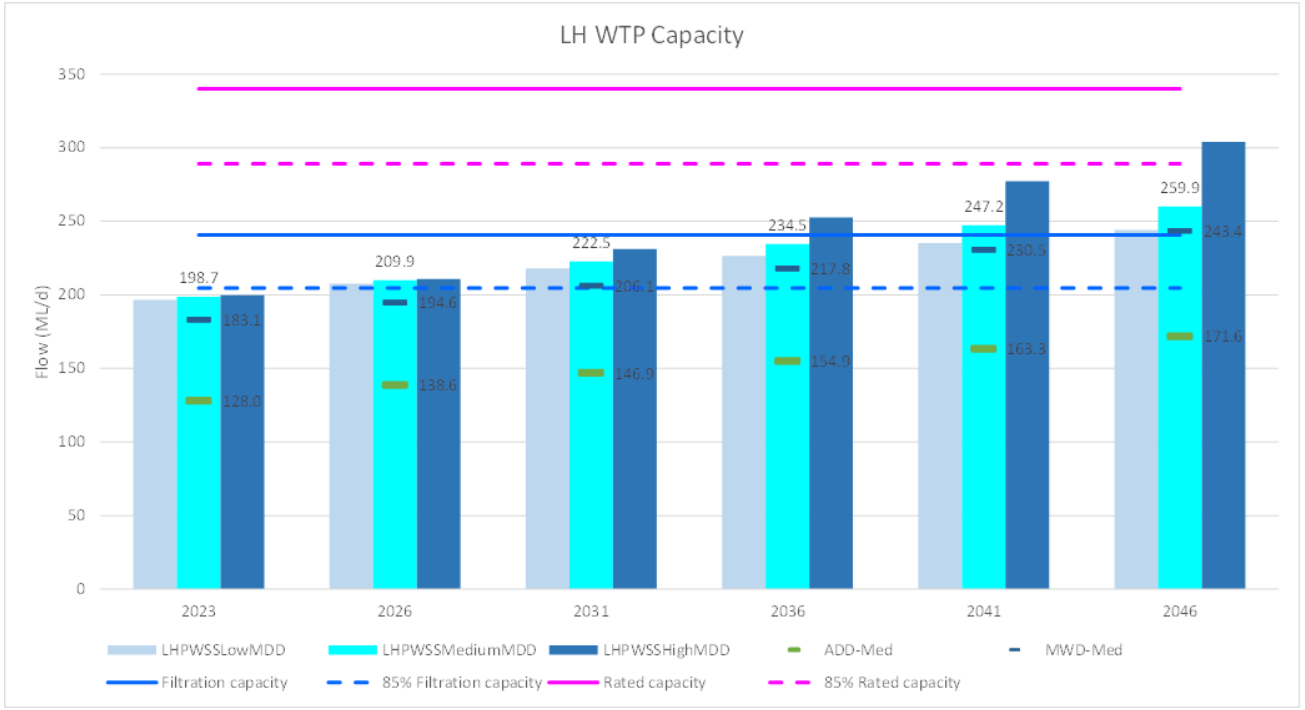
System Assessment

- Treatment
- Pumping
- Transmission
- Storage

Lake Huron
Primary Water Supply System

System Assessment – Treatment

- The rated capacity of the treatment plant of 340 ML/d is sufficient for the planning horizon (2046)
- The treatment plant is capable of meeting capacity of 240 ML/d, based on recently completed stress testing.
- Intake pipe and low lift pumping capacity are both sufficient.
- Some treatment processes were found to be limited meeting the maximum week demand at/beyond year 2041.
- A previous study indicates that much of the plant's concrete will reach its expected life in Year 2046. Condition assessment and rehabilitation may be required.



Lake Huron
Primary Water Supply System

System Assessment – Pumping

- Lake Huron Water Treatment Plant High Lift Pumps:
  - Pumping capacity is sufficient to meet the projected flows within design horizon (2046).
  - Four pumps were recently installed in 2022. Two pumps are existing to the plant and are expected to require replacement in the planning period.
- McGillivray Pump Station:
  - Pumping capacity is sufficient to meet the projected flows within design horizon (2046).
  - All four pumps are existing to the pumping station and are expected to require replacement in the planning period.
- Exeter-Hensall and Komoka Mt. Brydges Pumping Stations:
  - Pumping capacity is sufficient to meet the expected flows within design horizon (2046).

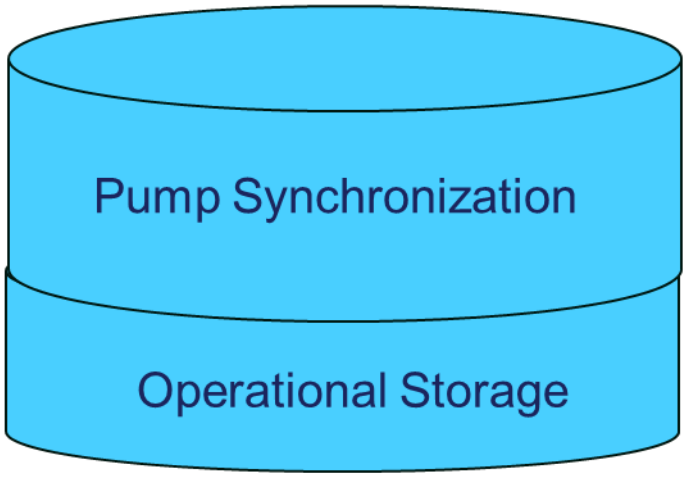
System Assessment –Transmission

- Lake Huron Water Treatment Plant to Arva Terminal Reservoir transmission mains:
  - Transmission main upgrades are not required for projected growth; however, age and condition will most likely dictate that small sections of the transmission main that are proactively replaced
    - LHPWSS continuously monitors the transmission main between Lake Huron Water Treatment Plant and Arva Terminal Reservoir. This monitoring provides insight to a proactive pipe replacement program.
  - It is recommended that planning beyond the 20-year planning horizon be completed to develop a comprehensive pipeline strategy considering reliability, redundancy and risk
- Other transmission mains in the system (Exeter-Hensall, Strathroy-Caradoc, Komoka-Mt. Brydges transmission mains) will have sufficient capacity to supply demands within the planning horizon.

Lake Huron
Primary Water Supply System

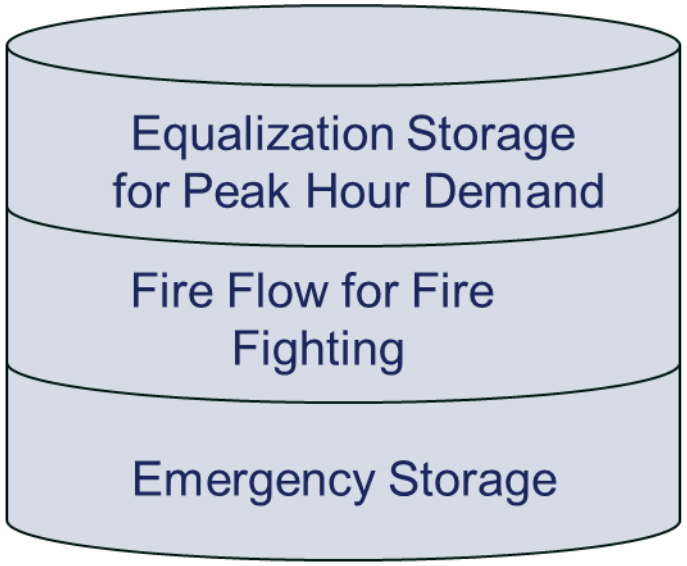
Storage Evaluation

- The Lake Huron Primary Water Supply System operates as a utility supplying water to customers/communities, and storage is required for flexibility of the utility's operations



Lake Huron Primary Water Supply Storage

- Communities ensure sufficient distribution storage is available to meet Ministry of the Environment Guidelines



Community Water Distribution System Storage

Lake Huron
Primary Water Supply System

System Assessment – Storage

- Arva Terminal Reservoir and Exeter-Hensall Reservoir have sufficient capacity within the planning horizon.
- Existing pumping facilities are currently sequenced to minimize storage needs for Lake Huron Water Treatment Plant onsite storage and McGillivray Reservoir.
  - If operation was not synchronized, more storage would be required at both facilities.
  - Existing storage capacity in both facilities is sufficient to accommodate their pumping capacities.

Lake Huron
Primary Water Supply System

Alternative Water Servicing Strategies

Planning Alternative	Screening Result	Alternatives for Further Study
1. Do Nothing • Does not address the problem opportunity statement.	Not Carried Forward.	Screened from additional study.
2. Limit Growth / Soley Optimize the Existing System (with no new Infrastructure) • While limiting growth and only optimizing the existing system would reduce the need for upgrades and improvements to the water distribution systems it does not address the problem and opportunity Statement, recognize the Regional Water Supply does not have the jurisdiction to implement such measures on member Municipalities or meet the need for new customers.	Not Carried Forward.	Screened from additional study.
3. Water Conservation/Reduction in Use • Partially addresses the Problem and Opportunity Statement. • Water conservation provides some relief for water treatment and distribution but does not consider future growth and would not be an adequate solution on its own. • Municipalities to continue the water conservation efforts	Not Carried Forward.	Screened from additional study. Encouraged as a best practice for community water systems

Lake Huron
Primary Water Supply System

Alternative Water Servicing Strategies cont'd

Planning Alternative	Screening Result	Alternatives for Further Study
4. Water System Improvements (to Rated Capacity) • Addresses the Problem and Opportunity Statement. • Provides ability to accommodate future growth through an upgrade to the current system rated capacity	**Carried Forward**.	**To be studied further**
5. Water System Improvements (Beyond Rated Capacity) • Addresses the Problem and Opportunity Statement. • Provides ability to accommodate future growth through an expansion beyond the current system rated capacity.	Not Carried Forward.	Screened from additional study. Expansion beyond the current system rated capacity is not needed within the planning horizon (to 2046)
6. Alternate Supply Source for Selected Current Customers/Communities • Difficult to implement due to jurisdictional and intra-basin complexities • Requires new water supply agreement(s)	Not Carried Forward.	Screened from additional study.

Lake Huron
Primary Water Supply System

Evaluation Criteria

Water servicing alternatives for Strategy No.4 were evaluated against the following criteria

Factor	Criteria	Description
Socio-Economic	• Long Term Impacts to the Community in relation to the utility. • Supports growth and development	• Considerations to potential long- and short-term impacts for the utility, as well as the communities served
Cultural Environment	• Archaeological Resources. • Cultural Heritage landscapes and built heritage resources.	• Disturbance to archaeological sites, cultural heritage landscapes and built cultural heritage resources.
Natural Heritage	• Aquatic environment. • Terrestrial environment. • Species at Risk. • Source water protection.	• Potential Impacts to the Natural Environment due to the construction, operation of new or updated infrastructure. • Intake Protection Zone considerations.
Technical	• Meets future needs. • Drinking water quality. • Maintenance of Service. • Constructability • Legal Jurisdictional	• The ability of the alternatives to meet the current and future needs of the water distribution system and how it can be integrated with the existing system
Economic and Financial	• Project and Operations Changes Costs.	• Costs to construct, maintain and operate the new infrastructure for the distribution system.

Lake Huron
Primary Water Supply System

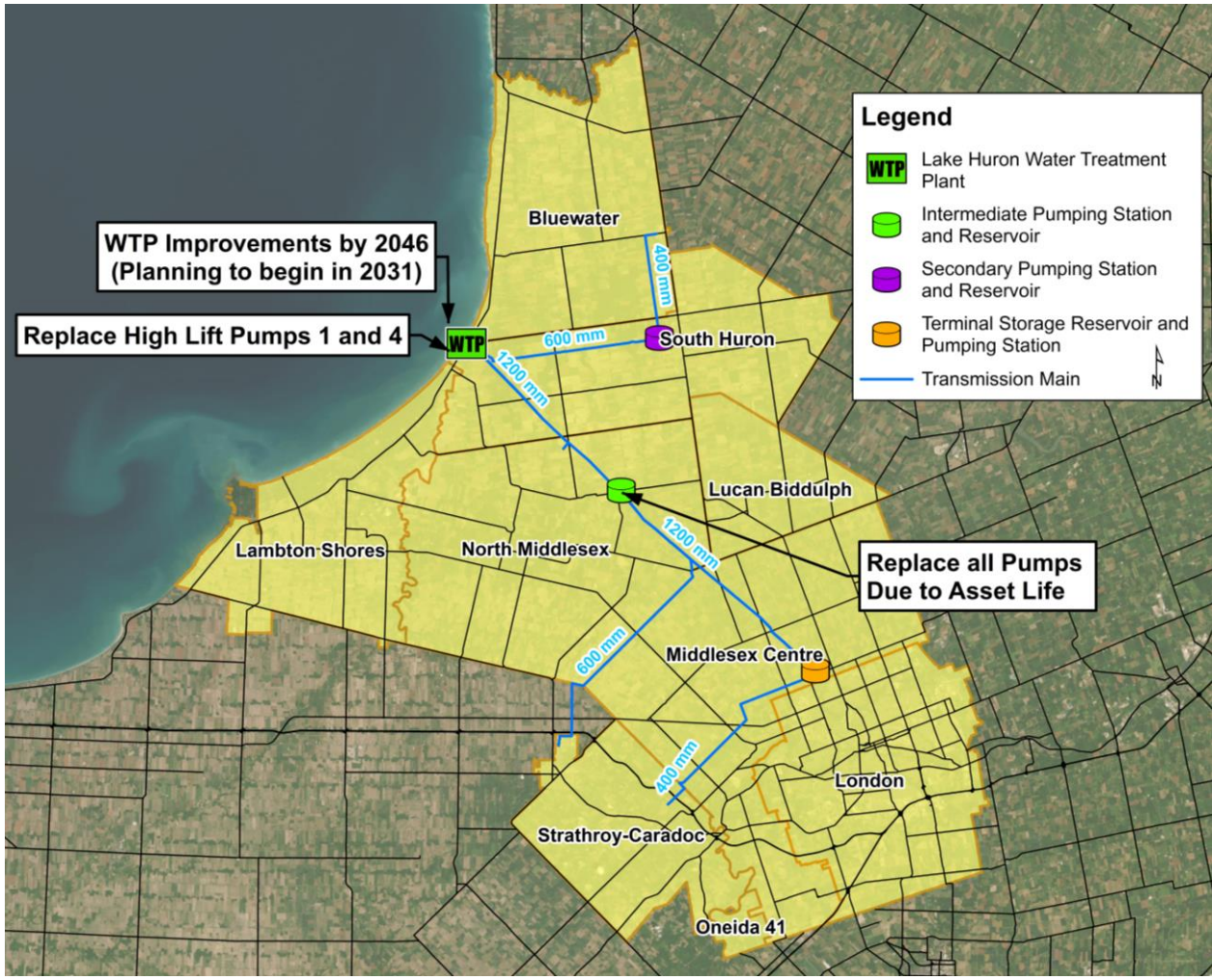
Evaluation of Water System Improvement Alternatives – Evaluation Summary

Water System Improvement Alternative	Evaluation Result	Rationale
Alternative 4A – Optimizing and Upgrading Existing System (with new infrastructures) *Upgrade existing infrastructure(s) to current system rated capacity through various improvements. Optimization of existing system is also included.*	**Carried Forward** 	• Moderate impacts to Natural Heritage • Moderate Impacts to/from Climate Change • Meets the need of current and potential new customers. • Moderate construction complexity. • Straight forward permitting and approvals • Moderate capital cost.
Alternative 4B – New Water Treatment Plant *Replace existing water treatment plant with new plant*	**Not Carried Forward** 	• Property acquisition may be required. • Moderate to high impacts to Natural Heritage. • High impacts to/from Climate Change. • Meets the need of current and potential new customers. • Moderate to High construction complexity. • More stringent permitting and approvals. • Highest capital cost.

Lake Huron
Primary Water Supply System

Recommended Water System Improvements

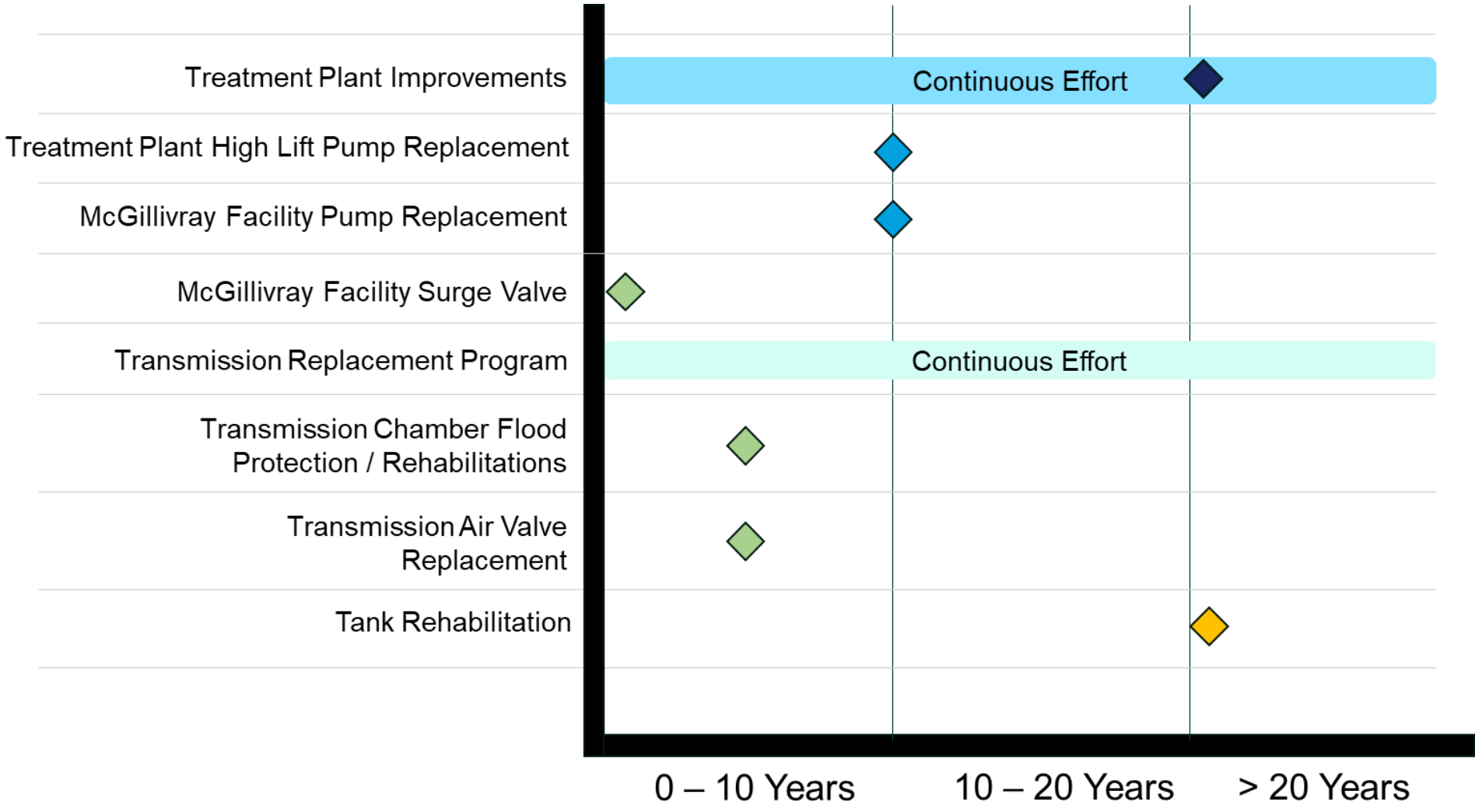
- Treatment Processes:
  - Flocculation Upgrades
  - Clarifier Capacity Expansion
  - Filter and Backwash Upgrades
  - Ultraviolet Disinfection
  - Tank/channel rehabilitations
- Pumping:
  - Pump Replacement of treatment plant high lift pumps (2)
  - Pump replacement of all McGillivray pumps (4)
  - Surge Valve Upgrade in McGillivray Reservoir
- Transmission:
  - Selected transmission mains replacement (approx. $300k per year) through proactive program
  - Chamber Flood Protection and Rehabilitations
  - Air Release Valve Replacements
- Storage:
  - Tank Rehabilitations



*All recommended projects are exempt from the Class Environmental Assessment

Lake Huron
Primary Water Supply System

Recommended Capital Program



Lake Huron
Primary Water Supply System

Water System Improvements – Water Treatment Plant Upgrades

Recommended Water System Improvements – Future Studies and Review

Treatment :

- Optimization of coagulant dosing strategy
- Optimization of powder activated carbon dosing strategy
- Cold water stress test
- Feasibility study for flocculation and clarifier capacity upgrades
- Feasibility study for filter capacity upgrades, including filter-to-waste and backwash sequence capability
- Ultraviolet disinfection feasibility study

.

Pumping, Storage and Transmission :

- Transient Hydraulic Modeling Studies for Secondary Transmission Mains
- Ongoing Monitoring of primary Transmission Mains
- System Reliability and Redundancy Review
- Water Loss Review
- Reservoir Expansion Feasibility Study

System Wide:

- Water Quality Facility Plan Update
- Asset Management Plan Update
- Ongoing Condition Assessment
- Climate Change Resiliency and Adaptation Plan
- Financial Plan Update
- 50 Year Roadmap Study
- Next Master Plan (2029)

All recommended studies/reviews are exempt from the Class Environmental Assessment process

Lake Huron
Primary Water Supply System

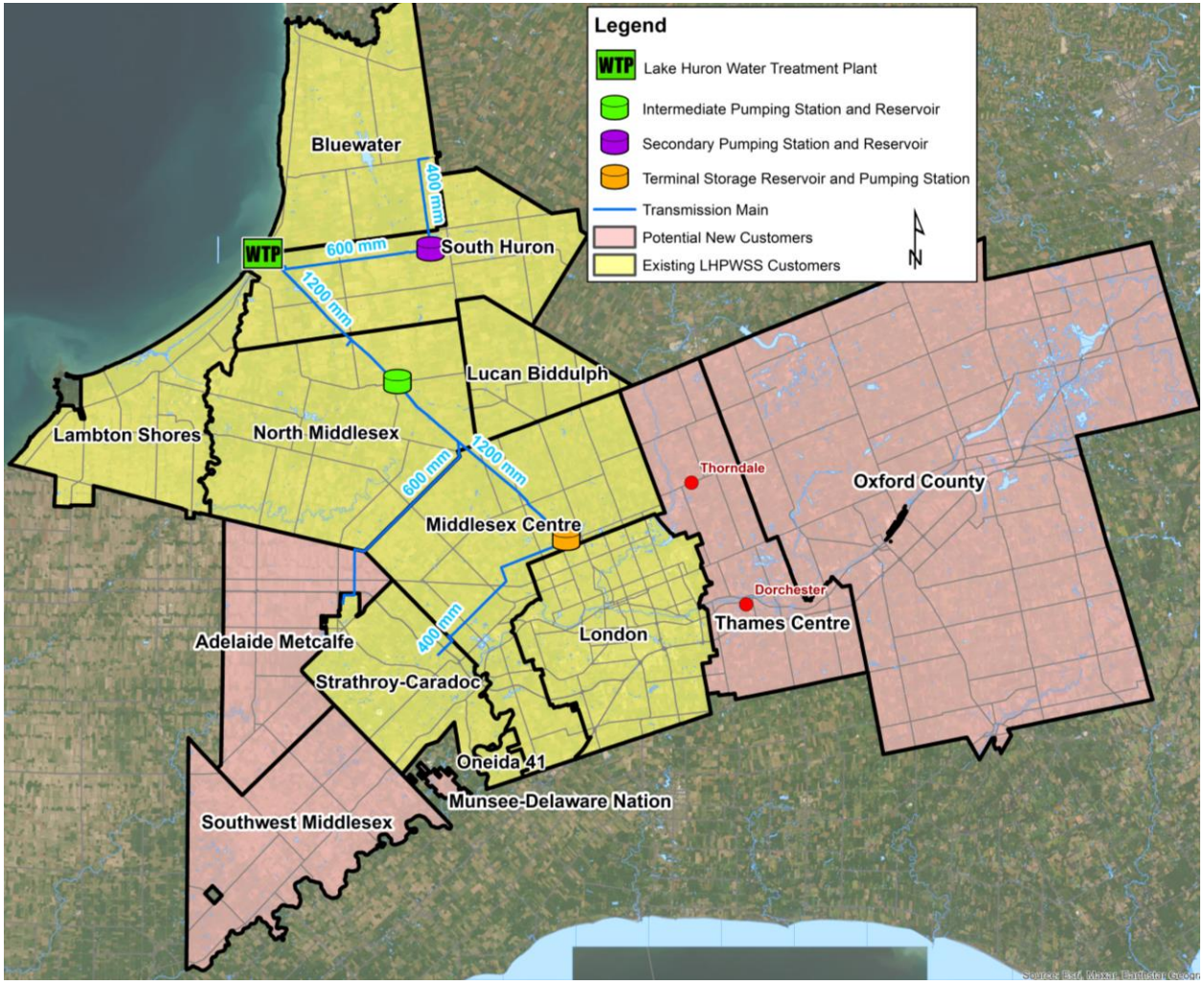
Potential New Customers

The following communities expressed interest in potential water supply from the Lake Huron Primary Water Supply System:

- Oxford County
- Munsee-Delaware First Nation
- Municipality of Thames Centre (Dorchester and Thorndale)
- Municipality of Adelaide-Metcalfe
- Municipality Southwest Middlesex

Additional requirements to accommodate new customers:

- Extension of secondary systems for connection to new communities
- Potential twinning of a portion of the untwined portion of the transmission main and/or some pump capacity upgrades will be required.
- Potential storage capacity increase
- Operational adjustments



* Water demands for these communities were not included in the overall system assessments

Lake Huron
Primary Water Supply System

Next Steps

June/July 2025
Collect input from PIC

Receive and consider input from the public, agencies and stakeholders to confirm the preferred alternatives.

Summer 2025
Master Plan Report

Prepare Master Plan Report to fully document the process including all consultation / engagement.

Fall 2025
30-Day Review Period

Report will be available for Public Review for 30-Days on the project website

If no issues are raised within the 30-day review, the Lake Huron Primary Water Supply System can proceed to detailed design and construction of the recommended works as outlined in the Master Plan Report.

Stay Connected

Visit our project website:

https://www.huronelginwater.ca/lake-huron-primary-water-supply-system-master-plan/

where you can:

- Ask questions and leave comments for the project team.
- View the latest project materials.
- Access a recording of this meeting.

You can also reach us any time with comments or questions, using the contact information below. This presentation can be made available in alternative formats upon request.

Please Provide and Questions and/or Comments related to the Public Information Centre by **July 4th, 2025.**

Marcy McKillop, P.Eng.
Environmental Services Engineer
Regional Water Supply
Lake Huron and Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London ON, N5X 4E7
Tel:519-930-3505 x4976
Email: mmckillop@huronelginwater.ca

Paul Adams, CPT
Environmental Planner,
AECOM Canada ULC.
250 York Street, Suite 410
London ON, N6A 6K2
Tel: 519-636-6448
Email: paul.adams2@aecom.com

AECOM

Appendix A.4

Indigenous Community Consultation

Lake Huron
Primary Water Supply System

February 25, 2025

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON
N7T 7H5

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Nahmabin,

Please find attached the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan to develop and evaluate a range of water servicing strategies to accommodate near, mid and long-term growth. The Master Plan is being completed in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment Master Planning process.

We recognize and acknowledge that the watersheds of southwestern Ontario have been home to the Attawandaron, Anishininaabeg, Haudenosaunee, and Lūnaapéewak throughout time. We understand our duty and responsibility for providing full, accurate, and up-to-date information about this project.

We would also like to understand any potential interest in a future community connection to the Lake Huron Primary Water Supply System.

To support the Master Plan, we kindly request you review and complete the survey at the link below and provide your response by **March 7th, 2025**. One consolidated response from each community would be appreciated.

The survey is available here: https://form.jotform.com/250303424192042

Office 519.930.3505 ext. 4976
Fax 519.474.0451
mmckillop@huronelginwater.ca
www.huronelginwater.ca

Lake Huron Primary Water Supply System
235 North Centre Road, Suite 200
London, ON N5X 4E7

We are committed to working with your community to facilitate your participation in the Master Plan. We would like to incorporate your input, and we welcome the opportunity for shared dialogue. Your participation could include a virtual meeting, hosted by the Lake Huron Primary Water Supply System, and providing input on project documents.

We have elected to send this letter and attached notice by email only. Please feel free to call or email me using the contact details below if you have any questions or require additional information.

