Kawartha Lakes

Jump In

PRESENTATION TO COUNCIL

Water and Wastewater Servicing and Capacity Master Plan Update

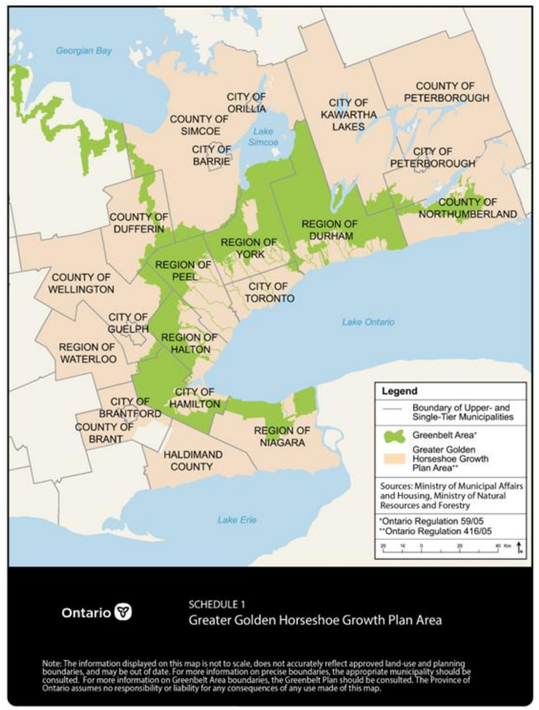
Tuesday December 10, 2024

TYLin

Photo: Lindsay Water Treatment Plant

Study Background and Objective

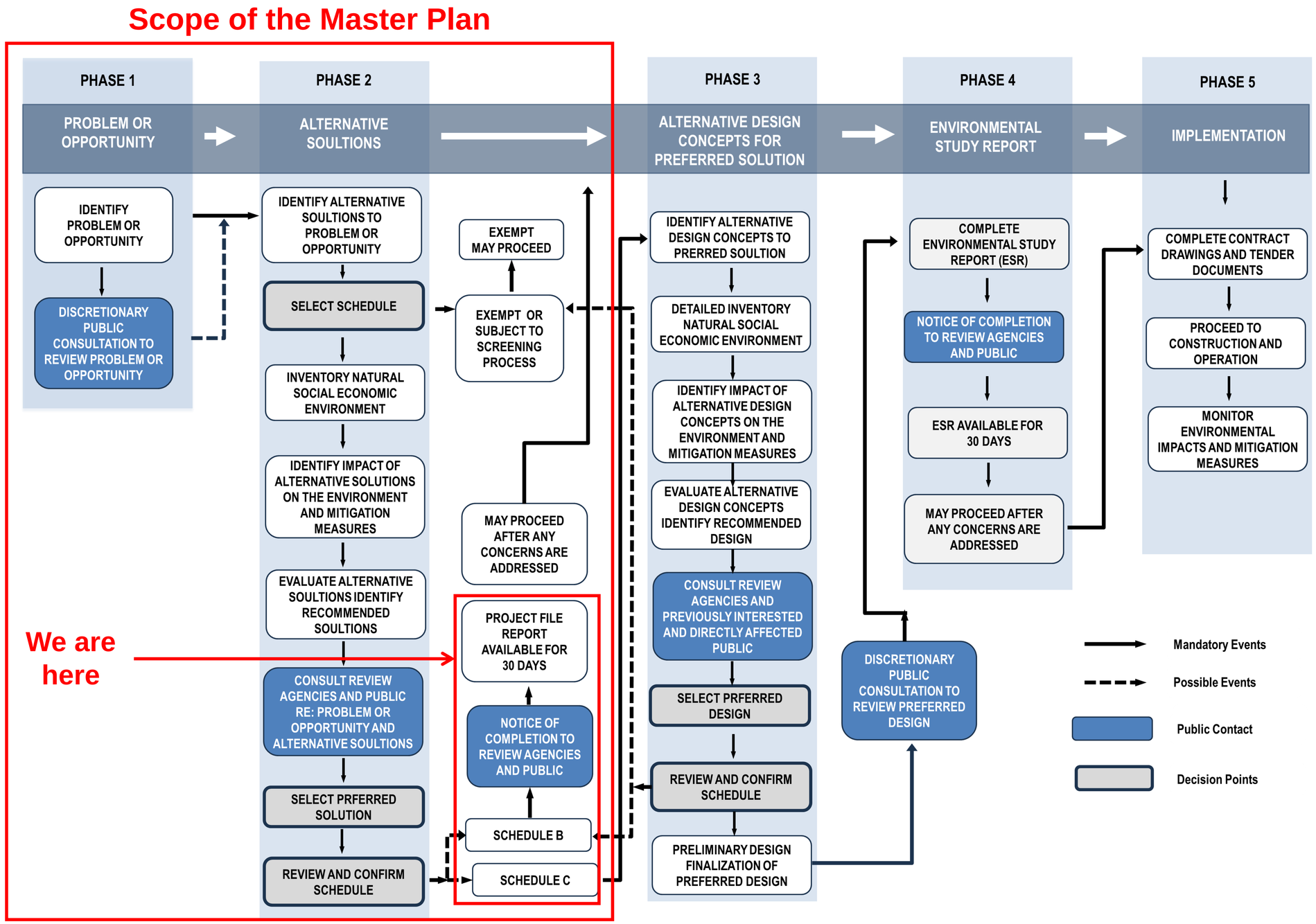
The City has experienced a significant increase in growth over the recent years, which is driving demands for improvements and upgrades to its water and wastewater infrastructure.



- The City is forecasted to grow to **130,000 people and 40,600 jobs by 2051**. This is reflected in the City's Growth Management Strategy (GMS), and is based on Provincial guidance (*A Place to Grow*, 2020).
- Council adopted the Province's housing target for Kawartha Lakes of 6,500 newly constructed housing units by the end of 2031.

The Objective of this Master Plan is to ensure that approved growth can be accommodated without affecting the level-of-service to existing residents and businesses.

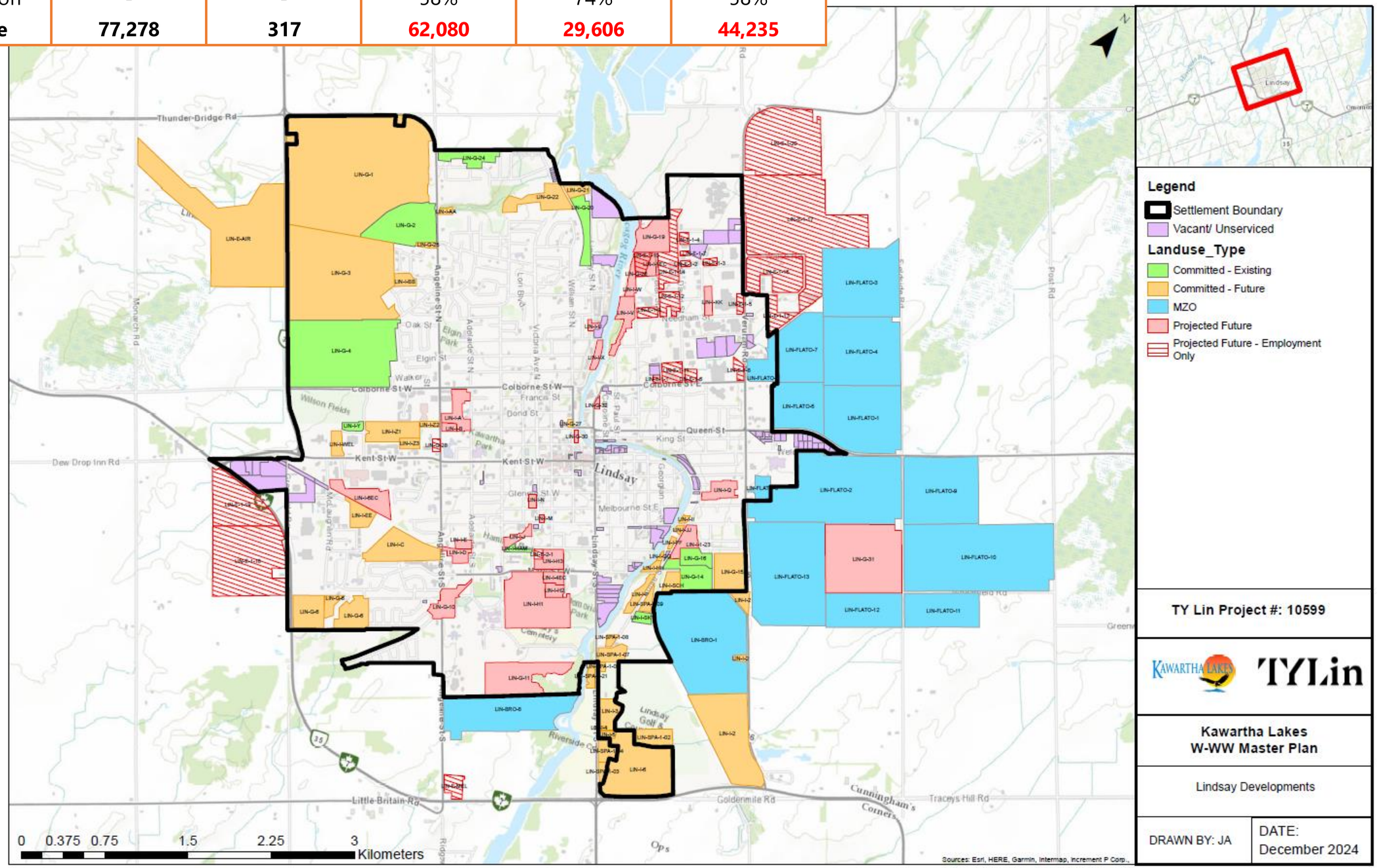
Environmental Assessment Process



Notes About Growth and Infrastructure Plans

- The **Growth Management Strategy (GMS)** process is a parallel study to this Water/Wastewater Master Plan Update
- The growth forecasts presented on the next slides reflect the current forecasts.
- These plans (the GMS and the W/WW Master Plan) are updated regularly, so that adjustments can be made as required.
- Infrastructure plans tend to be slightly conservative, so that recommended infrastructure can accommodate a degree of evolution in the various plans.

LINDSAY		Population	Employment Area [ha]	Water Treatment Capacity, MDD [m3/d]	Water Storage Capacity [m3]	Wastewater Treatment Capacity, ADF [m3/d]
	Existing	23,046	153	22,730	11,650	24,500
	Utilization	-	-	58%	74%	58%
	Future	**77,278**	**317**	**62,080**	**29,606**	**44,235**



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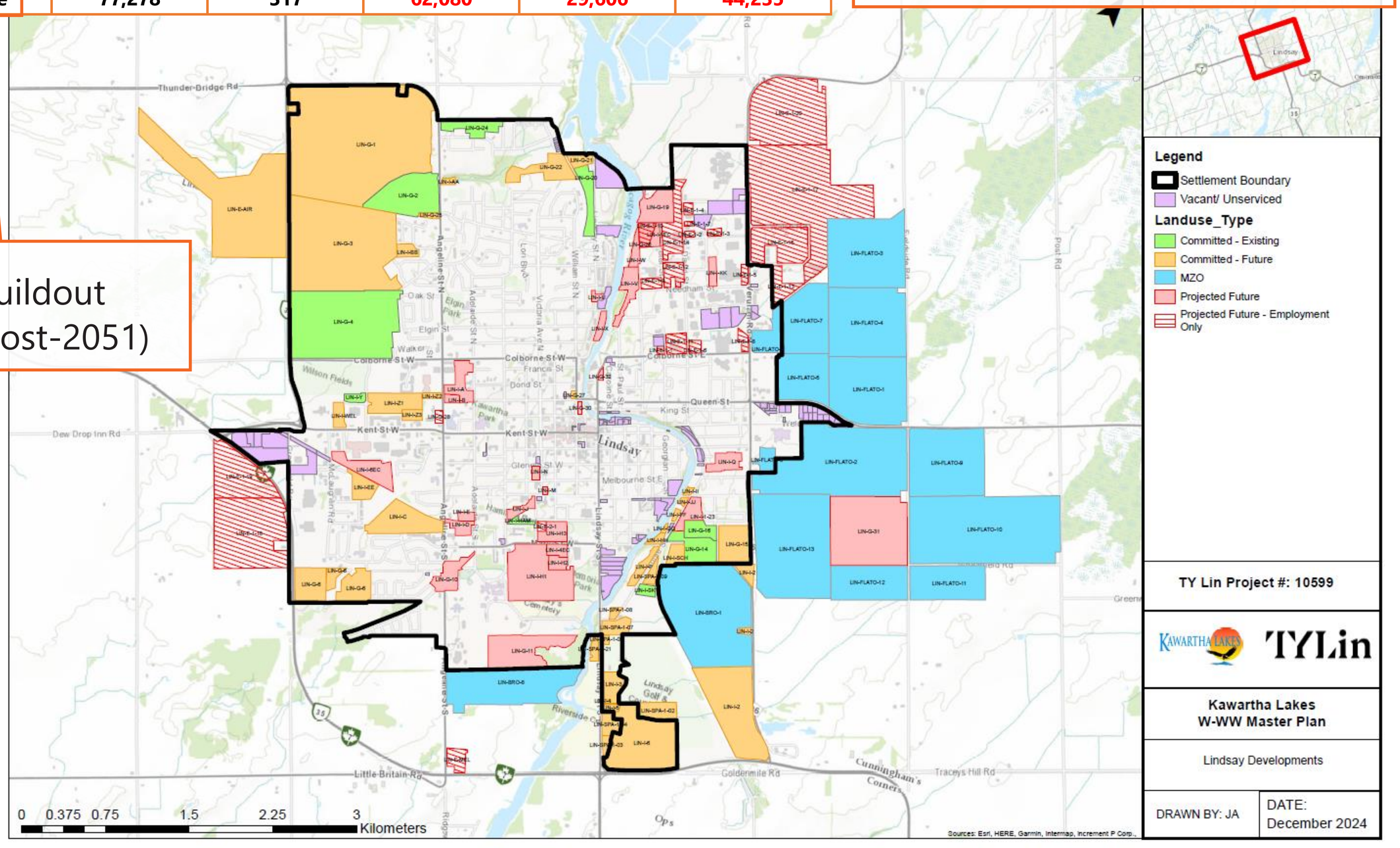
MDD=Maximum Day Demand
ADF=Average Day Flow

"Future"=Buildout
(could be post-2051)



