

# Growth, Water & Wastewater Servicing Master Plan

COUNCIL UPDATE  
JANUARY 16, 2023



**BLUEPRINT**  
FOR THE FUTURE

*Water & Wastewater Servicing Master Plan*



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# Agenda

- ▶ Overview of Master Plans
- ▶ Growth Forecasts and Settlement Areas
- ▶ Reserve Water and Wastewater Capacity Analysis
- ▶ Analysis of Capacity and Forecasted Growth
- ▶ Water Storage Capacity
- ▶ Lucknow and Ripley Water Distribution and Wastewater Collection Analysis
- ▶ Lakeshore Area Wastewater Servicing Options
- ▶ Identified Future Projects
- ▶ Next Steps

# Purpose and Intent of Master Plan

- ▶ The Master Plan will identify future growth scenarios, where that growth may occur, and water and wastewater infrastructure needs associated with that growth.
- ▶ Phase 1 Background Report set the stage, has a significant amount of the necessary background information.
- ▶ Incorporate vision for future growth with servicing needs.
- ▶ Master Plan will identify servicing strategies to allow the Township to plan and budget for future infrastructure projects to support growth and respond to development inquires.
- ▶ Examining current settlement areas: Lucknow, Ripley and Lakeshore areas.

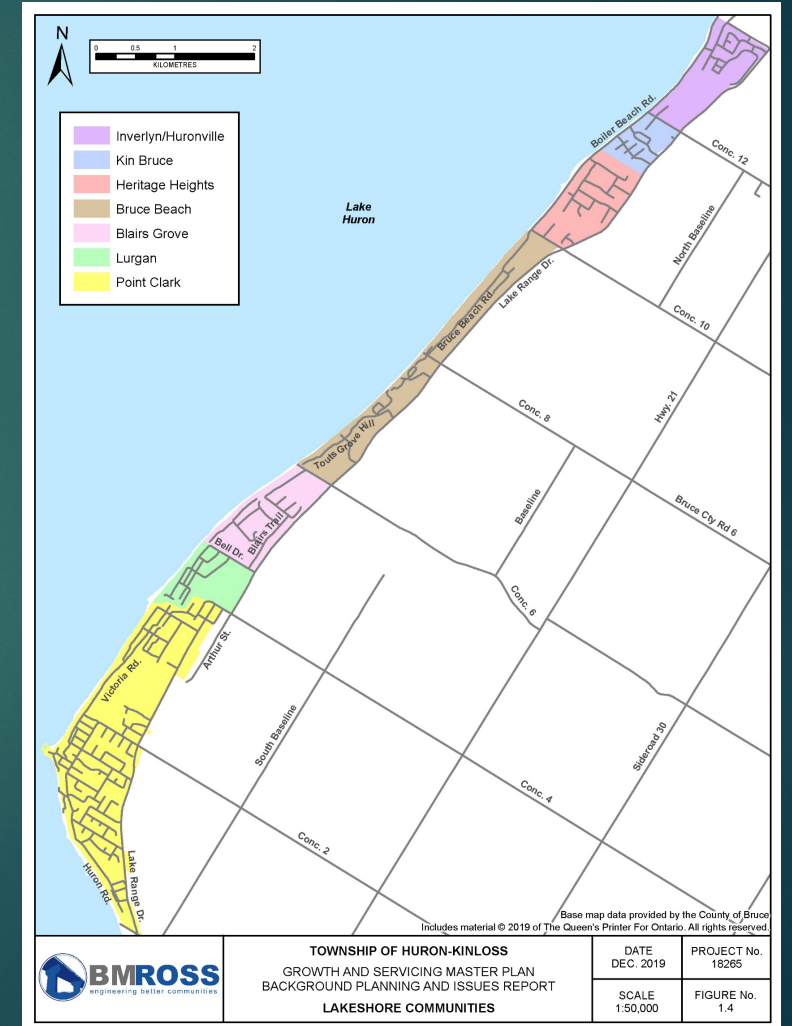
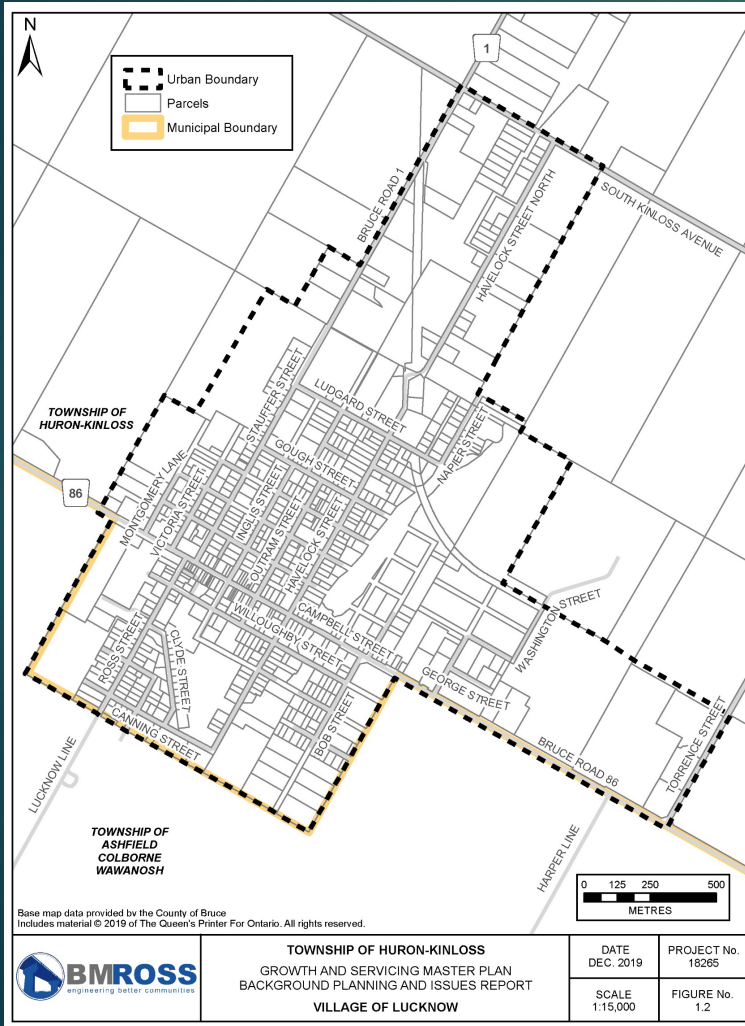
- ▶ Collect and analyze background information (Phase 1 Background Report)
- ▶ Consultation with public, agencies and First Nation and Métis communities
- ▶ Examine growth scenarios and development proposals
- ▶ Calculate reserve capacity for water treatment, water storage, and wastewater treatment
- ▶ Technical analysis of water and wastewater systems (system modeling)
- ▶ Compare reserve capacity to forecasted growth, identify where growth expected to occur, identify infrastructure needs and options for expansions
- ▶ Identify timing of infrastructure projects and any additional study requirements (and potential costs, if possible)

## Steps in the Master Plan Process

# Settlement Areas

## Primary Settlement Areas: Lucknow, Ripley

## Secondary Settlement Area: Lakeshore Area



# Growth Forecasts

Equivalent Residential Unit (ERU) is based on the average number of people per housing type:



1 Single Detached House = 1 ERU



1 multi/row house = 0.62 ERU



1 Apartment = 0.54 ERU

Low, medium and high growth forecasts examined as part of the Master Plan.