Sincerely,

Marcy McKillop, P.Eng.
Environmental Services Engineer
Lake Huron Primary Water Supply System

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Lake Huron
Primary Water Supply System

February 25, 2025

Bkejwanong Territory (Walpole Island)
R.R. #3
117 Tahgahoning Road
Walpole Island, ON
N8A 4K9

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Thomas,

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London, ON N5X 4E7

Lake Huron
Primary Water Supply System

February 25, 2025

Caldwell First Nation
14 Orange Street
Leamington, ON
N8H 1P5

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief van Oirschot,

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London, ON N5X 4E7

Lake Huron
Primary Water Supply System

February 25, 2025

Chippewas of the Thames First Nation
R.R. #1
320 Chippewa Road
Muncey, ON
N0L 1Y0

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Miskokomon,

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Environmental Services Engineer
Lake Huron Primary Water Supply System

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235 North Centre Road, Suite 200
London, ON N5X 4E7

Lake Huron
Primary Water Supply System

February 25, 2025

Eelŭnaapéewi Lahkéewiit (Delaware Nation at Moraviantown)
R.R. #3
14760 School House Line
Thamesville, ON
N0P 2K0

Subject: Lake Huron Primary Water Supply System Master Plan

Koolamalsi Chief Logan,

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Lake Huron Primary Water Supply System

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Lake Huron
Primary Water Supply System

February 25, 2025

Haudenosaunee Development Institute
16 Sunrise Court – Suite 600
P.O. Box 714
Ohsweken, ON
N0A 1M0

Subject: Lake Huron Primary Water Supply System Master Plan

Sge:no/She:koli/Shekon Tracey General,

Please find attached the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan to develop and evaluate a range of water servicing strategies to accommodate near, mid and long-term growth. The Master Plan is being completed in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment Master Planning process.

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Lake Huron
Primary Water Supply System

February 25, 2025

Chippewas of Kettle and Stony Point First Nation
6247 Indian Lane
Kettle and Stony Point FN, ON
N0N 1J1

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Bressette,

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We would also like to understand any potential interest in a future community connection to the Lake Huron Primary Water Supply System.

To support the Master Plan, we kindly request you review and complete the survey at the link below and provide your response by **March 7th, 2025**. One consolidated response from each community would be appreciated.

The survey is available here: https://form.jotform.com/250303424192042

Office 519.930.3505 ext. 4976
Fax 519.474.0451
mmckillop@huronelginwater.ca
www.huronelginwater.ca

Lake Huron Primary Water Supply System
235 North Centre Road, Suite 200
London, ON N5X 4E7

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Sincerely,

Marcy McKillop, P.Eng.
Environmental Services Engineer
Lake Huron Primary Water Supply System

Encl.

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Lake Huron
Primary Water Supply System

February 25, 2025

Munsee-Delaware Nation
R.R. #1
289 Jubilee Road
Muncey, ON
N0L 1Y0

Subject: Lake Huron Primary Water Supply System Master Plan

Koolamalsi Chief Thomas,

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Lake Huron
Primary Water Supply System

February 25, 2025

Oneida Nation Council of Chiefs
[On^yota a:ka Lotiyaneshu]

Subject: Lake Huron Primary Water Supply System Master Plan

Sheko:li Loyane Day,

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London, ON N5X 4E7

Lake Huron
Primary Water Supply System

February 25, 2025

Oneida Nation of the Thames
2212 Elm Avenue
Southwold, ON
N0L 2G0

Subject: Lake Huron Primary Water Supply System Master Plan

Sheko:li Chief Cornelius,

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Lake Huron
Primary Water Supply System

February 25, 2025

Six Nations Elected Council
2489 Chiefswood Rd.
P.O. Box 5000
Ohsweken, ON
N0A 1M0

Subject: Lake Huron Primary Water Supply System Master Plan

Shekon/ She:koli/ Segoli/ Sgę́:nǫ?/ Sgë:nö'/ Cwe:'n Lonny Bomberry,

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London, ON N5X 4E7

Lake Huron
Primary Water Supply System

June 5, 2025

Aamjiwnaang First Nation
978 Tashmoo Avenue
Sarnia, ON
N7T 7H5

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Nahmabin,

Please find attached the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan. The Master Plan is being completed in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment Master Planning process, to develop and evaluate a range of water servicing strategies to accommodate near, mid and long-term growth.

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Lake Huron Primary Water Supply System

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Lake Huron Primary Water Supply System
235 North Centre Road, Suite 200
London, ON N5X 4E7

Lake Huron
Primary Water Supply System

June 5, 2025

Bkejwanong Territory (Walpole Island)
R.R. #3
117 Tahgahoning Road
Walpole Island, ON
N8A 4K9

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Thomas,

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235 North Centre Road, Suite 200
London, ON N5X 4E7

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Lake Huron Primary Water Supply System

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Lake Huron Primary Water Supply System
235 North Centre Road, Suite 200
London, ON N5X 4E7

Lake Huron
Primary Water Supply System

June 5, 2025

Caldwell First Nation
14 Orange Street
Leamington, ON
N8H 1P5

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief van Oirschot,

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Lake Huron Primary Water Supply System
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London, ON N5X 4E7

Lake Huron
Primary Water Supply System

June 5, 2025

Chippewas of the Thames First Nation
R.R. #1
320 Chippewa Road
Muncey, ON
N0L 1Y0

Subject: Lake Huron Primary Water Supply System Master Plan

Aanii Chief Miskokomon,

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Lake Huron Primary Water Supply System

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Lake Huron Primary Water Supply System
235 North Centre Road, Suite 200
London, ON N5X 4E7

Lake Huron
Primary Water Supply System

June 5, 2025

Eelŭnaapéewi Lahkéewiit (Delaware Nation at Moraviantown)
R.R. #3
14760 School House Line
Thamesville, ON
N0P 2K0

Subject: Lake Huron Primary Water Supply System Master Plan

Koolamalsi Chief Logan,

Please find attached the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan. The Master Plan is being completed in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment Master Planning process, to develop and evaluate a range of water servicing strategies to accommodate near, mid and long-term growth.

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Lake Huron Primary Water Supply System

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Lake Huron
Primary Water Supply System

June 5, 2025

Haudenosaunee Development Institute
16 Sunrise Court – Suite 600
P.O. Box 714
Ohsweken, ON
N0A 1M0

Subject: Lake Huron Primary Water Supply System Master Plan

Sge:no/She:koli/Shekon Tracey General,

Please find attached the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan. The Master Plan is being completed in accordance with the Municipal Engineers Association Municipal Class Environmental Assessment Master Planning process, to develop and evaluate a range of water servicing strategies to accommodate near, mid and long-term growth.

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Lake Huron
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June 5, 2025

Chippewas of Kettle and Stony Point First Nation
6247 Indian Lane
Kettle and Stony Point FN, ON
N0N 1J1

Subject: Lake Huron Primary Water Supply System Master Plan

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June 5, 2025

Munsee-Delaware Nation
R.R. #1
289 Jubilee Road
Muncey, ON
N0L 1Y0

Subject: Lake Huron Primary Water Supply System Master Plan

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Lake Huron
Primary Water Supply System

June 5, 2025

Oneida Nation Council of Chiefs
[On^yota a:ka Lotiyaneshu]

Subject: Lake Huron Primary Water Supply System Master Plan

Sheko:li Alfred Day

Loyane - Shonuhses

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Lake Huron
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June 5, 2025

Six Nations Elected Council
2489 Chiefswood Rd.
P.O. Box 5000
Ohsweken, ON
N0A 1M0

Subject: Lake Huron Primary Water Supply System Master Plan

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Adams, Paul (London ON)

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 5:15 PM
To: Al Day
Cc: Ryan Armstrong; Adams, Paul (London ON)
Subject: RE: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good afternoon Al,

Feel free to contact me tomorrow/Friday at 226-688-8176 and we can further discuss the Master Plan for the Lake Huron Primary Water Supply System.

Best regards,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
T: 519-930-3505 ext. 4976
E: mmckillop@huronelginwater.ca
https://huronelginwater.ca
www.facebook.com/RegionalWaterSupply

The Lake Huron and Elgin Area Primary Water Supply Systems serve communities and people within the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron. We honour and respect the history, languages and culture of the diverse Indigenous people who call this territory home. This region is currently home to many First Nations, Inuit and Métis. We are grateful to have the opportunity to work and live in this territory.

From: Al Day <lutahawit@execulink.com>
Sent: Thursday, June 5, 2025 5:02 PM
To: Marcy McKillop <mmckillop@huronelginwater.ca>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; 'Adams, Paul (London ON)' <Paul.Adams2@aecom.com>
Subject: RE: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Good Afternoon Marcy

On behalf of the On^yota a:ka Lotiyaneshu, how do I become more informed and involved with process?

Thank you
Al

From: Marcy McKillop <mmckillop@huronelginwater.ca>
Sent: June 5, 2025 9:03 AM
To: Al Day <lutahawit@execulink.com>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Public Information Centre

Sheko:li Loyane Day,

Please find attached a letter regarding the Notice of Public Information Centre for the Lake Huron Primary Water Supply System Master Plan.

Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario N5X 4E7
T: 519-930-3505 ext. 4976
E: mmckillop@huronelginwater.ca
https://huronelginwater.ca
www.facebook.com/RegionalWaterSupply

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From: Marcy McKillop
Sent: Tuesday, February 25, 2025 4:52 PM
To: Al Day <lutahawit@execulink.com>
Cc: Ryan Armstrong <rarmstrong@huronelginwater.ca>; Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: Lake Huron Primary Water Supply System - Master Plan - Notice of Commencement

Sheko:li Loyane Day,

Please find attached a letter regarding the Notice of Commencement for the Lake Huron Primary Water Supply System Master Plan.

Yaw^ko,

Marcy McKillop, P.Eng. (she/her)
Environmental Services Engineer, Regional Water Supply

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AECOM

Appendix A.5

Agency Consultation

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

February 19, 2025

Marcy McKillop, P.Eng
Environmental Services Engineer
Region Water Supply
Lake Huron and Elgin Area Primary Water Supply Systems
mmckillop@huronelginwater.ca

BY EMAIL ONLY

Re: **Lake Huron Primary Water Supply System Master Plan**
Lake Huron Primary Water Supply System
Municipal Class Environmental Assessment, Master Plan (Phases 1-2)
Acknowledgement of Notice of Commencement

Dear Marcy McKillop,

This letter is in response to the Notice of Commencement for the above noted Master Plan. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the Lake Huron Primary Water Supply System (proponent) has indicated that the study is following the approved environmental planning process for a Master Plan following Phases 1-2 under the Municipal Class Environmental Assessment (Class EA).

The **updated (August 2022)** attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document**

relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing the projects identified in this Master Plan, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed Master Plan projects may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed projects**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed Master Plan projects:

- Aamjiwnaang First Nation
- Bkejwanong (Walpole Island)
- Caldwell First Nation
- Chippewas of Kettle and Stony Point
- Chippewas of the Thames First Nation
- Oneida Nation of the Thames
- Munsee Delaware
- Delaware Nation
- Six Nations of the Grand River (both elected and HCCC/HDI)
    - both the elected council and HCCC claim to represent the Six Nations Community. The HCCC is the traditional council and the SNGR elected was established by Canada pursuant to the Indian Act, 1924.

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed projects are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch (EABDirector@ontario.ca) under the following circumstances after initial discussions with the communities identified by the MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed projects may adversely affect an Aboriginal or treaty right;
- Consultation with Indigenous communities or other stakeholders has reached an impasse; or
- A Section 16 Order request is expected based on impacts to Aboriginal or treaty rights

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should additional steps and activities be required.

Please also ensure a copy of the final notice is sent to the ministry's Southwestern Region EA notification email account (eanotification.swregion@ontario.ca) after the draft report is reviewed and finalized.

Should you or any members of your project team have any questions regarding the material above, please contact me at monika.macki@ontario.ca.

Sincerely,

Monika Macki

Monika Macki
Regional Environmental Planner – Southwestern Region
Project Review Unit, Environmental Assessment Branch

Enclosed: Areas of Interest

Attached: Client's Guide to Preliminary Screening for Species at Risk

A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities

AREAS OF INTEREST (v. August 2022)

It is suggested that you check off each section after you have considered / addressed it.

Planning and Policy

- Applicable plans and policies should be identified in the report, and the proponent should describe how the proposed Master Plan projects adhere to the relevant policies in these plans.
    - Projects located in MECP Central or Eastern Region may be subject to the **Oak Ridges Moraine Conservation Plan (2017)** or the **Lake Simcoe Protection Plan (2014)**.
    - Projects located in MECP Central, Southwest or West Central Region may be subject to the **Niagara Escarpment Plan (2017)**.
    - Projects located in MECP Central, Eastern, Southwest or West Central Region may be subject to the **Greenbelt Plan (2017)**.
    - Projects located in MECP Northern Region may be subject to the **Growth Plan for Northern Ontario (2011).**

- The **Provincial Policy Statement (2024)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed projects are consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

Source Water Protection

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e. systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity

poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- In October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. **Given this requirement, please include a section in the report on source water protection.**

    - The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.

    - If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and be reflected in other sections of the report, such as the identification of net positive/negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if these Master Plan projects are occurring within a vulnerable area, proponents can use Source Protection Information Atlas, which is an online mapping tool available to the public. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs) can be turned on through the “Map Legend” bar on the left. The mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please**

consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.

More Information

For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

Climate Change

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of Class EA projects to:**

    1. Consider during the assessment of alternative solutions and alternative designs, the following:
        a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
        b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
    2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas

emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of these Master Plan projects, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern. **Please contact this office for further consultation on the level of Air Quality Impact Assessment required for these projects if not already advised.**

- If a quantitative Air Quality Impact Assessment is not required for a project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- As a common practice, "air quality" should be used an evaluation criterion for all road projects.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
    - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
    - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
    - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, for projects located in Central Region you may consider the provisions of the Rouge Park Management Plan if applicable.

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, please contact SAROntario@ontario.ca.

Surface Water

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods. **A Stormwater Management Plan should be prepared as part of the Class EA process** that includes:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the *Ontario Water Resources Act* (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the report should describe how the proposed Master Plan projects and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information. Additionally, an Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the Master Plan projects involve groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements.

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
    - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

Servicing, Utilities and Facilities

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the Master Plan projects.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Mitigation and Monitoring

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the Master Plan projects. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction monitoring plans must be documented in the report, as outlined in Section A.2.5 and A.4.1 of the MEA Class EA parent document.

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout the planning process. The report should also include copies of comments submitted on the Master Plan by interested stakeholders, and the proponent's responses to these comments (as directed by the Class EA to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- There are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. **The Master Plan should clearly indicate the selected approach for conducting the plan**, by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the Environmental Assessment Act, although the plan itself would not be. **Please include a description of the approach being undertaken (use Appendix 4 as a reference).**

- Any identified projects should also include information on the MCEA schedule associated with the project.

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and reference any relevant information in the report.

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020

Once the EA Report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address.

The public can request a higher level of assessment on any of the Schedule B or Schedule C projects identified in the Master Plan if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project(s) within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project(s).

Therefore, the proponent cannot proceed with the Master Plan projects until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Section 16 Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project(s).

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Section 16 Order requests on those matters should be addressed in writing to:

Minister of the Environment, Conservation and Parks
Ministry of the Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Ontario

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers

issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;
- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;

- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;
- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;

- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant documentation;

- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigates any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

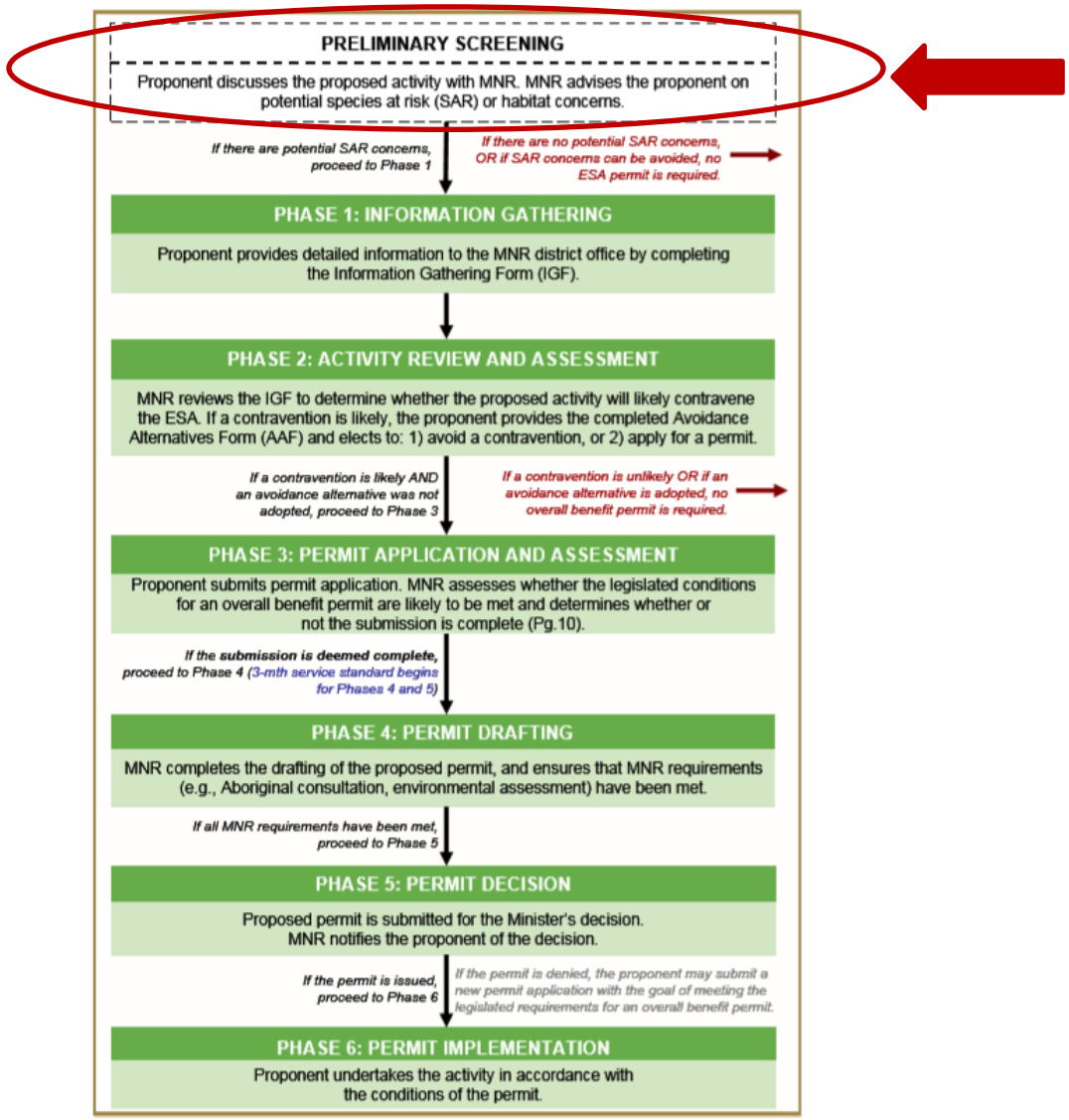
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

Adams, Paul (London ON)

From: Adams, Paul (London ON)
Sent: September 26, 2025 12:38 PM
To: 'Macki, Monika (MECP)'
Subject: RE: Adams, Paul (London ON) shared the folder "MECP Review" with you

Thank you Monika,

I will make that edit prior to issuing the Notice of Master Plan. Have a great weekend.

Paul.

From: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Sent: September 26, 2025 12:22 PM
To: Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Subject: RE: Adams, Paul (London ON) shared the folder "MECP Review" with you

Thanks Paul,

The only comment I have is on p. 10 of the Elgin Area Primary Water Supply System report, for the project tables, the treatment plant expansion should be called a “Schedule” C instead of “Class” C, to align with the terminology in the MCEA.

Monika Macki
Environmental Resource Planner/Environmental Assessment Coordinator
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
monika.macki@ontario.ca

From: Adams, Paul (London ON) <Paul.Adams2@aecom.com>
Sent: Wednesday, September 17, 2025 10:16 AM
To: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Subject: Adams, Paul (London ON) shared the folder "MECP Review" with you

Adams, Paul (London ON) shared a folder with you

Hi Monika,

The following link will allow you to download both the Lake Huron Primary Water Supply System and the Elgin Area Primary Water Supply system Master Plans for MECP review prior to issuing the Notice of Master Plan for each study.

Regards,

Paul.

MECP Review

This link only works for the direct recipients of this message.

Open

Appendix A.6

Adjacent Communities Survey

Legend

- Already serviced by another surface water treatment plant
- Serviced by Both LHPWSS and EAPWSS
- Potential FN Customers (Munsee-Delaware, Kettle and Stoney Point, COTTFN)
- Potential Customers to Contact
- Existing EAPWSS Customers
- Existing LHPWSS Customers
- Adjacent Municipalities

N

Port Albert
Wingham
Gorrie
Fordwich
Palmerston
Arthur
Caledon Village
Belgrave
Belwood
Hillsburgh
Erin
Goderich
Blyth
Brussels
Moorefield
Drayton
Listowel
Alma
Fergus
Elora
Huron East
Atwood
Central Huron
Clinton
Huron East
Rockwood
Acton
Monkton
Elmira
Milverton
Linwood
Eden Mills
Seaforth
Guelph
St. Jacobs
Bluewater
Dublin
Wellesley
Mitchell
West Perth
Waterloo
Kitchener
Aberfoyle
Morriston
Bluewater
Zurich
Hensall
New Hamburg
Carlisle
Cambridge
Stratford
Exeter
New Dundee
Tavistock
Grand Bend
South Huron
Plattsville
Huron Park
Perth South
Ayr
St. Marys
St. George
Blandford-Blenheim
Drumbo
Lucan Biddulph
Lucan
East Zorra-Tavistock
Paris
Princeton
Lambton Shores
Embro
Zorra
Woodstock
Brant
Brantford
Burford
Mount Pleasant
Thorndale
Beachville
Sweaburg
Thamesford
Ingersoll
Scotland
Norwich
Norwich
Hagersville
Otterville
Teeterville
Waterford
Jarvis
Delhi
Simcoe
Tillsonburg
Norfolk County
Springfield
Nanticoke
Port Dover
Vittoria
Langton
Malahide
Aylmer
Strafford ville
Bayham
Vienna
Port Burwell
Turkey Point
Port Rowan
Central Elgin
Union
Sparta
Port Stanley
Southwold
Fingal
St. Thomas
Dutton/Dunwich
Newbury
Southwest Middlesex
Florence
Bothwell
West Lorne
Rodney
Dresden
Thamesville
Highgate
Chatham-Kent
Ridgetown
Chatham
Thames Centre
South West Oxford
London
Dorchester
Belmont
Melbourne
Oneida 41
Adelaide Metcalfe
Strathroy-Caradoc
Middlesex Centre
Ilderton
North Middlesex
Ailsa Craig
Forest
Arkona
Brights Grove
Plympton-Wyoming
Warwick
Wyoming
Watford
Petrolia
Brooke-Alvinston
Alvinston
Oil Springs
Brigden
Upperwash Beach
Kettle Point

*Notwithstanding municipalities could be serviced by LHPWSS or EAPWSS.
Municipalities may also be serviced by other water systems, including LAWSS, West Elgin (Tri-County) DWS, etc.

Adjacent Communities Contacted

- Central Huron
- Huron East
- West Perth
- Perth South
- Stratford
- St Marys
- Adelaide Metcalfe
- Plympton-Wyoming
- Brooke Alvinston
- Warwick Township
- Thames Centre

Adams, Paul (London ON)

From: Andrew Henry <ahenry@huronelginwater.ca>
Sent: February 7, 2025 11:49 AM
To: cao@huroneast.com; bmills@huroneast.com
Cc: Vania Bittencourt; Ryan Armstrong; mmckillop
Subject: Master Water Plan - Lake Huron Water Supply System

The Lake Huron Primary Water Supply System (LHPWSS) has retained the services of AECOM Canada ULC (AECOM) to complete a Master Plan for the utility. The Master Plan will follow the Municipal Class Environmental Assessment Master Plan Approach 1 planning process to establish near, mid and long term (20-year planning horizon) water treatment and transmission infrastructure requirements for the LHPWSS. A project website is available here: https://www.huronelginwater.ca/lake-huron-primary-water-supply-system-master-plan/

A formal Notice of Commencement will be issued in the near future. In the meantime, we are reaching out to you today to introduce the project team and provide you with a link to a short web-based survey to understand any potential interest in a future community connection to the LHPWSS.

To support the Master Plan, we kindly request you review and complete the survey at the link below and provide your response by **February 21th, 2025**. One consolidated response from each community would be appreciated.

The survey is available here: https://form.jotform.com/250303424192042

The LHPWSS and AECOM thank-you for your attention to this request. Please contact the project team below should you have any questions.

Marcy McKillop, P.Eng.
LHPWSS Environmental Services Engineer
519-930-3505 ext. 4976
mmckillop@huronelginwater.ca

Ryan Armstrong, C.E.T.
LHPWSS Asset Management Coordinator
519-930-3505 ext. 2714
rarmstrong@huronelginwater.ca

Best Regards,

Andrew J. Henry, P.Eng. (he/him)
Director, Regional Water

Lake Huron & Elgin Area Water Supply Systems

235 North Centre Rd., Suite 200
London, Ontario N5X 4E7
T: 519.930.3505 ext.1355
E: ahenry@huronelginwater.ca
https://huronelginwater.ca
www.facebook.com/RegionalWaterSupply

Our normal working hours may differ from yours. Please do not feel obligated to reply to this email outside your normal working hours.

The Lake Huron and Elgin Area Water Systems serve communities and people that are within the traditional territories of the Anishinaabek (un-Nish-in-ah-bek), the Haudenosaunee (Ho-DE-no-show-ne), the Attawandaron (Add-a-won-da-run) and the Lunaapéewak (Len-ah-pay-wuk) peoples. We honour and respect the history, languages and culture of the diverse Indigenous Peoples who call this territory home. This region is currently home to many First Nations, Inuit and Metis people, and we are grateful to have the opportunity to work and live in this territory.

Potential For Future Connections

Master Water Plan - External Consultation

Tuesday, February 18, 2025

The Lake Huron & Elgin Area Primary Water Supply Systems are currently going through the process of updating our Master Water Plans. Through this undertaking we are reaching out to neighbouring communities to understand if there might be interest and/or considerations for future connections to the utility's transmission system. This information is intended to support our near, medium, and long term planning and growth projections forecasting.

The information contained in this survey is for informational purposes only. Supplied information is not binding on the submitting party or the Lake Huron and Elgin Area Primary Water Supply Systems. No commitments or obligations on any party are established or implied through this external consultation survey.

Although the information submitted through this survey will be used for internal planning purposes only, parts of our final Master Water Plan will become public documents so please do not include private or confidential information through this survey form. Please reach out to the utility directly should you have confidentiality issues or considerations.

Name of Community: Brooke-Alvinston

As a source of potable drinking water, would your Community have a future need for and/or desire a connection to the regional Lake Huron or Elgin Area Primary Water Supply Systems? NO – Not Anticipated in Current Planning Horizon

Please Describe the Planning Horizon Being Considered: Medium Term – 10-20 Years

Current Planning Horizon End Date: 2035

Additional Information/Comments for Consideration:

We currently receive water from Lake Huron through the Lambton Are Water Supply System (LAWSS) that draws water from Lake Huron at their facility in Point Edward. Therefore we do not anticipate a future need for water that can not be supplied from this system. However, if the Lake Huron & Elgin Area Primary Water Supply Systems were to expand to reach our borders we may consider a connection to it (if it was feasible) to have a second supply source to ensure no service disruptions due to some significant unforeseen event.

Potential For Future Connections

Master Water Plan - External Consultation

Monday, February 10, 2025

The Lake Huron & Elgin Area Primary Water Supply Systems are currently going through the process of updating our Master Water Plans. Through this undertaking we are reaching out to neighbouring communities to understand if there might be interest and/or considerations for future connections to the utility's transmission system. This information is intended to support our near, medium, and long term planning and growth projections forecasting.

The information contained in this survey is for informational purposes only. Supplied information is not binding on the submitting party or the Lake Huron and Elgin Area Primary Water Supply Systems. No commitments or obligations on any party are established or implied through this external consultation survey.

Although the information submitted through this survey will be used for internal planning purposes only, parts of our final Master Water Plan will become public documents so please do not include private or confidential information through this survey form. Please reach out to the utility directly should you have confidentiality issues or considerations.

Name of Community: Town of St. Marys

As a source of potable drinking water, would your Community have a future need for and/or desire a connection to the regional Lake Huron or Elgin Area Primary Water Supply Systems? NO – Not Anticipated in Current Planning Horizon

Please Describe the Planning Horizon Being Considered: Long Term – More Than 20 Years

Current Planning Horizon End Date: 2050

Potential For Future Connections

Master Water Plan - External Consultation

Friday, February 7, 2025

The Lake Huron & Elgin Area Primary Water Supply Systems are currently going through the process of updating our Master Water Plans. Through this undertaking we are reaching out to neighbouring communities to understand if there might be interest and/or considerations for future connections to the utility's transmission system. This information is intended to support our near, medium, and long term planning and growth projections forecasting.

The information contained in this survey is for informational purposes only. Supplied information is not binding on the submitting party or the Lake Huron and Elgin Area Primary Water Supply Systems. No commitments or obligations on any party are established or implied through this external consultation survey.

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Name of Community: Perth South

As a source of potable drinking water, would your Community have a future need for and/or desire a connection to the regional Lake Huron or Elgin Area Primary Water Supply Systems? NO – Not Anticipated in Current Planning Horizon

Please Describe the Planning Horizon Being Considered: Medium Term – 10-20 Years

Current Planning Horizon End Date: 2025

Potential For Future Connections

Master Water Plan - External Consultation

Monday, March 3, 2025

The Lake Huron & Elgin Area Primary Water Supply Systems are currently going through the process of updating our Master Water Plans. Through this undertaking we are reaching out to neighbouring communities to understand if there might be interest and/or considerations for future connections to the utility's transmission system. This information is intended to support our near, medium, and long term planning and growth projections forecasting.