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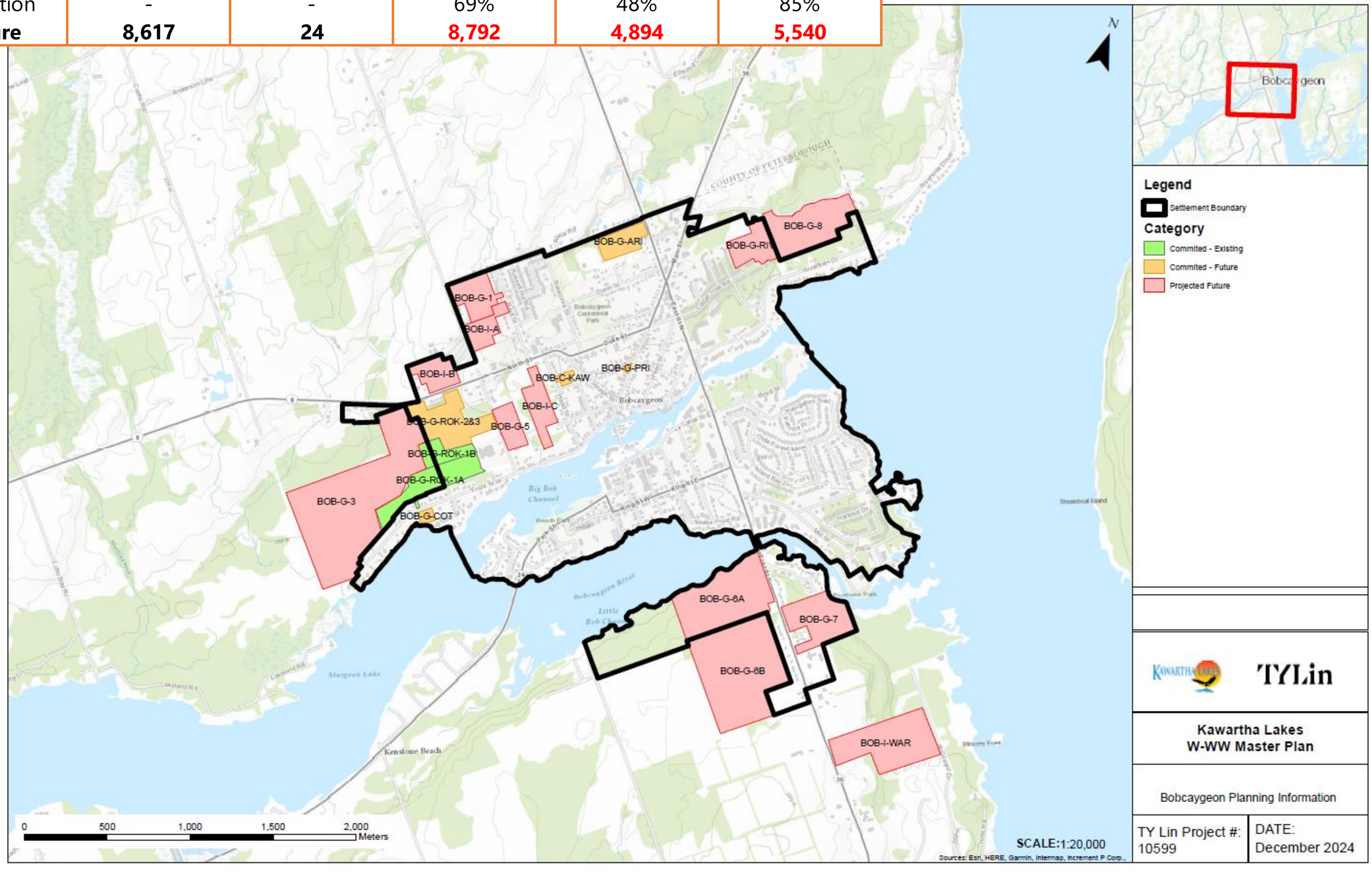
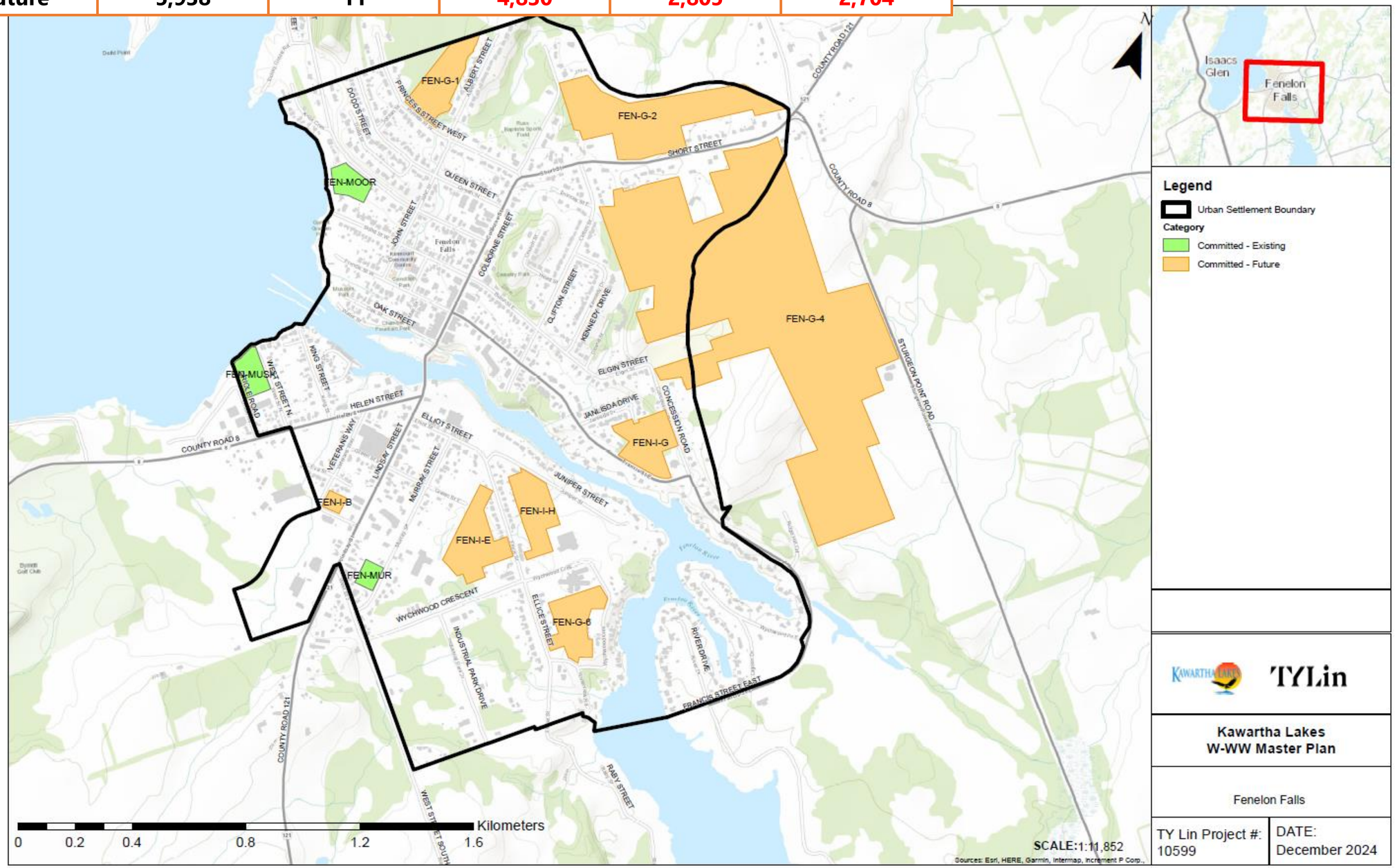
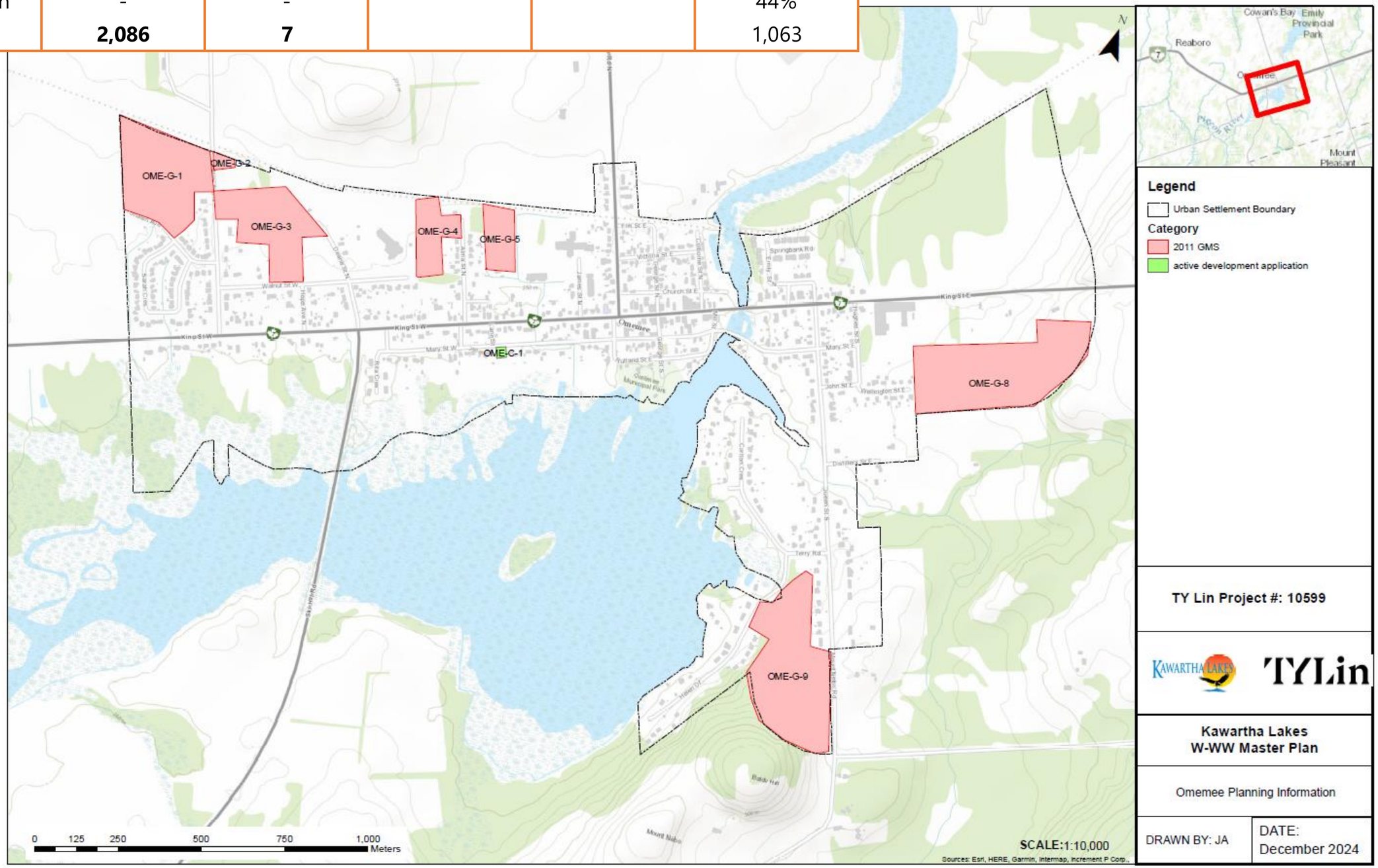
BOBCAYGEON		Population	Employment Area [ha]	Water Treatment Capacity, MDD [m3/d]	Water Storage Capacity [m3]	Wastewater Treatment Capacity, ADF [m3/d]
	Existing	3,595	4	5,184	4,400	3,055
	Utilization	-	-	69%	48%	85%
	Future	**8,617**	**24**	**8,792**	**4,894**	**5,540**



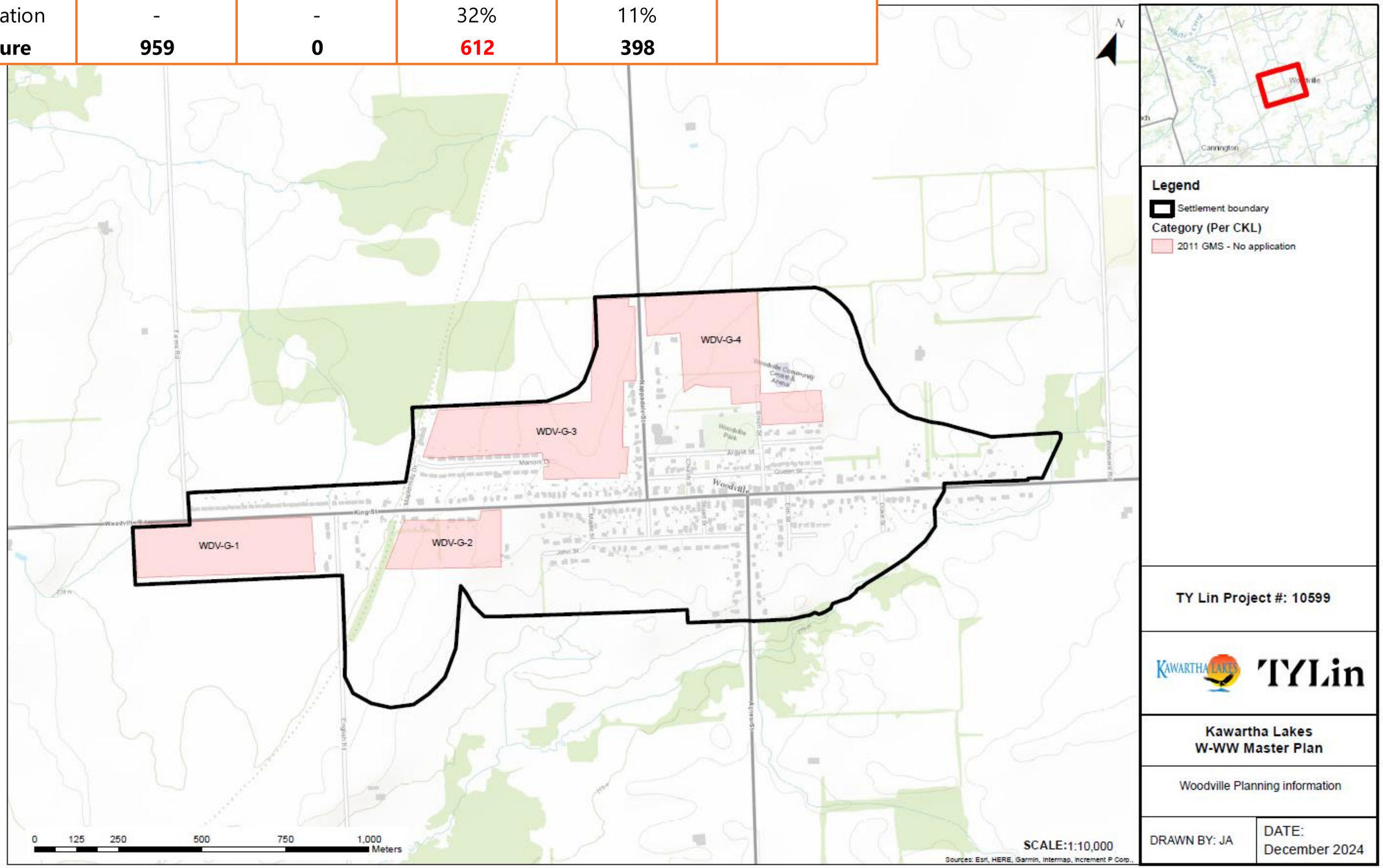
FENELON FALLS		Population	Employment Area [ha]	Water Treatment Capacity, MDD [m3/d]	Water Storage Capacity [m3]	Wastewater Treatment Capacity, ADF [m3/d]
	Existing	2,502	11	4,100	1,015	1,800
	Utilization	-	-	41%	136%	64%
	Future	**5,938**	**11**	**4,830**	**2,805**	**2,704**



OMEMEE		Population	Employment Area [ha]			Wastewater Treatment Capacity, ADF [m3/d]
	Existing	1,035	7			1,353
	Utilization	-	-			44%
	Future	**2,086**	**7**			1,063



WOODVILLE		Population	Employment Area [ha]	Water Treatment Capacity, MDD [m3/d]	Water Storage Capacity [m3]	
	Existing	619	0	588	1,160	
	Utilization	-	-	32%	11%	
	Future	**959**	**0**	**612**	**398**	



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Growth Forecasts – Other Communities

Water System	Forecasted Population Growth	Additional MDD Water Servicing Need [m^3/d]	Reserve Treatment Capacity [m^3/day]	Treatment Capacity Available?
Birch Point	0	0	162	Yes
Canadiana Shores	0	0	716	Yes
Janetville	186	209	207	No ( )
Kings Bay	106	119	174	Yes
Kinmount	329	370	252	No ( )
Manilla	150	169	71	No ( )
Manorview	0	0	235	Yes
Mariposa	0	0	5	Yes
Norland	12	14	78	Yes
Omemee	2,686	3,022	369	No ( )
Pinewood	366	412	316	No ( )
Pleasant Point	0	0	345	Yes
Sonya	0	0	92	Yes
Southview Estates	0	0	341	Yes
Victoria Place	0	0	33	Yes

Wastewater System	Forecasted Population Growth	Additional ADF Wastewater Servicing Need [m^3/d]	Reserve Treatment Capacity [m^3/day]	Treatment Capacity Available?
Coboconk	16	7	10	Limited ( )
King's Bay	106	48	87	Yes ( )

Treatment Considerations

Janetville: Water Plant expansion appears warranted

Kinmount: Water Plant expansion appears warranted

Manilla: Water Plant expansion appears warranted

Omemee: Local neighbourhood WTP; Undertake detailed water servicing review for new developments.

Pinewood: Local neighbourhood WTP; Undertake detailed water servicing review for new developments.

Coboconk: No land available for expansion. Likely not warranted.

King's Bay: Currently, low flows but high loadings. Detailed servicing assessment is recommended.

Level of Service Objectives

- Development leads to increased water demands and wastewater flows, which may result in low pressure or fire flow in certain areas, or exceed the existing treatment plant capacities.
- **The objective of this Master Plan Update** will be to study the impact of the planned growth, and identify required solutions to maintain the level of service.

Water Systems

Water Treatment/Storage:

Ensure that water supply needs can be provided, with planning for upgrades when plant flows reach 80% of Capacity

System Pressures

Operating pressures between 350 and 550 kPa (50 and 80 psi)

Fire Flow

Under fire flow conditions, the pressure should not drop below 140 kPa (20 psi) at any point in the water system

Wastewater Systems

Wastewater Treatment:

Ensure that wastewater treatment needs can be provided, with planning for upgrades when plant flows reach 80% of Capacity

Design Flows

The sanitary sewers should not surcharge under Design Flow Conditions

System Surcharge (Policy Under Development)

Under Severe Storm Events, water levels in sanitary sewers shall be below basement levels

Master Plan Objectives

- **The objective of this Master Plan Update** will be to study the impact of the planned growth, and identify the following:

1. Risks to the Level-of-Service for existing residents and businesses

2. Facility and system upgrades which need to be implemented to support the forecasted growth, and minimize the risks to the level-of-service

3. Capital Planning investments to assist the City in financing these upgrades, and supporting growth

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Servicing Assumptions

1. Treatment Upgrades:
   - The Preferred Alternatives (upgrade existing treatment plant; build a second treatment plant, replace existing plant with a new larger facility) will not be confirmed through this process
     - This Study ***informs*** subsequent "Schedule C" Class Environmental Assessments
2. Storage and Pumping Stations:
   - The need for these facility upgrades has been identified
3. Internal Development Servicing:
   - We have identified assumed connection points based on the following:
     - Availability of existing servicing adjacent to the development
     - Preliminary Servicing Plans (where available)
     - Topography and existing streets (where Servicing Plans are not Available)
   - These assumptions are to be confirmed, and internal systems will be designed by the owners to meet the Master Servicing Plan.