25-year forecast period (to 2047)

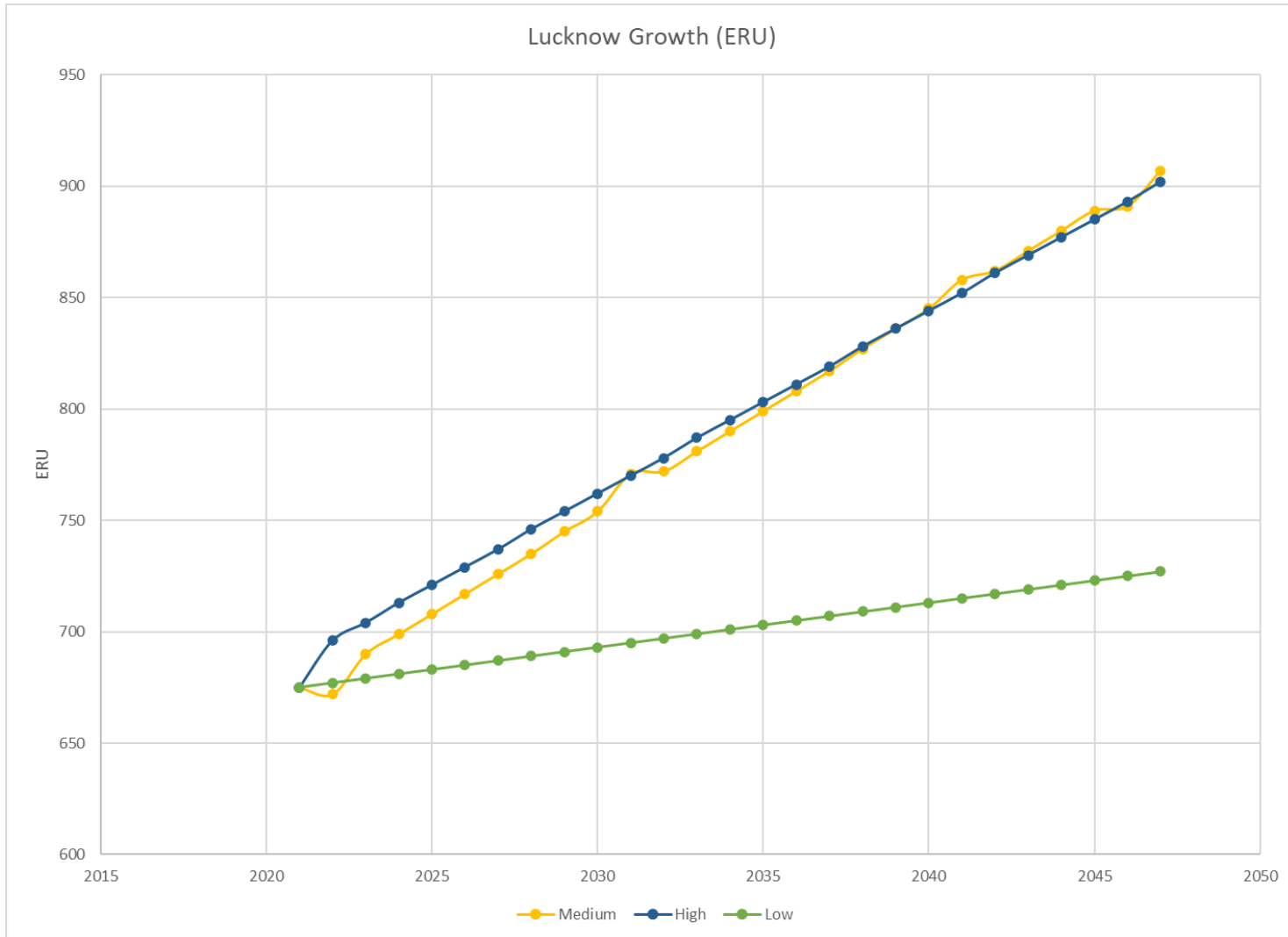
Low forecast based on 10-year annual average of residential building permits

Medium forecast based on NWMO base forecast by metroeconomics

High forecast based on Bruce County Growth Management forecasts



Forecasted population and ERUs for Lucknow, Ripley and the Lakeshore Area.

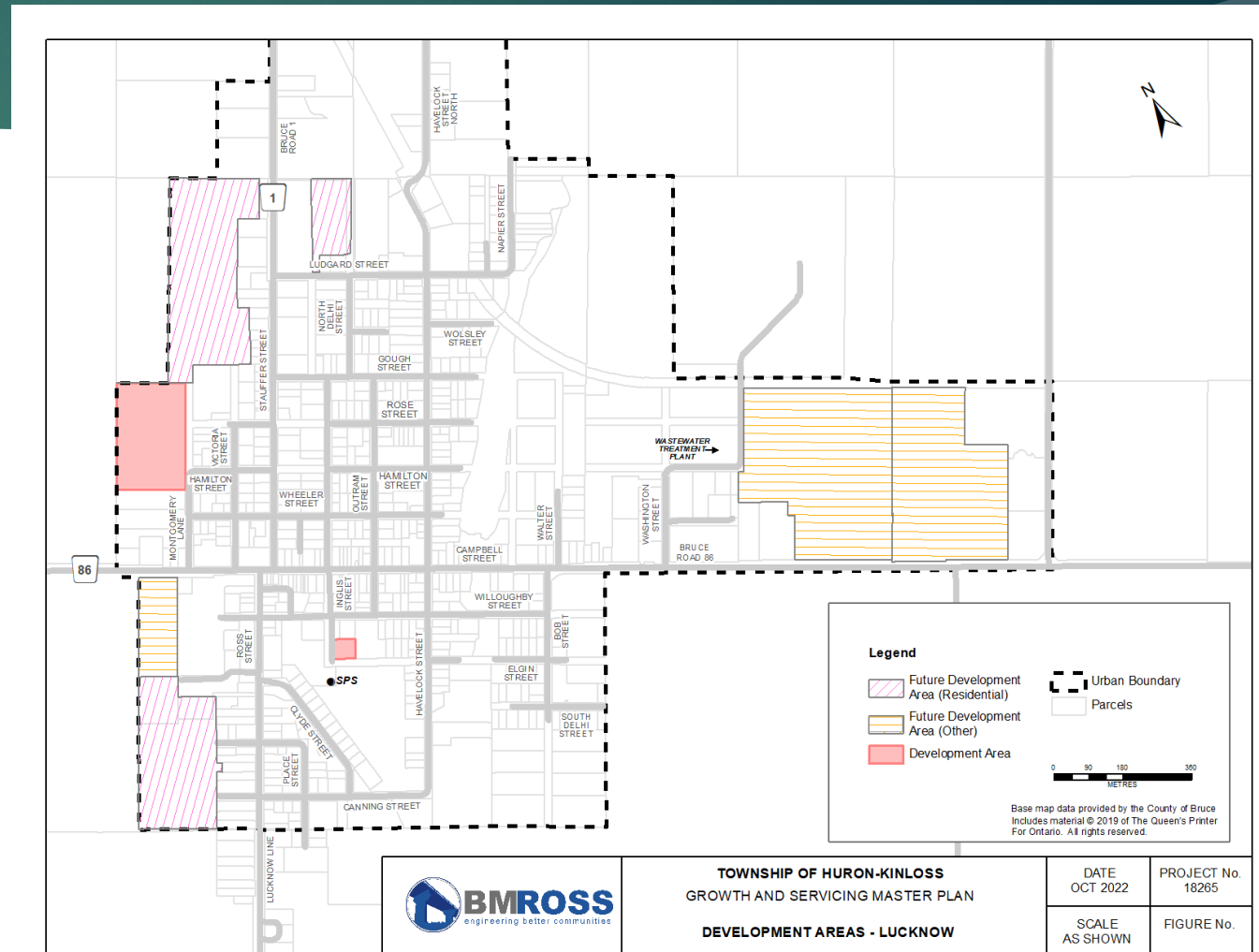


# Lucknow Growth Forecast

Lucknow	Low (Additional ERUs )	Medium (Additional ERUs )	High (Additional ERUs )
2022-2027	10	54	41
2022-2032	20	100	82
2022-2042	40	190	165
2022-2047	50	235	206