The information contained in this survey is for informational purposes only. Supplied information is not binding on the submitting party or the Lake Huron and Elgin Area Primary Water Supply Systems. No commitments or obligations on any party are established or implied through this external consultation survey.

Although the information submitted through this survey will be used for internal planning purposes only, parts of our final Master Water Plan will become public documents so please do not include private or confidential information through this survey form. Please reach out to the utility directly should you have confidentiality issues or considerations.

Name of Community: Munsee Delaware Nation

As a source of potable drinking water, would your Community have a future need for and/or desire a connection to the regional Lake Huron or Elgin Area Primary Water Supply Systems? YES – Potential Being Considered in Current Planning Horizon

Please Describe the Planning Horizon Being Considered: Near Term – Less Than 10 Years

Current Planning Horizon End Date: 2030

Regarding Serviced Area, What Portion of Your Community is Serviced by a Local Water Distribution System?

Current Serviced Area (%)	76%-100%

Regarding Supply, Is the Connection to the Lake Huron or Elgin Area Primary Water Supply System Envisioned to be: Sole Supply to Community

Combined Water Demand Projections for Your Community (residential, industrial, commercial, and institutional):

	2025	2030	2035	2040	2045
Water Demand (ML/day)	101.7				

Additional Information/Comments for Consideration:

Hi it is unknown at this time what the demand ML/day will be required for our Nation, projecting forward to 2045. We are in the process of getting our Capital Planning Study updated, and will know better after this data has been collected from the engineering company, tasked to complete the work.

Thanks
Kevin

Potential For Future Connections

Master Water Plan - External Consultation

Friday, February 14, 2025

The Lake Huron & Elgin Area Primary Water Supply Systems are currently going through the process of updating our Master Water Plans. Through this undertaking we are reaching out to neighbouring communities to understand if there might be interest and/or considerations for future connections to the utility's transmission system. This information is intended to support our near, medium, and long term planning and growth projections forecasting.

The information contained in this survey is for informational purposes only. Supplied information is not binding on the submitting party or the Lake Huron and Elgin Area Primary Water Supply Systems. No commitments or obligations on any party are established or implied through this external consultation survey.

Although the information submitted through this survey will be used for internal planning purposes only, parts of our final Master Water Plan will become public documents so please do not include private or confidential information through this survey form. Please reach out to the utility directly should you have confidentiality issues or considerations.

Name of Community: Oxford County

As a source of potable drinking water, would your Community have a future need for and/or desire a connection to the regional Lake Huron or Elgin Area Primary Water Supply Systems? YES – Potential Being Considered in Current Planning Horizon

Please Describe the Planning Horizon Being Considered: Long Term – More Than 20 Years

Current Planning Horizon End Date: 2047

Regarding Serviced Area, What Portion of Your Community is Serviced by a Local Water Distribution System?

Current Serviced Area (%)	51%-75%

Regarding Supply, Is the Connection to the Lake Huron or Elgin Area Primary Water Supply System Envisioned to be: Supplementary Supply for the Community

Percentage of Your Community's Water Demands Envisioned Taken from the Lake Huron or Elgin Area Primary Water Supply System (%): 30

Combined Water Demand Projections for Your Community (residential, industrial, commercial, and institutional):

	2025	2030	2035	2040	2045
Water Demand (ML/day)	32.5	34.5	36.4	38.8	41.3

Additional Information/Comments for Consideration:

Interested in supplementing one urban area currently 100% groundwater based outside of the current planning horizon of 2046.

Potential For Future Connections

Master Water Plan - External Consultation

Friday, April 4, 2025

The Lake Huron & Elgin Area Primary Water Supply Systems are currently going through the process of updating our Master Water Plans. Through this undertaking we are reaching out to neighbouring communities to understand if there might be interest and/or considerations for future connections to the utility's transmission system. This information is intended to support our near, medium, and long term planning and growth projections forecasting.

The information contained in this survey is for informational purposes only. Supplied information is not binding on the submitting party or the Lake Huron and Elgin Area Primary Water Supply Systems. No commitments or obligations on any party are established or implied through this external consultation survey.

Although the information submitted through this survey will be used for internal planning purposes only, parts of our final Master Water Plan will become public documents so please do not include private or confidential information through this survey form. Please reach out to the utility directly should you have confidentiality issues or considerations.

Name of Community: village of Dorchester / village of Thorndale

As a source of potable drinking water, would your Community have a future need for and/or desire a connection to the regional Lake Huron or Elgin Area Primary Water Supply Systems? YES – Potential Being Considered in Current Planning Horizon

Please Describe the Planning Horizon Being Considered: Medium Term – 10-20 Years

Current Planning Horizon End Date: 2030

Regarding Serviced Area, What Portion of Your Community is Serviced by a Local Water Distribution System?

Current Serviced Area (%)	51%-75%

Regarding Supply, Is the Connection to the Lake Huron or Elgin Area Primary Water Supply System Envisioned to be: Supplementary Supply for the Community

Percentage of Your Community's Water Demands Envisioned Taken from the Lake Huron or Elgin Area Primary Water Supply System (%): 30

Combined Water Demand Projections for Your Community (residential, industrial, commercial, and institutional):

	2025	2030	2035	2040	2045
Water Demand (ML/day)	650	660	680	700	725

Additional Information/Comments for Consideration:

Dorchester and Thorndale are two separate drinking water systems. There are currently no watermain or service connections outside these two urban boundaries.

AECOM

Appendix B.1

Technical Memorandum 1

Problem and Opportunity, Evaluation Criteria, Flow Projection Analysis

Lake Huron Primary Water Supply System Master Plan

Technical Memorandum 1 – Problem and Opportunity, Evaluation Criteria, Flow Projections

Regional Water Supply

60730329

February 2025

Delivering a better world

Prepared for:

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Lake Huron & Elgin Area Primary Water Supply Systems
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1. Introduction

1.1 Background

The Lake Huron Primary Water Supply System ('LHPWSS' or 'the utility') is a regional water supply system that delivers drinking water services to benefitting communities within its geographical service area, including the City of London, Municipality of Lambton Shores, Municipality of South Huron, Municipality of Bluewater, Municipality of Middlesex Centre, Municipality of Lucan-Biddulph, and the Municipality of Strathroy-Caradoc (Refer to **Figure 1**). Under the Provincial Transfer Order of 2000, the utility is required to prepare a Master Plan (Plan) for the system, forecasting future investment and expansion requirements over a twenty-year planning period. This Plan is updated on a five-year planning cycle. The utility's current Plan was completed in 2020 and accordingly is due to be updated to assess system growth and infrastructure needs. This ensures the LHPWSS is a data-driven, sustainable, and future-ready utility that continues provide safe and reliable drinking water to current and future communities.

1.2 Problem and Opportunity Statement

The growth in water demands forecast for the 2046 planning horizon requires review and assessment of the system's capacity and required investment for the sustainability and reliability of the utility's treatment, pumping, and transmission infrastructure.

Phase one of the five-phase Municipal Class Environmental Assessment (MCEA) planning process requires the LHPWSS, as the proponent of an undertaking, to first document factors leading to the need for an improvement and develop a clear statement of the identified problems and/or opportunities to be investigated. As such, the Problem and Opportunity Statement is the principal starting point in undertaking an MCEA and becomes the central theme integrated into the process and sets the scope outline for the utility's Plan update. The following is the utility's Master Plan MCEA Problem and Opportunity Statement:

- Develop and assess a range of water system strategies considered to support existing servicing and account for reasonably expected near, mid, and long-term future growth projections, including servicing to new communities.
- Develop a recommended investment strategy for the near, mid, and long-term future growth projections that will support future infrastructure planning and budgeting.
- Consult benefitting communities, the public, Indigenous communities, agencies, and other interested parties, through the development of the Plan to identify the preferred alternatives that best meet long-term needs of the utility.
- Determine operational challenges based on the system hydraulics review related to projected future demands and growth-related requirements for treatment, pumping, transmission infrastructure.
- Review and confirm the utility's operational storage needs.
- Assess primary transmission pipeline redundancy, including the approximate nineteen kilometres of non-twinned transmission main, and investigate alternative solutions to facilitate redundancy.
- Review and assess pressure control infrastructure to mitigate excessive and transient pressure incidents related to projected future demands and growth-related requirements.
- Review opportunities to enhance energy efficiency, conservation, and recovery across the system.
- Review the impacts of climate change on the utility's infrastructure and assess mitigation and adaptation opportunities in alignment with the utility's framework.
- Ensure alignment with and continuity between the Plan and the utility's other guiding plans including the Asset Management Policy and Plan, Financial Plan, Operational Plan, and various management systems.

Legend

- Already serviced by another surface water treatment plant
- Serviced by Both LHPWSS and EAPWSS
- Potential FN Customers (Munsee-Delaware, Kettle and Stoney Point, COTTFN)
- Potential Customers to Contact
- Existing EAPWSS Customers
- Existing LHPWSS Customers
- Adjacent Municipalities

N

Belgrave
Palmerston
Arthur
Belwood
Hillsburgh
Goderich
Blyth
Brussels
Moorefield
Drayton
Listowel
Alma
Fergus
Elora
Huron East
Atwood
Central Huron
Clinton
Huron East
Rockwood
Monkton
Elmira
Milverton
Linwood
Bayfield
Seaforth
Eden Mills
Guelph
St. Jacobs
Dublin
Wellesley
Bluewater
Mitchell
West Perth
Waterloo
Kitchener
Aberfoyle
Morriston
Bluewater
Zurich
Hensall
New Hamburg
Cambridge
Stratford
Exeter
New Dundee
Tavistock
Grand Bend
South Huron
Huron Park
Plattsville
Ayr
Perth South
St. Marys
Drumbo
St. George
Upperwash Beach
Innerkip
Lucan Biddulph
Lucan
Kettle Point
Paris
Princeton
Lambton Shores
North Middlesex
Ailsa Craig
Embro
Woodstock
Brant
Brantford
Thorndale
Burford
Beachville
Mount Pleasant
Sweaburg
Thamesford
Ingersoll
Scotland
Forest
Arkona
Ilderton
Middlesex Centre
Norwich
Brights Grove
Plympton-Wyoming
Adelaide Metcalfe
London
Dorchester
Otterville
Teeterville
Waterford
Wyoming
Watford
Strathroy
Thames Centre
South-West Oxford
Strathroy-Caradoc
Belmont
Jarvis
Petrolia
Tillsonburg
Delhi
Simcoe
Springfield
Alvinston
Melbourne
Oneida 41
Norfolk County
Oil Springs
Malahide
Port Dover
Vittoria
Southwest Middlesex
St. Thomas
Aylmer
Central Elgin
Straffordville
Langton
Southwold
Bayham
Fingal
Union
Sparta
Newbury
Vienna
Turkey Point
Dutton/Dunwich
Port Stanley
Port Burwell
Florence
Bothwell
Port Rowan
West Lorne
Dresden
Rodney
Thamesville
Highgate

*Notwithstanding municipalities could be serviced by LHPWSS or EAPWSS.
Municipalities may also be serviced by other water systems, including LAWSS, West Elgin (Tri-County) DWS, etc.

2. Evaluation Criteria

This section introduces the criteria used to evaluate the alternative servicing strategies used to address Problem and Opportunity Statement outlined in **Section 1.2**

2.1 Water Servicing Strategies Evaluation Criteria

Table 1: Servicing Strategies Evaluation Criteria

Category	Criteria	Indicators
Socio-Economic:	**Long Term Impacts to the Community**	Potential effects (Noise, Dust, Vibration, property access) related to disruptions to residences, agricultural, business, and travelling public during construction and operation. Potential effects on existing and approved / planned land uses. Degree of Property Acquisition / Easement requirements Conformance with approved local, and provincial plans and policies.
	Supports growth and development and Transportation Corridors	Ability to meet Municipality growth vision. Potential effects on transportation corridors.
Natural Environment	**Impacts to the Aquatic Environment**	Potential for impacts to Aquatic habitat and Species at Risk
	Impacts to the Terrestrial Environment	Potential for impacts to Terrestrial habitat and Species at Risk
	Source water Protection	Potential impacts to Groundwater Recharge Areas, Intake Protections Zones and Highly Vulnerable Aquifers.
	Climate Change	Potential for impacts to climate change (greenhouse gas emissions) Potential for climate change to impact the projects (climate change resiliency)
Economic	**Project Costs**	Capital Costs. Property Acquisition/Easement Costs (no costs / order of magnitude). Operation and Maintenance Costs.

Technical	**Meets Future Needs**	Addresses the existing system capacity constraints. Improvements to level of service utilization of the existing and future infrastructure. Meets the long-term capacity (treatment, transmission, storage and pumping) requirements to service the projected population growth to 2046.
	Drinking Water Quality	Ability to maintain or improve water quality.
	Maintenance of Service	Operation redundancy to improve services security and allow for safe and efficient maintenance activities. Potential to minimize increases to operational and/or maintenance complexity of the system.
	Constructability	Construction complexity including potential for utility conflicts.
	Legal Jurisdictional	Future regulatory requirements. Complexity of Approvals. Land Requirements.
Cultural Environment	**Archaeology**	Potential effects to cultural heritage resources.
	Built Heritage	Potential effects to built heritage resources.
	Cultural Heritage Landscapes	Potential effects to Cultural Heritage Landscapes.
	Indigenous Communities	Potential Impacts to Treaty Lands.

3. Flow Projection Analysis

The flow projections for the LHPWSS will provide a solid foundation for the master plan, supporting future planning and infrastructure improvements. The projections cover key milestones for the years 2026, 2031, 2036, 2041, and 2046, ensuring the system's ability to meet water demands through 2046. A combination of surveying municipalities for their future anticipated water demands as well as estimating water demands using population growth forecasts, development plans, and historical water consumption trends was completed as part of this analysis.

Projected flows to the year 2046 are highlighted in **Table 2** below, for the full Technical Memo - 'Flow Projection Analysis' refer to **Appendix A**:

Table 2: LHPWSS Flow Projections

Year	2026	2031	2036	2041	2046
Medium Growth Projected Flows (ML/d)	209.87	222.47	234.49	247.21	259.92

Appendix A

Flow Projection Memo

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To:
Ms. Marcy McKillop, P.Eng. Environmental Services Engineer
Lake Huron & Elgin Area Primary Water Supply Systems
235 North Centre Road, Suite 200
London, Ontario, N5X 4E7

CC:
Billy Haklander
Ryan Armstrong
Benny Wan
Neil Awde
Paul Adams
Eppo Eerkes
Matt Simons

Project name:
Lake Huron Primary Water Supply System 2024 Master Plan Update

Project ref:
60730329

From:
Sophy Leung

Date:
February 4 2025

Memo

Subject: Technical Memorandum – Flow Projections Analysis for Lake Huron Primary Water Supply System

1. Introduction

AECOM Canada ULC. has been retained by the Lake Huron Water Supply System (LHPWSS) to update its water master plan. As part of the master plan, a flow projection analysis was completed to review future water demands for local municipalities. The flow projections for the LHPWSS will provide a solid foundation for the master plan, supporting future planning and infrastructure improvements. The projections cover key milestones for the years 2026, 2031, 2036, 2041, and 2046, ensuring the system's ability to meet water demands through 2046.

The purpose of this technical memorandum is to provide recommended flow projections to be used in the LHPWSS 2024 Master Plan Update. In general, a combination of surveying municipalities for their future anticipated water demands as well as estimating water demands using population growth forecasts, development plans, and historical water consumption trends was completed as part of this analysis.

2. Data Collection

2.1 Historical Flow Data

Historical flow data from 2018 to 2023 was collected and analyzed for the flow projections for the LHPWSS. The summary of treated water leaving LHWTP is shown in **Table 2-1**.

Table 2-1: Treated Water Leaving LHWTP

	2018	2019	2020	2021	2022	2023
ADD (ML/d)	127.67**	121.10	124.30	124.60	128.50	131.60
MDD (ML/d)	-	161.60	202.90	195.40	188.40	198.50
MDD Peaking Factor	-	1.33*	1.63*	1.57	1.47	1.51
Average MDD Peaking Factor *	1.51					

* Min. and max. MDD peaking factors have been removed for calculating the average MDD peaking factor calculation.
** Adopted from the System Total Demand in 2018.

The summary of historical ADD between 2018 and 2023 of each municipality is shown in **Table 2-2**.

Table 2-2: Historical ADD of each LHPWSS Municipality

Municipalities	ADD (ML/d)					
	2018	2019	2020	2021	2022	2023
North Middlesex	3.66	3.62	3.87	3.93	4.09	4.44
Lucan Biddulph	0.88	0.93	1.12	1.01	1.04	1.03
Middlesex Centre	1.57	1.64	1.79	1.92	2.08	2.58
Bluewater	1.36	1.52	1.61	1.54	1.54	1.76
Lambton Shores	3.85	3.97	3.77	4.09	3.75	4.16
South Huron	3.63	3.58	4.00	4.04	3.88	3.23
Strathroy-Caradoc	5.22	5.26	5.56	5.73	5.78	5.56
London	107.49	106.06	108.36	106.74	103.30	105.24
System Total	**127.67**	**126.59**	**130.07**	**129.01**	**125.45**	**128.00**
Treated Water Leaving LHWTP		**121.10**	**124.30**	**124.60**	**128.50**	**131.60**

2.2 Survey Data

To support the flow projection analysis, surveys were distributed to the municipalities that currently take water supply from LHPWSS. The surveys were sent to the following municipalities: Municipality of North Middlesex, Township of Lucan Biddulph, Municipality of Middlesex Centre, Municipality of Bluewater, Municipality of Lambton Shores, Municipality of South Huron, Municipality of Strathroy-Caradoc and City of London for obtaining their projected average day demand (ADD) and maximum day demand (MDD). A summary of the status of survey responses and the water demand data collected are shown in **Table 2-3** and **Table 2-4**, respectively. The full survey responses are provided in **Appendix A**.

Table 2-3: Status of Survey Responses from Municipalities

Municipalities	Survey Response Status
North Middlesex	Participated in the survey
Lucan Biddulph	Participated in the survey
Middlesex Centre	Participated in the survey
Bluewater	Participated in the survey, but did not provide water demands
Lambton Shores	Participated in the survey
South Huron	Did not participate in the survey
Strathroy-Caradoc	Did not participate in the survey
London	Did not participate in the survey; flow projections were provided separately

Table 2-4: Water Demands Summary from the Survey

Municipalities	ADD (ML/d)				
	2026	2031	2036	2041	2046
North Middlesex	4.40	4.49	4.54	4.59	4.64
Lucan Biddulph	1.00	1.25	1.31	1.77	2.04
Middlesex Centre	3.04	3.59	4.22	4.94	5.77
Bluewater	-	-	-	-	-
Lambton Shores	4.22	4.56	4.91	5.30	5.71
South Huron	-	-	-	-	-
Strathroy-Caradoc	-	-	-	-	-
London *	114.74	120.85	126.97	133.08	139.22

* City of London provided separate flow projections, which are included in **Appendix B.**

For the municipalities who did not participate in the survey or provide input outside of the survey, flow projections have been determined by historical trend projections. The flow projection methodology specific to each municipality, including those that did not participate in the survey, is outlined in **Section 3**.

3. Recommended Flow Projections for Each Municipality

This section presents low, medium, and high growth flow projections for each municipality served by LHPWSS. The methodologies for projecting flows for municipalities that did not participate in the survey are also outlined.

3.1 Flow Projections for Municipality of North Middlesex

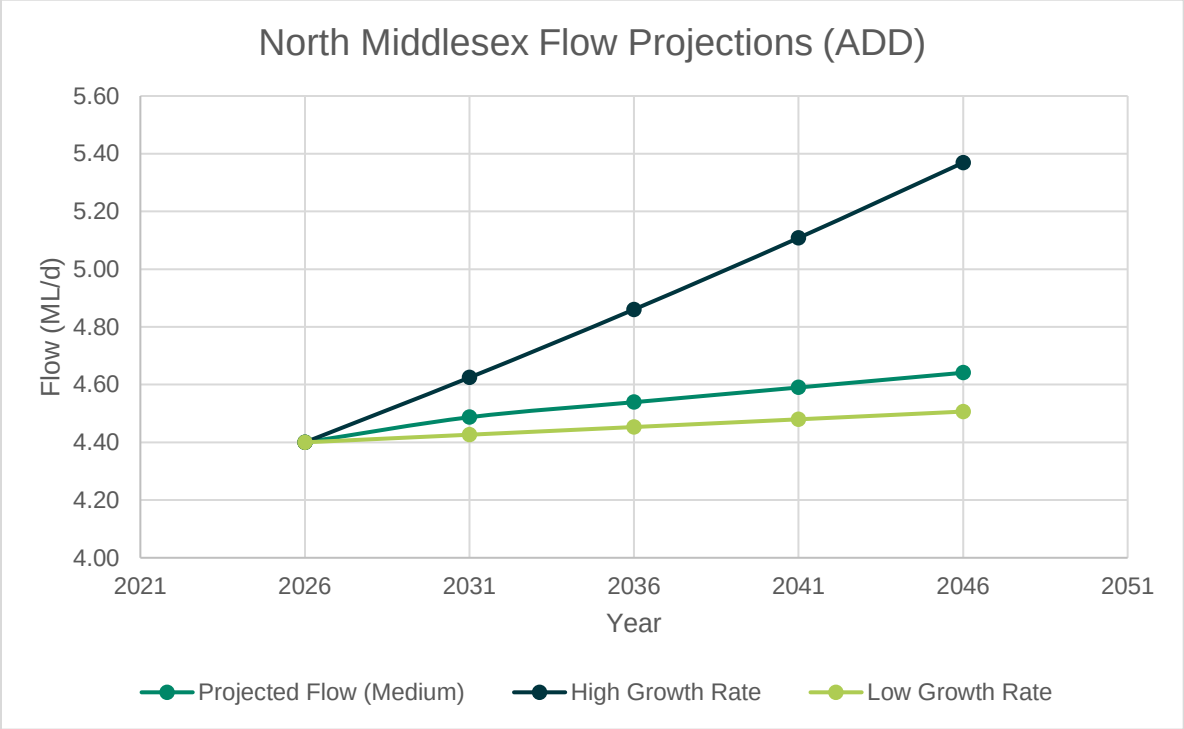
North Middlesex participated in the survey. The flow projections in the survey were used for the medium growth flow projection. The low and high growth rates identified in the survey were 0.6% and 1% respectively. As the medium growth rate is less than the 0.6% identified for the low growth rate, it has been interpreted that the 0.6% increase occurs over a five-year span, for an annual low growth rate of 0.12%. The high growth rate of 1% has assumed to be provided on an annual basis. A summary of water demands and the flow projections for ADD are shown in **Table 3-1** and **Figure 3-1.**

The survey response also noted that North Middlesex faces significant challenges with water loss and non-revenue water, such that approximately 45% of water that is purchased from LHPWSS is going unbilled.

Table 3-1: Projected ADD for North Middlesex

	ADD (ML/d)				
	2026	2031	2036	2041	2046
Low Growth Flow Projections	4.40	4.43	4.45	4.48	4.51
Medium Growth Flow Projections	4.40	4.49	4.54	4.59	4.64
High Growth Flow Projections	4.40	4.62	4.86	5.11	5.37

Figure 3-1: North Middlesex Flow Projections (ADD)



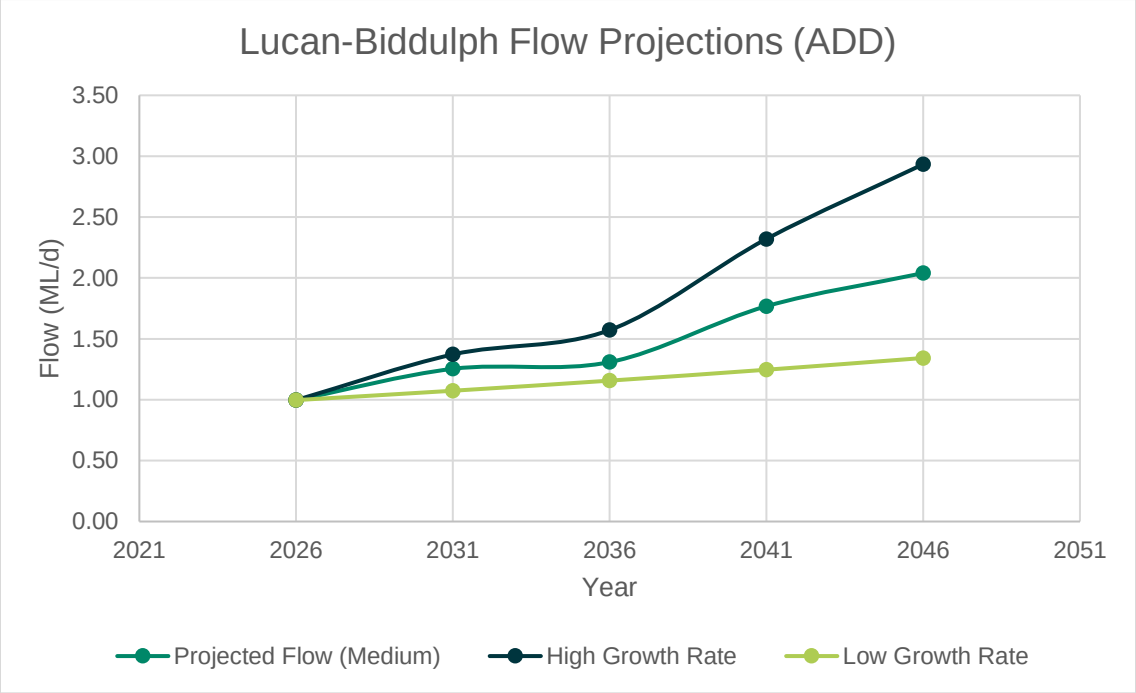
3.2 Flow Projections for Township of Lucan Biddulph

Lucan Biddulph also participated in the survey. The flow projections in the survey were used for the medium growth flow projection. The low and high growth rates identified in the survey were 1.5% and 1.9% respectively. As the medium growth rate is greater than the 1.9% identified for the high growth rate, it has been interpreted that an additional 1.9% per year occurs in addition to that incorporated into the medium growth flow projection. The low growth rate of 1.5% has assumed to be provided on an annual basis. A summary of water demands and the flow projections for ADD are shown in **Table 3-2** and **Figure 3-2**.

Table 3-2: Projected ADD for Lucan Biddulph

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth Flow Projections	1.00	1.07	1.16	1.25	1.34
Medium Growth Flow Projections	1.00	1.25	1.31	1.77	2.04
High Growth Flow Projections	1.00	1.37	1.57	2.32	2.93

Figure 3-2: Lucan Biddulph Flow Projections (ADD)



3.3 Flow Projections for Municipality of Middlesex Centre

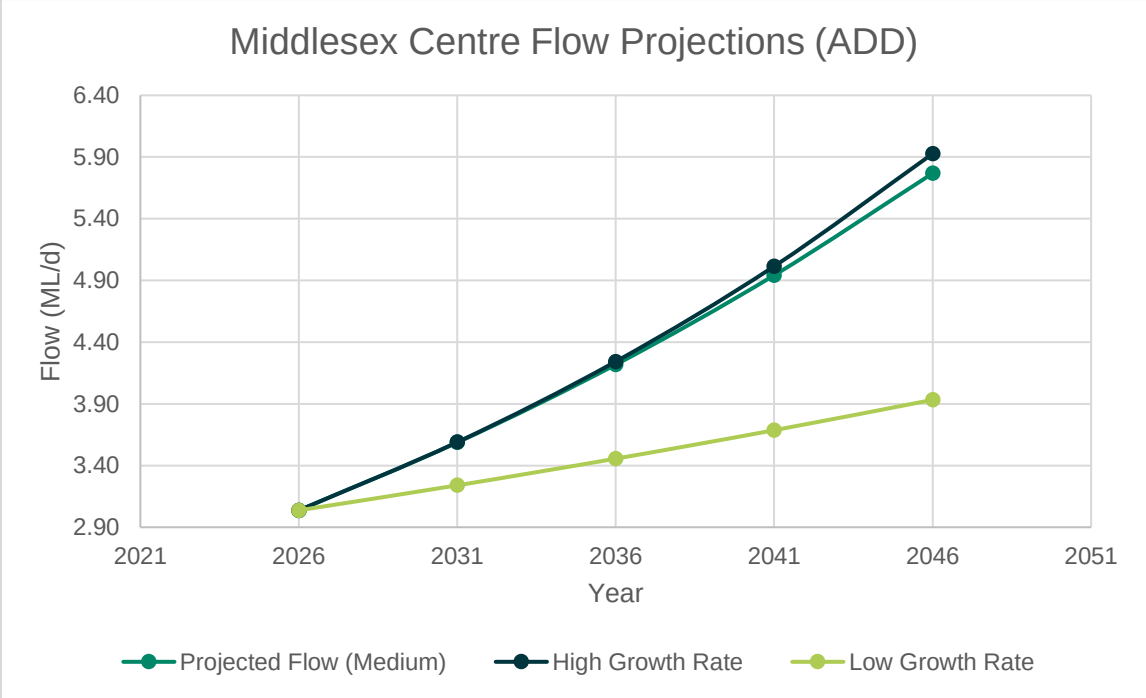
Middlesex Centre participated in the survey. The flow projections in the survey were used for the medium growth flow projection. The low and high growth rates identified in the survey were 1.3% and 3.4% respectively. These growth rates were interpreted as being on annual basis. A summary of water demands and the flow projections for ADD are shown in **Table 3-3** and **Figure 3-3**.