Design Flow/Demand Basis

Existing Serviced Areas are based on Historical Data (Plant Flow Records and/or Sewer Flow Monitoring Data)

- The hydraulic models have been calibrated

Future Development is considered at the City Design Standard

- Average day water demand/wastewater flow: 450 Lpcd;
- Extraneous flow: 0.26 L/s/ha
- Appropriate peaking factors

Consultation Process and Activities

1. **Notice of Commencement:**
   – Published June 8, 2023
2. **Project Website:**
   – Established to facilitate ongoing consultation
3. **Public Information Centre #1:**
   – Held in Lindsay on October 18, 2023
   – Presentation was live-broadcasted, with remote participation
4. **Public Information Centre #2:**
   – Held in Fenelon Falls on June 19, 2024; in Lindsay on June 20, 2024
   – Lindsay presentation was live-broadcasted, with remote participation
5. **First Nations Consultation:**
   – All local First Nations were contacted
   – Project Team met with Alderville First Nation on February 29, 2024

Technical Studies Supporting Master Plan

1. **Background Information and Needs Review:**
   – Internal review of technical information and studies
2. **Field Investigation Recommendations:**
   – Identified the need for additional wastewater flow monitoring
3. **Wastewater Flow Monitoring Report:**
   – 22 Flow Monitoring Locations (12 in Lindsay; 7 in Bobcaygeon; 3 in Fenelon Falls)
   – Supported model development and calibration
4. **System Capacity and Condition Assessment:**
   – Documents the capacities of existing facilities
5. **Services Demand Assessment:**
   – Establishes the servicing needs of the 2051 community populations

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Evaluation of Alternatives

- The possible alternatives are as follows:
  1. **Do Nothing:**
     - Allow the growth to occur, but do not implement upgrades
     - **The systems will not have sufficient capacity.**
  2. **Limit Community Growth:**
     - Establish the ultimate population can be supported by infrastructure, and do not allow the communities to grow beyond that population
     - **This does not fulfill the growth objectives established through *Places to Grow* and the *Growth Management Strategy***
  3. **Water Conservation and Inflow Reduction**
     - If we can reduce water demands and wastewater flows, the existing pipes can accommodate some increases in serviced population.
     - **This is always an objective, but rarely a complete solution**
  4. **Expand the Facilities and Services**
     - **Identify improvements required to Treatment, Pumping and Storage, Pipes**
     - Continue to investigate options to reduce servicing requirements

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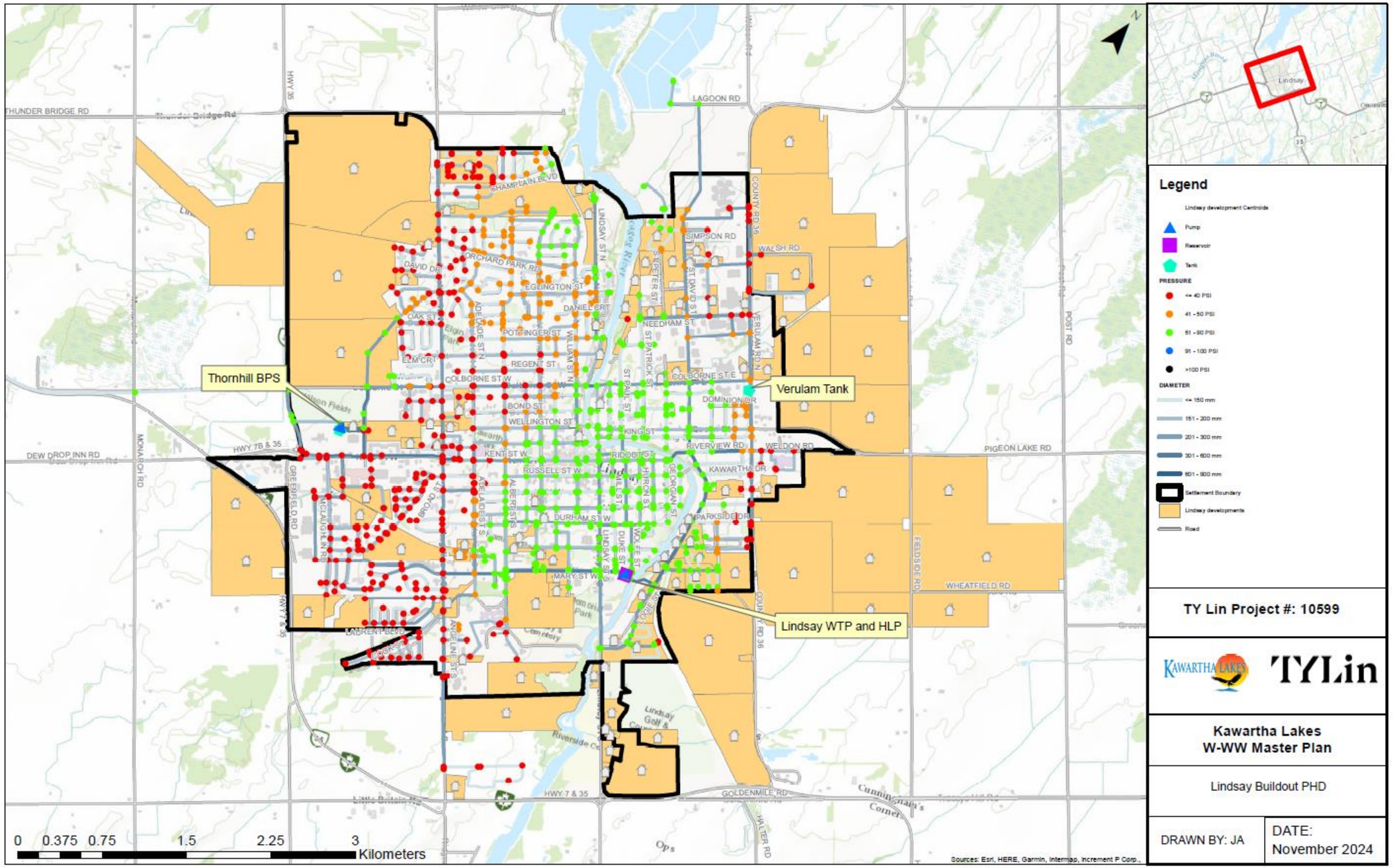
Evaluation of Alternatives

Evaluation Criteria	Alternative 1: Do Nothing	Alternative 2: Limit Community Growth	Alternative 3: Water Conservation	Alternative 4: Expand & Enhance Municipal Systems
Technical Merit	This would result in the desired level-of-service not being provided	Does not permit the Township to achieve the Regional growth targets.	This would maximise the use of the existing built capacity, but does not provide for servicing of greenfield development.	Completely addresses the growth envisioned in the Growth Management Strategy through intensification and expansions to urban boundaries.
Natural	No impact, but does not offer improvements to existing conditions.	No impact, but does not offer improvements to existing conditions.	No impact, and offers improvements to existing conditions.	Some impact as a result of construction works including creek crossings. Most construction will occur in road right-of-ways and the use of trenchless technologies will largely mitigate concerns. Offers valuable improvements to existing conditions.
Socio-Economic	Could result in basement flooding associated with surcharged sanitary sewers. Minimum pressure requirements or fire flow availability might not meet the desired level-of-service	This option does not meet the growth and density objectives of the City's growth forecast.	It can be difficult to encourage residents/businesses to conserve to the degree required to ensure success. Cannot guarantee long-term compliance. Greenfield development not serviced.	Modest impacts during construction, most of which will occur in outlying areas. Completely satisfies the City's growth forecast.
Financial	No impact.	Minor financial investment required to address existing capacity constraints.	Modest financial investment required. If not successful, would require additional investment in implementing another solution.	Significant financial investment required. Infrastructure largely funded by development.
OVERALL	**Cannot satisfy City's Servicing Policies.**	**Cannot satisfy growth forecast.**	**Cannot satisfy growth forecast.**	**Optimal balance of benefits and impacts across all evaluation criteria while fully satisfying the City's growth forecasts.**

Lindsay - Water Constraints [Peak Hour]



TY Lin Project #: 10599

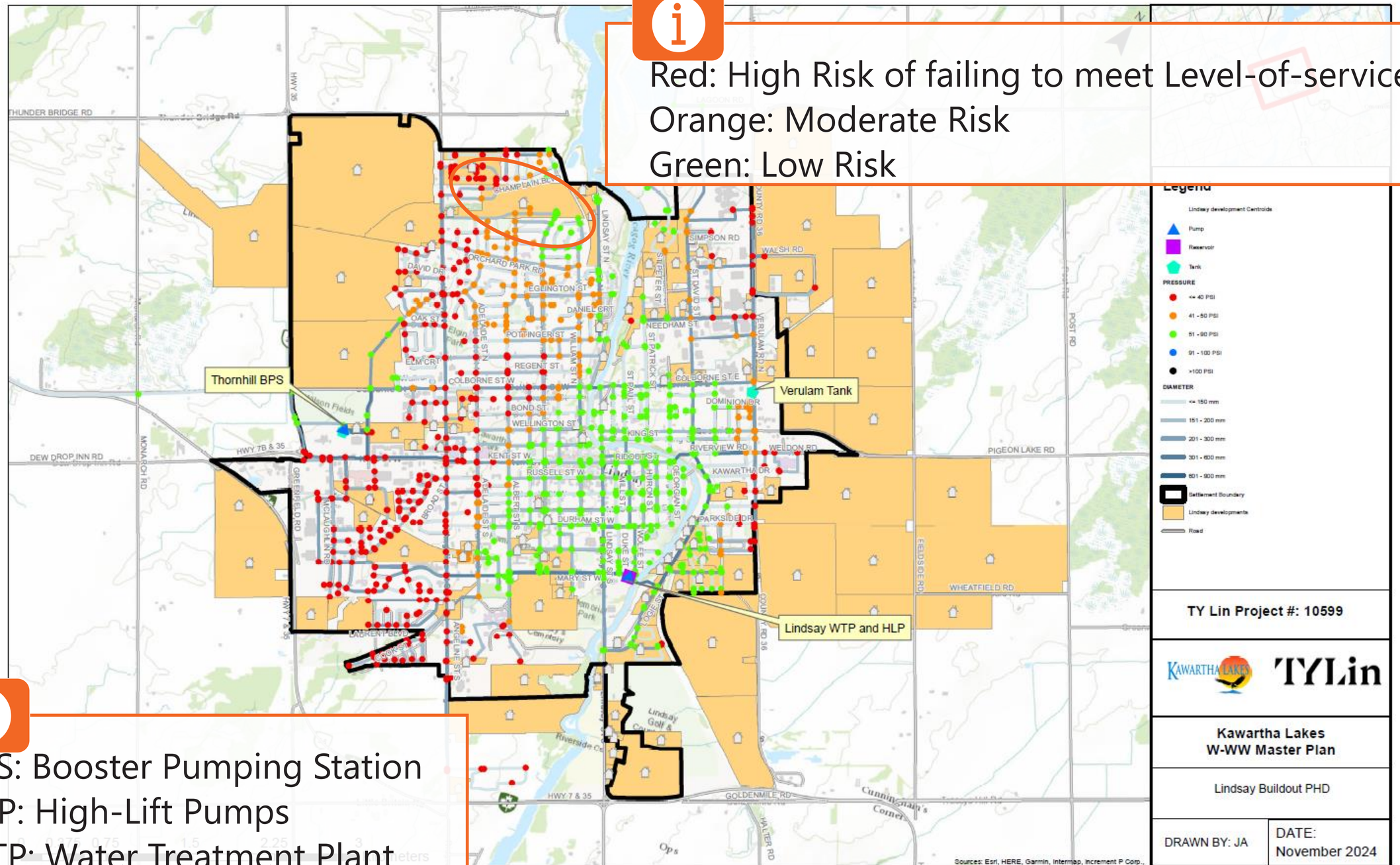
Kawartha Lakes
W-WW Master Plan

Lindsay Buildout PHD

DRAWN BY: JA

DATE:
November 2024

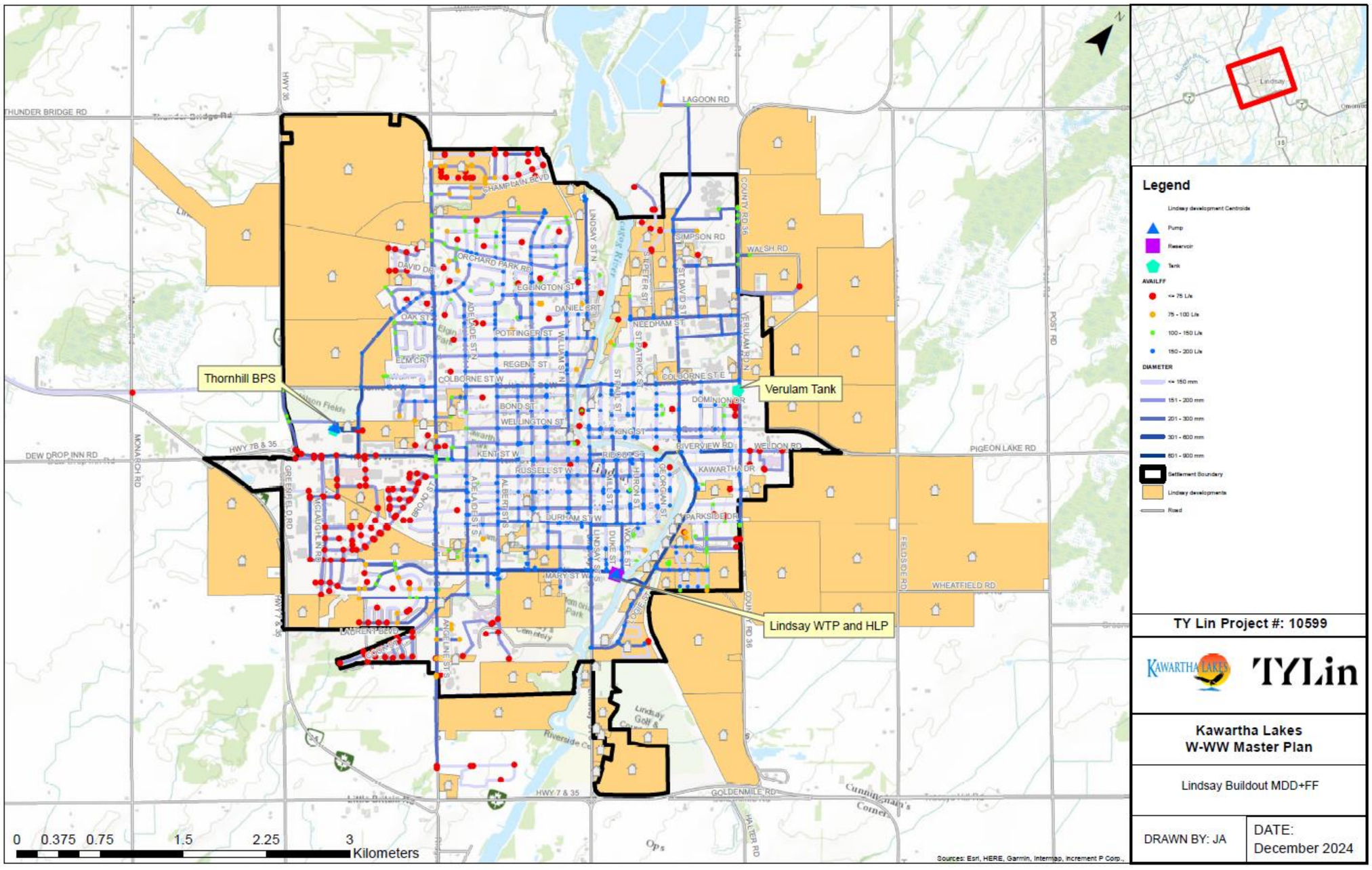
Lindsay - Water Constraints [Peak Hour]