# Forecasted Growth - Lucknow

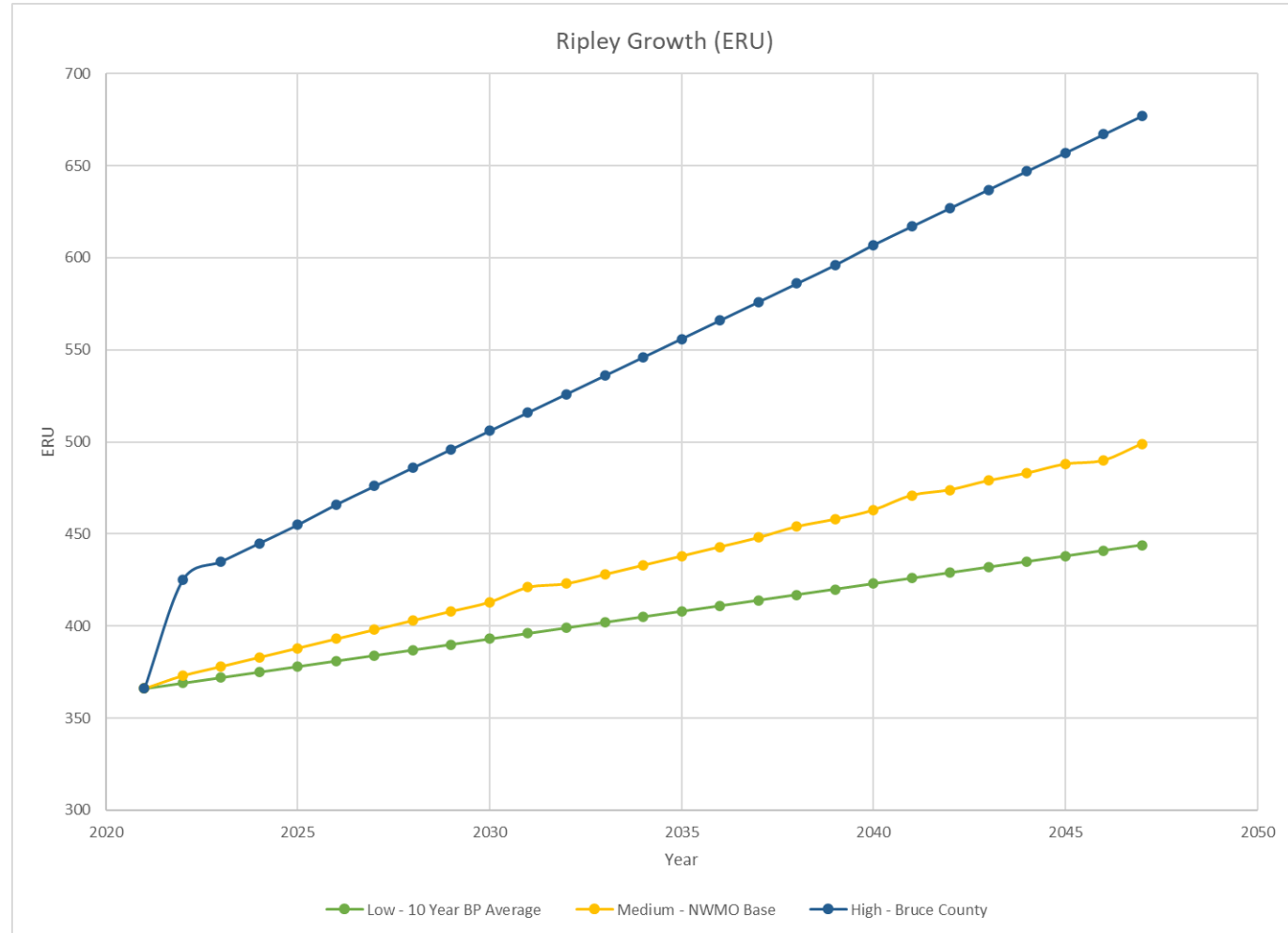
- ▶ **Max ERUs forecasted = 235 units**
- ▶ Proposed/Unbuilt units = 91
- ▶ Infill lots = 42
- ▶ FD/R1-h lands = 50.56 ha = 758 ERU (at 15 units/ha)
- ▶ Appears to be sufficient space within current settlement area for forecasted growth. Not expected to need a settlement area expansion over the next 25-years.





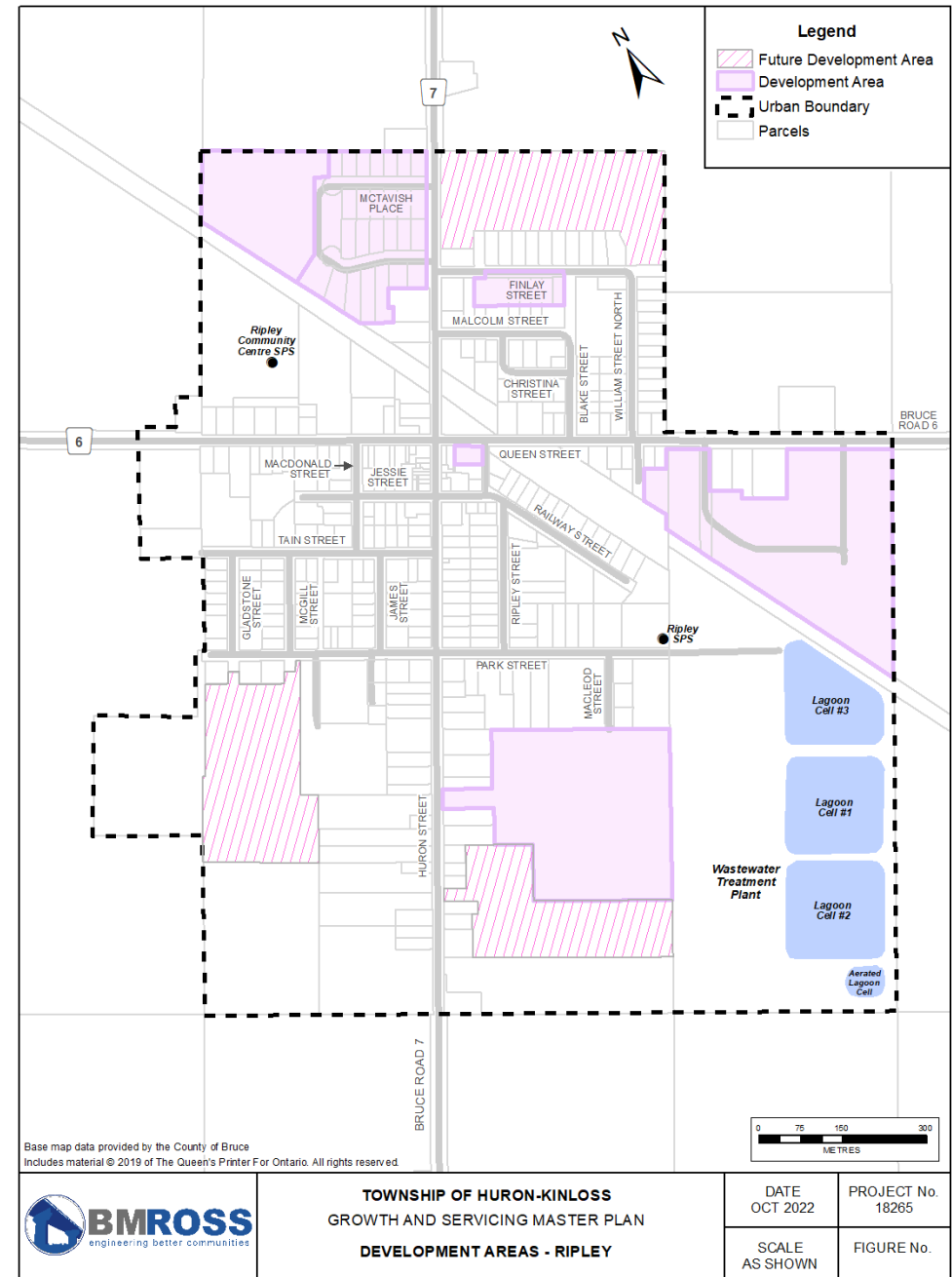
# Ripley Growth Forecast

<b>Ripley</b>	<b>Low (Additional ERUs)</b>	<b>Medium (Additional ERUs)</b>	<b>High (Additional ERUs)</b>
2022-2027	15	25	51
2022-2032	30	50	101
2022-2042	60	101	202
2022-2047	75	126	252