The survey response also indicated that growth projections could increase significantly if Middlesex Centre is successful amending the Arva Wastewater Agreement with the City of London.

Table 3-3: Projected ADD for Middlesex Centre

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth Flow Projections	3.04	3.24	3.46	3.69	3.93
Medium Growth Flow Projections	3.04	3.59	4.22	4.94	5.77
High Growth Flow Projections	3.04	3.59	4.24	5.01	5.93

Figure 3-3: Middlesex Centre Flow Projections (ADD)



3.4 Flow Projections for Municipality of Bluewater

Bluewater did not provide flow projections in the survey, however did provide population growth percentages referencing the 2022 Municipality of Bluewater Development Charges Study by BM Ross (2022 Bluewater DC Study). Using the population projections from the 2022 Bluewater DC Study and historical water consumption data, average per capita demands were calculated. The summary is shown in **Table 3-4**.

Table 3-4: Average Per Capita Demands

	2021	2022	2023
Historical Demands (ADD) (ML/d)	1.54	1.54	1.76
Population	7,540	7,811	8,082*
Per Capita Demands (Lpcd)	204.9	196.7	217.6
Avg. Per Capita Demands (Lpcd)	206.4		

* Projected population based on linear interpolation of projected populations in 2022 Bluewater DC Study

The per capita water demand of 206.4 Lcpd shown in **Table 3-4** was applied to projected populations in the 20-year planning period. The years that the population projections were provided in the 2022 Bluewater DC Study did not align with the years used in this study, however, the 2022 Bluewater DC Study were linear interpolated to align with the projection years used in this study. The summary of population projections and the calculated water demand projections are shown in **Table 3-5**. The calculated ADD was carried forward as the medium growth flow projection.

Table 3-5: Population and Calculated ADD Projection for Bluewater

	2026	2031	2036	2041	2046
Population	8,183	8,647	9,111	9,574	10,038
Calculated ADD (ML/d)	1.69	1.78	1.88	1.98	2.07

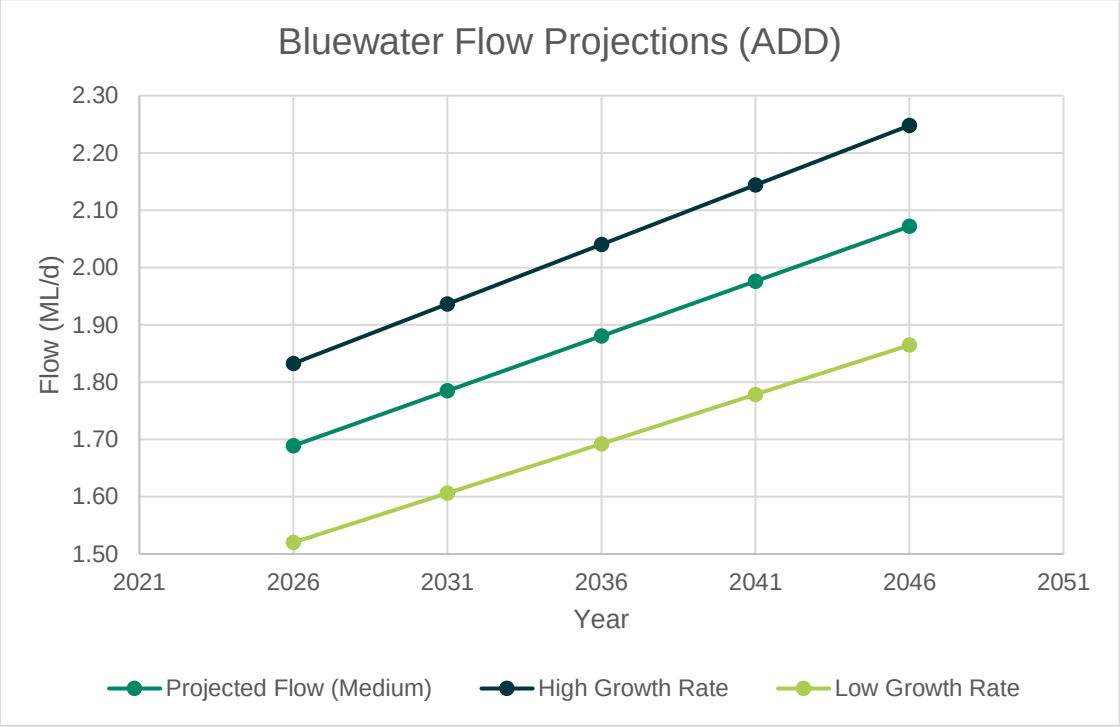
* Projected population based on linear interpolation of projected populations in 2022 Bluewater DC Study

In the survey, Bluewater provided low and high growth rates of 11.00% and 8.50%, respectively. The low growth rate is assumed to reflect an 11.00% decrease below the medium growth projected flow, while the high growth rate is assumed to reflect an 8.50% increase above the medium growth projected flow. A summary of water demands and the flow projections for ADD are shown in **Table 3-6** and **Figure 3-4**.

Table 3-6: Projected ADD for Bluewater

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth Flow Projections	1.52	1.61	1.69	1.78	1.86
Medium Growth Flow Projections	1.69	1.78	1.88	1.98	2.07
High Growth Flow Projections	1.83	1.94	2.04	2.14	2.25

Figure 3-4: Bluewater Flow Projections (ADD)



3.5 Flow Projections for Municipality of Lambton Shores

Lambton Shores participated in the survey. The flow projections in the survey were used for the medium growth flow projection. The low and high growth rates identified in the survey were 1% and 4% respectively. These growth rates were interpreted as being on annual basis. A summary of water demands and the flow projections for ADD are shown in **Table 3-7** and **Figure 3-5.**

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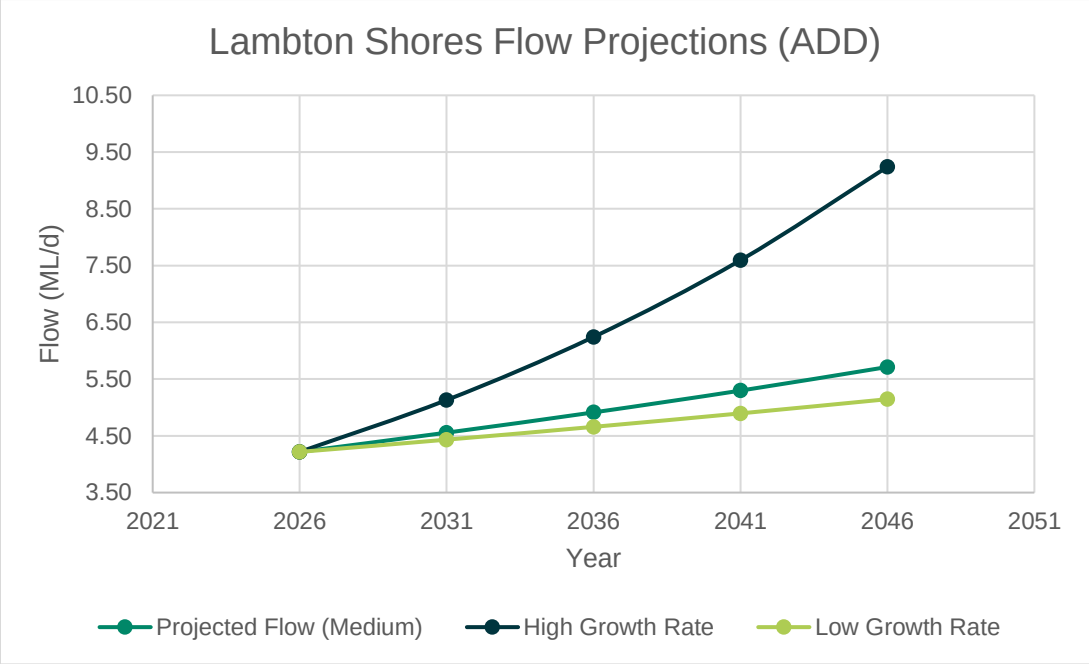
Table 3-7: Projected ADD for Lambton Shores

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth Flow Projections	4.22	4.43	4.66	4.90	5.15
Medium Growth Flow Projections	4.22	4.56	4.91	5.30	5.71
High Growth Flow Projections	4.22	5.13	6.24	7.59	9.24

Figure 3-5: Lambton Shores Flow Projections (ADD)



3.6 Flow Projections for Municipality of South Huron

South Huron did not provide flow projections in the survey. Population data and growth projections were able to be obtained from the 2024 Huron County Population and Housing Projections Study by Watson & Associates Economists Ltd (2024 South Huron Population Study). Using the population projections from the 2024 South Huron Population Study and historical water consumption data, average per capita demands were calculated. The summary is shown in **Table 3-8**.

Table 3-8: Average Per Capita Demands

	2018	2019	2020	2021	2022	2023
Historical Demands (ADD) (ML/d)	3.63	3.58	4.00	4.04	3.88	
Population	10,507*	10,506*	10,504*	10,503	10,653*	10,803*
Per Capita Demands (Lpcd)	345.6	341.0	380.7	384.7	364.6	299.0
Avg. Per Capita Demands (Lpcd)	352.6					

* Population based on linear interpolation of population data in 2024 South Huron Population Study

The per capita water demand of 352.6 Lcpd shown in **Table 3-8** was applied to projected populations in the 20-year planning period. The years that the population projections were provided in the 2024 South Huron Population Study did align with the years used in this study, so population projections are directly from that study. The summary of population projections and the calculated water demand projections are shown in **Table 3-9**.

Table 3-9: Population and Calculated ADD Projection for South

	2026	2031	2036	2041	2046
Population	11,255	12,911	13,659	14,439	15,141
Calculated ADD (ML/d)	3.70	3.89	4.40	5.20	5.55

* Projected populations based on projected populations in 2024 South Huron Population Study

The growth rate of the South Huron population above is approximately 1.5% per year. The 2024 South Huron Population Study indicated that Huron County as a whole would grow 0.8% in the low growth scenario, 1.1% in the medium growth scenario and 1.4% in the high growth scenario. Given that South Huron's growth rate is higher

than the high growth scenario's rate, calculated ADD was carried forward as the high growth flow projection. Low and medium population projections were completed based upon a 2024 population of 10,953 and inflated by 0.8% per year and 1.1% per year respectively. ADDs for the low and medium growth flow projections were calculated using the 352.6 Lpcd shown in **Table 3-8.** Population projections and calculated ADDs for the low and medium growth projections are shown in **Table 3-10**. A summary of water demands and the flow projections for ADD are shown in **Table 3-11** and **Figure 3-6**.

Table 3-10: Population and Calculated ADD for Low and Medium Growth Scenarios for South Huron

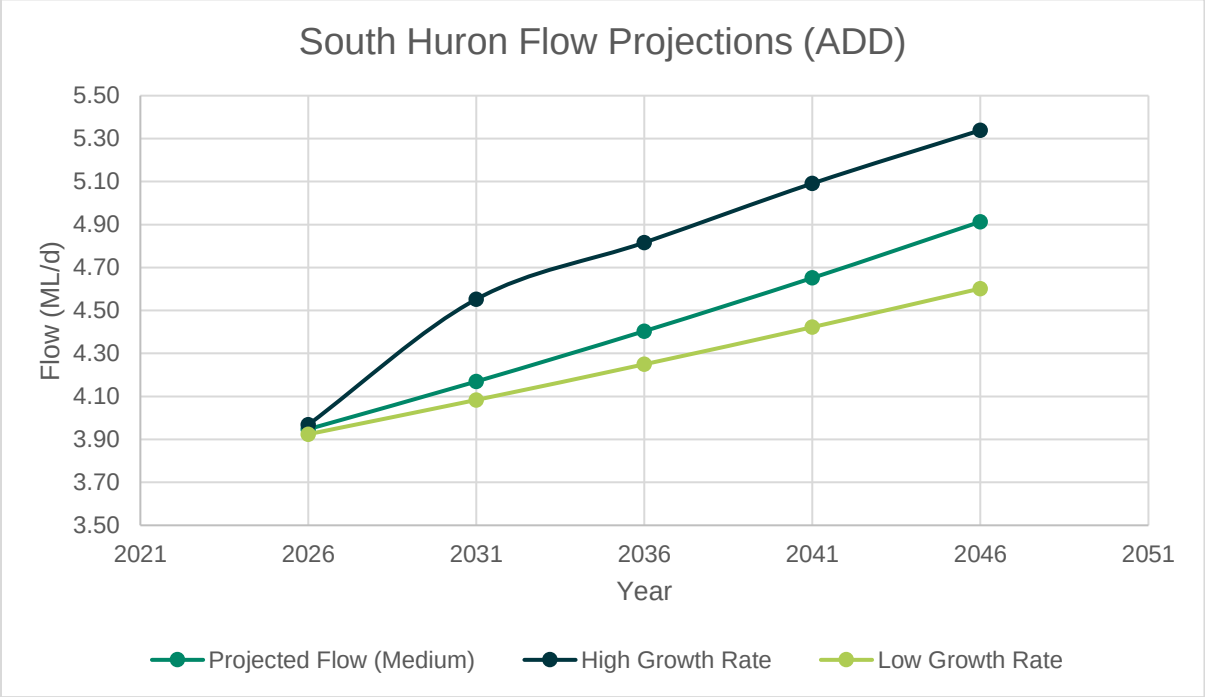
	2026	2031	2036	2041	2046
Low Growth Population	11,129	11,581	12,052	12,542	13,052
Low Growth Calculated ADD (ML/d)	3.92	4.08	4.25	4.42	4.60
Medium Growth Population	11,195	11,825	12,490	13,192	13,933
Medium Growth Calculated ADD (ML/d)	3.95	4.17	4.40	4.65	4.91

* Projected populations based on projected populations in 2024 South Huron Population Study

Table 3-11: Projected ADD for South Huron

	ADD (ML/d)				
	2026	2031	2036	2041	2046
Low Growth Flow Projections	3.92	4.08	4.25	4.42	4.60
Medium Growth Flow Projections	3.95	4.17	4.40	4.65	4.91
High Growth Flow Projections	3.97	4.55	4.82	5.09	5.34

Figure 3-6: South Huron Flow Projections (ADD)



3.7 Flow Projections for Municipality of Strathroy-Caradoc

Strathroy-Caradoc did not participate in the survey. Water demand projections were developed using Public Information Session #2 (PIC2) (September 11, 2024) of Water, Wastewater and Stormwater Master Plan and Pollution Prevention Control Plan of Strathroy-Caradoc. Since only MDD data is available in PIC2, the MDD was adjusted to ADD by using a factor of 1.51, which is the average from historical data between 2019 and 2023 as shown in **Table 2-1**. These water demand projections are shown in **Table 3-12**. The adjusted ADD was carried forward as the medium growth flow projection.

Table 3-12: Water Demand Summary for Strathroy-Caradoc from PIC2

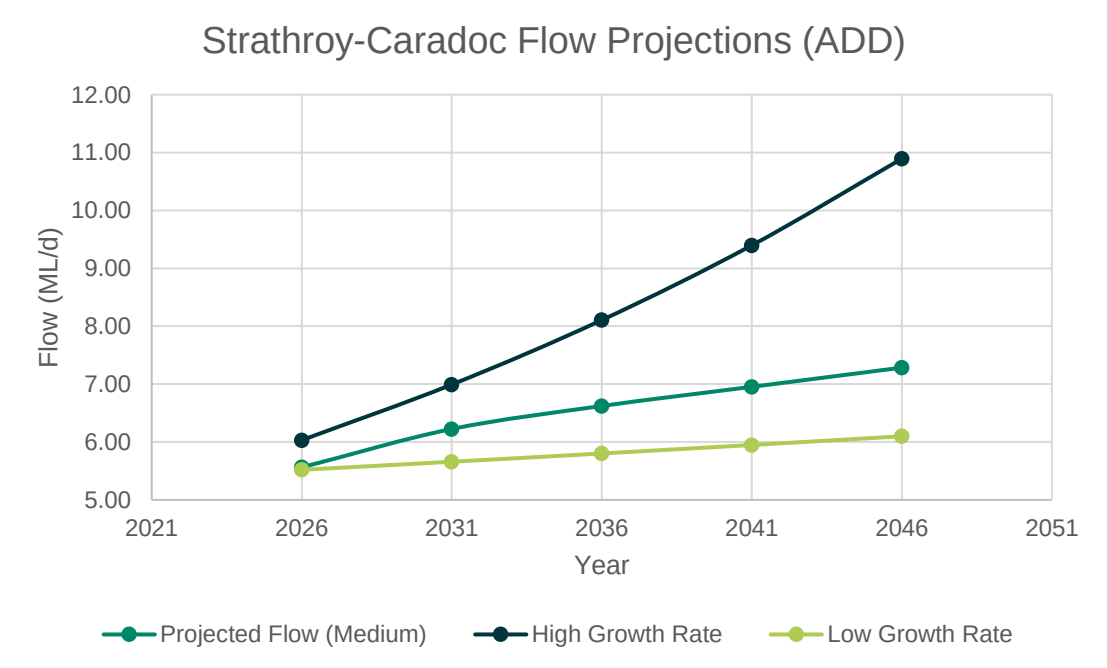
	Water Demand (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
MDD from PIC2	8.40	9.40	10.00	10.50	11.00
Adjusted ADD	5.56	6.23	6.62	6.95	7.28

As low and high growth rates were not provided. A low growth rate of 0.5% per year and a high growth rate of 3% per year were used to determine the low and high growth flow projections. 5.52 ML/d, the historical average ADD between 2018 to 2023, was used as 2026 low growth flow projections while the high grow flow projection inflated the 2023 ADD flow of 5.52 ML/d by 3% per year for 3 years to 6.03 ML/d. A summary of water demands and the flow projections for ADD are shown in **Table 3-13** and **Figure 3-7**.

Table 3-13: Projected ADD for Strathroy-Caradoc

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth Flow Projections	5.52	5.66	5.80	5.95	6.10
Medium Growth Flow Projections	5.56	6.23	6.62	6.95	7.28
High Growth Flow Projections	6.03	6.99	8.11	9.40	10.89

Figure 3-7: Strathroy-Caradoc Flow Projections (ADD)



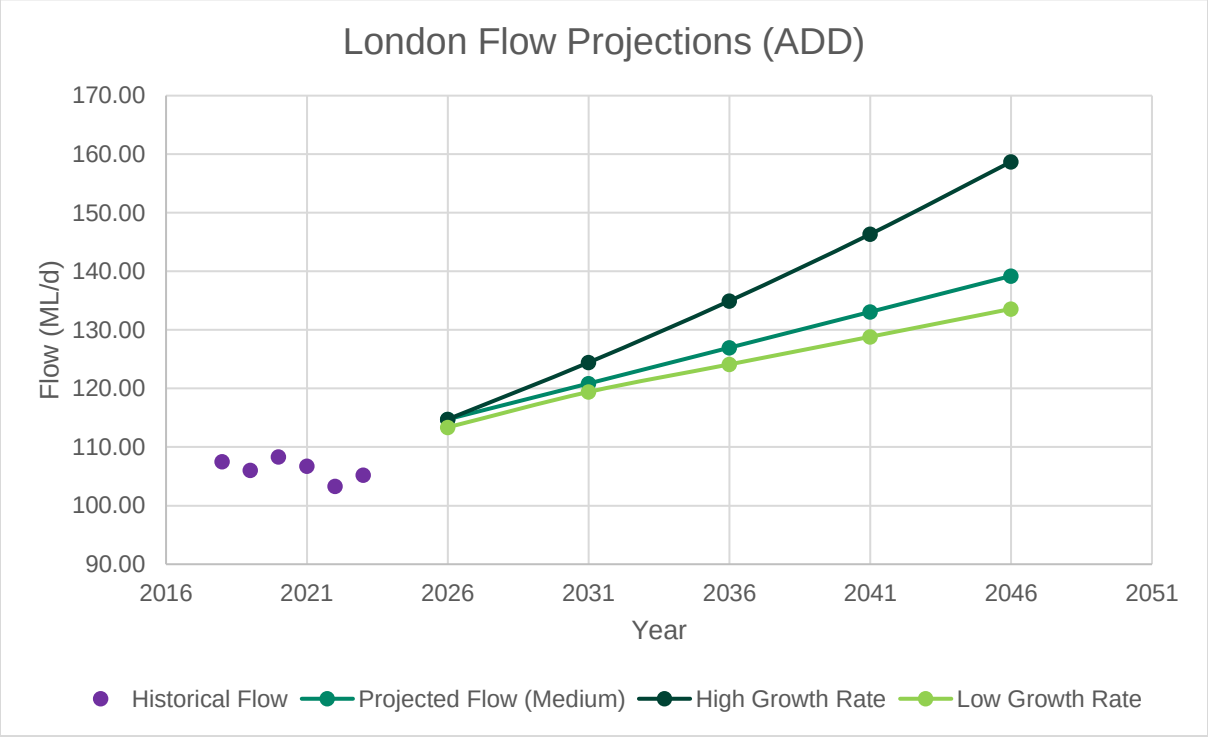
3.8 Flow Projections for City of London

Although London did not participate in the survey, London provided separate flow projections, which are included in **Appendix B** and will be adopted for the future Master Plan.

According to the Ontario Ministry of Finance population projections released on October 1, 2024, Middlesex County, which includes the City of London, is expected to grow at an average annual rate of 1.6%, reaching approximately 880,000 people by 2051 representing a 50% increase over 25 years. Based on this information, the high growth rate has been assumed at 1.6%. The low growth flow projections were determined by using projected medium London water demands multiplying it by 0.976; the ratio of low MDD to medium MDD in the 2020 Master Plan.

The summary of water demand projections for ADD under both low growth and high growth scenarios is presented in **Figure 3-8**. It should be noted that London projected the flow per year (ADD) from EAPWSS would be 22.7 ML/d each year in the planning period from 2026 to 2046 and not included in the projection shown in **Figure 3-8**.

Figure 3-8: London Flow Projections (ADD) with Low, Medium, and High Growth Scenarios



Total water demand for City of London is presented in **Table 3-14**. EAPWSS will supply a maximum of 22.7 ML/d to this area, while the remaining water demand will be supplied by the LHPWSS, as shown in **Table 3-15**. If the City of London and EAPWSS were to agree that the City of London did not need to take a minimum of 22.7 ML/d from EAPWSS and instead only provided enough for the Southeast Pressure Zone, the difference in flow would need to be made up by the LHPWSS. The flow projections under this consideration are shown in **Appendix C**.

Table 3-14: Total Water for London

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Medium Growth Flow Projections	137.44	143.55	149.67	155.78	161.92

Table 3-15: Projected ADD for London (Supplies from LHPWSS)

	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth Flow Projections	113.38	119.42	124.11	128.83	133.59
Medium Growth Flow Projections	114.74	120.85	126.97	133.08	139.22
High Growth Flow Projections	114.74	124.44	134.95	146.35	158.71

4. Recommended Flow Projections for Master Plan

Following the collection of survey data from municipalities and a comprehensive review of relevant reports, news sources, and historical data, the overall flow projections of ADD and MDD are summarized and presented in **Table 4-1** and **Table 4-2. Figure 4-1** and **Figure 4-2** show the ADD and MDD flow projections graphically. An MDD factor of 1.51, which is the average from historical data between 2019 and 2023 as shown in **Table 2-1**, has been applied to calculate the MDD. These projections will form the basis for future planning and infrastructure decisions in the Master Plan.

Table 4-1: Projected ADD for LHPWSS

Scenario	ADD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth	136.99	143.94	149.58	155.29	161.09
Medium Growth	138.60	146.92	154.85	163.26	171.65
High Growth	139.23	152.64	166.83	183.02	200.66

Table 4-2: Projected MDD for LHPWSS

Scenario	MDD (ML/d)				
	2026	**2031**	**2036**	**2041**	**2046**
Low Growth	207.44	217.96	226.50	235.15	243.92
Medium Growth	209.87	222.47	234.49	247.21	259.92
High Growth	210.83	231.13	252.62	277.14	303.85

Figure 4-1: Water Demands Summary (ADD) for LHPWSS with EAPWSS providing London with 22.7 ML/D ADD

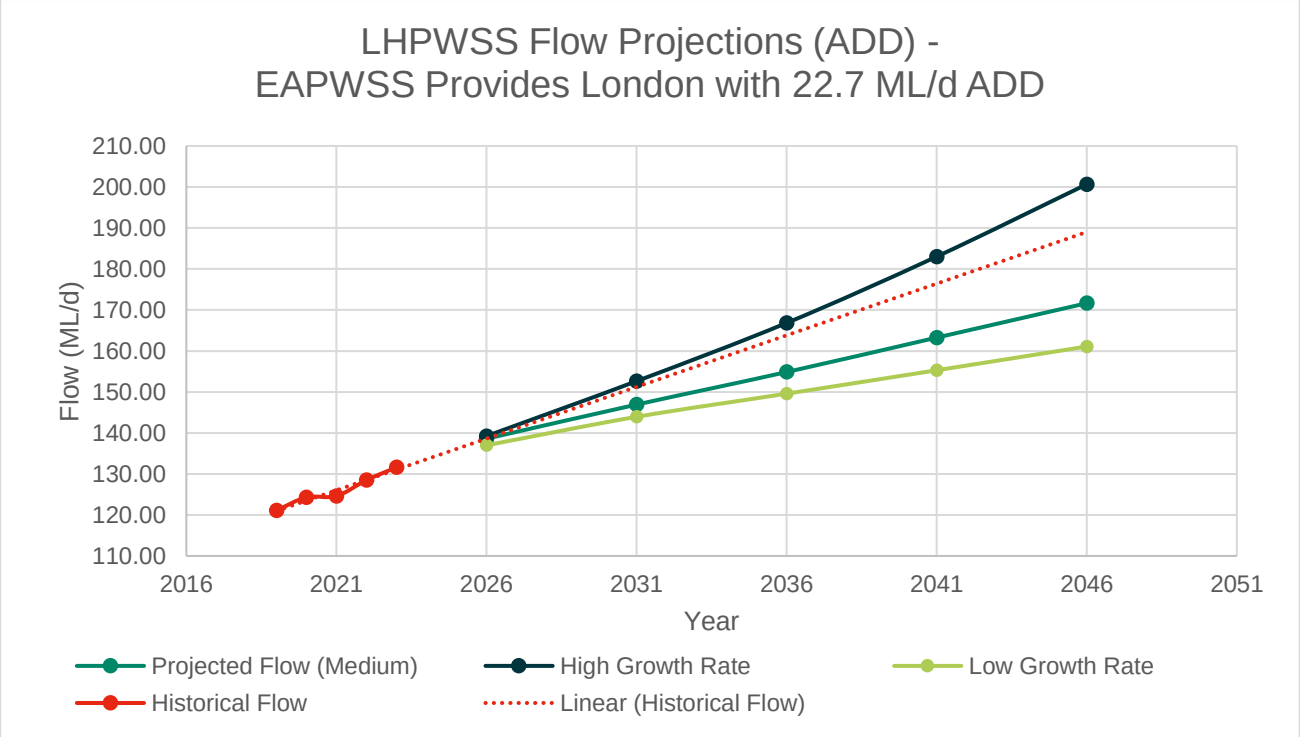
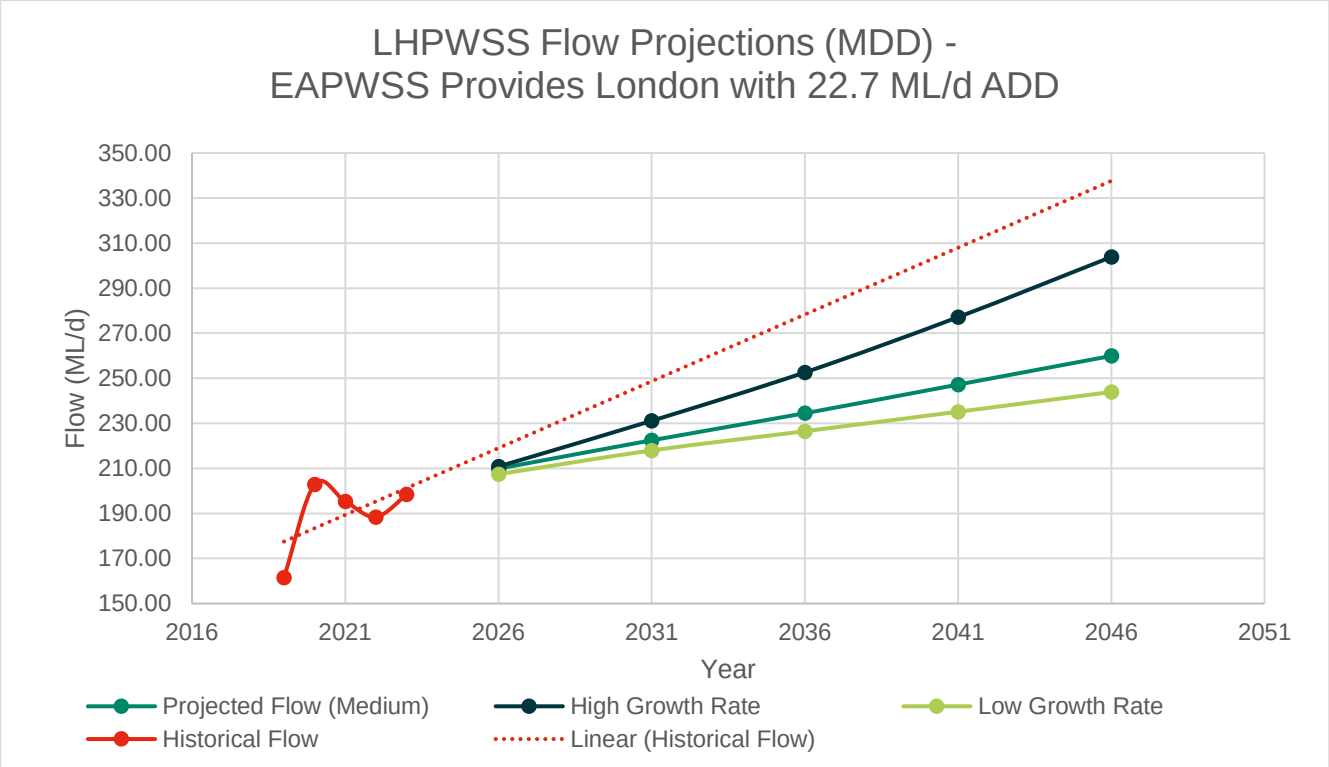


Figure 4-2: Water Demands Summary (MDD) for LHPWSS with EAPWSS providing London with 22.7 ML/D ADD



5. Conclusions and Recommendations

The flow projections developed for LHPWSS provide a comprehensive assessment of future water demand scenarios based on a detailed analysis of survey data, historical consumption trends, and population growth projections.