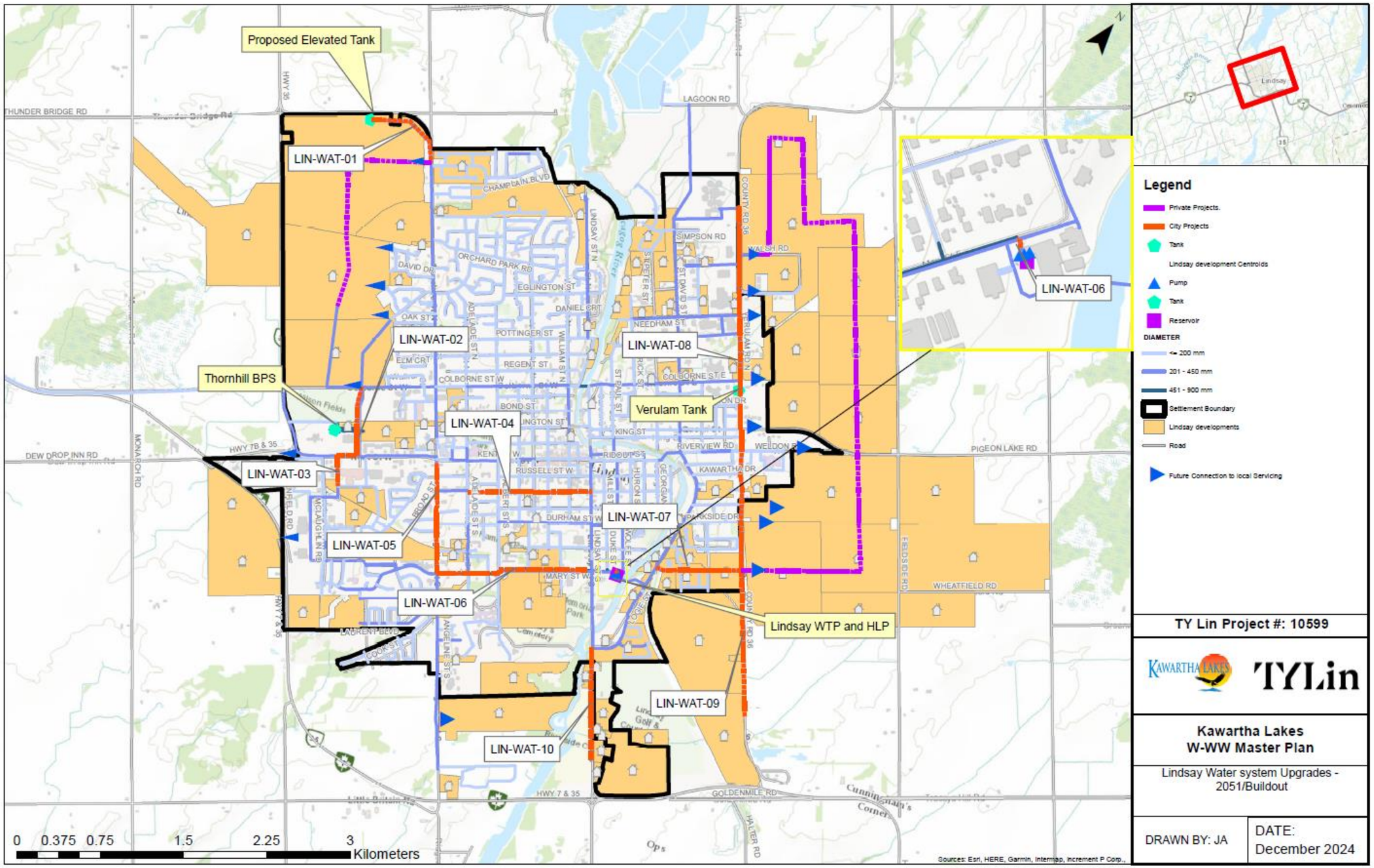
Red: High Risk of failing to meet Level-of-service
Orange: Moderate Risk
Green: Low Risk

BPS: Booster Pumping Station
HLP: High-Lift Pumps
WTP: Water Treatment Plant

Lindsay - Water Constraints [Max Day+Fire]



Lindsay: Recommended Water Projects



TY Lin Project #: 10599

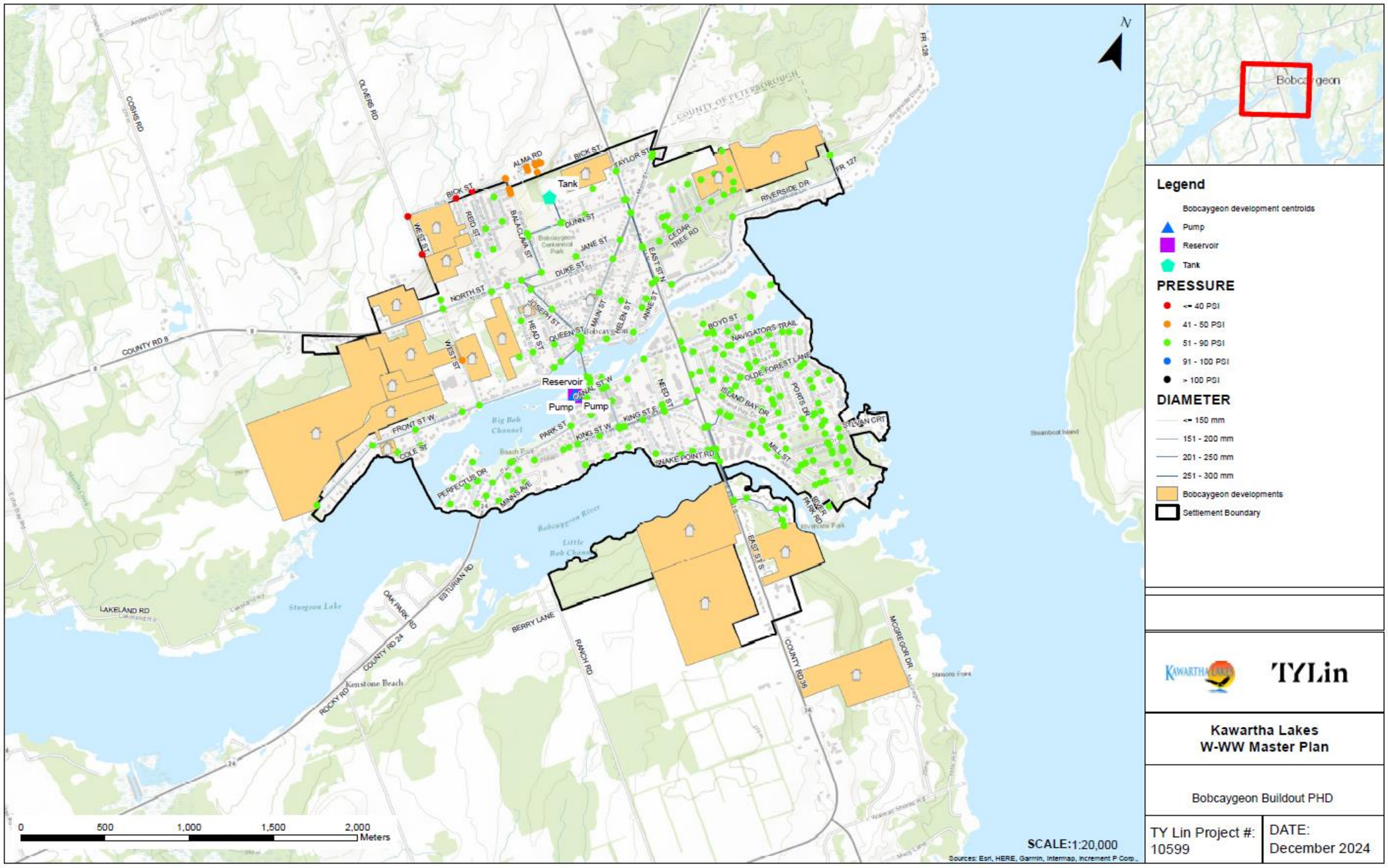
Kawartha Lakes
W-WW Master Plan

Lindsay Water system Upgrades - 2051/Buildout

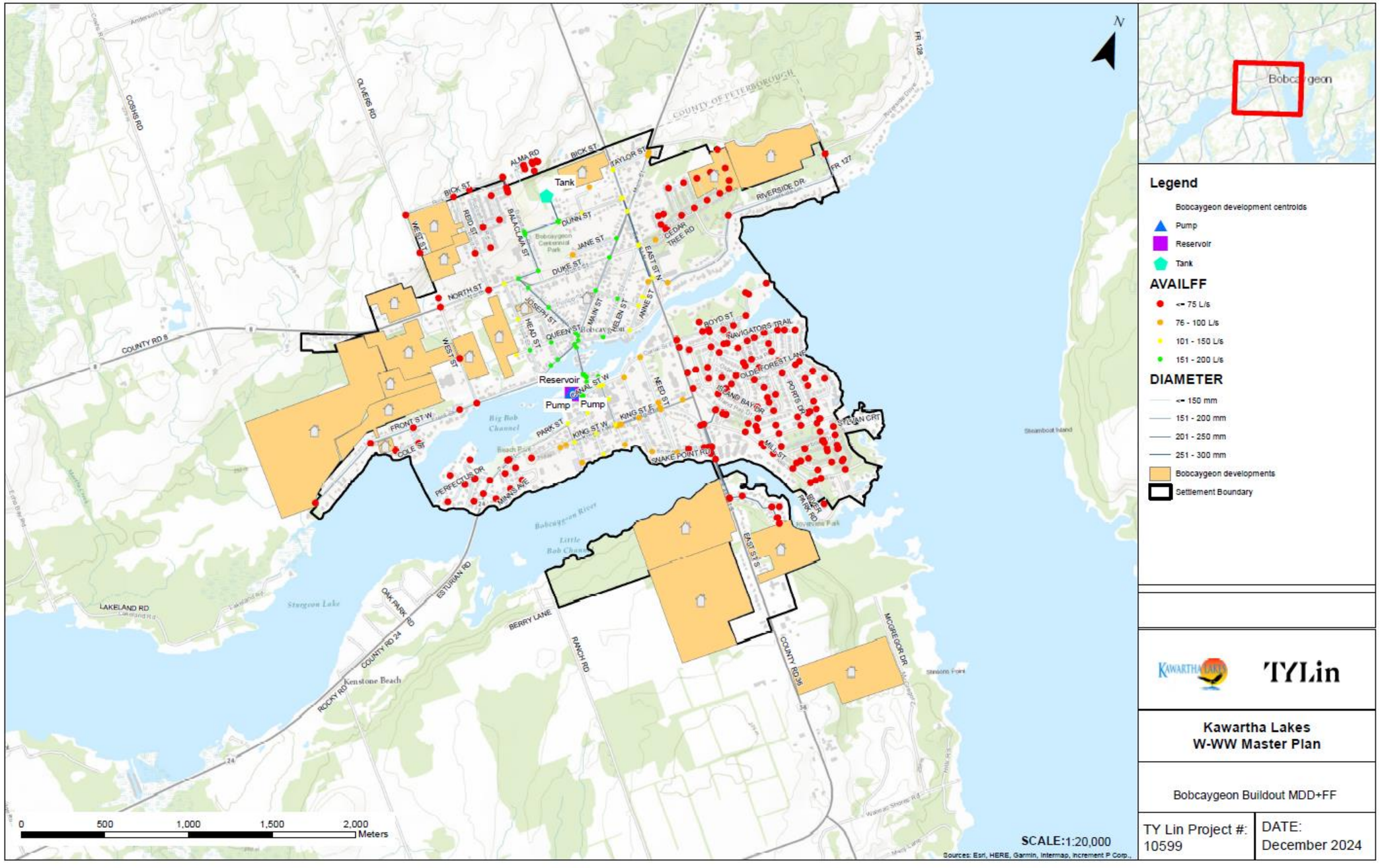
DRAWN BY: JA

DATE: December 2024

Bobcaygeon - Water Constraints [Peak Hour]



Bobcaygeon-Water Constraints [Max Day + Fire]



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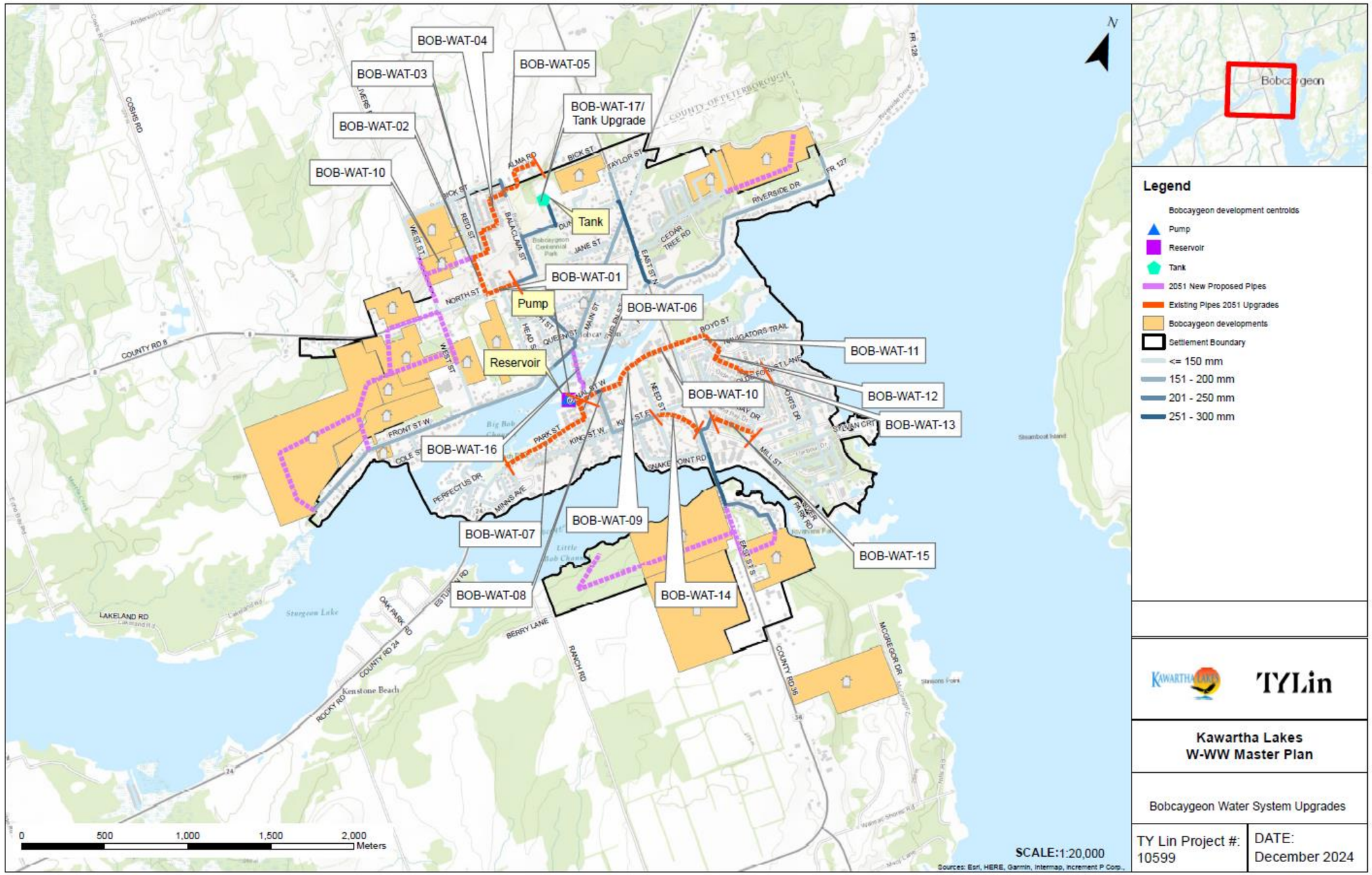
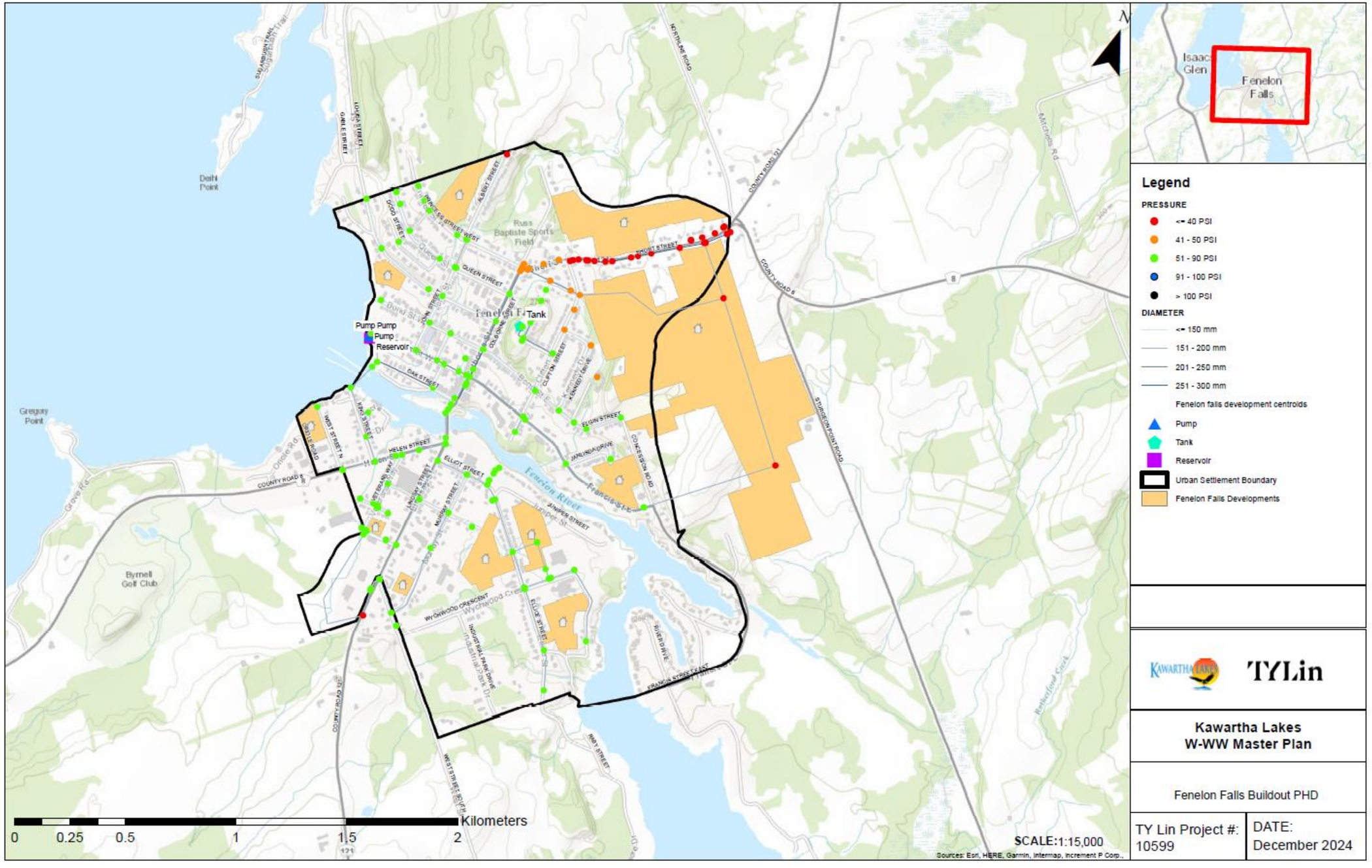
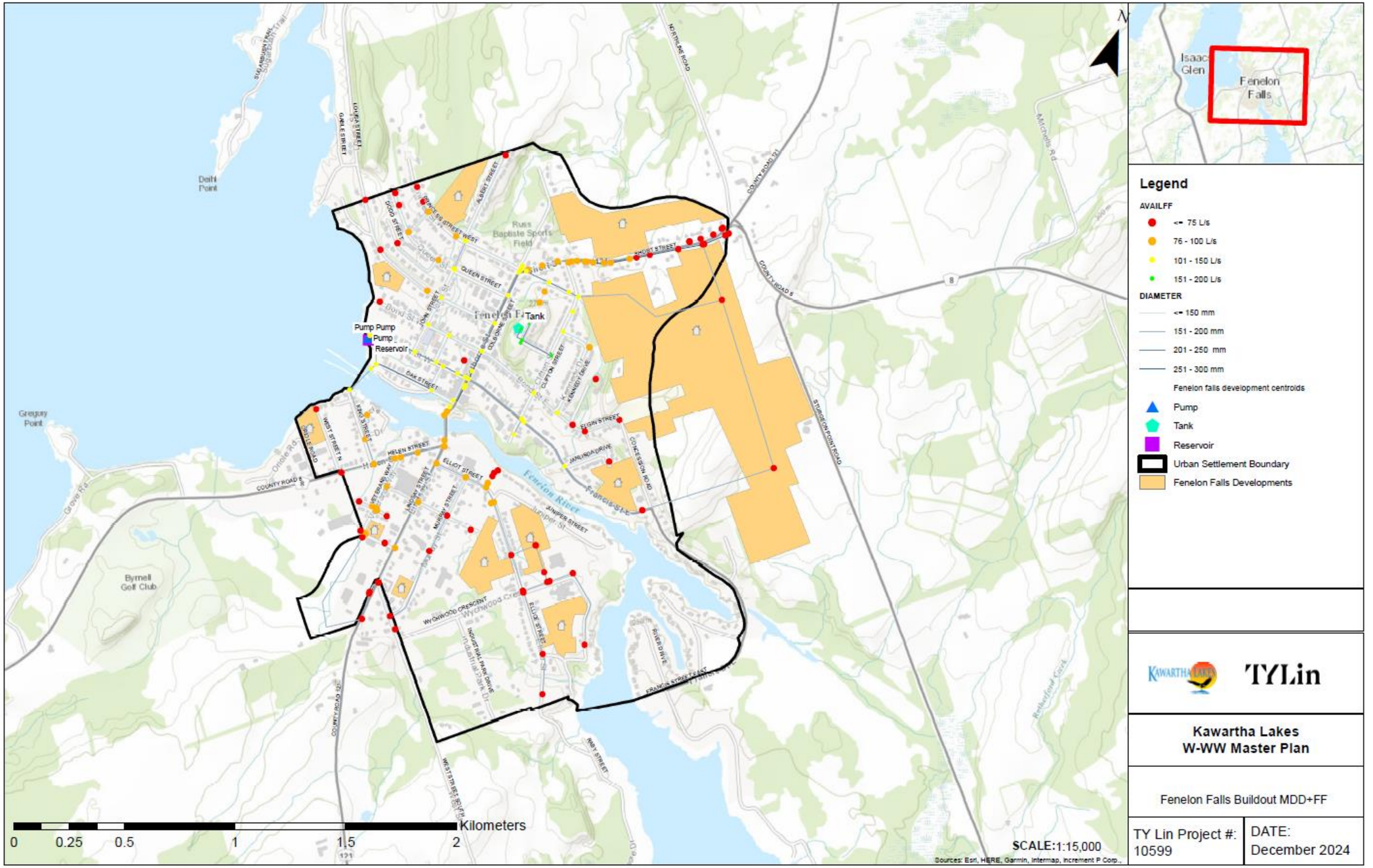