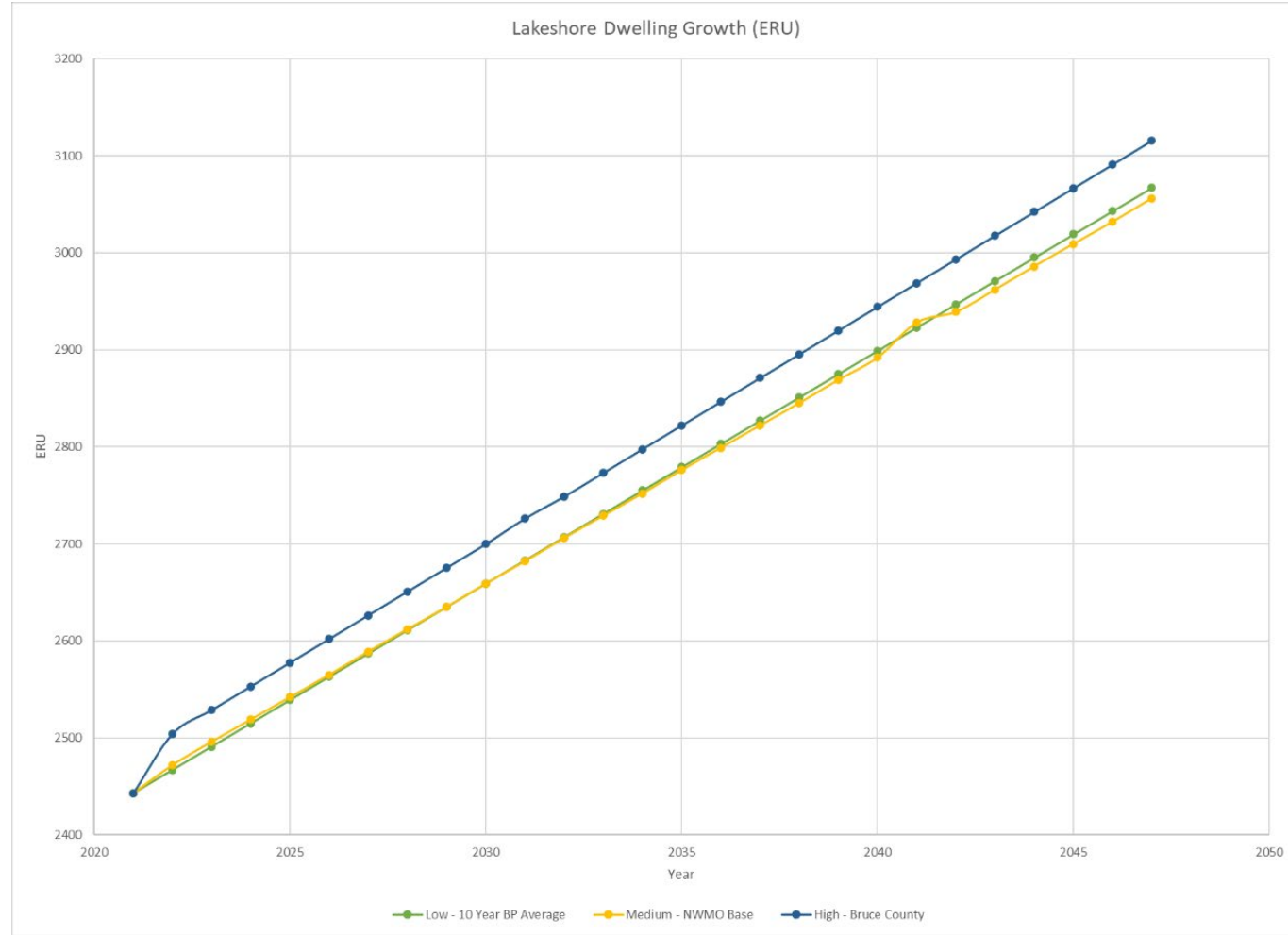
# Growth - Ripley

- ▶ Max ERUs forecasted = 252 units
- ▶ Proposed/Unbuilt units = 310
- ▶ Infill lots = 18
- ▶ FD/R1-h lands = 11 ha = 165 ERU (at 15 units/ha)
  
- ▶ Appears to be sufficient space within current settlement area for forecasted growth over the next 25 years.