To conduct the flow projections, the following work was performed:

- Reviewed survey data
    - North Middlesex, Lucan Biddulph, Middlesex Centre, Lambton Shores:
        - Low, medium, and high growth flow projections based on survey data
    - Bluewater:
        - Flow projections based on historical flow data, survey data and the 2022 Municipality of Bluewater Development Charges (DC) Background Study

- Estimated flow projections for municipalities that did not participate in the survey:
    - South Huron:
        - Flow projections based on historical flow data and 2024 Huron County Population and Housing Projections Study
    - Strathroy-Caradoc:
        - Flow projections based on PIC2 for the 2024 Strathroy-Caradoc Water, Wastewater and Stormwater Master Plan
        - Applied MDD peaking factor of 1.51 to calculate ADD
    - London: Flow projections were provided separately by London
- The flow projections for ADD in 2046 under low, medium and high growth scenarios are 161.69 ML/d, 172.67 ML/d and 199.33 ML/d, respectively when EAPWSS provides London 22.7 ML/d ADD.
- Historical Water Consumption
    - The historical water consumption data includes both residential and Industrial, Commercial, and Institutional (ICI) usage.

Based on the flow projection analysis results presented in this technical memorandum, it is recommended the water servicing strategy and infrastructure upgrades options to be analyzed with the medium growth projection scenarios while the high and low growth scenarios will be used to review the implications to the recommended infrastructure upgrades.

Appendix A – Survey Response

Appendix A

Municipality Name:	What is the current total water service population (residential + non-residential) and total water demands for your system? Clarify any areas or communities served, including customers in other mu...	What is the source of the information for the current total water service population (residential + non-residential) and total water demands for your system?	2026 or equivalent year: expected average day flow and / or maximum daily water demand (m3/d) for expected population.	2031 or equivalent year: expected average day flow and / or maximum daily water demand (m3/d) for expected population.	2036 or equivalent year: expected average day flow and / or maximum daily water demand (m3/d) for expected population.	2041 or equivalent year: expected average day flow and / or maximum daily water demand (m3/d) for expected population.	2046 or equivalent year: expected average day flow and / or maximum daily water demand (m3/d) for expected population.	What is the source of the information for the projected water service population / demand for your system?	High growth rate in relation to expected growth (+x%)	Low growth rate in relation to expected growth (+x%)	Please provide any additional information to support the development of the Master Plan.
Municipality of North Middlesex	2,339 water customers; annual total water demand (2023) = 1,603,938 m3; small populations in neighbouring municipalities served: Lucan Biddulph (Clandeboye), Adelaide Metcalfe (Keyser/Townsend Line), South Huron (Greenway area), Lambton Shores (feed to Thedford reservoir).	Development Charge Background Study;Water and Wastewater Rate Study;	4,400 m3/d (approximately equal to current usage	4,487 m3/d	4,539 m3/d	4,590 m3/d	4,641 m3/d	Water and Wastewater Rate Study (2024);	1.0%	0.6%	The Municipality of North Middlesex faces significant challenges with water loss/non-revenue water; 45% of the water purchased from the Lake Huron Primary Water Supply System is going unbilled. There may be similar issues in other municipalities which receive water from the LHPWSS. It would be helpful for LHPWSS and all municipalities if this could be reviewed through the Master Plan as a means of addressing water conservation.
Township of Lucan Biddulph	Three area, Lucan, Granton and North Middlesex. 1730 water accounts. Total annual flow 309 741 cubic meters. 2023 information	2023 Water Summary Report;	997 cubic meters per day	1,254 cubic meters per day	1,309 cubic meters per day	1,768 cubic meter per day	2,040 cubic meters per day	Development Charge Background Study;	1.9% annually	1.5% annually	
Middlesex Centre	Approximately 15,350 residential and non-residential customers Approximately 991,000 m3 annual total in 2023 or about 2,715 m3/d	Recent Servicing MP & Official Plan. Water demands are based on 2023 billings.;	ADD estimated at 3,037	ADD estimated at 3,587	ADD estimated at 4,218	ADD estimated at 4,942	ADD estimated at 5,768	Water Master Plan;	3.14 to 3.4 % depending on time period	1.3% (from Growth Management Study Technical Report)	Growth projections for Arva may increase significantly if we are successful in amending the Arva wastewater agreement with the City of London to increase our allowable daily sewage flows to the City.
The Municipality of Bluewater	Bayfield - 2040 Lakeshore - 3490 Hensall - 1000 Zurich - 970 Total - 7500	Development Charge Background Study;	Bluewater's DC Background study identifies 10% growth in population in 2027 over 2021	Bluewater's DC Background study identifies 6% growth in population in 2032 over 2027	Bluewater's DC Background study identifies 5% growth in population in 2037 over 2032	Bluewater's DC Background study identifies 5% growth in population in 2042 over 2037	Bluewater's DC Background study identifies 5% growth in population in 2047 over 2042	Development Charge Background Study;	8.5	11	The Municipality of Bluewater has restricted growth in Bayfield due to capacity limitations at the Bayfield waste water treatment facility (Bayfield WWTF) . The Municipality is currently working toward the expansion of the Bayfield WWTF. Once the facility has been constructed and the growth restriction lifted, the municipality may observe growth which was not contemplated through the DC background study.
Lambton Shores	Water service population - 8855 1,471,486m2 in 2023 Communities served include Grand Bend, Port Frabks, Ipperwash, Thedford, Arkona, East Bosanquet. Communities of Forest and West Bosanquet are normally served from LAWSS system but interconnection exists.	Development Charge Background Study;Statistics kept by Municipality;	4217m3 average daily flow	4556m3 average daily flow	4913m3 average daily flow	5297m3 average daily flow	5713m3 average daily flow	Development Charge Background Study;Projections by staff beyond DC outlook;	4	1	Lambton Shores has a very high seasonality fluctuation of population due to summer tourist areas. Maximum daily demands generally will have higher peaking factors as a result.

AECOM

Appendix B.2

Technical Memorandum #2

System Capacity Evaluation and Hydraulic Modelling Analysis

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Project name:
Lake Huron Primary Water Supply System 2024 Master Plan Update

Project ref:
60730329

From:
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Matt Simons, P.Eng.
Benny Wan, P.Eng.

Date:
September 12, 2025

Memo

Subject: Technical Memorandum No. 2 – System Capacity Evaluation and Hydraulic Modelling Analysis – LHPWSS Master Plan

1. Introduction

AECOM Canada ULC has been retained by Regional Water Supply (RWS) to update the Water Master Plan for the Lake Huron Primary Water Supply System (LHPWSS). The objective of this Technical Memorandum (TM) is to summarize the design and level of service criteria for the LHPWSS as well as the system assessment results and hydraulic modelling results for the water servicing options. The information presented herein will provide a foundation for the Water Master Plan and will support the planning process for the Class Environmental Assessment for identifying the preferred servicing alternative.

This TM outlines the service criteria and guidelines for the following:

- System demand forecasts
- Available storage capacity at terminal reservoir and water treatment plant and site capacity for additional storage
- Storage requirements methodology
- Fire flow guidelines
- Pipeline maximum flow velocity / head loss gradient
- Member community meter pressure requirements
- Capacity trigger to initiate infrastructure expansion
- Pipe pressure rating
- Water age target
- Useful life of infrastructure
- Redundancy
- System capacity assessment
- Hydraulic modelling results

2. Abbreviations

The following abbreviations are used throughout the TM.

Abbreviation	Description	Abbreviation	Description
ADD	Average day demand	**LIT**	Level indicating transmitter
AFO	Acoustic fibre optic	**LO**	Low Alarm Level
AWWA	American Water Works Association	**LOLO**	Low Low Alarm Level
ATR	Arva Terminal Reservoir	L/s	Litres per second
CPP	Concrete pressure pipe	**MDD**	Maximum day demand
CT	Chlorine contact time	**MECP**	Ministry of Environment, Conservation and Parks
DBP	Disinfection by-products	**ML**	Megalitres
EA	Environmental Assessment	**ML/d**	Megalitres per day
EHPS	Exeter / Hensall Pumping Station	**MPS**	McGillivray Pumping Station
EHR	Exeter / Hensall Reservoir	**MR**	McGillivray Reservoir
EPS	Extended period simulation	**MWD**	Maximum week demand
EHTM	Exeter / Hensall Transmission Main	**NPSHr**	Required net positive suction head
HI	High Alarm Level	**PS**	Pumping station
HIHI	High-High Alarm Level	**RWS**	Regional Water Supply
HTM	Huron Transmission Main	**SC**	Strathroy-Caradoc
HGL	Hydraulic grade line	**SCADA**	Supervisory control and data acquisition
KMPS	Komoka / Mount Brydges Pumping Station	**SCTM**	Strathroy-Caradoc Transmission Main
KMTM	Komoka / Mount Brydges Transmission Main	**TOC**	Total organic carbon
LHPWSS	Lake Huron Primary Water Supply System	**TM**	Technical Memorandum
LH HLPS	Lake Huron High Lift Pumping Station	**UV**	Ultraviolet
LHTM	Lake Huron transmission main	**WQFPU**	Water Treatment Plant Water Quality Facility Plan Update
LH WTP	Lake Huron Water Treatment Plant	**WTP**	Water treatment plant

3. System Demand Forecasts

A flow projection analysis was completed as part of TM1 to review future water demands for the municipalities that currently receive water from the LHPWSS. Flow projections were provided in 5-year increments for milestone years 2026, 2031, 2036, 2041, and 2046 under low, medium, and high growth scenarios. **Table 3-1** identifies the medium growth average day demand (ADD) forecasts outlined in TM1 which will be used within the model. Demand forecasts for each design year for each secondary system user will be allocated to all model nodes based on the proportion of current municipal demand at each meter.

Table 3-1: Water Demands Summary (ADD Medium Growth) for LHPWSS

ADD (ML/d)				
2026	**2031**	**2036**	**2041**	**2046**
138.60	146.92	154.85	163.26	171.65

According to the MECP Design Guidelines for Drinking Water Systems, Section 3.4.1, the drinking water system including the water treatment plant and treated water storage should be designed to satisfy the greater of the following demands:

- Maximum day demand plus fire flow (where fire protection is to be provided); or
- Peak hour demand

The above guidelines are intended for water supply in local distribution systems. Since the LHPWSS is responsible for providing water treatment and transmission only, therefore, providing fire flow and peak hour demand should be the responsibilities of the customers.

The LHPWSS only provides water supply at average day demand and be accommodative to meet some limited fluctuation in member community water needs above average day flow. Member communities are encouraged/required by LHPWSS to meet their water needs above average day within their distribution system - maximum day, peak hour, fire and emergency etc.

The water servicing strategy and infrastructure evaluations of the LHPWSS will be based on ADD, historical maximum day demand (MDD) conveyed from the water treatment plant (WTP) and historical maximum week demand (MWD) peaking factors for supply to the various secondary systems.

The treatment and pumping components will be assessed under MDD condition. If deficiency is identified, the storage component will be evaluated against the MWD to confirm the serviceability. For the hydraulic modelling, the extended 7-day MWD simulation, which also captures the MDD, is adopted to ensure serviceability.

3.1 Member Community Supply Characteristics

Table 3-2 summarizes minimum, average and maximum member community supply characteristics based on SCADA data for meters on SCADA for the MWD or Mid-May 2023 that will be used in the hydraulic modeling. Much of this data was obtained through previous hydraulic modeling assignments. Where possible, the water supply patterns for the MWD for each municipality from Mid-May 2023 will be used for Maximum Week scenarios. The member community supply, or “Call for Water”, is generally based on a water level reaching a pre-defined set point in the member community storage facilities. The minimum supply is defaulted at “0” and demand is as-needed.

Table 3-2: Member Community Supply – Maximum Week

Municipalities	Meter	Model Nodes	Minimum Supply (L/s)	Average Supply (L/s)	Maximum Supply (L/s)	Comment
Bluewater	North Transmission Main – Waterworks Rd	J4260		25.0		Meter not on SCADA
Bluewater	Hensall – Airport Rd	J2420	0.1	10.3	39.2	
Lambton Shores	B-Line Road – Lambton Shore Meter	J4262	0.0	66.9	187.1	
South Huron	Gore @ B-Line (MS1) (less Waterworks	J4258	42.3	56.0	68.9	

Municipalities	Meter	Model Nodes	Minimum Supply (L/s)	Average Supply (L/s)	Maximum Supply (L/s)	Comment
	Rd & Grand Bend)					
South Huron	Dashwood – Bronson Line	J2564	2.7	6.1	11.9	
South Huron	Exeter south – Airport Rd	EHPS_N60	0.0	8.0	57.6	
South Huron	Exeter north – Airport Rd	J2616	11.1	13.6	15.7	
South Huron	Shipka – Chamber 9	J782		22.8		Meter not on SCADA
North Middlesex	Mt. Carmel - Parkhill	MC_N1	0.0	28.8	56.3	
North Middlesex	Mt. Carmel - McGillivray	J930		11.7		Meter not on SCADA
North Middlesex	Ailsa Craig – Water Tower	J1426		3.0		Meter not on SCADA
North Middlesex	Carlisle – Highway #7 – Large Meter	J4250		4.2		Meter not on SCADA
North Middlesex	McGillivray Booster Station – Main Line	MPS_N27	3.9	7.7	11.8	
North Middlesex	Naim Road – Strathroy Line	J2570		6.0		Meter not on SCADA
Lucan Biddulph	Lucan (Nairn)	J1006		20.8		Meter not on SCADA
Middlesex Centre	Denfield	J1614		0.8		Meter not on SCADA
Middlesex Centre	Ilderton	J2624		14.5		Meter not on SCADA
Middlesex Centre	Komoka	KM_MS1_N2	0.0	45.9	159.6	
Strathroy-Caradoc	Strathroy – MS2	SC_MS2_N1	0.0	61.7	92.6	

Municipalities	Meter	Model Nodes	Minimum Supply (L/s)	Average Supply (L/s)	Maximum Supply (L/s)	Comment
Strathroy-Caradoc	Mt. Brydges – KM2	KM_MS2_N4	0.0	45.9	159.6	
London	East and West Meter (total)	ARVA_RES-1	1,760.6	1,814.3	1,855.2	
Middlesex Centre	Melrose (future connection)	TBD				

4. Regional Storage

The total, current and potential useable storage capacities of the Lake Huron WTP (LH WTP), Arva Terminal Reservoir (ATR), McGillivray Reservoir (MR), and Exeter-Hensall Reservoir (EHR) were reviewed based on available information, operational setpoints, and as-built drawings. The current total available capacity of the reservoirs within the LHPWSS is assessed and detailed in the following subsection.

Since the LHPWSS delivers drinking water to the communities it services; equalization, fire storage and emergency storage is the responsibility of the member communities. Therefore, the required storage for the LHPWSS will consider the operational use and flexibility only. Storage evaluation methodology will be discussed further in **Section 5**.

4.1 Available Reservoir Capacity – Regional System

The total, current usable, and potential usable capacities of the LHPWSS terminal storage facilities are presented in **Table 4-1**. The concept of the total, current usable, and potential usable capacities of the LHPWSS storage facilities are illustrated in **Figure 4-1**.

1. The total capacity of each reservoir is identified based on the height between the bottom and top reservoir water levels multiplied by the total surface area for each facility.
2. The current useable capacity is determined based on the height between the current operating range using the LO and HI level setpoints provided by RWS multiplied by the total surface area for each facility. The current useable capacity also takes into account the pump configuration, which requires a minimum water level in the reservoirs to operate. Typically, the LO level setpoint is higher than the required minimum water level for the pump operation.
3. The potential usable capacity is based on the height between the current operating range using the LOLO and HIHI level setpoints provided by RWS multiplied by the total surface area for each facility. The current useable capacity also takes into account the pump configuration, which requires a minimum water level in the reservoirs to operate. Typically, the LOLO level setpoint is higher than the required minimum water level for the pump operation.

The LO, HI, LOLO, and HIHI are the low, high, low-low and high-high alarm levels in the terminal storage facilities of the regional system. These alarm levels indicate the filling operation of the terminal storage facilities and governed by the pump configurations and hydraulics. Therefore, they are provided for adoption in evaluating the current useable storage and potential useable storage capacities.

It should be noted that the Lake Huron WTP consists of three (3) reservoirs and suction conduit which aid in achieving chlorine contact time (CT). Capacities and setpoints for the storage at LH WTP are included in the below table. However, actual operation may restrict the low level setpoint and usable capacity of the storage due to CT requirements.

Table 4-1: Existing and Future Regional Storage Capacity Assessment

Facility	Total Capacity (ML)	Current Usable Storage			Potential Usable Capacity		
		Low Level Setpoint (m)	High Level Setpoint (m)	Usable Capacity (ML)	Low Level Setpoint (m)	High Level Setpoint (m)	Usable Capacity (ML)
Lake Huron WTP*(1,2)*	10.1	2.25	3.33	1.5	1.80	3.33	2.2
Exeter Hensall Reservoir(3)	8.0	1.50	4.05	4.1	1.2	4.2	4.9
McGillivray Reservoir(3)	18.2	5.00	8.70	6.7	3.52	8.70	9.6
Arva Terminal Reservoir(3)	109.2	4.25	6.30	34.2	3.25	6.4	52.6
Total	**145.5**			**46.5**			**69.3**

(1) Reservoir storage at the Lake Huron WTP is also used for WTP to achieve Chlorine Contact Time (CT), which depends upon a variety of conditions including flow, chlorine concentration, pH, temperature, etc. so operations may be restricted due to CT requirements at that time.
(2) Low level setpoint will depend upon operation factors including water quality and pump operation ensuring that $NPSH_r$ requirements are met when pumping in the acceptable operating range of the pump.
(3) The low level setpoint (usable) is the LO, high level setpoint (usable) is the HI, low level setpoint(potential) is LOLO and high level setpoint (potential) is HIHI.

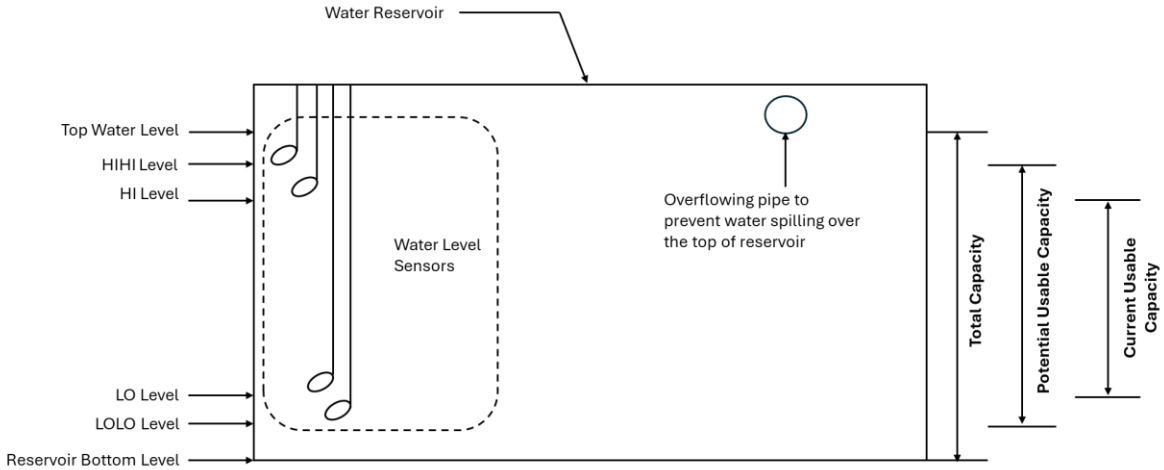

Figure 4-1 Illustration of Water Levels and Storage Capacity in a Typical Terminal Storage Facility

4.2 Municipal Storage

Backfeed from municipal storage facilities would depend on the hydraulic grade in the facilities and therefore, gravity flow might not be feasible. Furthermore, the municipal storage facilities are maintained separately by the member communities for meeting their local water distribution needs. For the purposes of this Master Plan, municipal storage was not considered when assessing regional storage needs of the LHPWSS.

5. Storage Requirements Methodology

Since the LHPWSS is not a municipal distribution system but a water wholesaler to the communities it services, meeting equalization storage, fire storage and emergency storage is the responsibility of each member community. Therefore, the equalization storage, fire storage and emergency storage, as articulated in the MECP Design Guidelines for Drinking Water Systems, are not applicable to the regional system. Further details of the storage components in the MECP Design Guidelines for Drinking Water Systems are shown in Appendix A.

The required storage for the LHPWSS should consider the pumping synchronization as the primary purpose and any remaining surplus storage for flexibility use as a secondary purpose. Equalization storage, fire storage and emergency are considered not applicable for the LHPWSS. In evaluating the storage requirements, the following two considerations are recommended to be applied. The pumping synchronization and flexibility storage are further explained in the sub-sections below.

- **Pumping Synchronization Storage:** Storage capacity to improve/assist the resiliency in operating the water transmission system. This is described further in Section 5.1.
- **Flexibility Use:** Storage capacity to provide water supply for the local area communities while the pumping synchronization storage is maintained. This is described further in Section 5.2.

5.1 Pumping Synchronization Storage

Pumping Synchronization Storage is applicable to water treatment plants and the pumping stations.

In the water treatment plant, one of the key considerations is the synchronization of input of treated water (from treatment processes) and output of treated water (to communities).

When the output of treated water is increased by pumping a higher flow to meet the higher water usage during daytime, it takes time for the input of treated water to catch up. The onsite storage of treated water at the water treatment plant should allow a minimum of 1hr pump ramp-up time for the input of treated water while output supply is maintained to the system at or below the design capacity of the water treatment plant.

Similarly, in any pumping station, when the input of treated water from an upstream pumping facility needs time to catch up with the increasing output of treated water, the storage in the pumping station should allow a minimum of 1hr pump ramp-up time for the upstream pumping station while the pumping facility continues to supply water to the system at the design capacity.

For all pumping facilities (WTP and PS), a minimum storage volume will be defined as the existing SCADA alarm setting for low-low limit. The minimum storage volume should be further reviewed and consider the water level associated with the net positive suction head (NPSH) requirements for the existing pump(s) at the facility as well as other operational factors including water quality, air entrainment, chlorine contact time, etc.

In summary, the pumping synchronization storage is equal to the capacity required to maintain low-low storage level limit plus the capacity for pump synchronization.

5.2 Flexibility Use

The flexibility use storage differs from the pumping synchronization storage. It is the surplus capacity after considering the pumping synchronization storage and considered as the secondary purpose of the terminal storage facilities of the regional system for non-standard water use (i.e., any other water uses apart from those mentioned under Section 5.1).

The flexibility use capacity will be determined by subtracting the potential useable capacity of the existing storage facility by the pumping synchronization storage as described above.

The flexibility use capacity will determine the service duration for non-standard water use. It will be evaluated based on the demand conditions (e.g. ADD, MWD or MDD) and the available storage capacity for flexibility use. The service duration for non-standard water use will be reported as the available level of service under non-

standard water use for each service area. The service duration will be reported as the available level of service under emergency conditions for each service area. Note that ATR storage is not available to supply member communities upstream of the Ilderton high area of the LHTM when the Lake Huron WTP or the LHTM is offline (e.g. during SCADA maintenance). The reservoir can only supply to the London, Komoka / Mt. Brydges, and Ilderton meters under this condition.

6. Pipeline Maximum Flow Velocity / Head Loss Gradient

6.1 Transmission Mains

The maximum velocity and head loss gradient are proposed to be used to evaluate the theoretical design capacity of each transmission main. For comparison, transmission main maximum velocity criteria used in other municipalities and guidelines are listed as follows:

- City of Toronto: 2.0 m/s (fire flow 3.0 m/s); head loss gradient 2 to 5 m/km
- Peel Region: 2.0 m/s
- City of Calgary: 2.0 m/s; velocities of 3.0 m/s or more may be permitted provided an engineering review of the specific feedermain has been made including acknowledgement of transient, head loss and erosion
- City of London: 1.5 m/s (fire flow 2.4 m/s)
- City of Dallas: 2.4 m/s
- Niagara Region: 2.0 m/s
- 2020 LHPWSS Master Plan: No specific guidelines stated
- AWWA M32 (Computer Modeling of Water Distribution Systems): 2.0 m/s; head loss gradient 3.0 m/km
- AWWA M9 (Concrete Pressure Pipes): 2.1 m/s (or up to 3.0 m/s for short pipe lengths)
- AWWA M11 (Steel Pipes): No velocity criteria
- MECP Design Guidelines for Drinking Water Systems for Treated Water (pumped): 3.0 m/s

For the LHPWSS Master Plan, it is recommended to use the following velocity and head loss gradient values:

- Maximum velocity: 2.0 m/s (consistent with major municipalities in Ontario)
- Maximum head loss gradient: 3.0 m/km (consistent with AWWA M32).

The actual velocity values will be estimated during the hydraulic analysis of various alternatives.

6.2 PS Suction and Discharge Velocity

The velocity requirements for the evaluating the suction and discharge sides of the water pumps in this study are proposed with reference to the MECP Design Guidelines for Drinking Water Systems are shown in Table 6-1

Table 6-1 and **Table 6-2**.

Table 6-1: PS Suction Piping Velocities (MECP Design Guidelines for Drinking Water Systems, Table 7-1)

Pipe diameter	Velocity
Up to 250 mm (10 in)	1.0 m/s (3 ft/s) or less
From 300 to 800 mm (12 to 32 in)	1.5 m/s (5 ft/s) or less
Greater than 800 mm (32 in)	2.0 m/s (6.5 ft/s) or less

Table 6-2: PS Discharge Piping Velocities (MECP Design Guidelines for Drinking Water Systems, Table 7-2)

Pipe diameter	Velocity
Up to 250 mm (10 in)	1.0-1.5 m/s (3-5 ft/s)
From 300 to 800 mm (12 to 32 in)	1.2-2.0 m/s (4-6.5 ft/s)
Greater than 800 mm (32 in)	1.8-3.0 m/s (6-10 ft/s), max 3.0 m/s (10 ft/s)

7. Treatment Plant Evaluation

7.1 Intake Capacity

The MECP Design Guidelines for Drinking Water Systems stipulate that the intake capacity of a water treatment plant should be able to meet the maximum day demand for a 20-year design period, as a minimum. To further ensure adequate capacity is available in the water treatment plant intake for operational use, it is recommended that the capacity of the water treatment plant intake should not exceed a maximum velocity of 1.5 m/s and head loss gradient of 1.5 m/km. In addition to the velocity and head loss gradient, the following paragraph taken from Section 4.2.4 of the MECP Design Guidelines for Drinking Water Systems will also be considered in evaluating the intake capacity for the Lake Huron WTP:

"*The designer should consider the potential occurrence of frazil ice on intakes when determining crib design and inlet velocities. Intake crib materials should be of low thermal conductivity, with racks of smooth materials. The design should provide for low entry velocities below 75 mm/s (3 in/s) and uniform acceleration of water from inlet to intake pipe."*

7.2 Treatment Capacity

Prior to the initiation of the Master Plan Study, RWS retained Stantec to complete the "Lake Huron Water Treatment Plant Water Quality Facility Plan Update" (WQFPU) which provide opportunities for improvement of the WTP performance for capacity, compliance and best practices as well as a "Process Evaluation Trigger" memo to develop a framework to inform when and under which conditions a re-evaluation of plant treatment processes. AECOM will utilize these documents along with previous project experience at the LH WTP to discuss the LH WTP treatment capacity.

Figure 2-3 of the WQFPU provided the unit process capacity in comparison to MECP design guidelines and this figure identified a number of processes that are below the WTP capacity of rated at 340 ML/d. In the report, the capacity of the flocculation, sedimentation and filtration processes were revealed to be only 191 ML/d, 200 ML/d and 240 ML/d respectively. Moreover, as a part of the WQFPU, full plant scale capacity testing was undertaken and in **Figure 2-4** of the WQFPU, it states "the practical capacity of the pre-treatment processes at Lake Huron WTP is estimated to be approximately 240 ML/d under moderate temperature conditions (and possibly lower during cold water conditions) which is significantly lower than the current plant rated capacity of 340 ML/d." As such, 240 ML/d will be used as the maximum treatment capacity between the start of the flocculation process to the end of the filtration process.