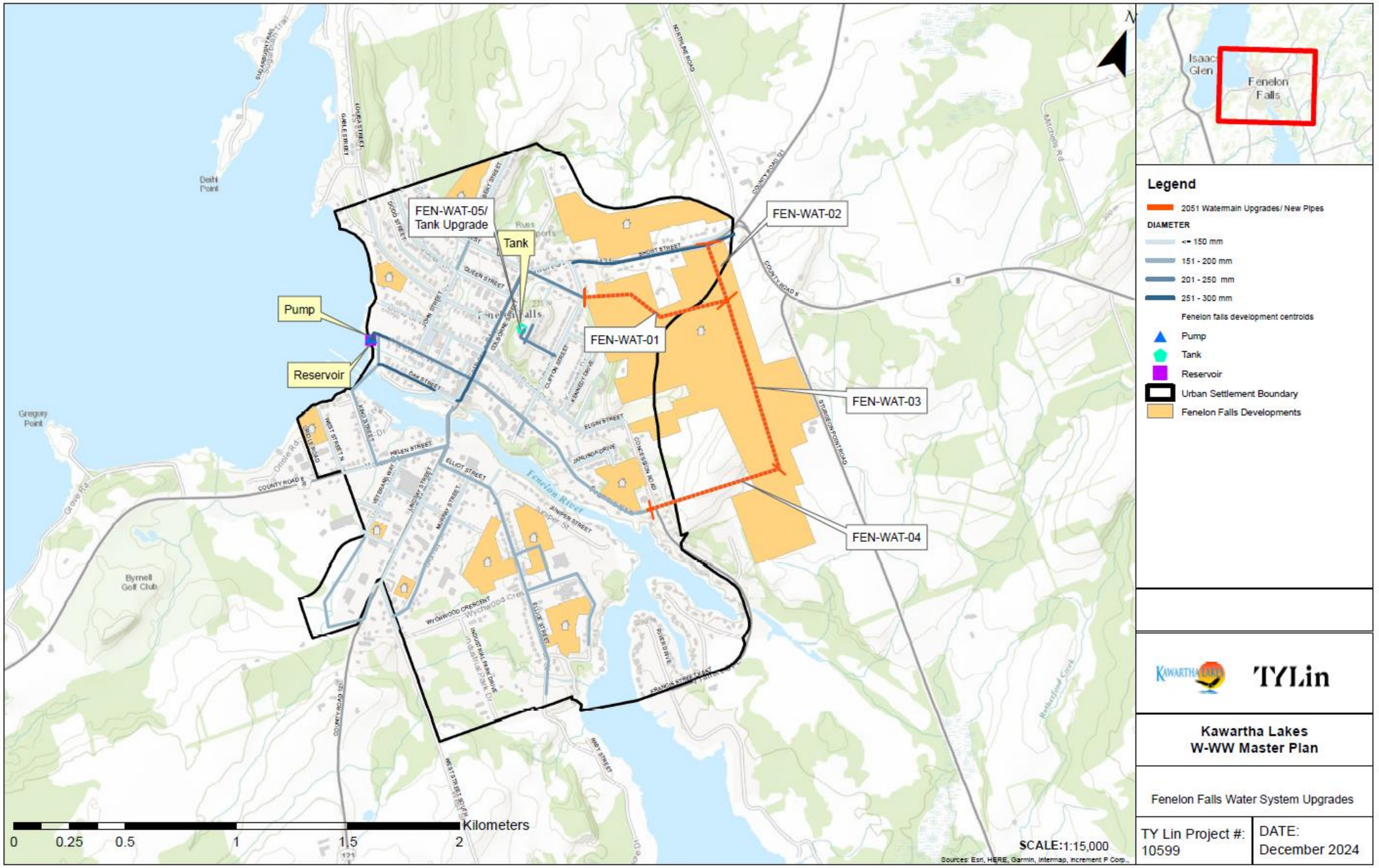
Fenelon Falls - Water Constraints [Peak Hour]



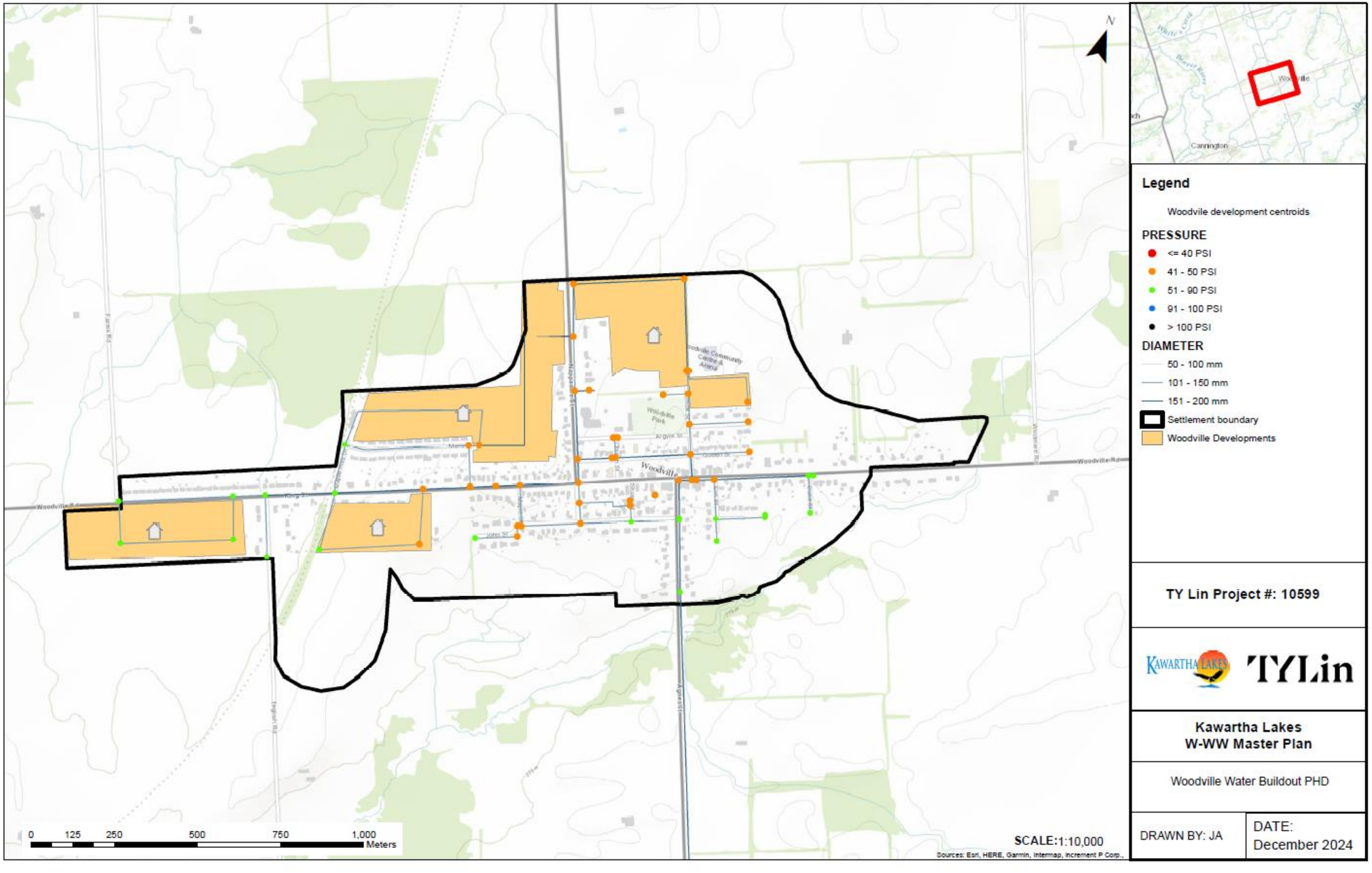
Fenelon Falls - Water Constraints [Max Day+ Fire]



Fenelon Falls: Recommended Water Projects



Woodville - Water Constraints [Peak Hour]