# Lakeshore Area Growth Forecast

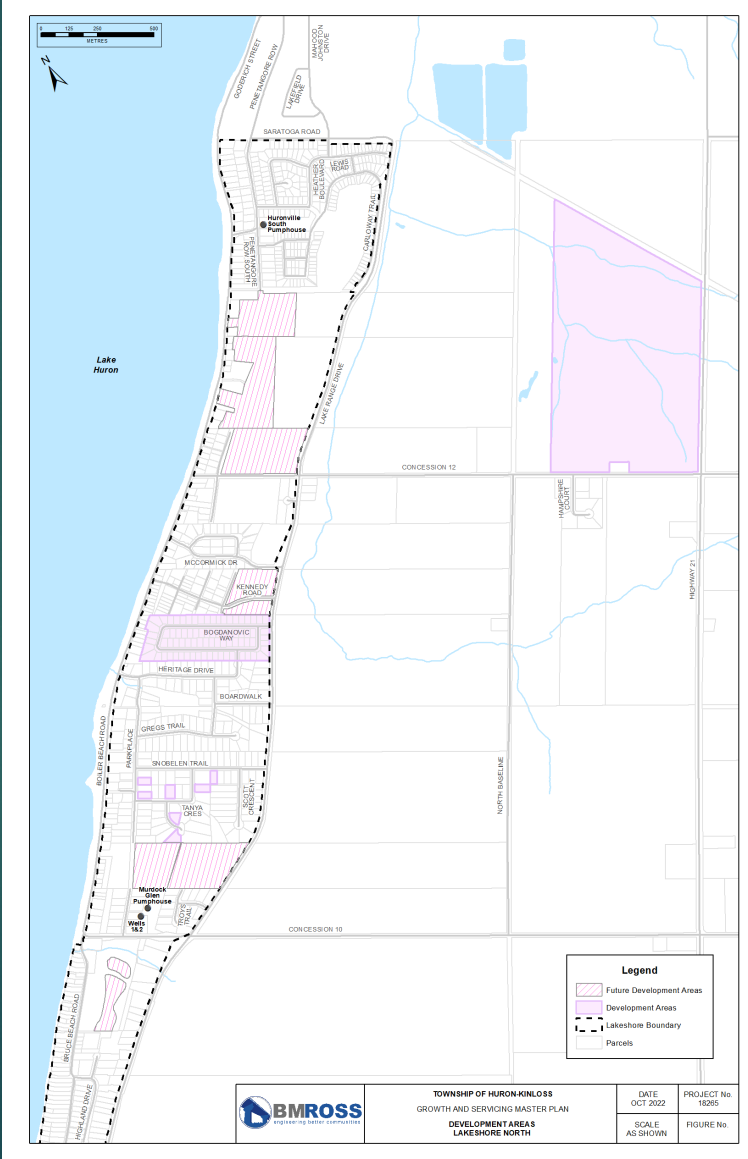
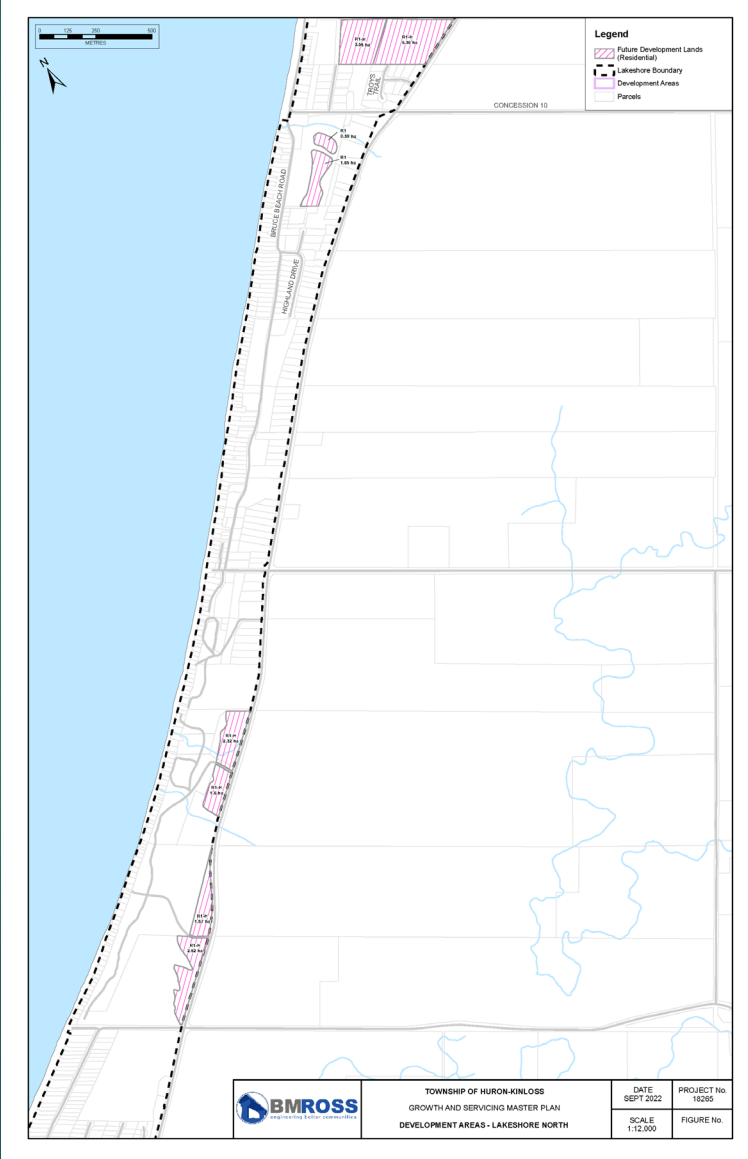
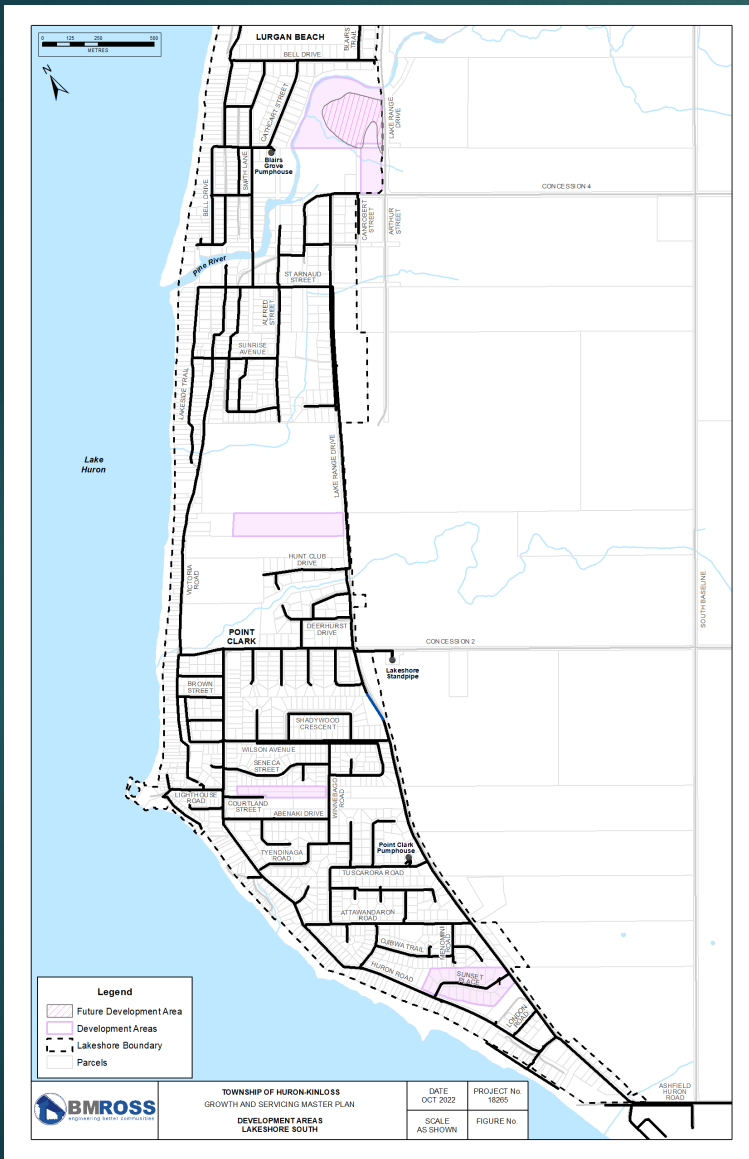
Lakeshore	Low (Additional ERUs)	Medium (Additional ERUs)	High (Additional ERUs)
2022-2027	117	120	133
2022-2032	234	240	266
2022-2042	467	480	532
2022-2047	600	584	611



# Growth – Lakeshore Area

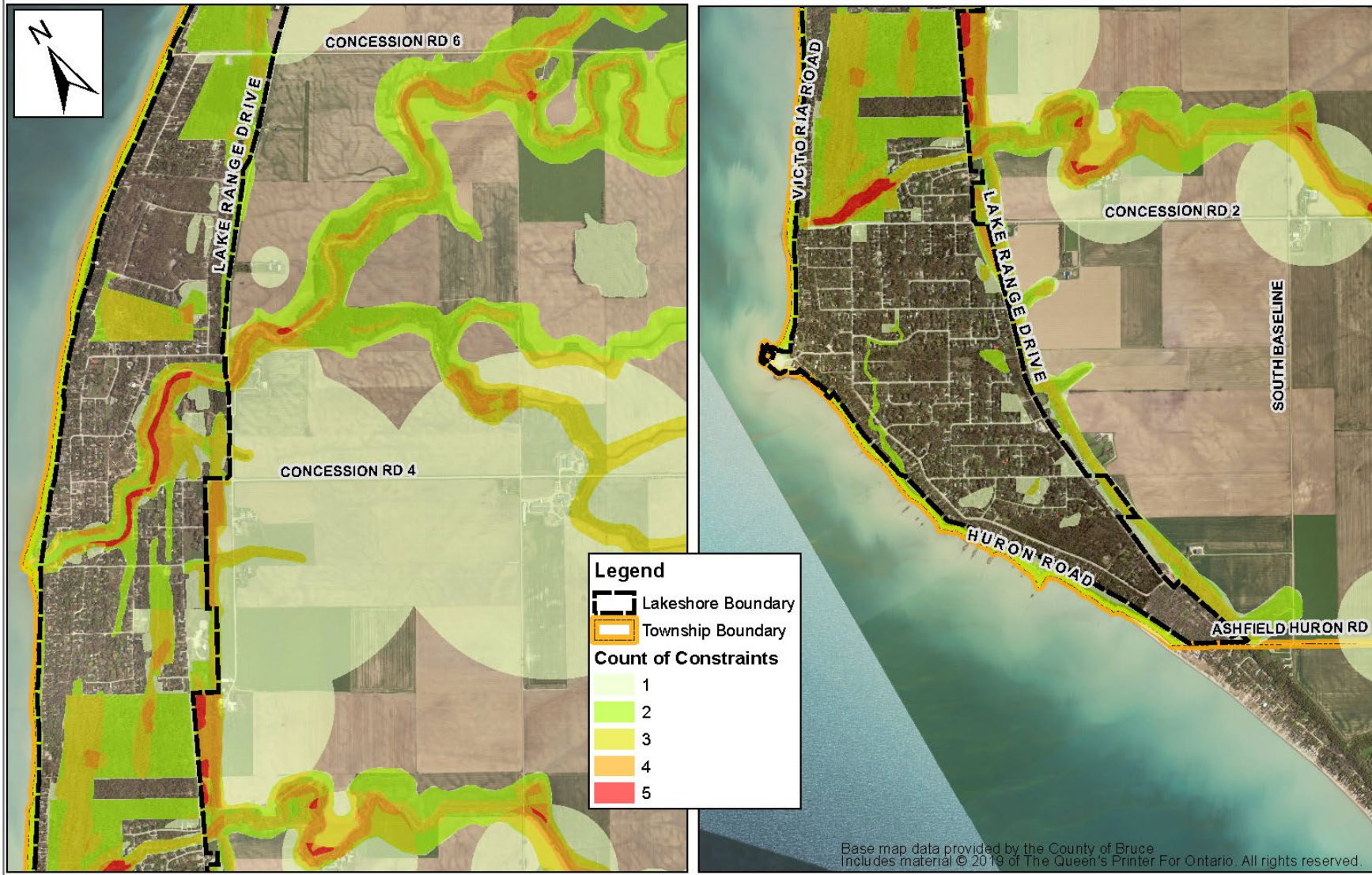
- ▶ **Max ERUs forecasted = 611**
- ▶ Proposed/Unbuilt units = 144
- ▶ Infill lots = 195
- ▶ R1/R1-h lands = 42 ha = 210 ERU (at 5 units/ha)
  
- ▶ Appears to be a deficit of land for 25-year forecasted growth. Based on high growth forecast additional space will be needed for 117 ERUs or 24 ha (60 acres).