8. Member Community Meter Pressure Requirements

The modelling evaluation of alternatives will include an evaluation of available pressure at member community meters (excluding those that take from a LHPWSS reservoir). In general, a value of 20 psi (140 kPa) will be used to evaluate model results. According to the MECP Design Guidelines for Drinking Water Systems, 20 psi of water system pressure represents the worst-case scenario in operating the water system (i.e. fire flow conditions). Based on a review of model results to date, these meters meet or exceed this target with the exception of several meters

located at reservoir sites (e.g. ATR), which is expected given the nature of these sites. It is also noted that the utility does not guarantee or have a commitment to provide a minimum pressure to member communities at meters.

9. Capacity Trigger to Initiate Infrastructure Expansion

A capacity trigger to initiate the planning process for the treatment, pumping, transmission, and storage capacity expansions have been established for the LHPWSS through the previous master plan. Values used in master plans for other jurisdictions are provided below for comparison.

- 2020 LHPWSS Master Plan: The planning process for an expansion is triggered when 85% of the rated capacity is projected to be reached.
- Niagara Region: The planning process for an expansion is triggered when 80% of the rated capacity is reached. The plant and facility expansion must be completed before the 90% capacity is reached.
- Peel Region: When 90% of the plant rated capacity is projected to be reached, an expansion to the treatment plant is required to be in service, noting that different treatment processes have specific design criteria that are applicable.

For this master plan, a value of 85% of the available capacity is recommended to be used as a trigger point when comparing to the water demand conditions as discussed in Section 3 to initiate capacity expansion for the above infrastructure types (e.g., water treatment plants and pumping facilities). This refers to the start of the overall project life cycle and involves design concepts, conceptual design, Class EA and detailed design.

Redundancy considerations will be addressed as discussed in **Section 13**.

10. Pipe Pressure Rating

Pipe pressure ratings for each transmission main at the time of design are based on available record drawings and shop drawings. **Table 10-1** shows the pressure class of each LHPWSS feedermain based on the available record drawings. Shop drawings would be required to further verify the pressure rating for these mains.

Modelled pressure for the master planning scenarios will be compared against the available pressure rating. Pipe sections that show an operating pressure above 90% of the original design pressure rating will be flagged. It is important to note that this does not include the pressure rating of pipeline appurtenances such as valves or air valves.

Table 10-1: LHPWSS Transmission Main Pressure Class

Feedermain	Pressure Class Range		
	From	To	
LHTM	CPP Class 250	CPP Class 110	Steel C200
EHTM	CPP – AWWA C301(L) Class 18	CPP – AWWA C301(L) Class 26	
SCTM	CPP – AWWA C301(L) Class 16	CPP – AWWA C301(L) Class 18	
KMTM	PVC-DR25 C9D5 PR 165		

11. Water Age / Turnover Target

Water age, which can be estimated with the hydraulic model, is an indicator of hydraulic residence time within the transmission system. This is often used as a surrogate for other water quality parameters such as chlorine residual or disinfection by-product (DBP) formation. Based on historical water quality in the system, DBPs have not been a concern which is not surprising as total organic compound (TOC) concentrations have been relatively low at the Lake Huron WTP. However, should TOC concentration rise, DBP formation would be more likely and would warrant more frequent and thorough monitoring. It is also noted that the system is actively monitored to provide minimum chlorine residuals at various locations and take-offs throughout the system.

The water age will be estimated and compared for critical alternative solutions to be evaluated with the goal to minimize water age.

A review of the maximum age guideline used in several jurisdictions indicated the following:

- City of London: 3 days
- AWWA: 3 days
- Region of Peel: Any section of the transmission should maintain one volumetric turnover in every two days

For the scenarios to be evaluated as part of the Master Plan, the following criteria are recommended to be applied to confirm the size of future transmission main(s) would not result in negative impacts to water quality.

- Average water age target of 3 days based on an average day scenario
- Any section of the transmission should maintain a minimum of 1.0 turnover in every 2 days

Any areas of concern based on the water age assessment will be identified and recommended for further review using chlorine decay modelling, which can be incorporated into the hydraulic model as a separate study.

12. Useful Life of Infrastructure

To estimate the remaining useful life of the various infrastructure components in the LHPWSS, the typical industry standards excluding mid-life asset intervention (e.g, rehabilitation) were compared against the age of the infrastructure within the system, hence it was used as a consideration when formulating and prioritizing capital works.

When the age of the above noted asset exceeds the total useful life, project(s) such as condition assessment or replacement will be identified for the Master Plan.

13. Redundancy Considerations

Considerations for redundancy of critical components within the LHPWSS will be explored when developing alternative solutions to meet the design criteria (future demand) for future growth. In reviewing the redundancy of the water supply, service durations under emergency conditions (e.g. Huron Transmission Main is temporarily out of service for repair) will be identified in the hydraulic model when determining the need for twinning. When twinning is confirmed to be needed, the size of the twinning will consider the future flows, water age, emergency operation and operational flexibility for any planned future maintenance activities that require temporary shutdown of any existing transmission mains.

Qualitative assessment on the treatment process redundancy will be considered when the system evaluation results indicated treatment deficiency occurred which triggered upgrades (e.g. plant expansion). Such upgrades will be identified with the consideration of providing treatment redundancy.

14. Capacity Assessment

Hydraulic capacity of the following infrastructure was compared with system demand forecasts for each planning year, including the following:

- Water treatment plants.
- Pumping stations.
- Transmission mains.
- Storage.

A sensitivity analysis was also completed for the water treatment plants and pumping station capacity assessment for the low, medium and high MDD forecast developed in TM1. These are discussed in the following sections.

14.1 Capacity Assessment – Lake Huron Water Treatment Plant Intake

According to the Drinking Water Works Permit, the size of the existing intake for LH WTP is 1800mm with a total capacity of 454,000 m3/d (454ML/d). In comparison with the projected water demands for the Lake Huron water service area, the existing intake will provide sufficient capacity to meet the future flow and no capacity upgrade is required. **Figure 14-1** shows the comparison of the flow projections vs. intake capacity.

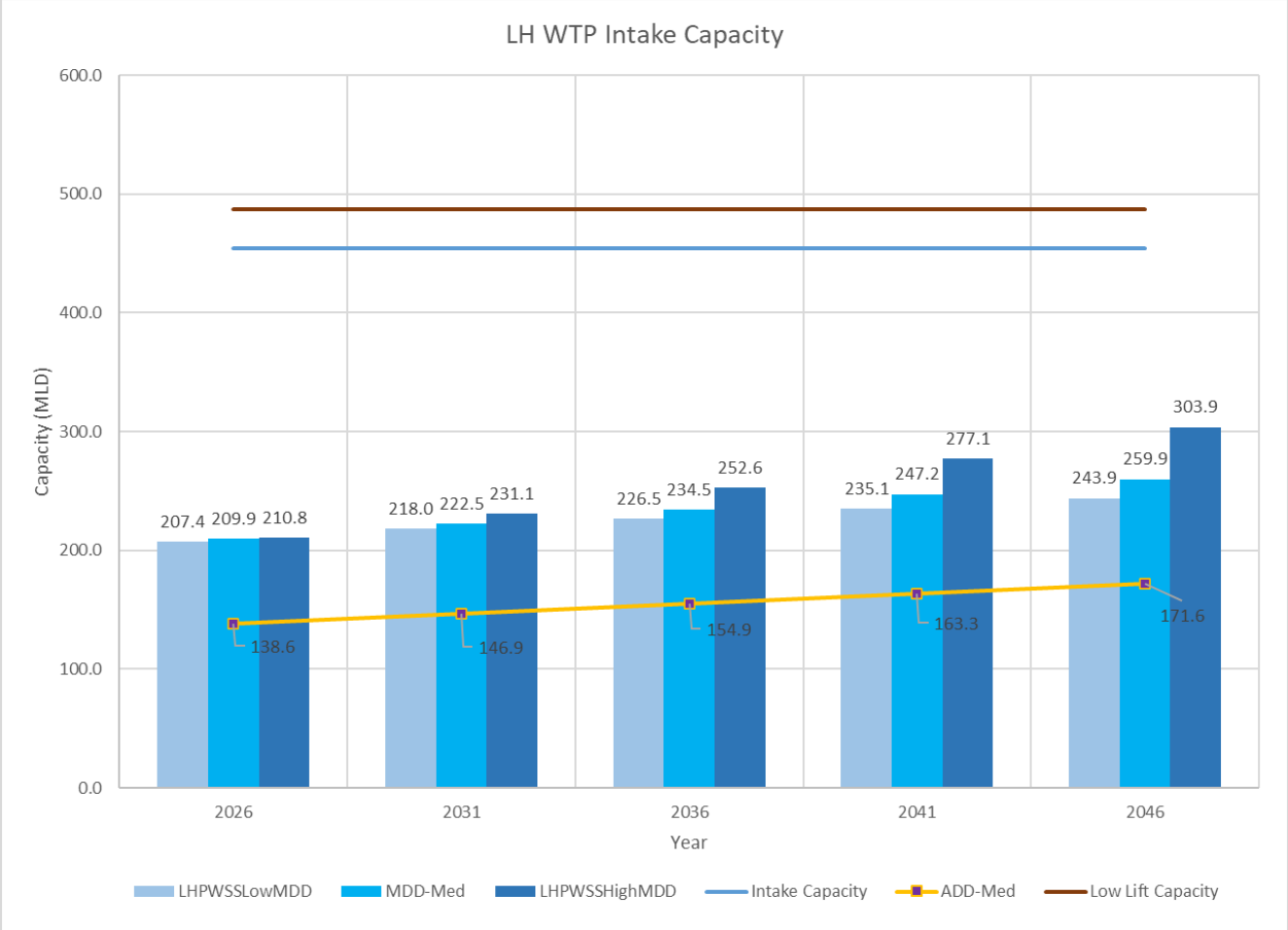

Figure 14-1: Intake Capacity and Low Lift Pumping Capacity Review

For the raw water pumping capacity, the existing firm capacity of 487ML/d would be sufficient to meet the average day and maximum day demand conditions for all planning horizon and therefore no capacity upgrades were triggered

14.2 Capacity Assessment – Lake Huron Water Treatment

Table 14-1 shows the range of capacities for LH WTP for various treatment processes. The capacity used for the hydraulic modelling is 240.6 ML/d, based on filtration capacity as shown on the table.

Table 14-1: Water Treatment Plant Capacity Assessment – LH WTP

Process	Capacity (ML/d)
Rated capacity	340.0
Pre-disinfection / disinfection	302.9
Filtration	240.6
Sedimentation	200.6
Flocculation	191.2
Capacity Assumed for Master Plan*	240.6
85% Capacity*	204.5

*based on available filtration capacity

The design basis for LH WTP capacity evaluation is typically the MDD condition. However, the MWD scenario was also reviewed, along with the modelling analysis to evaluate the capacity.

Typically, the planning process for upgrades should be initiated when the MDD reaches 85% of the design capacity. **Figure 14-2** shows low, medium and high system demand forecasts for each planning year, along with the WTP filtration capacity as discussed above, as well as 85% of this capacity.

Based on the figure, the following is concluded for the filtration capacity based on the medium demand forecast:

- 85% of the WTP filtration capacity will be reached for the 2026 MDD and for the 2031 MWD condition.
- Full plant filtration capacity will be reached by 2041 MDD and 2046 MWD.
- Planning and evaluation for the LH WTP improvement works to provide capacity beyond the filtration capacity as shown on **Table 14-1** should be initiated by the year 2031.

Based on the figure, the following is concluded for the WTP rated capacity as shown on **Table 14-1** based on the medium demand forecast:

- The demands are within 85% of the WTP rated capacity for the extent of the planning horizon.
- The demands are within the plant rated capacity for the extent of the planning horizon.

Sensitivity analysis for low, medium and high MDD demand forecasts are presented on **Figure 14-2**.

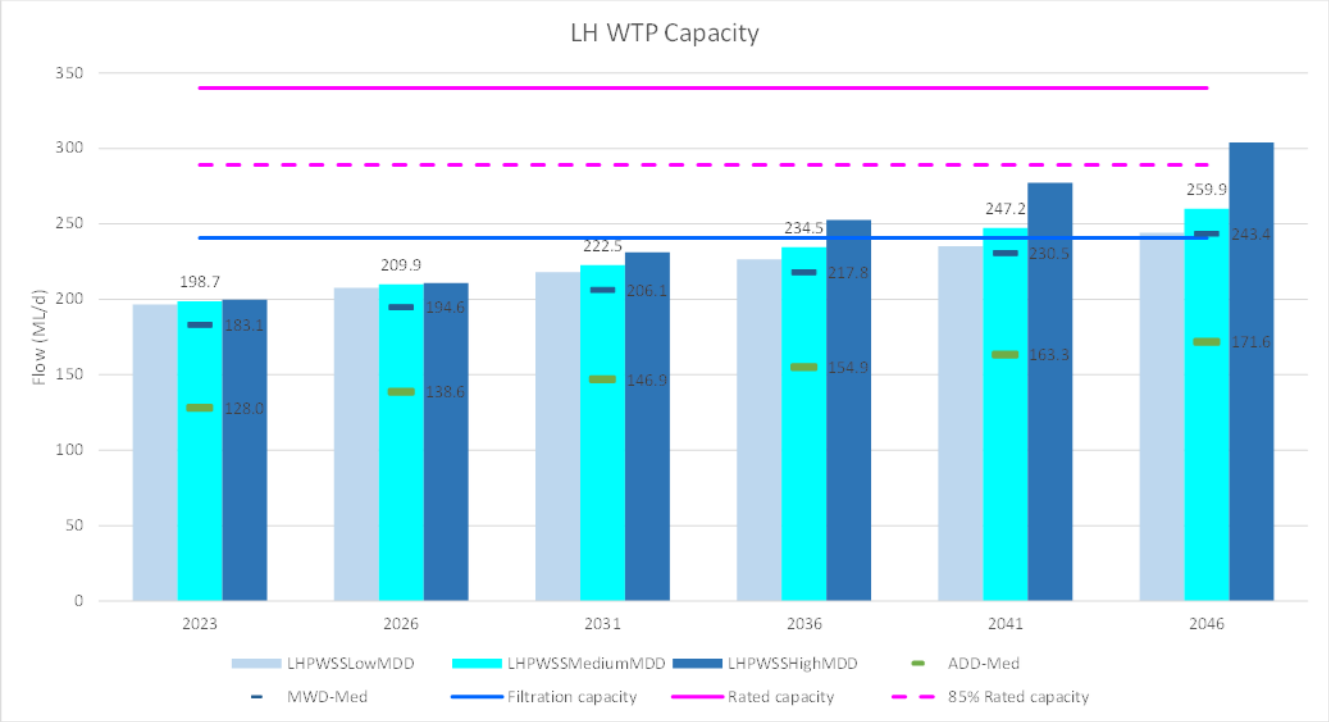

Figure 14-2 Lake Huron WTP Capacity Assessment

14.3 Capacity Assessment – Lake Huron Primary Water Supply System Surge Protection

Transients, also known as pressure surges or water hammer, occur when there is a sudden change in flow velocity within a water transmission system. These abrupt shifts in pressure can lead to pipe damage, pump failure, and system inefficiencies. Transients occur within a water system due to normal and emergency pump and / or valve operations.

Robust surge protection in a water transmission system is essential to maintaining pipeline integrity and ensuring stable operations. Key objectives of implementing surge protection include:

- Protect structural integrity by ensuring severe pressure fluctuations are mitigated.
- Reduce water quality risk by maintaining positive pressures within the system as much as possible.
- Improve operations to minimize recurring pressure fluctuations.

As part of a separate transient study in 2023, AECOM reviewed the LH HLPS, MPS and 1200mm dia transmission mains and found that these components when working properly can provide adequate capacity when two high lift pumps are in operation when pumping between the LH WTP and Arva Terminal Reservoir (ATR). Additional when pumping from LHWTP to McGillvray Pumping Station with 3 high lift pumps then from McGillivray PS (MPS) to ATR with 3 pumps, the surge system can handle the capacity when all protection is in working order. The transient study did have further recommendations to improve the system and these will be incorporated into the Master Plan.

14.4 Capacity Assessment – Pumping Stations

The design basis for pumping station capacity evaluation is typically the MDD condition. However, the MWD scenario was also reviewed, along with the modelling analysis to evaluate the capacity. The capacity assessment results of pumping stations and transmission have also been reviewed in the hydraulic modelling section as shown in Section 15.

14.4.1 Lake Huron High Lift PS

Figure 14-3 shows low, medium and high system demand forecasts for each planning year, along with the pump capacity for the Lake Huron High Lift PS (LH HLPS) based on three pump separated system operation, as well as 85% of this capacity. Also shown on the figure is the pumping capacity with two pumps running under direct ATR supply.

As shown on the figure, pumping capacity for the LH HLPS will be acceptable within the planning horizon based on the medium demand forecast.

Four of the six pumps (Pumps 1, 3, 5 and 6) in the station were recently replaced / added. The original remaining pumps (Pumps 2 and 4) are likely beyond their service life and are also recommended for replacement.

Sensitivity analysis for low, medium and high MDD demand forecasts are presented on **Figure** 14-3.

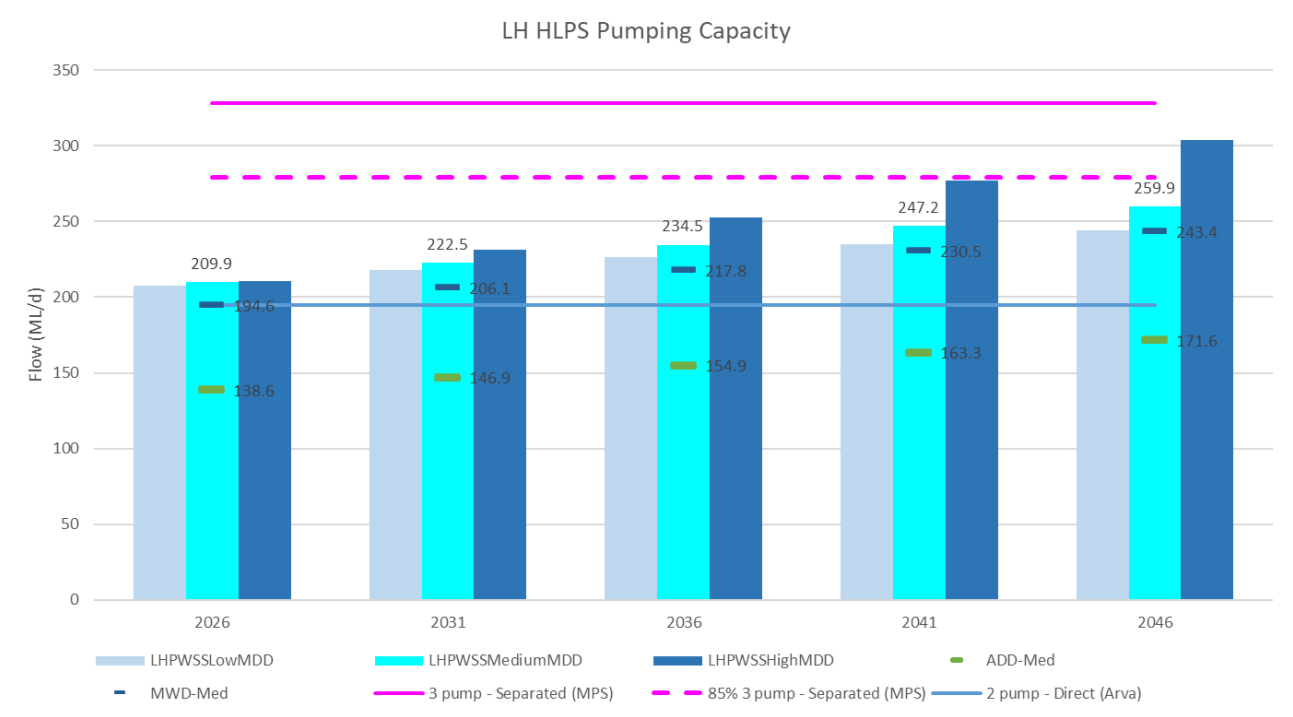

Figure 14-3 LH HLPS Capacity Assessment

14.4.2 McGillivray PS

Figure 14-4 shows low, medium and high system demand forecasts for each planning year, along with the pump capacity for MPS based on three pump separated system operation, as well as 85% of this capacity.

As shown on the figure, pump capacity for the MPS will be acceptable within the planning horizon based on the medium demand forecast, although 85% of the capacity will be reached by 2046, so for an upgrade should be initiated by then.

However, the existing pumps are likely beyond their service life and are recommended for replacement.

Sensitivity analysis for low, medium and high MDD demand forecasts are presented on **Figure 14-4**. It shows that the low MDD demand forecast will remain below the 85% of the MPS capacity in 2046, while the high MDD demand will slightly exceed the MPS capacity in 2046.

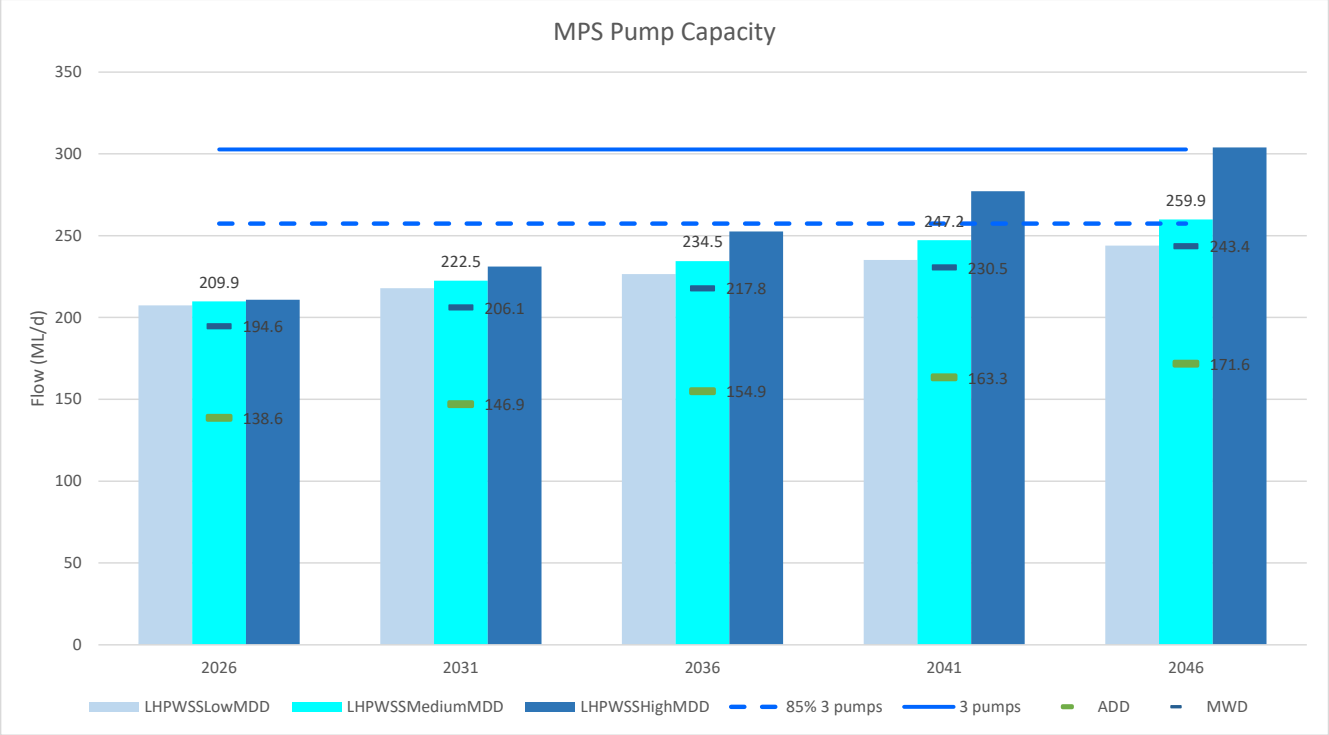

Figure 14-4 MPS Capacity Assessment

14.4.3 Exeter-Hensall PS and Komoka-Mount Brydges PS

Based on a similar analysis as described above, both Exeter-Hensall PS (EHPS) and Komoka-Mount Brydges PS (KMPS) will have sufficient capacity for the duration of the planning horizon as shown on **Figure 14-5** and **Figure 14-6** below.

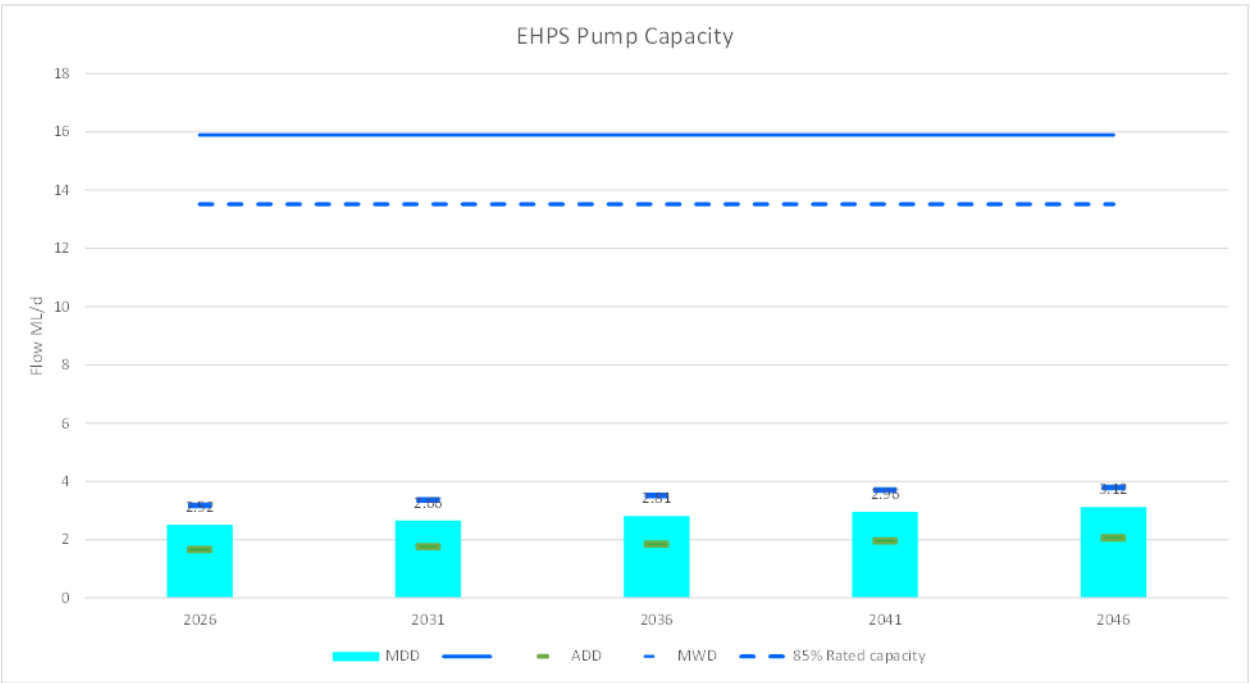

Figure 14-5 EHPS Capacity Assessment

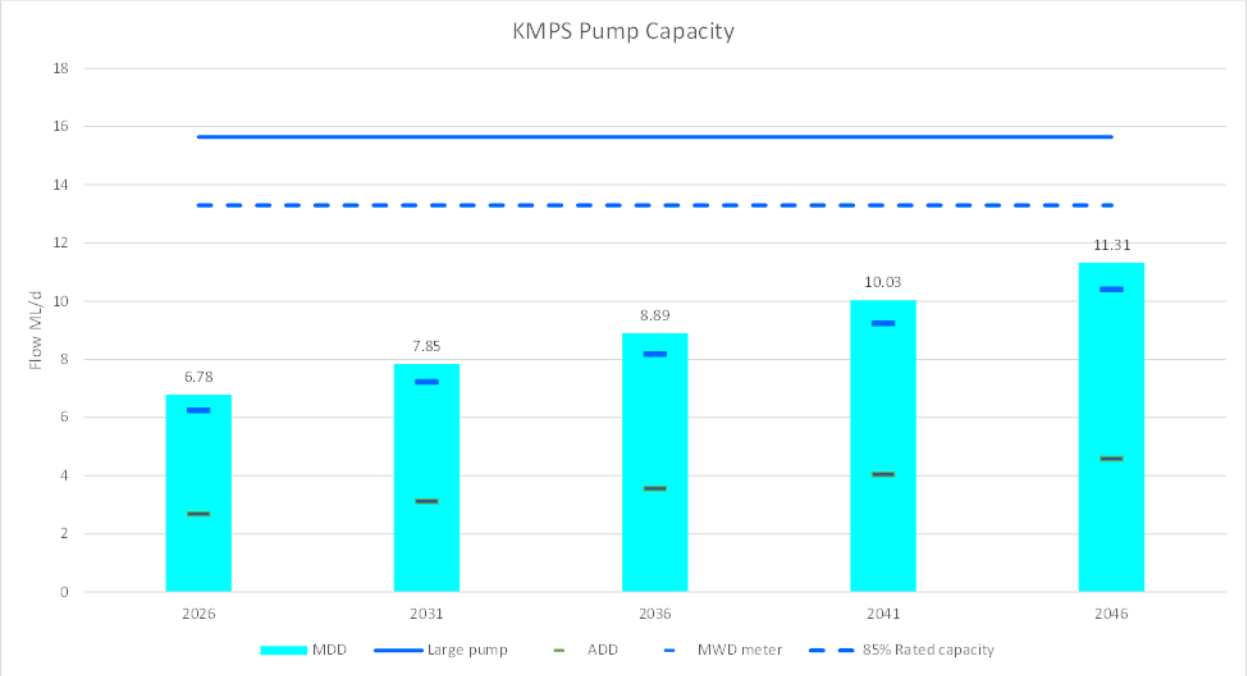

Figure 14-6 KMPS Capacity Assessment

14.5 Capacity Assessment – Transmission Mains

The design basis for transmission main capacity evaluation was evaluated based on the EPS model results for the MWD for each planning year as discussed in Section 15. This was evaluated based on comparing the model results with the design criteria discussed in other sections, including velocity, headloss gradient and pipe pressure relative to the pressure rating. These values can fluctuate within transmission mains based on pumps in operation and system demands for each time step. These are discussed for the transmission mains in the following sections.