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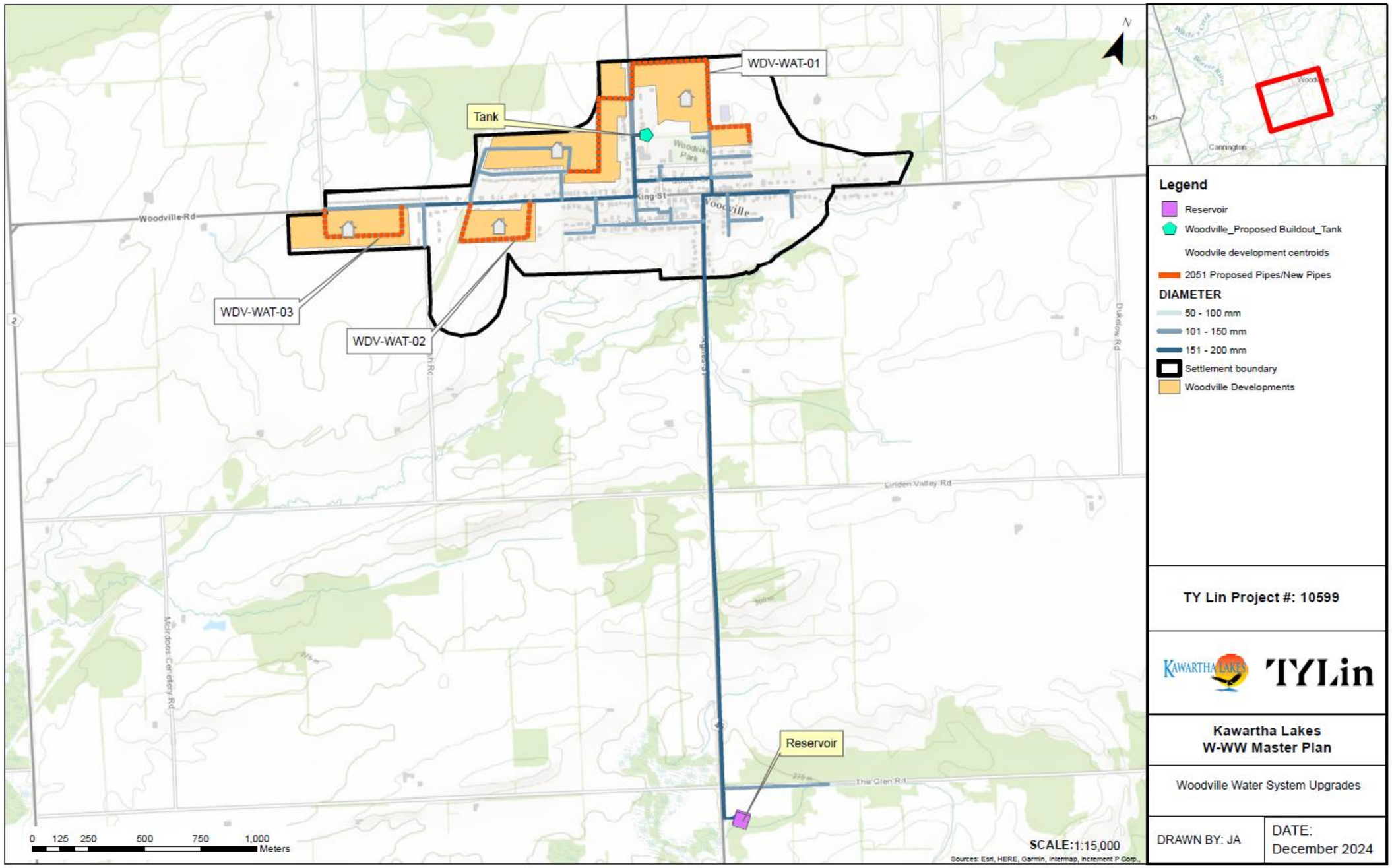
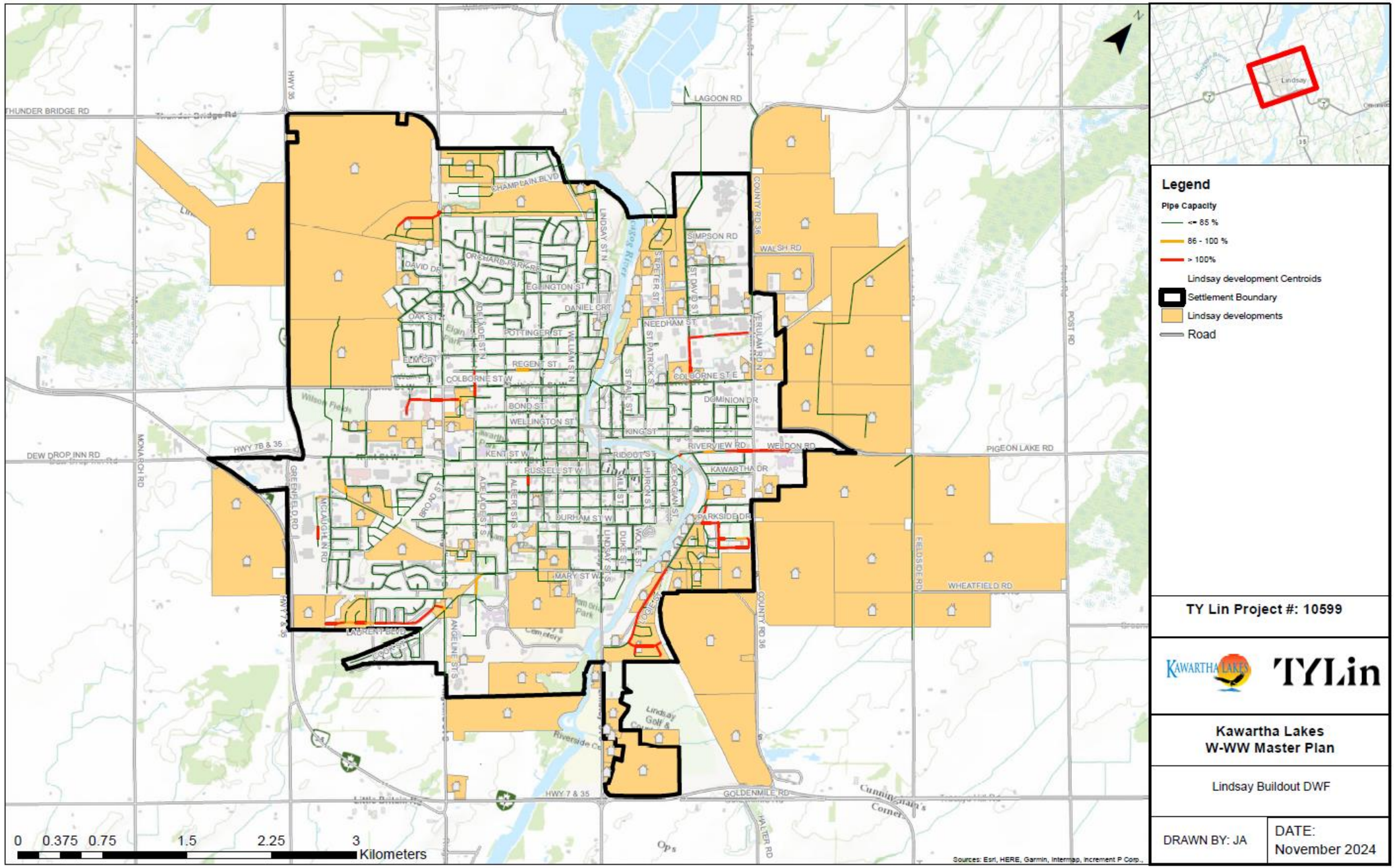
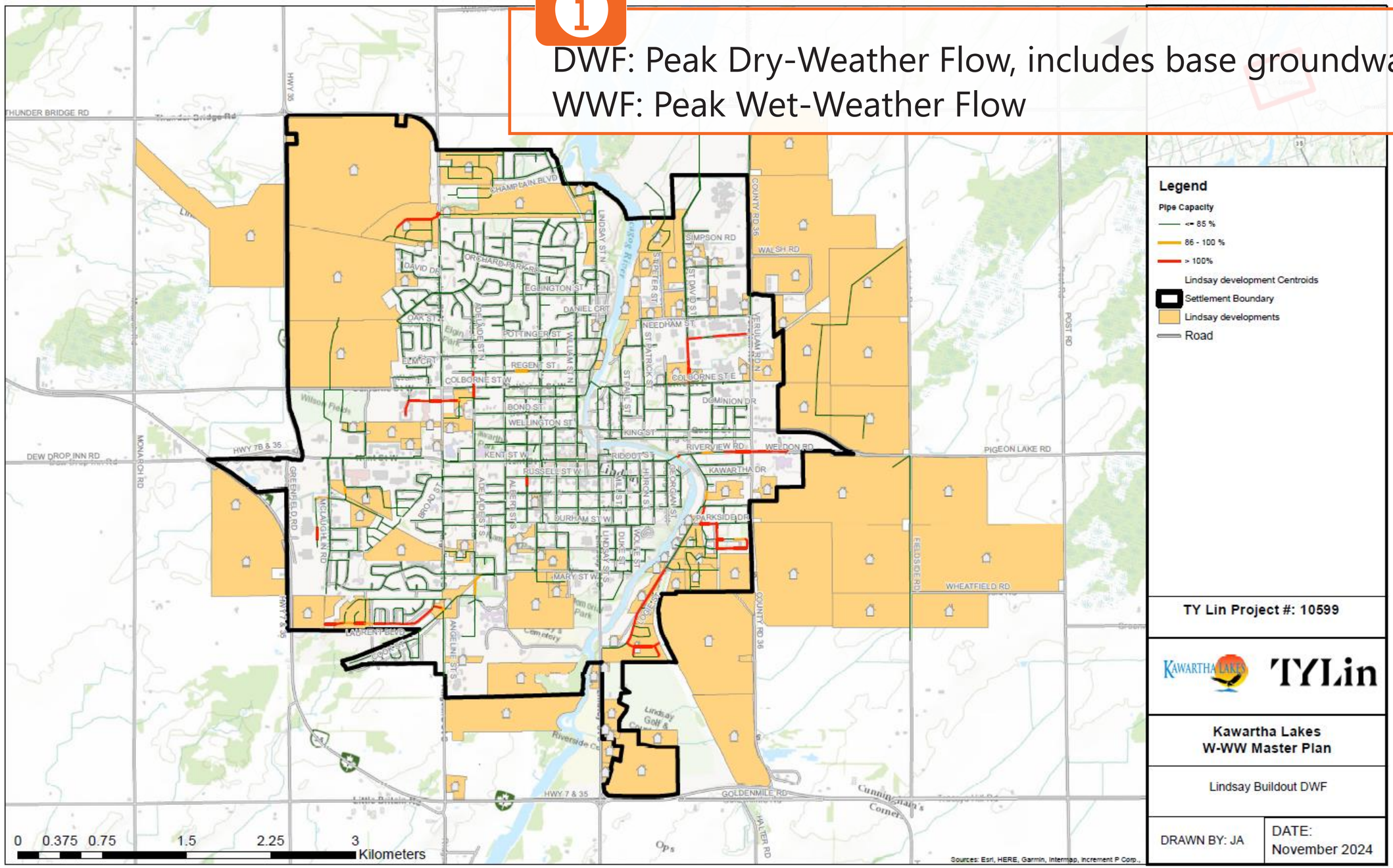


Lindsay- Wastewater Constraints DWF



Lindsay- Wastewater Constraints DWF

DWF: Peak Dry-Weather Flow, includes base groundwater
WWF: Peak Wet-Weather Flow



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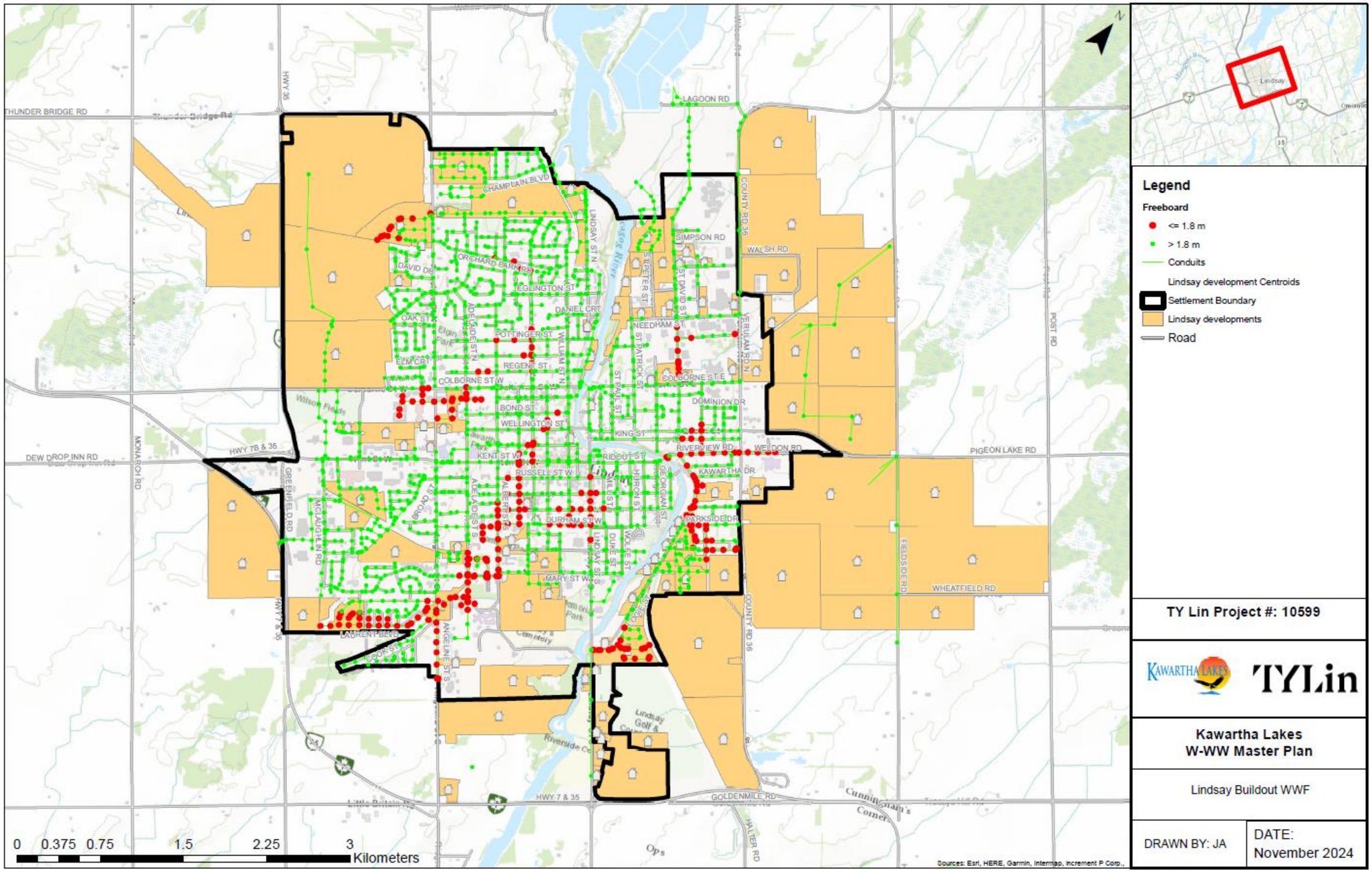