# Lakeshore Area Development Maps



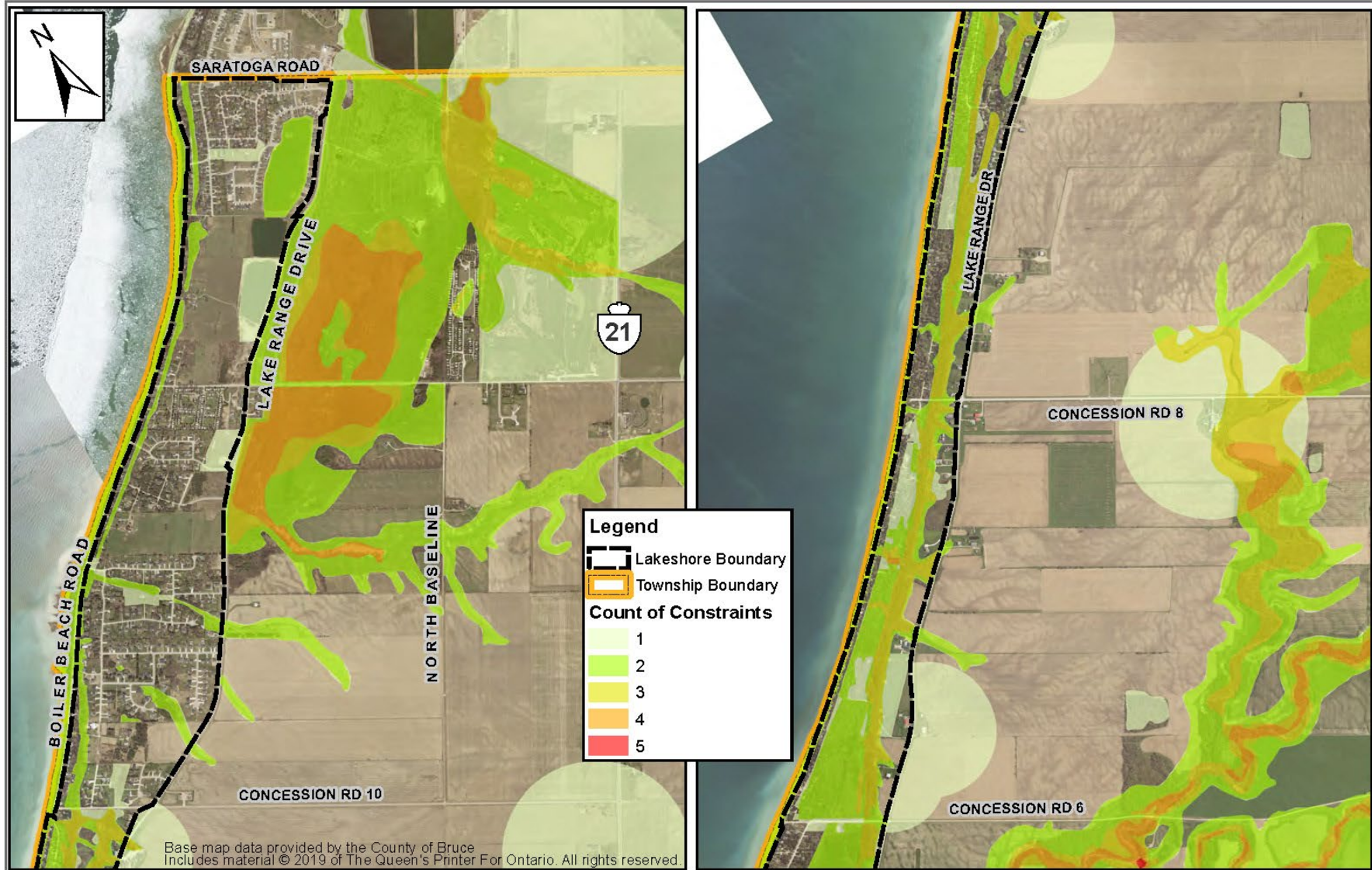
# Lakeshore Area Settlement Expansion

- ▶ Timing of when additional settlement lands in the Lakeshore Area will be needed will depend on how development progresses.
- ▶ Expansion will require a Settlement Capacity Study to amend Bruce County and Huron-Kinloss Official Plans.
- ▶ Phase 1 Background Report examined potential expansion areas based on:
  - ▶ Planning policies (e.g. adjacent to existing settlement areas)
  - ▶ Presence of development constraints (e.g. hazard lands, Minimum Distance Separation, environmental features – significant woodlands, wetlands)
  - ▶ Presence of existing infrastructure
- ▶ Identified potential area north of Concession 10 on east side of Lake Range Drive.



**TOWNSHIP OF HURON KINLOSS**  
**GROWTH AND SERVICING MASTER PLAN**  
**BACKGROUND PLANNING AND ISSUES REPORT**  
**LAKESHORE SOUTH SUMMARY OF CONSTRAINTS**

DATE December 2019	PROJECT No. 18265
SCALE 1:25 000	FIGURE No. 5.12



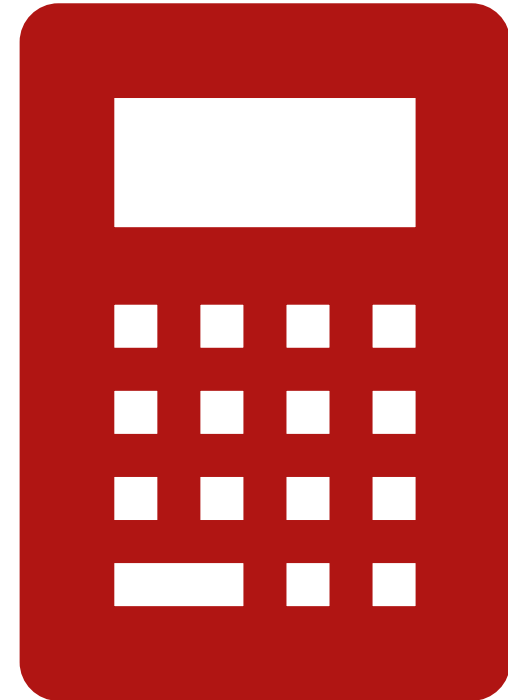
**TOWNSHIP OF HURON KINLOSS**  
**GROWTH AND SERVICING MASTER PLAN**  
**BACKGROUND PLANNING AND ISSUES REPORT**  
**LAKESHORE NORTH SUMMARY OF CONSTRAINTS**

DATE December 2019	PROJECT No. 18265
SCALE 1:25 000	FIGURE No. 5.13



# Water and Wastewater Reserve Capacity

- ▶ Reserve capacity is how much treatment capacity is available for future development.
- ▶ Total reserve capacity = Rated capacity – current usage
- ▶ Uncommitted reserve capacity = Rated capacity – current usage – committed capacity (i.e. allocated to developments)
- ▶ Uncommitted reserve capacity is not allocated (i.e. it is available for additional development)