14.5.1 Lake Huron TM

The pipeline pressure limit should restrict flow from LH HLPS to maintain a maximum HGL of 345 metres at LH HLPS to stay below 95% of the original design pressure ratings. **Figure 14-7** shows the profile of the LHTM along with operating HGL, the pressure rating as well as 95% of the pressure rating (in terms of HGL).

Model results for the LHTM will be reviewed with the PCCP Degradation Modelling report (Pure).

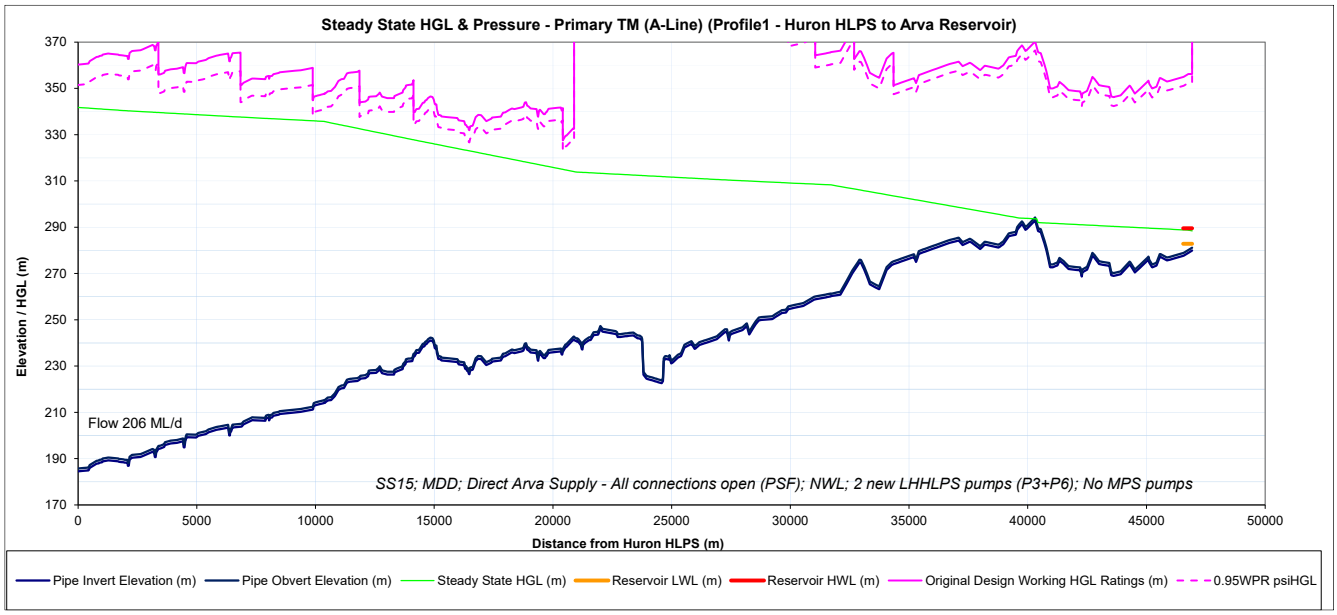

Figure 14-7 Lake Huron Transmission Main Hydraulic Profile – Existing MDD

14.5.2 Komoka-Mount Brydges TM, Strathroy / Caradoc TM and Exeter-Hensall TM

Hydraulic model results as discussed in Section 15 for the KMTM, SCTM and EHTM show acceptable values for the velocity, headloss gradient and pressure rating targets for each planning horizon to the year 2046.

14.6 Capacity Assessment – Storage

Storage requirements for pump synchronization were assessed for 2026 and 2046 conditions, with the following considerations:

- Based on 1 hour time allowance to ramp pumps.
- Assumes no inflow (supply) pumps in service.

Table 14-2 shows the results of the assessment for the LHPWSS storage facility. Based on the analysis, there are marginal storage deficits for the following facilities for pump synchronization. Other facilities (ATR and HER) have acceptable storage capacity:

- LH WTP Treated Water Storage.
- McGillivray Reservoir.

This can be mitigated by one or more of the following alternatives:

- Reducing synchronization time from the 1 hour time period assumed for the analysis.
- Ensuring supply pumps are operating, which was assumed not to occur for the analysis.
- Utilizing the potential storage capacity, which can be accomplished by adjusting the low and high levels and are shown on **Table 14-2**.

Table 14-2: Storage Capacity Assessment – Pump Synchronization

			Pump Synchronization Storage			
			2026		2046	
Reservoir	Available Useful Storage (ML)	Potential Useful Storage (ML)	Required Storage (ML)	Remainder (ML)	Required Storage (ML)	Remainder (ML)
LHPWSS						
LHWTP Treated Water Storage	3.16	4.48	8.1	-5.0	9.9	-6.7
Exeter Hensall Reservoir	4.35	5.11	0.6	3.8	0.7	3.6
McGillivray Reservoir	6.74	9.65	8.9	-2.2	8.9	-2.2
Arva Terminal Reservoir	34.50	53.02	7.0	27.5	7.1	27.4
Total LHPWSS	**48.75**	**72.26**	**24.6**	**24.1**	**26.7**	**22.1**

Storage capacity to provide for the demand growth scenarios were determined through hydraulic modelling results as discussed in Section 15. The storage levels during the 7-day MWD simulation were compared with the maximum and maximum operating levels.

15. Hydraulic Modelling Results

The hydraulic model was simulated for the MWD scenario for each planning year. The hydraulic analyses of different planning years were modelled with the evaluated water demand to determine available / required system capacity to supply growth.

The model utilized for the analysis is described in above sections. Scenario(s) were created for each planning year (2026 - 2046) for both the no upgrade and the upgrade scenarios as applicable and are discussed in the following sections. The following is a list of hydraulic modelling scenarios discussed in this section. In total 6 scenarios were assessed:

- 2026 (No Upgrades) - 2026 scenario with existing infrastructures / capacity
- 2031 (No Upgrades) - 2031 scenario with existing infrastructures / capacity
- 2036 (No Upgrades) - 2031 scenario with existing infrastructures / capacity
- 2041 (No Upgrades) - 2041 scenario with existing infrastructures / capacity
- 2046 (No Upgrades) - 2046 scenario with existing infrastructures / capacity
- 2046 (With WTP Capacity Improvement) - 2046 scenario with existing infrastructures / capacity and WTP Capacity Improvement

The model operational setup was as follows for the scenarios:

- LH HLPS was operated in the model with either 2 pumps under direct ATR supply or 2 pumps under separated system (MPS) operation as required to maintain ATR levels.

- During MPS operation, MPS pumps were operated as required to maintain ATR levels. The reservoir fill valve was throttled to match the LH HLPS supply. The simulated water level in ATR has been shown under each scenario to indicate the operation range.

15.1 Modelling Scenario 2026 (No Upgrades)

The following discusses hydraulic modelling results for the 2026 scenario with existing infrastructures / capacity; no new upgrades were included, for the LHPWSS system.

- There is sufficient WTP filtration capacity at LH WTP to supply the forecasted demands (MDD and MWD) for this scenario as discussed in Section 14.1.
- LH PS operates with 1 or 2 pumps direct supply to ATR.
- MPS is not required to supplement ATR levels for this scenario.
- For the LHTM, there is a small section of the single portion of the main that slightly exceeds the velocity / headloss targets. There is a small section of the main with pressure slightly exceeding 95% of the pressure rating for a short period.
- Other TMs have acceptable hydraulic results.
- The model shows that the terminal reservoir would operate within the level targets (operation range 4m to 6.4m). **Figure 15-1** shows ATR levels for the simulation.
- The model shows acceptable pressure at meter nodes.
- The model shows generally acceptable results.
- No new capital works would be required for this scenario based on the modelling.

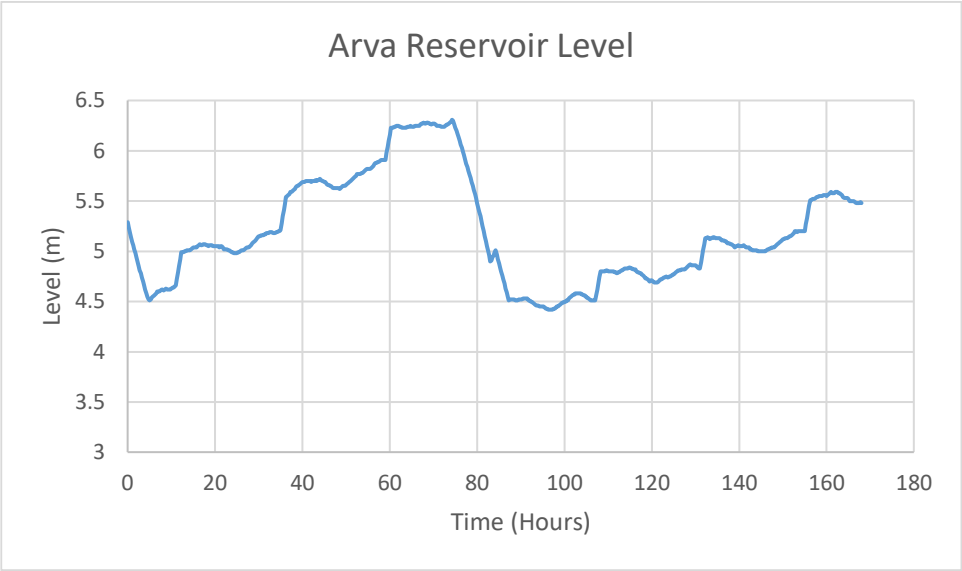

Figure 15-1 Arva Terminal Reservoir Level - 2026 (No Upgrades)

15.2 Modelling Scenario 2031 (No Upgrades)

The following discusses hydraulic modelling results for the 2031 scenario with existing infrastructures / capacity; no new upgrades were included.

- There is sufficient WTP filtration capacity at LH WTP to supply the forecasted demands for this scenario as discussed in Section 14.1.

- LH PS 2 operates with pumps direct to ATR.
- MPS pumping is required occasionally to replenish ATR.
- For the LHTM, there is a small section of the main that slightly exceeds the velocity / headloss targets. There is a small section of the main with pressure slightly exceeding 95% of the pressure rating for a short period.
- Other TMs have acceptable hydraulic results.
- The model shows that the terminal reservoir would operate within the level targets (operation range 4m to 5.5m). **Figure 15-2** shows ATR levels for the simulation. The model showed ATR levels dropping, however if MPS was started earlier, this would replenish the reservoir.
- The model shows acceptable pressure (> 20 psi) at meter nodes.
- The model shows generally acceptable results.
- No new capital works would be required for this scenario based on the modelling.

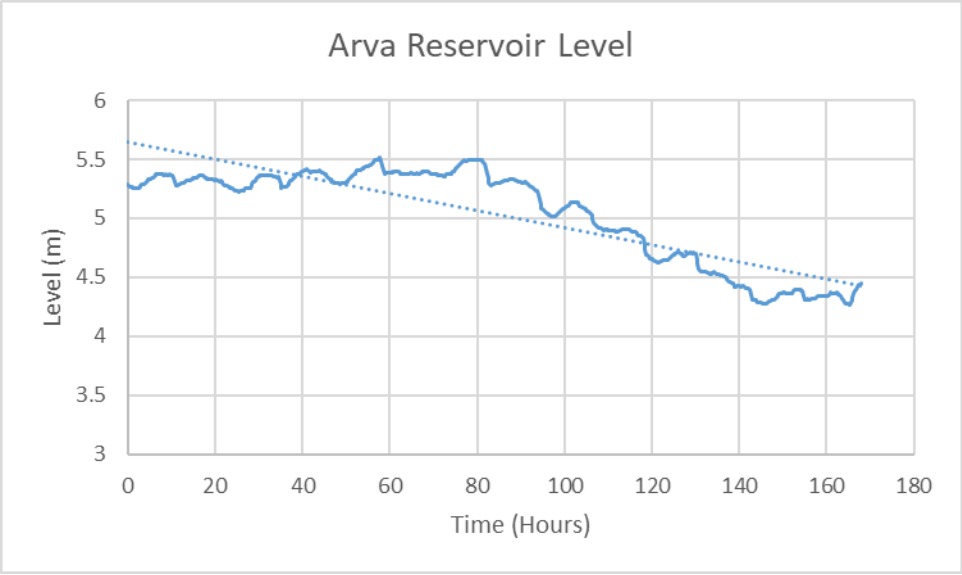

Figure 15-2 Arva Terminal Reservoir Level - 2031 (No Upgrades)

15.3 Modelling Scenario 2036 (No Upgrades)

The following discusses hydraulic modelling results for the 2036 scenario with existing infrastructures / capacity; no new upgrades were included.

- There is sufficient WTP filtration capacity at LH WTP to supply the forecasted demands for this scenario as discussed in Section 14.1.
- LH PS operates with 2 pumps direct to ATR.
- MPS pumping is required about 40% of the time to replenish ATR.
- For the LHTM, there is a small section of the main that slightly exceeds the velocity / headloss targets. There is a small section of the main with pressure slightly exceeding 95% of the pressure rating for a short period.
- Other TMs have acceptable hydraulic results.
- The model shows that the terminal reservoir would operate within the level targets (operation range 4m to 6.4m). **Figure 15-3** shows ATR levels for the simulation.

- The model shows acceptable pressure (> 20 psi) at meter nodes.
- The model shows generally acceptable results.
- No new capital works would be required for this scenario based on the modelling.

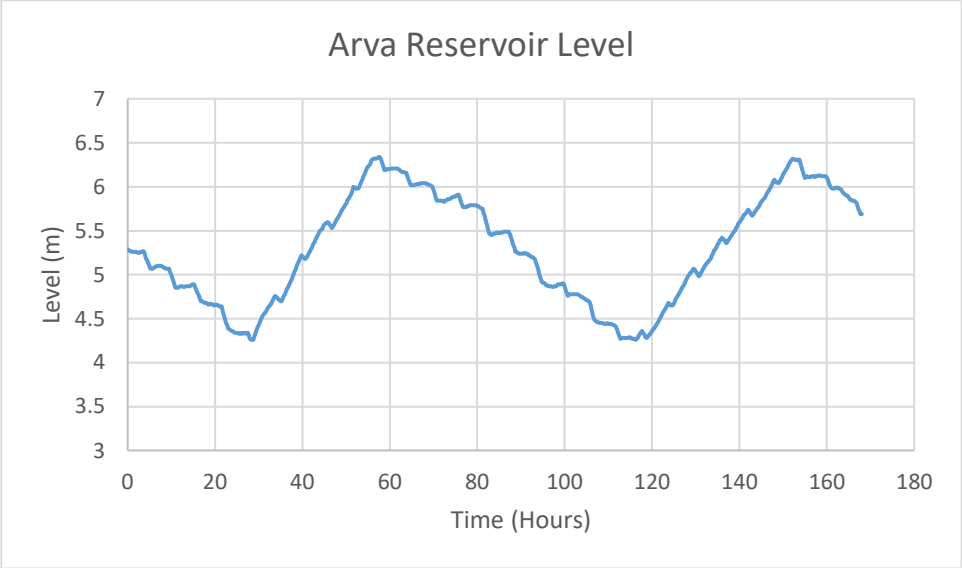

Figure 15-3 Arva Terminal Reservoir Level - 2036 (No Upgrades)

15.4 Modelling Scenario 2041 (No Upgrades)

The following discusses hydraulic modelling results for the 2041 Do Nothing scenario with 2036 upgrades in place as discussed in the previous section.

- There is sufficient WTP filtration capacity at LH WTP to supply the forecasted demands for this scenario as discussed in Section 14.1.
- LH PS operates with 2 pumps direct to ATR.
- MPS pumping is required about 70% of the time to replenish ATR.
- The model shows that the terminal reservoir would operate within the level targets (operation range 4m to 6.4m). **Figure 15-4** shows ATR levels for the simulation.
- For the LHTM, there is a small section of the main that slightly exceeds the velocity / headloss targets. There is a small section of the main with pressure slightly exceeding 95% of the pressure rating for a short period.
- Other TMs have acceptable hydraulic results.
- The model shows acceptable pressure (> 20 psi) at meter nodes.
- The model shows generally acceptable results.
- No new capital works would be required for this scenario based on the modelling.

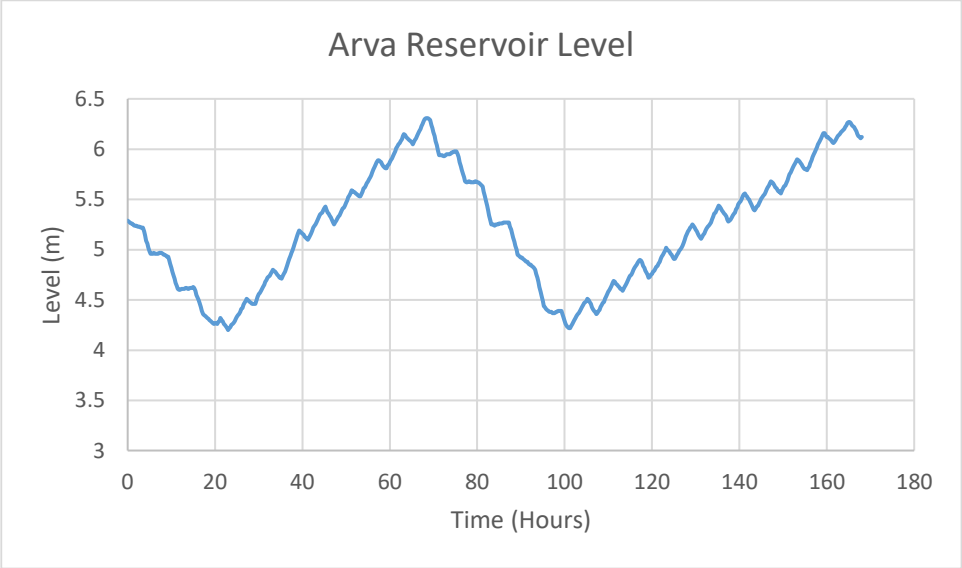

Figure 15-4 Arva Terminal Reservoir Level – 2041 Scenario (No Upgrades)

15.5 Modelling Scenario 2046 (No Upgrades)

The following discusses hydraulic modelling results for the 2046 Do Nothing scenario with 2041 upgrades in place as discussed in the previous section.

- There is insufficient WTP filtration capacity at LH WTP to supply the forecasted demands for this scenario as discussed in Section 14.1.
- The average MWD is greater than WTP filtration capacity (marginally).
- LH HLPS operates with 2 pumps direct to ATR.
- MPS pumping is required about 95% of the time (2 pumps) to replenish ATR.
- The model shows that the terminal reservoir would operate (operation range 3.8m to 5m) within the level targets for the simulation, however, are continually dropping (cannot sustain level within targets). **Figure 15-5** shows ATR levels for the simulation.
- MPS reservoir completely empties for the scenario.
- For the LHTM, there is a small section of the main that slightly exceeds the velocity / headloss targets. There is a small section of the main with pressure slightly exceeding 95% of the pressure rating for a short period.
- Other TMs have acceptable hydraulic results.
- LH WTP improvements were evaluated for 2046. This is discussed further in the next section.
- The model shows acceptable pressure (> 20 psi) at meter nodes.

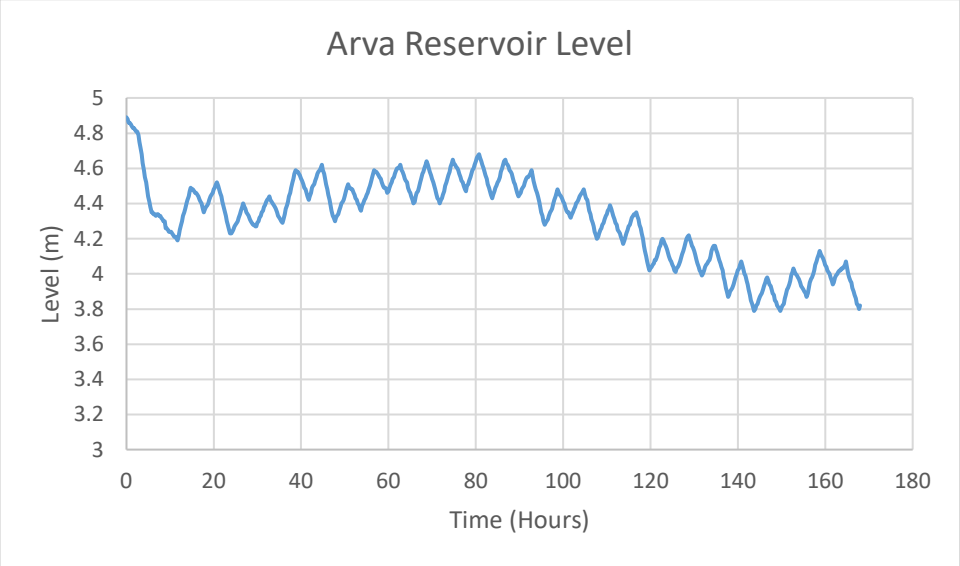

Figure 15-5 Arva Terminal Reservoir Level - 2046 (No Upgrades)

15.6 Modelling Scenario 2046 (with WTP Capacity Improvement)

The following discusses hydraulic modelling results for the 2046 scenario with upgrades in place.

- There is insufficient WTP capacity at LH WTP to supply the forecasted demands for this planning horizon as discussed in Section 14.1.
- This scenario evaluated a WTP capacity improvement for the LH WTP based on supplying the average MWD for this period. Details of the WTP capacity improvement for the LH WTP will be discussed in TM3.
- MPS pumping is required about 95% of the time (2 pumps) to replenish ATR.
- The model shows that the terminal reservoir would operate (operation range 4m to 6.4m) within the level targets with the upgrades in place. **Figure 15-6** shows ATR levels for the simulation.
- For the LHTM, there is a small section of the main that slightly exceeds the velocity / headloss targets. There is a small section of the main with pressure slightly exceeding 95% of the pressure rating for a short period.
- Other TMs have acceptable hydraulic results.
- The model shows acceptable pressure (> 20 psi) at meter nodes.
- The model shows generally acceptable results.
- No new additional capital works, other than the WTP capacity improvement, would be required for this scenario.

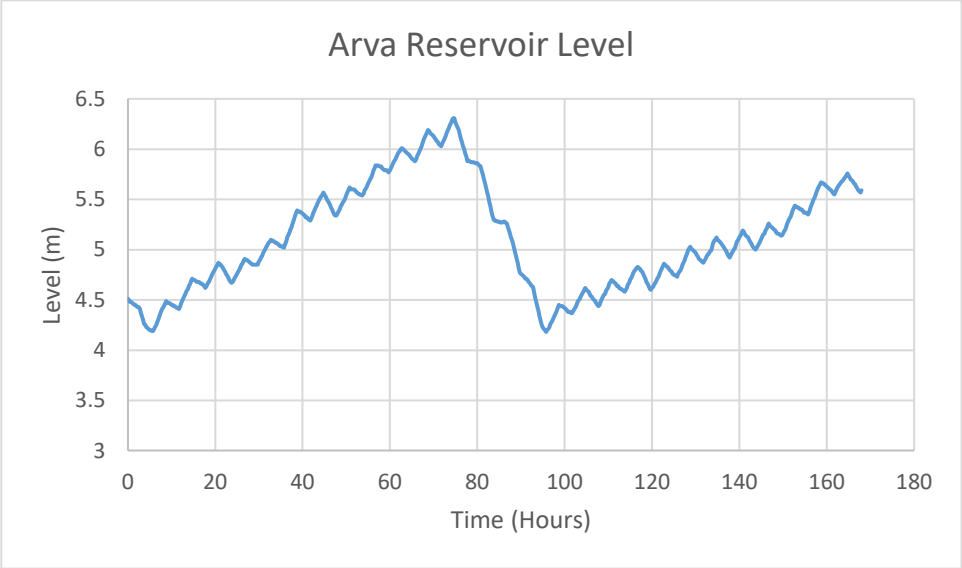

Figure 15-6 Arva Terminal Reservoir Level - 2046 (With Upgrades)

16. Arva Terminal Reservoir Backflow Alternatives

The LHTM A and B-Lines include a high area around Ilderton, with a pipe elevation above the Arva Terminal Reservoir (ATR) operating level (around Chamber 58). ATR cannot provide backflow to the portion of the LHPWSS system upstream of the high area when the WTP or LHTM is off-line, so ATR storage is not available to these member communities due to the hydraulic restriction. This point is now a hydraulic boundary condition for the LHTM under certain pumping conditions. ATR storage would only be available for supply to London, Komoka, Mount Brydges and Oneida.

Currently the LHTM pipes at the high area, as well as the MPS hydropneumatic air chamber (HAC) gets depressurized (empties) during this condition. The following system enhancement was considered to facilitate supply to the LH system upstream of the high elevation area. Other possible options are summarized in Appendix B.

<u>Configure MPS with a jockey pump to pressurize LHTM to provide backup supply during a supply interruption to LHPWSS customers upstream of the Ilderton high area from MPS Reservoir:</u>

- This system enhancement aims to configure MPS using a jockey pump to pressurize the LHTM and supply customers from the MPS Reservoir.
- This system enhancement assumes the MPS reservoir fill valve to be closed, transmission main line valve to be opened and ATR isolated.
- The existing MPS pumps were not considered in this system enhancement, as the pressure will exceed the pipe working pressure rating, unless excessive throttling is adopted.
- A jockey pump would be used to pressurize the LHTM from MPS under a supply disruption. This pump could also be used for reservoir recirculation when MPS pumps are offline.
- Requires isolation at ATR.
- EPS modelling for this system enhancement should be conducted during design if included in the preferred alternatives.
- The following are pros and cons for this system enhancement:

<u>Pros:</u>

- This system enhancement would combine a dual function of providing backup supply when LH WTP is off-line, as well as providing reservoir recirculation (without needing to utilize large MPS pumps as frequently).
- The jockey pump will also reduce the lowering of water level in the surge tanks and prevent them from fully drained.
- The resumption of the pumping from LH HLPS can be expedited as the LHTM could be remained pressurized.
- This alternative would have a relatively lower cost.

Cons:

- This system enhancement would require modifications to the MPS station design.
- Would need to evaluate space and pump / valve requirements to accommodate the jockey pump.
- Would require additional pump and valve controls.
- MPS Reservoir has relatively smaller volume of available storage than ATR to use for backup supply.

17. Conclusions

The following are conclusions based on the alternative evaluation and hydraulic modelling for the LHPWSS system for supply growth demands (medium forecasts).

The capacity assessments and modelling for the master planning assessment assumes a constant supply to London based on the current supply agreement. The assessment does not include sensitivity analysis for adjusting this supply and increasing LHPWSS supply to offset the timing of EAPWSS required system upgrades. This should be evaluated as a separate study. However, sensitivity analysis was conduct for treatment and pumping capacity based on high and low growth projections. The implications to the implementation schedule for the recommended system improvements were evaluated and presented below in **Table 17-1**. The following subsections summarize the system capacity assessment based on medium (recommended) growth and the associated improvement works for maintaining sustainable water supply in the systems.

Table 17-1: Sensitivity Analysis Results for Low, Medium and High Growth Scenarios

Facility	Filtration capacity						Rated capacity					
	Year 85% Capacity Reached			Year 100% Capacity Reached			Year 85% Capacity Reached			Year 100% Capacity Reached		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
LH WTP	2026	2026	2026	2046	2041	<2036	>2046	>2046	2046	>2046	>2046	>2046
LH HLPS							>2046	>2046	2041	>2046	>2046	>2046

17.1 Treatment

- LH WTP filtration capacity can accommodate the MWD until the year 2041, however there would be a capacity shortfall for MDD in 2041, however this can be accommodated with existing Arva storage capacity. By 2046, LH WTP improvements will be required to be in service to provide additional capacity beyond the available filtration capacity.

- LH WTP Intake capacity and low lift pumping capacity were both sufficient to meet the projected flows; no capacity upgrade will be required.

17.2 Pumping

- LH HLPS pumping capacity would be acceptable within design horizon. The original pumps (P1 and P4) are likely beyond their useful life span.
- MPS pumping capacity would be acceptable within design horizon. MPS operation is not required to supply the 2026 MWD demands, however is required for 2031 and would be required most of the time for 2046. The existing pumps are likely beyond their useful life span.
- Other stations in the system (EH PS and KM PS) will have sufficient capacity to supply demands within the planning horizon.