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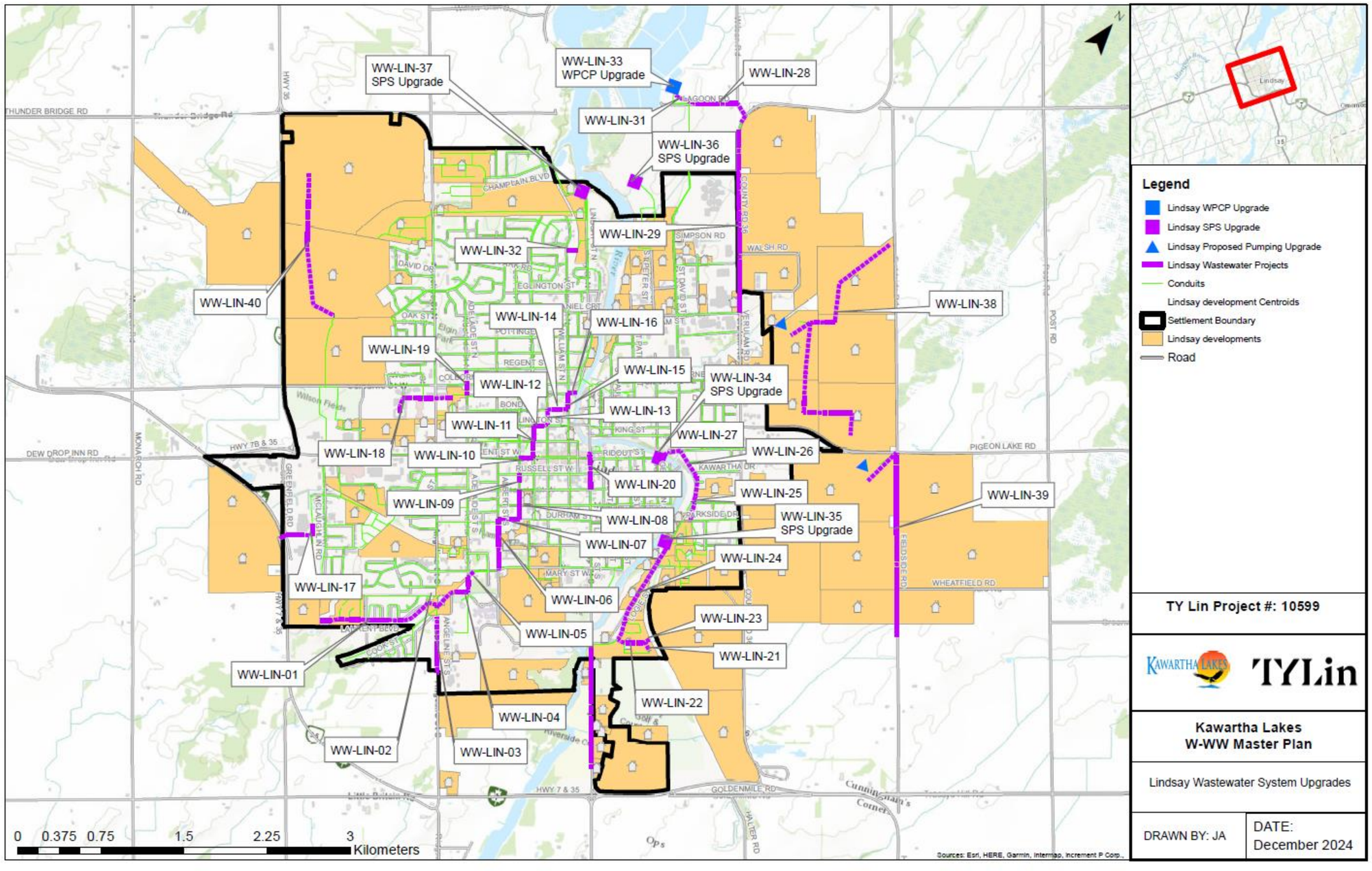
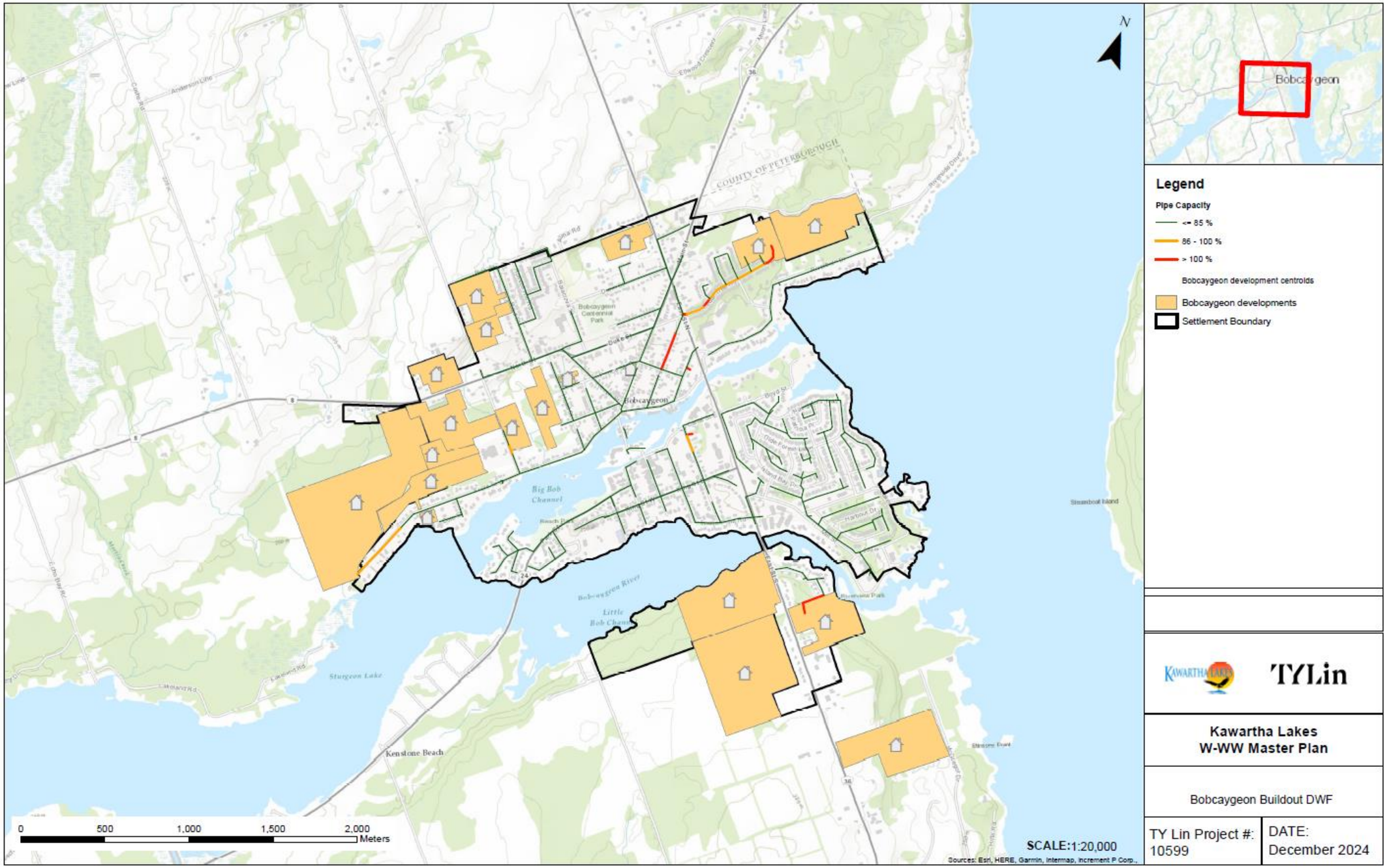
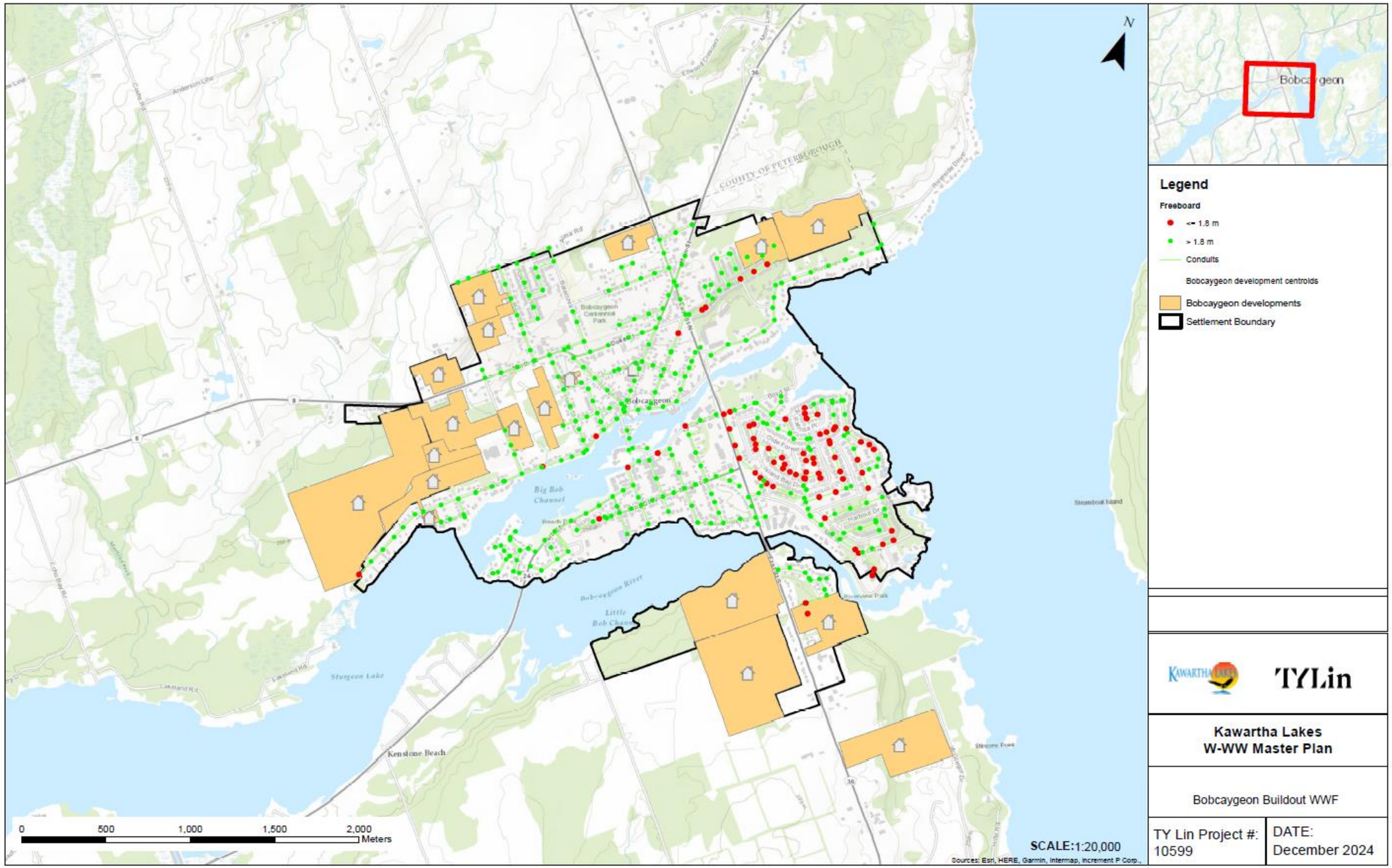


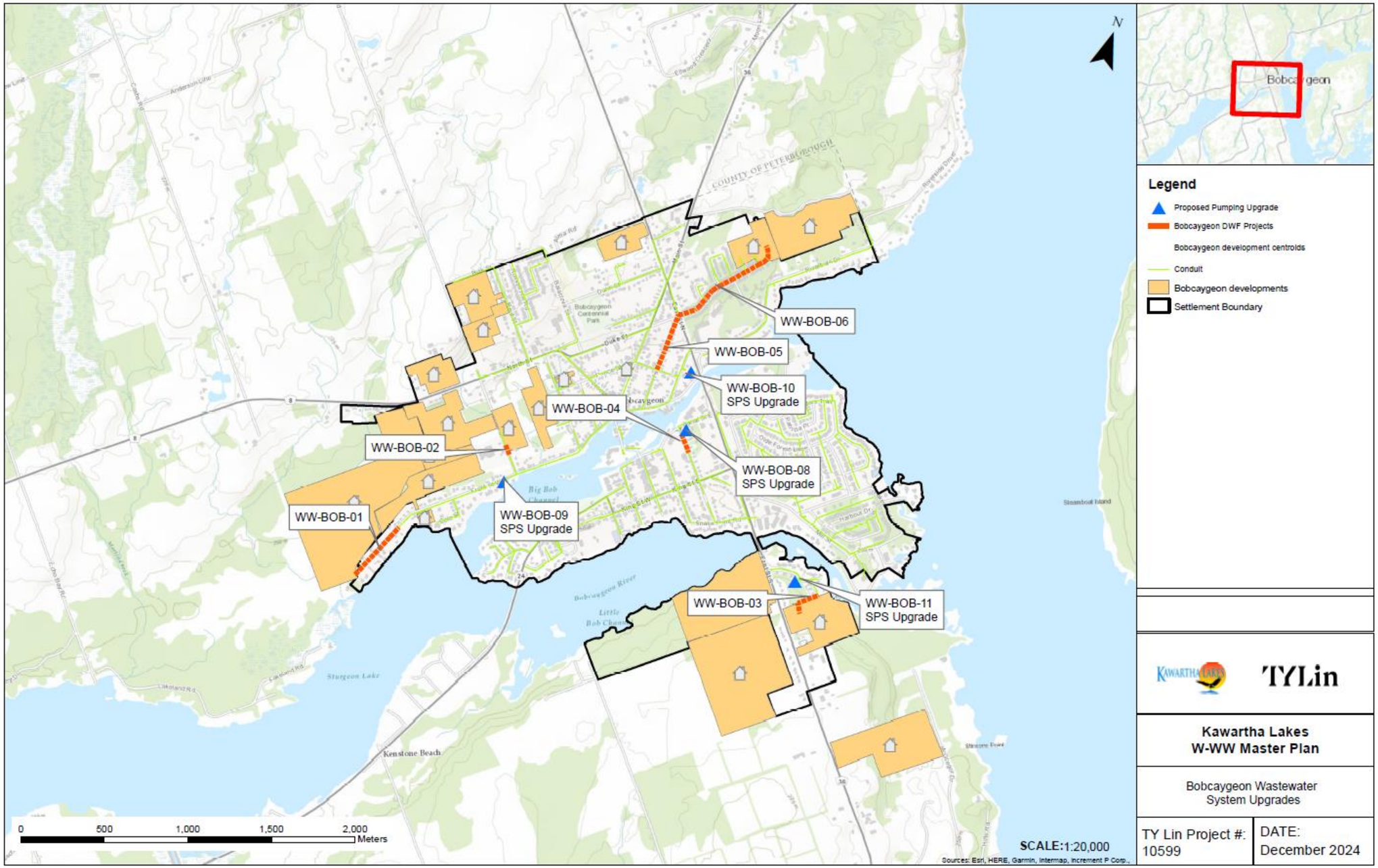
Bobcaygeon- Wastewater Constraints DWF



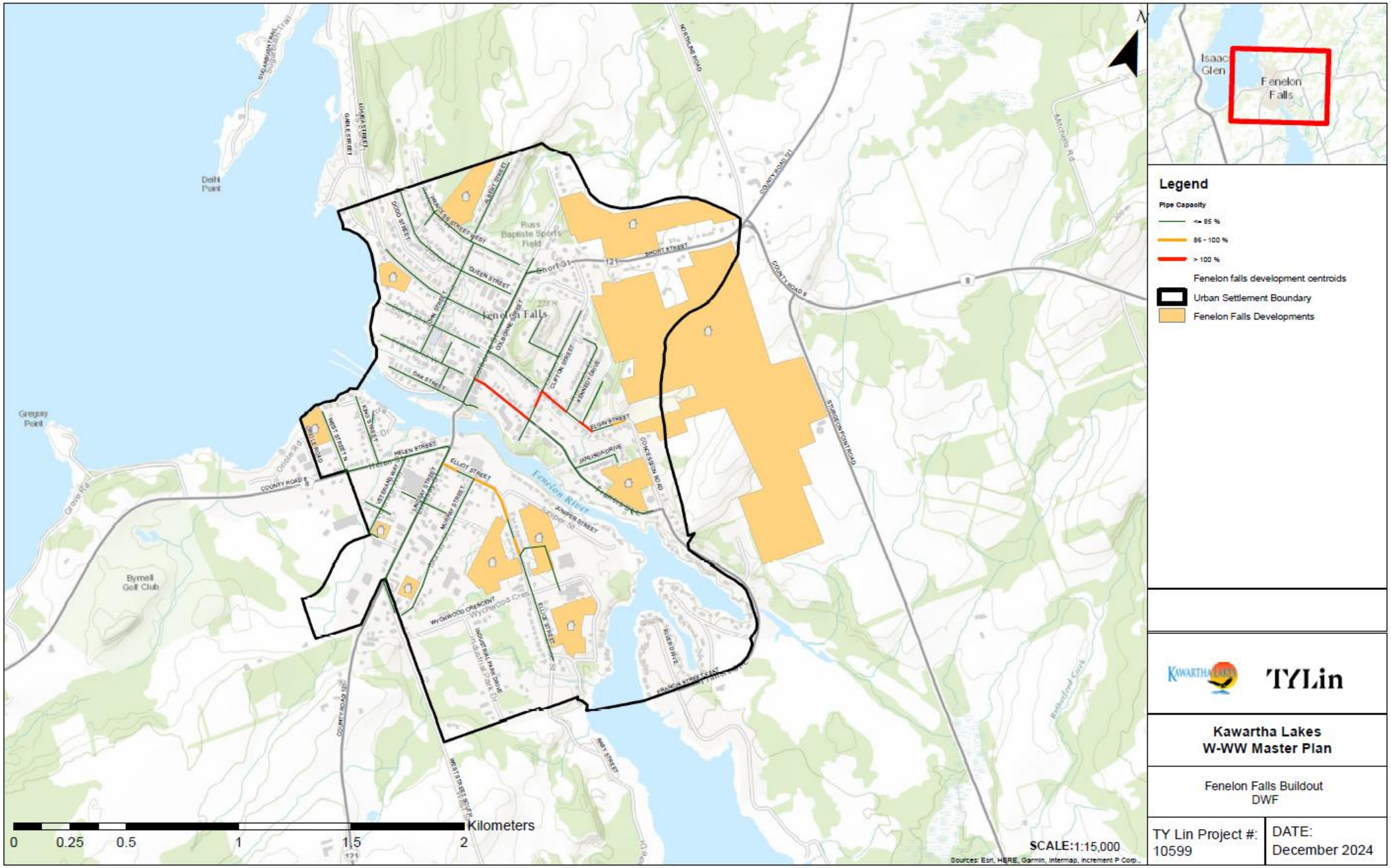
Bobcaygeon- Wastewater Constraints WWF



Bobcaygeon: Recommended Wastewater Projects



Fenelon Falls- Wastewater Constraints DWF



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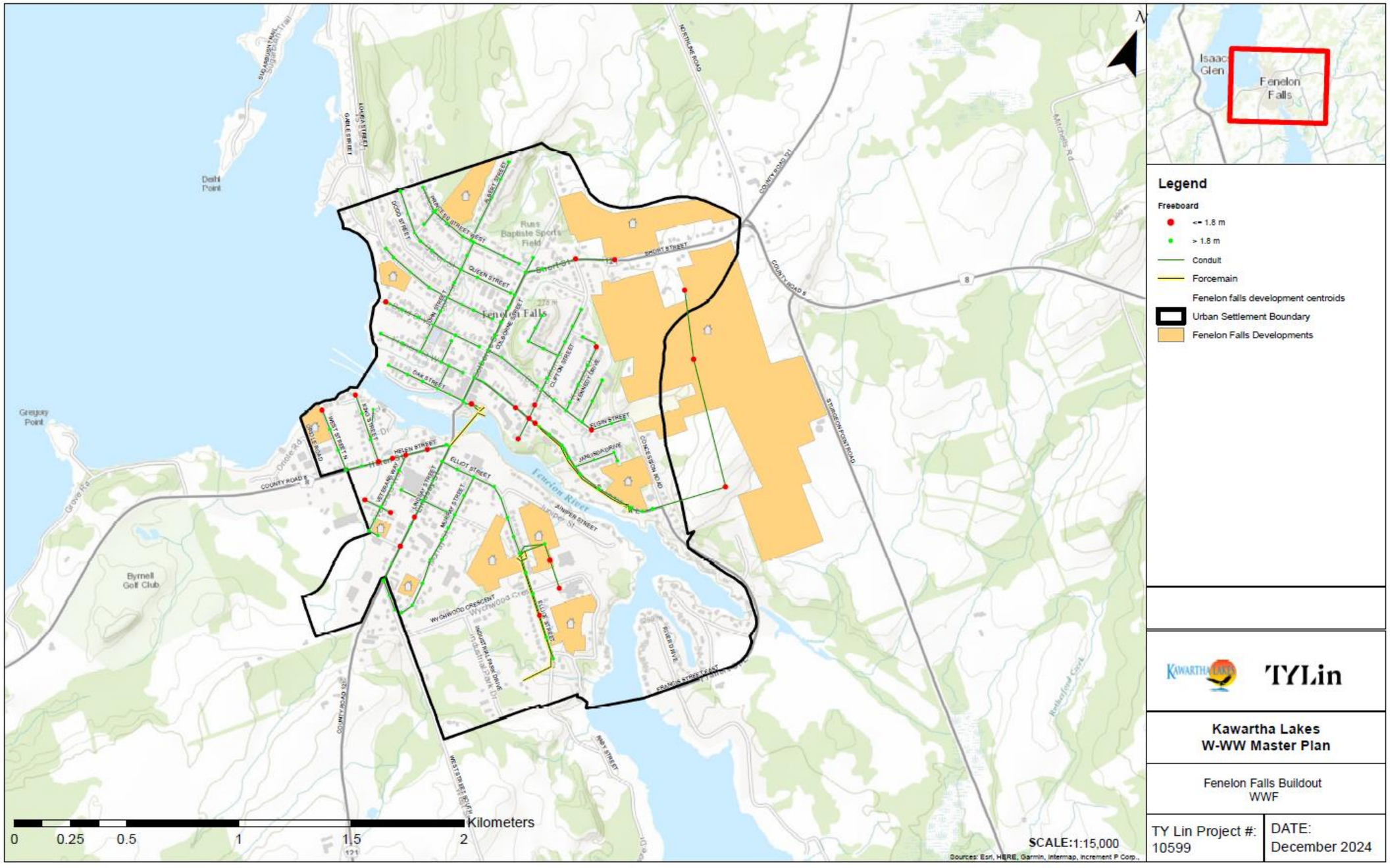