# Treatment Reserve Capacity

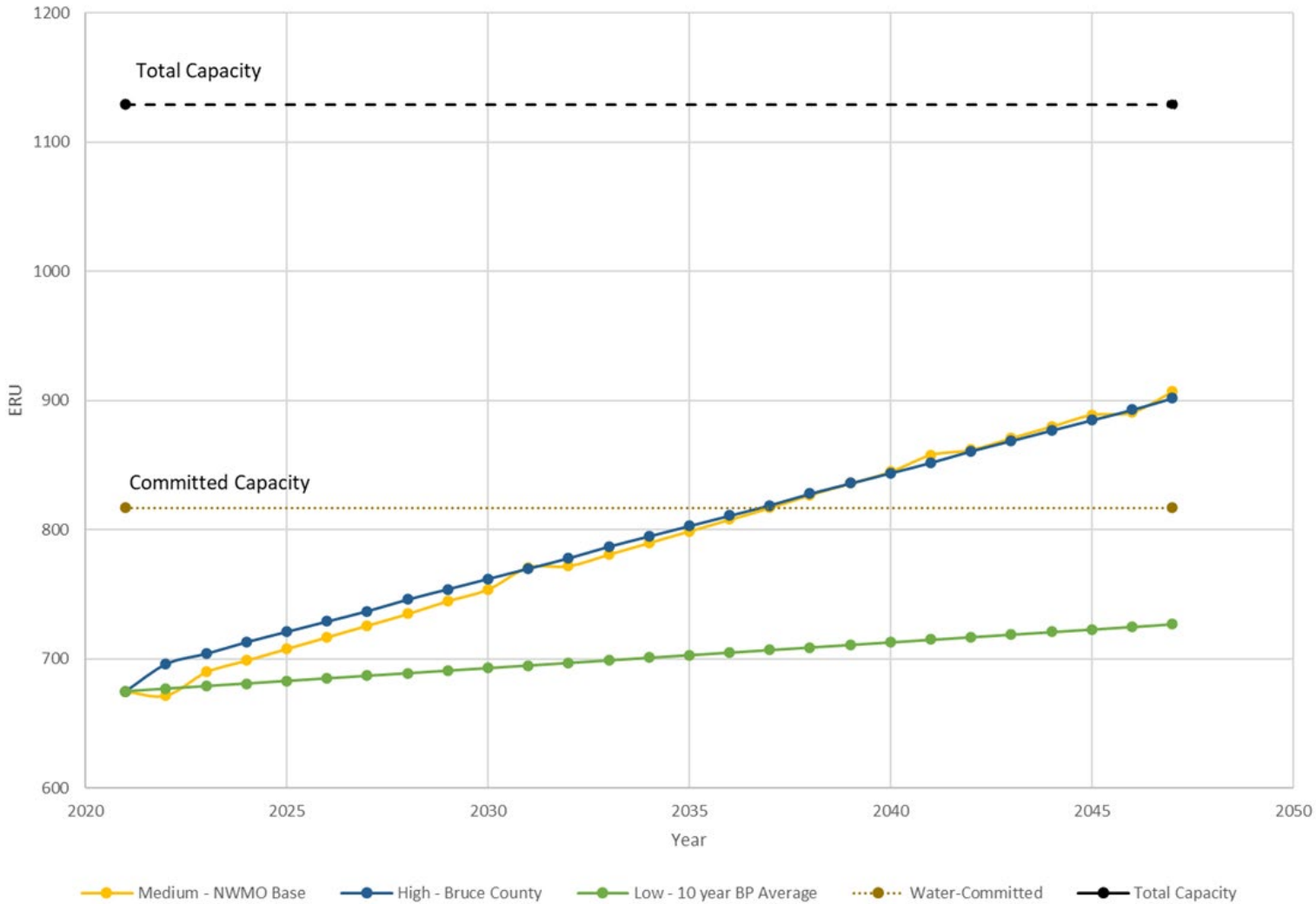
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System	Location	Rated Capacity (m <sup>3</sup> /d)	Current Usage (m <sup>3</sup> /d)	Total Reserve (m <sup>3</sup> /d)	Committed (m <sup>3</sup> /d)	Uncommitted Total Reserve (m <sup>3</sup> /d) (ERU)	
Water Supply	Lucknow	2,000	1,210 (60%)	790	236	554	312
Water Supply	Ripley	2,880	1,147 (40%)	1,733	1,037	696	222
Water Supply	Lakeshore North <sup>1</sup>	5,741	2,656 (46%)	3,085	489	2,596	834
Water Supply	Lakeshore South <sup>1</sup>	5,893	3,375 (57%)	2,518	386	2,132	1,004
Wastewater	Lucknow	750	559 (75%)	191	109	82	100
Wastewater	Ripley	600	368 (61%)	232	331	-99	-99

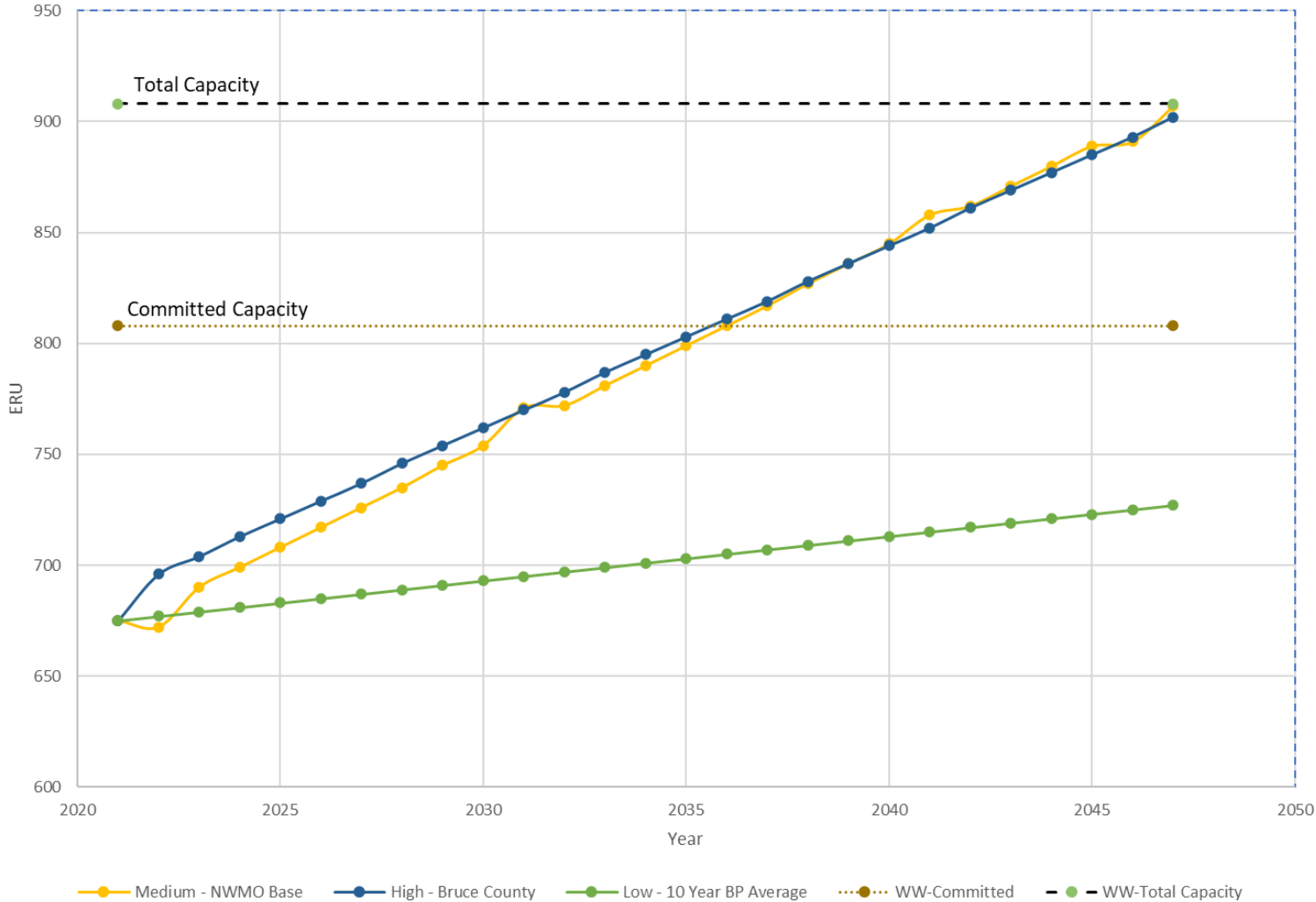
Notes: 1. The Lakeshore Water System is split into two pressure zones at Concession 6.