17.3 Storage

- ATR reservoir has sufficient storage capacity for growth demands within the planning horizon.
- MPS reservoir has sufficient storage capacity within the planning horizon for growth demands, however has a slight shortfall of storage for pump synchronization, however this can be addressed by utilizing the potential available storage as shown on Table 14-2.
- Based on the analysis, there are marginal storage deficits for the following facilities for pump synchronization:
    - LH WTP Treated Water Storage.
    - McGillivray Reservoir.
- Flexibility storage requirements were not considered in the master plan, however should be considered as a policy level.

17.4 Transmission

- Velocity exceeds the target velocity within the un-twinned sections of the LHTM (about 19 km) when MPS in operation with 2 pumps (maximum velocity ~2.6 m/s by the year 2046). However, the LHTM system is likely well protected for transients for existing conditions, however this should be confirmed with additional transient modelling for future scenarios.
- There is a slight area at risk for high pressures on a portion of the LHTM under the two pump direct supply operation, however other TMs within the LHPWSS would have acceptable pressures.
- Transmission main upgrades are likely not required for forecasted demand growth, however these should be evaluated for reliability / redundancy (e.g. LHTM twinning) and future risk (based on Pure PCCP Degradation report, completed for the LHTM).
- Other transmission mains in the system (EHTM, SCTM, KMTM) will have sufficient capacity to supply demands within the planning horizon.

18. Recommendations (Supply Growth Demands)

The following is recommended based on the hydraulic modelling for the LHPWSS system:

- Planning and evaluation for the LH WTP improvement works to provide capacity beyond the filtration capacity as shown on Table 14-1 should be initiated by the year 2031.

- The following other works are recommended for implementation:

- Replace the remaining original LH HLPS pumps (Pumps 1 and 4).
- Replace the existing MPS pumps and evaluate installation of a jockey / recirculation pump.
- Evaluate alternatives to allow ATR to provide continuous supply upstream of the Ilderton high area of the LHTM during periods when the LH WTP is off-line for planned maintenance. These are discussed in Section 16.
- Evaluate reliability / redundancy upgrades for each component of the system in separate studies.
- Maintain pressure limits for LH HLPS pumping to stay within 95% of LHTM pressure rating.

Figure 18-1 shows recommended works for the LHPWSS Master Plan.

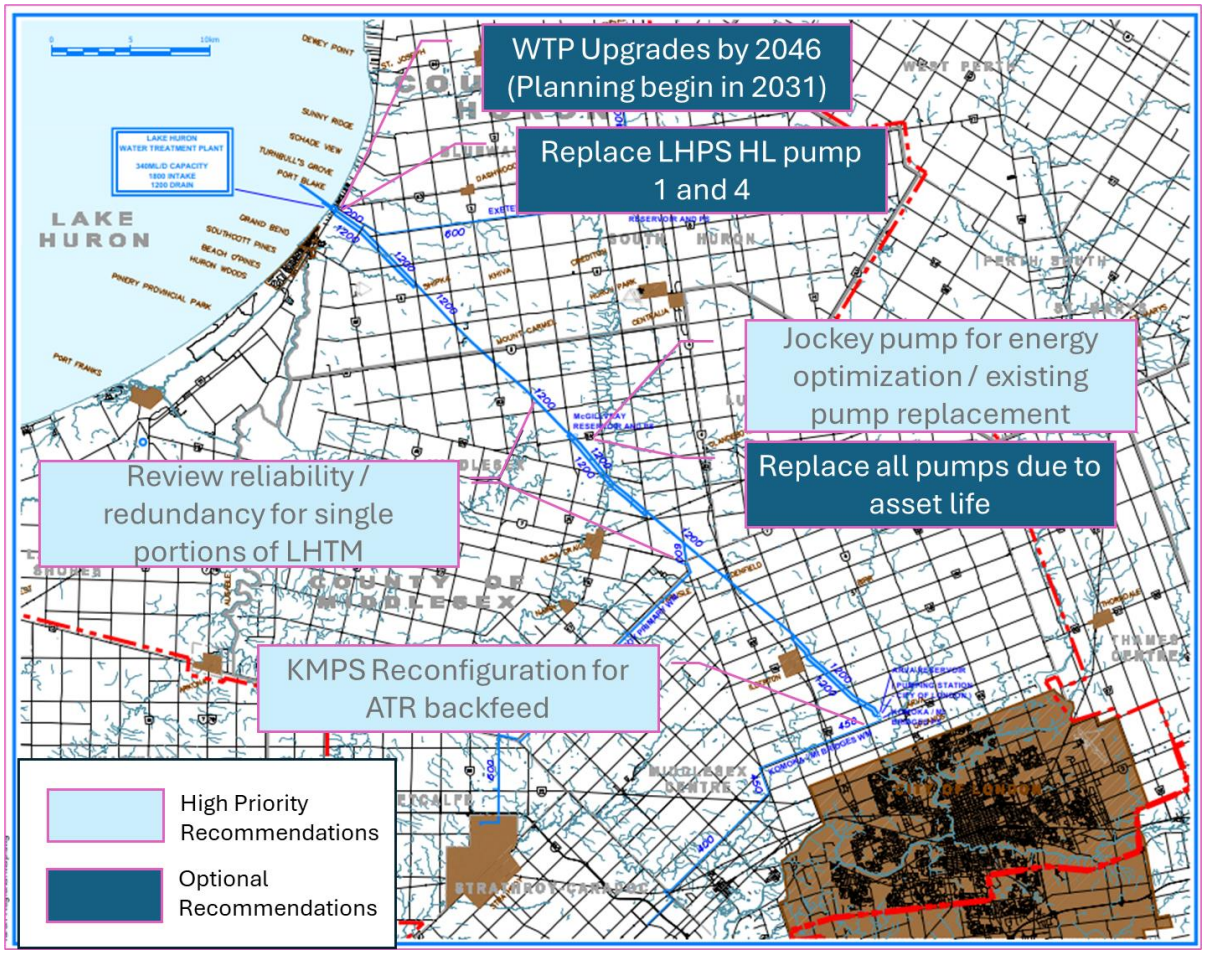

Figure 18-1 LHPWSS Master Plan Alternatives

18.1 Next Steps

The following are next steps that should be completed for the final LHPWSS EA evaluation:

- Finalize growth modelling scenarios and capital works requirements conducted herein.
- Evaluate redundancy and reliability alternatives and recommendations.
- Transient protection review and recommendations for further analysis for future scenarios.
- Evaluate modelled LHTM pressures for with Pure pipe degradation modelling report to identify areas of the main at risk.
- Evaluate potential customers on a macro level (i.e. intra-basin transfer).

- Confirm the additional improvement works identified in the previous studies (i.e. condition assessment, previous EA)

Appendix A – Extracted Description of Storage Components in the MECP Design Guidelines for Drinking Water Systems

The following three (3) storage components in the MECP Design Guidelines for Drinking Water Systems are briefly described for reference:

- **Equalization Storage:** Provide sufficient water storage volume to account for flow differences between peak hour demand and maximum day demands. This storage is provided to allow pumps to operate at their design capacities, which is maximum day demand when storage facilities are available in the system. Equalization storage is suggested to be 25% of the maximum day demand according to MECP guidelines.
- **Fire Storage:** In the event of fire within the benefitting communities, additional water for fire rescue will be supplied by the municipal water storage facility. Operation of the pumping facility can be maintained at the design capacity, which is maximum day demand when a storage facility is available in the system. Fire flow requirements and fire duration are suggested by the MECP based on service population.
- **Emergency Storage:** Under any emergency conditions such as a power outage where pumping is interrupted, water service for customers will be provided directly from storage. Service duration under such emergency conditions will vary depending on the water demand. MECP Guidelines recommend and flexibility storage volume equal to 25% of the sum of Equalization Storage and Fire Storage volumes.

Appendix B – Other Possible System Enhancement Options to Facilitate Backflow from ATR

1. System Enhancement P/T8 – Reconstruct the portion of the LHTM A- and B-Lines at the Ilderton high area:

- This alternative aims to formulate a conceptual design for reconstructing the existing LHTM at the high area for both A and B-Lines. Approximately 2 to 3 kilometers of pipe would be reconstructed above this elevation for each main.
- If the mains are reconstructed to an invert elevation of 285.0 metres, this would facilitate gravity supply from Arva terminal storage to the entire LHPWSS service area. This would free up about 68 percent of Arva terminal reservoir total storage volume for gravity backfeed supply.
- This alternative should be evaluated for the hydraulic, transient and operational benefits during design, should it be selected as a preferred alternative.
- The following are pros and cons for this alternative:

Pros:

  - This alternative would improve transients associated with the high area following an emergency pump shutdown.
  - Would address water quality risk associated with depressurizing the pipe at the high area.
  - Would allow LHTM to 'float' on the ATR to provide backup supply to the system without additional controls.

Cons:

  - This alternative would have a high cost.
  - Disruption of supply during construction.

2. System Enhancement P/T9 - Configure KMPS to pressurize LHTM to provide back-up supply to LHPWSS member communities from ATR:

- This alternative aims to configure KMPS to pressurize the LHTM and supply to customers from ATR during a supply interruption to facilitate utilization of ATR storage for customers upstream of the Ilderton high area.
- This would require a PRV or dedicated pump and new connection main, as well as isolation at ATR.
- Supply minimum target pressure at member community nodes as discussed in TM2A.
- EPS modelling for this alternative should be conducted during design if included in the preferred alternatives.
- The following are pros and cons for this alternative:

Pros:

  - This alternative would enable utilization of the large available ATR volume to provide backup supply to the system when WTP is off-line.
  - Relatively lower cost than the previous alternative.

Cons:

  - This alternative would require significant modification to KMPS which is not currently connected to the primary system.
  - Would need to evaluate space and pump / valve requirements.
  - Would require additional pump and valve controls.

Pros:

- This alternative would combine a dual function of providing backup supply when LH WTP is off-line, as well as providing reservoir recirculation (without needing to utilize large MPS pumps as frequently).
- This alternative would have a relatively lower cost.

Cons:

- This alternative would require modifications to the MPS station design.
- Would need to evaluate space and pump / valve requirements to accommodate the jockey pump.
- Would require additional pump and valve controls.
- MPS Reservoir has relatively smaller volume of available storage than ATR to use for backup supply.

3. System Enhancement S3 - Implement water supply storage at LH WTP

The LH WTP is only equipped with minimal treated water storage. The addition of treated water supply storage at the LH WTP to provide backup supply to the LHPWSS is discussed as follows:

- This alternative aims to formulate a feasible option with requirements to use LHHLPS pumps to pump from treated water storage to the system.
- Allows some supply to LHPWSS customers if the treatment processes are off-line. The small pump at LH HLPS can be used to maintain adequate pressure in the system.
- Requires isolation at ATR to prevent depleting the storage.
- The following are pros and cons for this alternative:

Pros:

- This alternative would combine a dual function of providing backup supply when LH WTP off-line as well as providing additional storage for improved operational flexibility between low lift and high lift pump synchronization, which has a slight storage deficit as shown on Table 14-2.

Cons:

- Need to ensure no detrimental impact on operating HGL relative to pipe pressure rating.

4. System Enhancement S6 - Add a storage facility at the Ilderton high area of the Huron TM:

- This alternative aims to formulate a feasible option of implementing new floating storage at Ilderton high area to provide gravity storage to LHPWSS customers under a supply interruption:
- This would be an alternative to configuring KMPS to supply non-London customers from Arva terminal reservoir (Alternative P/T 9).
- The following are pros and cons for this alternative:

Pros:

- This alternative would provide backup supply to the system when LH WTP is off-line.
- Improvement to hydraulics and transients at the high area of the mains.
- This would be an alternative to twinning LHTM to improve supply redundancy.
- This would be an alternative to reconstructing LHTM at Ilderton high area (Alternative P/T8).
- Would address water quality risk associated with depressurizing the pipe at the high area.

Cons:

- Additional storage volume not required for pump synchronization and would be considered to be surplus storage.
- Would require additional control complexity and complex valving requirements.
- There may be site constraints for storage at this location, which should be evaluated.
- There may be potential effects to adjacent private properties.
- Likely high cost including land acquisition.
- Need to ensure that there would be no detrimental impact on operating HGL relative to LHTM pipe pressure rating.

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Appendix B.3

Technical Memorandum #3

Evaluation of Alternatives

Lake Huron Primary Water Supply System Master Plan

Technical Memorandum # 3

60730329

July 2025

Delivering a better world

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AECOM: 2015-04-13

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Tables

1. Identification of Alternative Water Servicing Strategies

Having identified hydraulic capacity deficiencies in the existing system to service existing and future populations, there are six (6) alternative servicing strategies moving forward. These strategies are being screened based on the water modeling and the technical ability to provide water in the most efficient manner to existing and future customers to the 2046 planning horizon.

1.1 Alternative 1: Do Nothing – Maintain the Status Quo

Assumes no improvements will be made to the systems beyond those already planned or approved. Regular maintenance activities will continue. This alternative does not address the problem and opportunity statement, and therefore this alternative is not to be carried forward to evaluation. **Not Carried forward for additional study.**

1.2 Alternative 2: Limit Growth / Soley Optimize the Existing System with no new Infrastructure

Assumes no improvements will be made beyond those already planned or approved and includes measures to limit future growth in the service areas. While limiting growth would reduce the need for upgrades and improvements to the water service system, it does not address the problem and opportunity statement or recognize the Regional Water Supply does not have the jurisdiction to implement such measures on member Municipalities. This also contradicts Provincial Policy Statement on municipal growth and the official plan for the member Municipalities. Therefore, this alternative is not to be carried forward to evaluation. **Not Carried forward for additional study.**

1.3 Alternative 3: Water Conservation / Reduction in Use

This alternative only partially addresses the problem and opportunity statement. Water conservation and reduction in use can provide some treatment and distribution relief, but does not address future growth and would not be an adequate solution on its own. This alternative also does not recognize that the Regional Water Supply has limited jurisdictional control to implement conservation measures on member Municipalities. This strategy is encouraged as a best practice measure for community water systems. **Not Carried forward for additional study.**

1.4 Alternative 4: Water System Improvements up to Rated Capacity

This alternative addresses the problem and opportunity statement by providing the ability to accommodate future growth through upgrades (including system optimization) to the current system up to the rated capacity. The rated capacity for the system is sufficient to provide water to customers to the 2046 planning horizon. **Carried forward to be studied further and develop alternative servicing solutions.**

1.5 Alternative 5: Water System Improvements Beyond the System Rated Capacity

This alternative addresses the problem and opportunity statement by providing the ability to accommodate future growth through an expansion of the system beyond the current rated capacity. The existing system rated capacity is sufficient to provide water to customers to the 2046 planning horizon, so this alternative is not necessary at this time. **Not Carried forward for additional study.**

1.6 Alternative 6: Alternative Supply Source for Selected Current Customers/Communities

This alternative would consider finding an alternative source of water for selected customers to supplement the current supply to accommodate future growth. This would require new water supply agreements and would be difficult to implement due to jurisdictional and intra-basin complexities. **Not Carried forward for additional study.**

2. Evaluation Criteria

A detailed qualitative assessment of each alternative for **Water Servicing Strategy Number 4: Water System Improvement to the System Rated Capacity** was completed based on evaluation components and criteria. In this evaluation approach, trade-offs consider the advantages and disadvantages of each alternative to address the problem and opportunity statement with the least environmental effects and the most technical benefits which forms the rationale for the identification of the preferred alternative.

Each evaluation category was evaluated based on the following scoring system. Low impact is considered a preferred solution compared to moderate or high impact.

In order to evaluate the alternatives for Strategy Concept 4, a set of criteria were chosen which are categorized as follows in **Table 2-1.**

Table 2-1: Evaluation Criteria

Category	Criteria	Indicators
Socio-Economic: (Considerations to potential long and short term impacts to the communities the Utility services)	**Long Term Impacts to the Community in relation to the services provided by the utility**	Potential effects (Noise, Dust, Vibration, property access) related to disruptions to residences, agricultural, business, and travelling public during construction and operation. Potential effects on existing and approved / planned land uses. Degree of Property Acquisition / Easement requirements Conformance with approved local (communities the Utility services) , and provincial plans and policies.
	Supports growth and development	Ability to meet utility needs and strategic plan.
Cultural Environment (How the alternatives may impact existing Heritage Buildings or lands including potential archaeological sites.)	**Archaeology**	Potential effects to cultural heritage resources.
	Built Heritage	Potential effects to built heritage resources.
	Cultural Heritage Landscapes	Potential effects to Cultural Heritage Landscapes.
	Indigenous Communities	Potential Impacts to Treaty Lands.
Natural Environment (Potential Impacts to the Natural	**Impacts to the Aquatic Environment**	Potential for impacts to Aquatic habitat and Species at Risk

Category	Criteria	Indicators
Environment due to the construction, operation of new or updated infrastructure)	**Impacts to the Terrestrial Environment**	Potential for impacts to Terrestrial habitat and Species at Risk
	Source water Protection	Potential impacts to Groundwater Recharge Areas, Intake Protection Zones and Highly Vulnerable Aquifers in relation to current Source Water Protection Plans.
	Climate Change	Potential for impacts to climate change (greenhouse gas emissions) Potential for climate change to impact the projects and the ongoing operation (climate change resiliency)
Technical (The ability of the alternatives to meet the current and future needs of the water distribution system and how it can be integrated with the existing system.)	**Meets Future Needs**	Addresses the existing system capacity constraints. Improvements to level of service utilization of the existing and future infrastructure. Meets the long-term capacity (treatment, transmission, storage and pumping) requirements to service the projected population growth to 2046. Alignment with Regional Water Supplies current Asset Management Policy
	Drinking Water Quality	Reliability of the water system (treatment, and transmission)
	Maintenance of Service	Ability to maintain or improve water quality. Operation redundancy to improve services security and allow for safe and efficient maintenance activities.
	Constructability	Potential to minimize increases to operational and/or maintenance complexity of the system. Construction complexity including potential for utility conflicts.
	Legal Jurisdictional	Security of Utility Infrastructure Future regulatory requirements. Complexity of Approvals. Land Requirements.
Economic (Costs to construct, maintain and operate the new	**Project and Operations Changes Costs**	Capital Costs. Property Acquisition/Easement Costs (no costs / order of magnitude).

Category	Criteria	Indicators
infrastructure for the distribution system)		Operation and Maintenance Costs (Day to Day costs and Contracted Operations Services costs). Life Cycle Costs

3. Water Servicing Strategy 4 Alternatives

3.1 Alternative 4A – Optimizing and upgrading the existing system with new infrastructure

This alternative would optimize and upgrade the existing system to the current rated capacity through various system improvements and new infrastructure.

3.2 Alternative 4B – New Water Treatment Plant

This alternative would replace the existing Water Treatment Plant with a new plant with a rated capacity that matches the existing plant.

4. Evaluation of Strategy 4 Alternatives

A full evaluation matrix for Strategy 4 alternative is provided in **Table 4-1**. Based on the criteria and methodology applied as part of the evaluation process, the recommended alternative is **Alternative 4A – Optimizing and Upgrading the Existing System**.

A summary for the rationale for this recommendation includes:

- Moderate impacts to Natural Heritage
- Moderate Impacts to/from Climate Change
- Meets the need of current and potential new customers.
- Moderate construction complexity.
- Straight forward permitting and approvals
- Moderate capital cost.

Table 4-1 – Lake Huron Primary Water Supply System - Evaluation of Water Servicing Strategy 4 Alternatives

Category	Criteria	Alternative 4A Optimize and Upgrade the Existing System (Treatment, Pumping, Storage, Transmission) *Utilize existing infrastructure with potential operational changes and new infrastructure upgrades.*	Alternative 4B New Water Treatment Plant *Replace existing water treatment plant with new plant constructed adjacent to the existing plant within Port Blake Park*
Socio Economic (Considerations to potential long and short term impacts the communities the Utility Services)	**Long Term Impacts to the Community in relation to the utility.**	Low Impacts to the community in relation to operations.	Moderate to high impacts to the community in relation to operations and construction.
		Moderate Impacts, no property acquisition is anticipated however potential impacts to recreation as new infrastructure has the potential to be constructed in Port Blake Park.	High Impact, no property acquisition is anticipated however there would be impacts to recreation as the new plant would be constructed in Port Blake Park.
	Supports growth and development	Low Impact, supports growth and future development within the existing customer service area and potential new customers based on average day demand conditions.	Low to Moderate Impact, supports growth and future development within the existing customer service area and potential new customers.
Cultural Environment (How the alternatives may impact existing Heritage Buildings or lands including potential archaeological sites.)	**Archaeology**	Potential Impacts to Archaeology. Stage 1 AA May be Required if upgrades are constructed in Port Blake Park outside of the fence line of the existing plant.	Potential Impacts to Archaeology. Stage 1 AA required.
	Built Heritage	No Impacts to Built Heritage.	Potential Impacts to Built Heritage. Cultural Heritage Evaluation Report will be required.
	Cultural Heritage Landscapes	No Impacts to Cultural Heritage Landscapes.	Potential Impacts to Cultural Heritage Landscapes. Cultural Heritage Evaluation Report will be required.
	Indigenous Communities	No or minimal Impacts to Indigenous Communities. Continued consultation required.	No or minimal Impacts to Indigenous Communities. Continued consultation required.
Natural Heritage (Potential Impacts to the Natural Environment due to the construction, operation of new or updated infrastructure)	**Impacts to the Aquatic Environment**	Low to moderate Impacts to the aquatic environment	Moderate to High impacts to the aquatic environment. New Greenfield sites may have Species at Risk and other aquatic habitats.
	Impacts to the Terrestrial Environment	Low to Moderate Impacts to the terrestrial environment.	Moderate to High impacts to the terrestrial environment. Greenfield site may have Species at Risk and other terrestrial habitats
	Source water Protection	Potential to be in Groundwater Recharge areas.	Potential to be in Groundwater Recharge areas.
		All alternatives have to potential to be within Low Threat designated vulnerable areas.	All alternatives have to potential to be within Low Threat designated vulnerable areas.

Table 4-1 – Lake Huron Primary Water Supply System - Evaluation of Water Servicing Strategy 4 Alternatives

Category	Criteria	Alternative 4A Optimize and Upgrade the Existing System (Treatment, Pumping, Storage, Transmission) *Utilize existing infrastructure with potential operational changes and new infrastructure upgrades.*	Alternative 4B New Water Treatment Plant *Replace existing water treatment plant with new plant constructed adjacent to the existing plant within Port Blake Park*
	Climate Change	The existing plant is partially within an intake protection zone. Lowest impact to Climate change due to limited construction activities. Less equipment required for optimization.	The new plant would be partially within an intake protection zone. High Climate change impacts due to construction activities.
Technical (The ability of the alternatives to meet the current and future needs of the water distribution system and how it can be integrated with the existing system.)	**Meets Future Needs** **Drinking Water Quality** **Maintenance of Service** **Constructability** **Legal Jurisdictional**	Low Impact, meets current and future needs of the existing and future customers for average day demand conditions. No change to potable water quality. Low Impact, No change to the maintenance of the system. Low to moderate Impacts to construct new infrastructure. Low Impact. Fewer and more straightforward permitting and approvals.	Low Impact, Meets the current and future needs of the existing and future customers. No change to potable water quality. Moderate to High Impact. More complex system maintenance incorporating a new Water treatment plant. Moderate to High Impact, The new plant would be more complex to design and construct than the optimizing and upgrading. Moderate Impact. The new treatment plant may require more stringent permitting and approvals.
Economic and Financial (Costs to construct, maintain and operate the new infrastructure for the distribution system)	**Project and Operations Changes Costs**	Moderate impact to Capital Costs. Low Operation and Maintenance Costs. No Land Acquisition Costs.	Moderate to High Impacts to Capital Costs. Low to Moderate Operation and maintenance costs. No Land acquisition costs.
		RECOMMENDED	**NOT RECOMMENDED**

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Appendix B.4

Potential New Customers

Water Demand Forecast of Potential New Customers

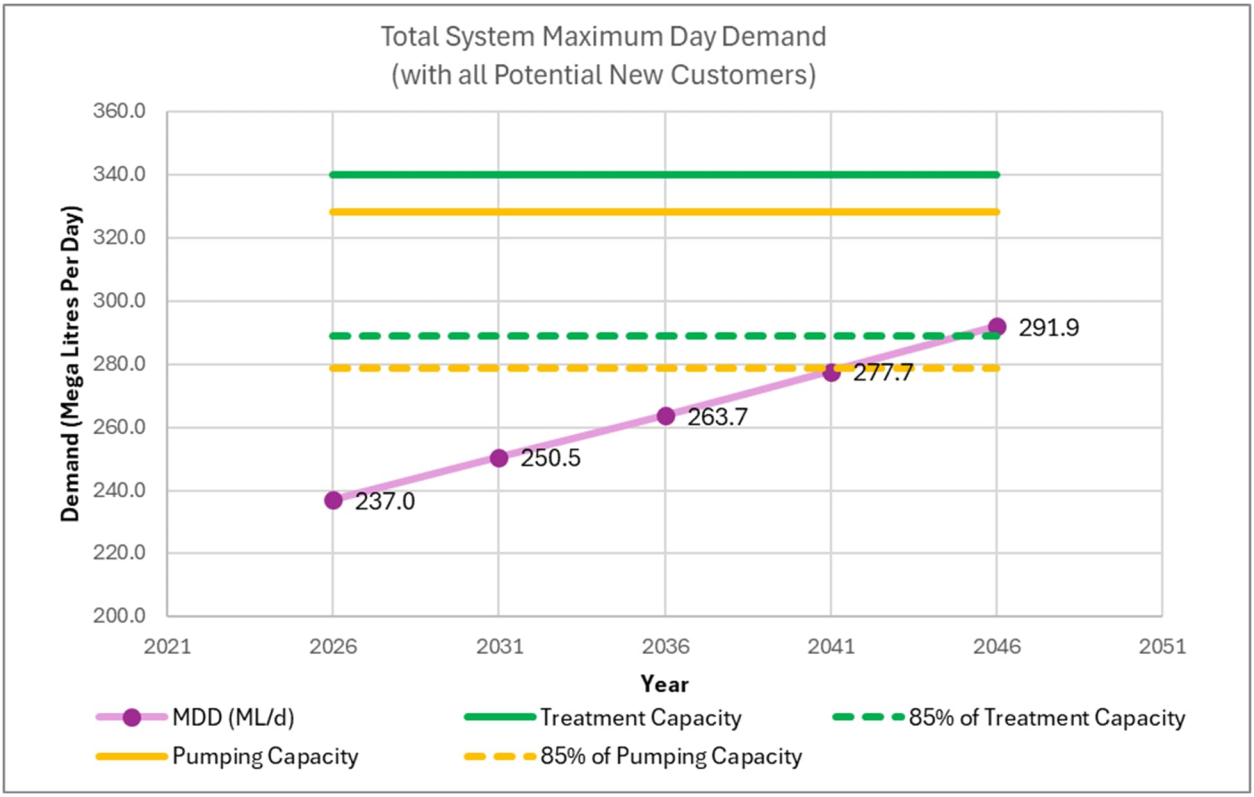
A survey was sent out to potential new customers. Some expressed their interest in obtaining water supply from the Lake Huron Primary Water Supply System. The projected water demands of these potential new customers are summarized in **Table 1**. These values were used in the high-level servicing evaluation in subsequent section. The projected water demands for these communities should be reviewed in the next water master plan study.

Table 1 - Summary of Maximum Day Demand of Lake Huron Primary Water Supply System after Considering Potential New Customers:

Potential New Customers	2026 Maximum Day Demand (Million Litres per day)	2031 Maximum Day Demand (Million Litres per day)	2036 Maximum Day Demand (Million Litres per day)	2041 Maximum Day Demand (Million Litres per day)	2046 Maximum Day Demand (Million Litres per day)
Oxford	9.75	10.35	10.92	11.64	12.39
Munsee Delaware	0.52	0.58	0.64	0.71	0.79
Villages of Dorchester and Thorndale (Within the Municipality of Thames Centre)	16.85	17.11	17.63	18.14	18.79
Lake Huron Primary Water Supply System	209.8	222.4	234.6	247.3	259.9
Total Demand	237.0	250.5	263.7	277.7	291.9

Furthermore, the projected Maximum Day Demand of Lake Huron Primary Water Supply System by considering all the projected Maximum Day Demand of the potential new customers is shown in **Figure 1.**

Figure 1-Total System Maximum Day Demand of Lake Huron Primary Water Supply System with All Potential New Servicing Communities



It is noted that Lake Huron Water Treatment Plant rated treatment capacity (340 ML/d) will remain above the total Maximum Day Demand in 2046 after considering all the projected Maximum Day Demand of the potential new customers. For Lake Huron High Lift Pumping Station, the total pumping capacity with 3 pumps in operation is 328 ML/d, which is above the 22019.9 ML/d. However, both the treatment capacity of Lake Huron Water Treatment Plant and pumping capacity of Lake Huron High Lift Pumping Station will be above the 85% trigger by 2046. If all these potential new servicing communities will be serviced by Lake Huron Primary Water Supply System and the projected water demands are likely to realize, the planning for upgrading Lake Huron Water Treatment Plant and Lake Huron High Lift Pumping Station should be considered in 2046 respectively.

The capacity implication of incorporating Adelaide-Metcalfe and Southwest Middlesex into LHPWSS Lake Huron Primary Water Supply System should be reviewed in the next master plan study when the projected water demand of these two potential new customers is made available.