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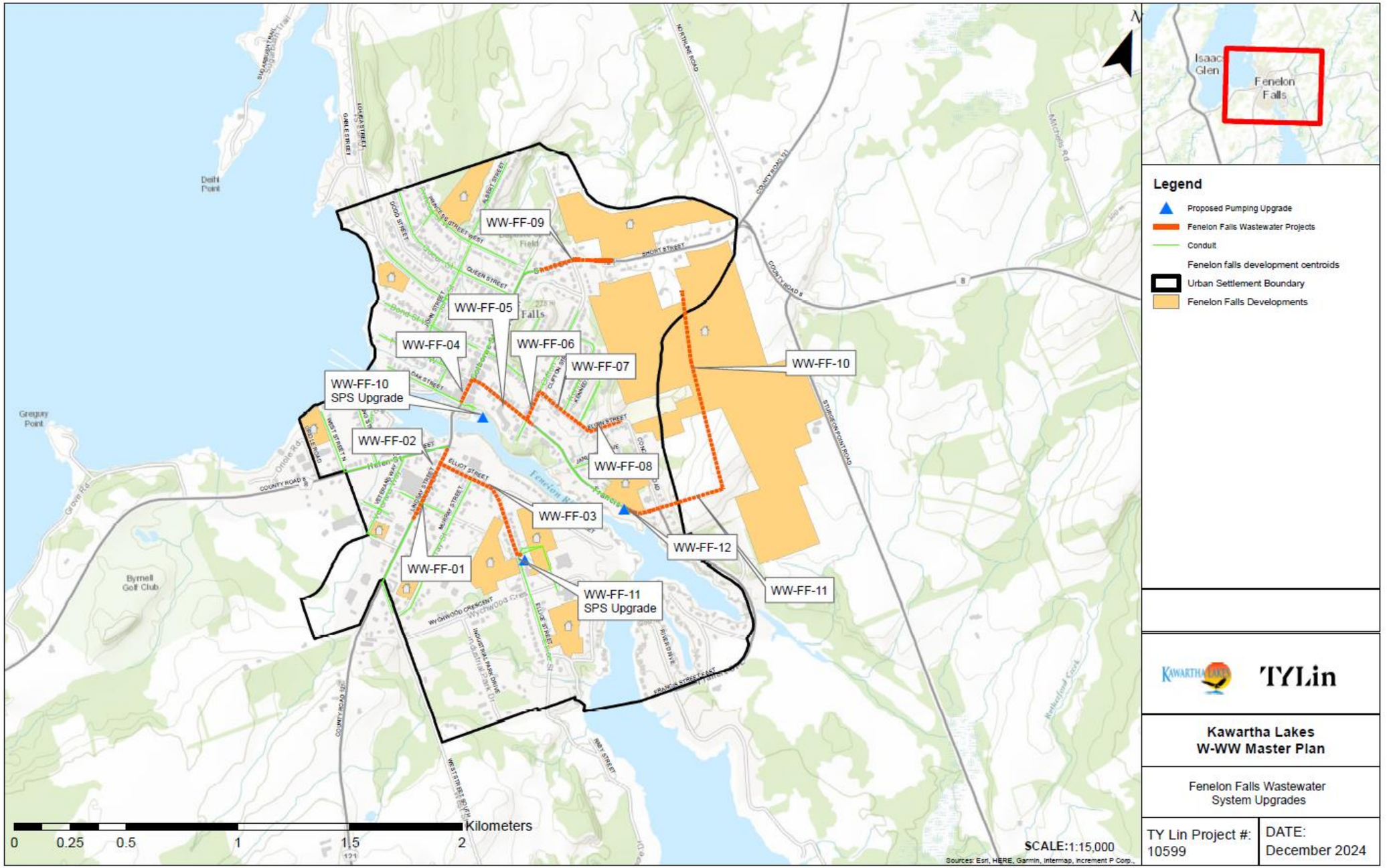
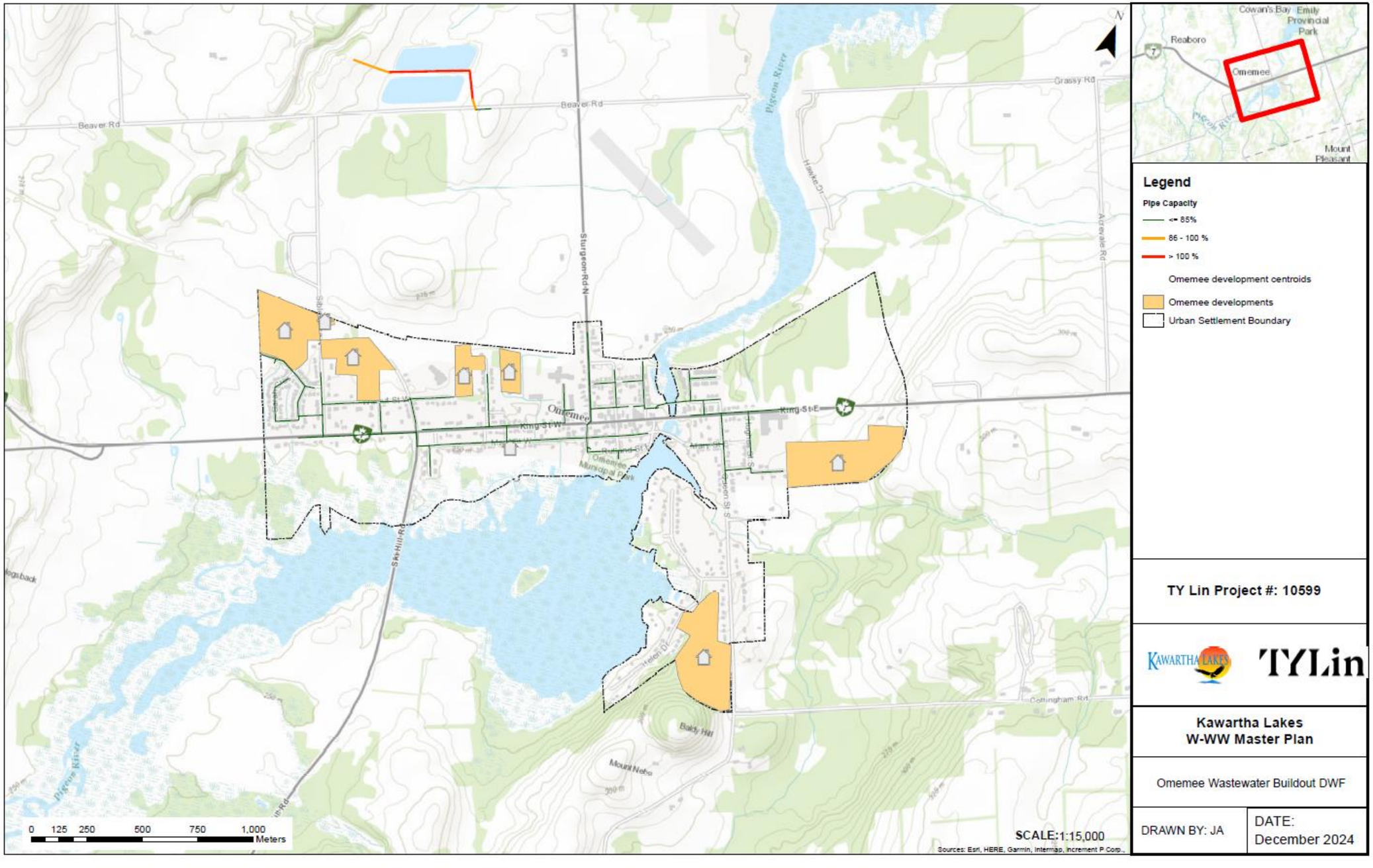
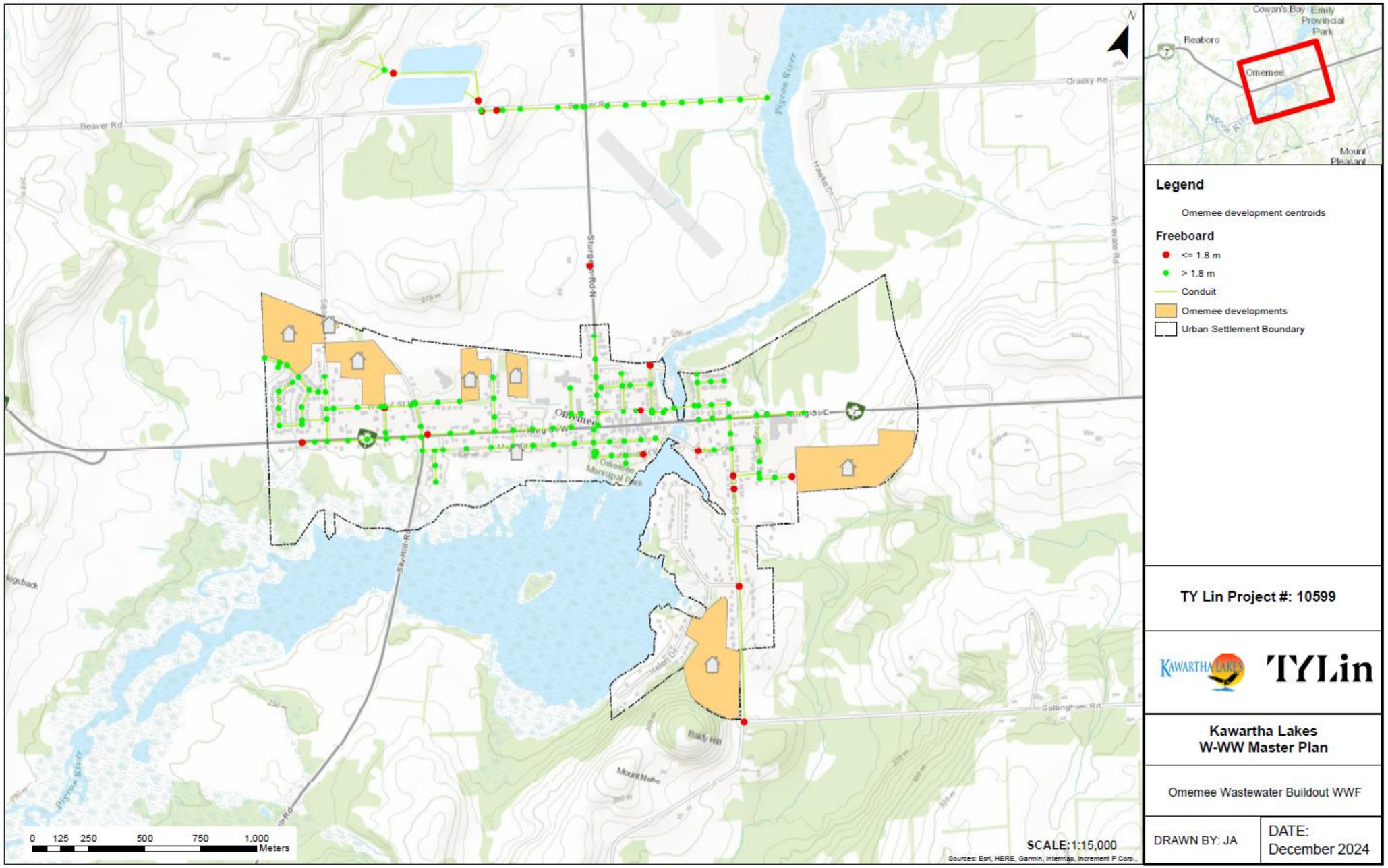
Fenelon Falls: Recommended Wastewater Projects



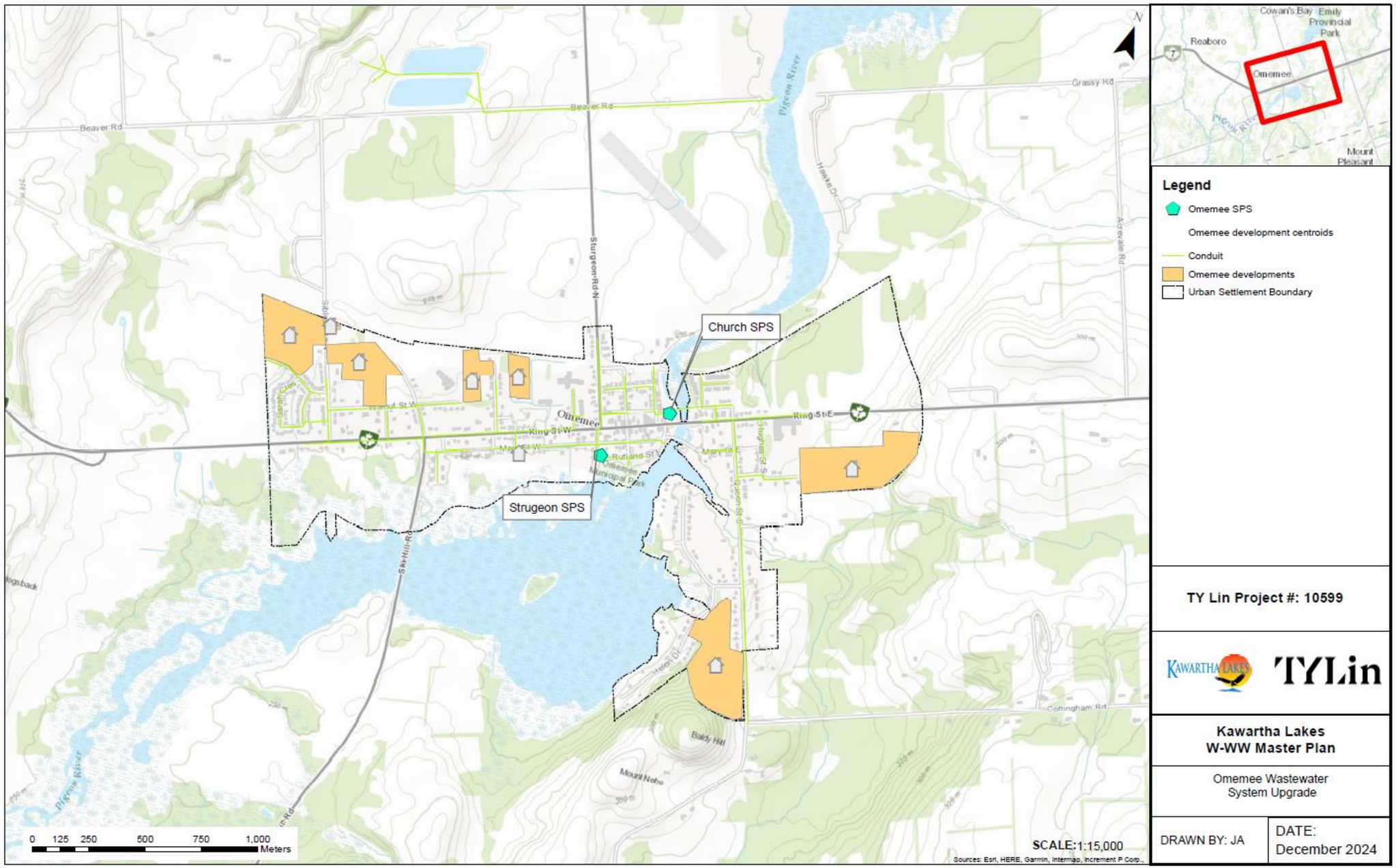
Omemee- Wastewater Constraints DWF



Omemee- Wastewater Constraints WWF



Omemee: Recommended Wastewater Projects



Capital Forecast

Water System	Estimated Capital Costs	Forecasted Growth [Res. Units]	Cost/Unit
Lindsay	$492,000,000	23,695	$21,000
Bobcaygeon	$77,000,000	2,406	$32,000
Fenelon Falls	$37,000,000	1,746	$21,000
Woodville	$7,000,000	718	$10,000
TOTAL	**$613,000,000**	**28,565**	**$21,000**

Wastewater System	Estimated Capital Costs	Forecasted Growth [Res. Units]	Cost/Unit
Lindsay	$381,000,000	23,695	$16,000
Bobcaygeon	$82,000,000	2,406	$34,000
Fenelon Falls	$59,000,000	1,746	$34,000
Omemee	$0	718	$0
TOTAL	**$522,000,000**	**28,565**	**$18,000**

Next Steps

1. **Finalise Project File Report**
   - To Council with a final report for endorsement in 2025-Q1
2. **Notice of Completion**
   - Formal Consultation Activity, notifying Stakeholders that the Class EA process is complete
3. **30-Day Project File Review**
   - Stakeholders have the opportunity to review the Project File and ask questions
4. **Implementation (by Class EA Schedule)**
   - Exempt: May proceed to implementation
   - Schedule B and Schedule C: Must complete more detailed Study

Kawartha Lakes

Jump In

THANK YOU

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Photo: Lindsay Water Treatment Plant