# Lucknow Water Treatment Capacity and Growth

Lucknow Growth (ERU) and Water Treatment Capacity

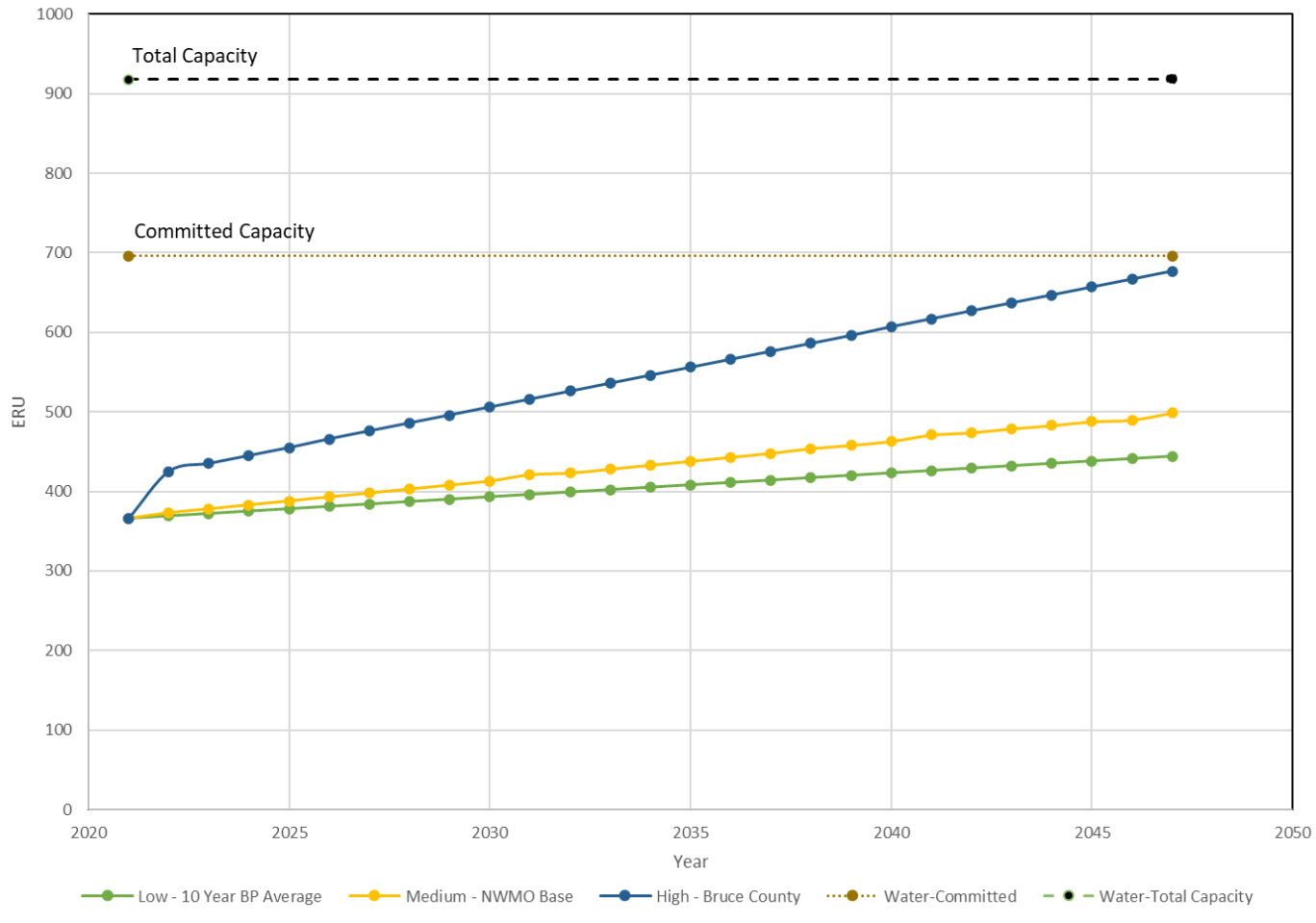


Lucknow Growth (ERU) and Wastewater Capacity



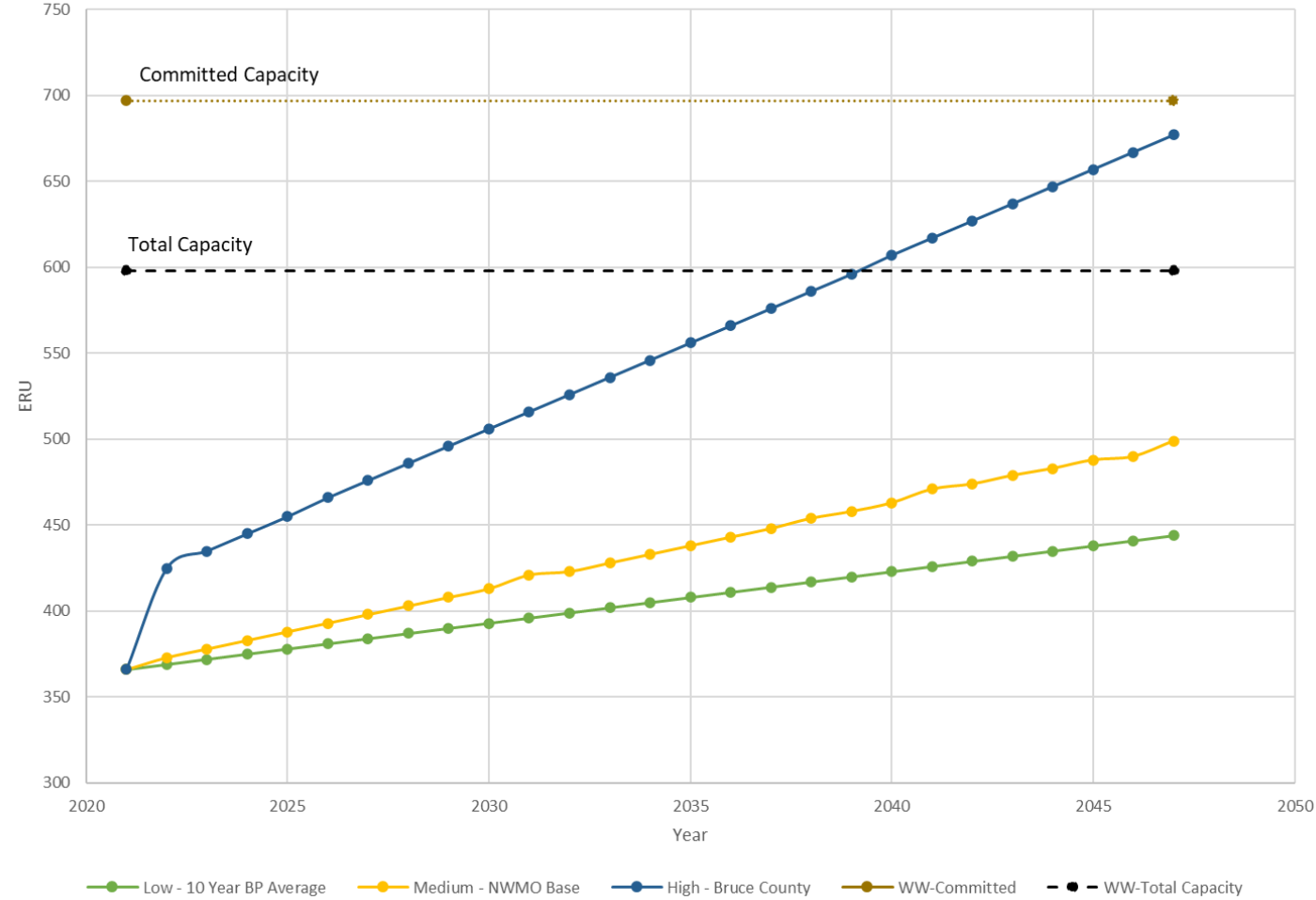
# Lucknow Wastewater Capacity and Growth

Ripley Growth (ERU) and Water Treatment Capacity



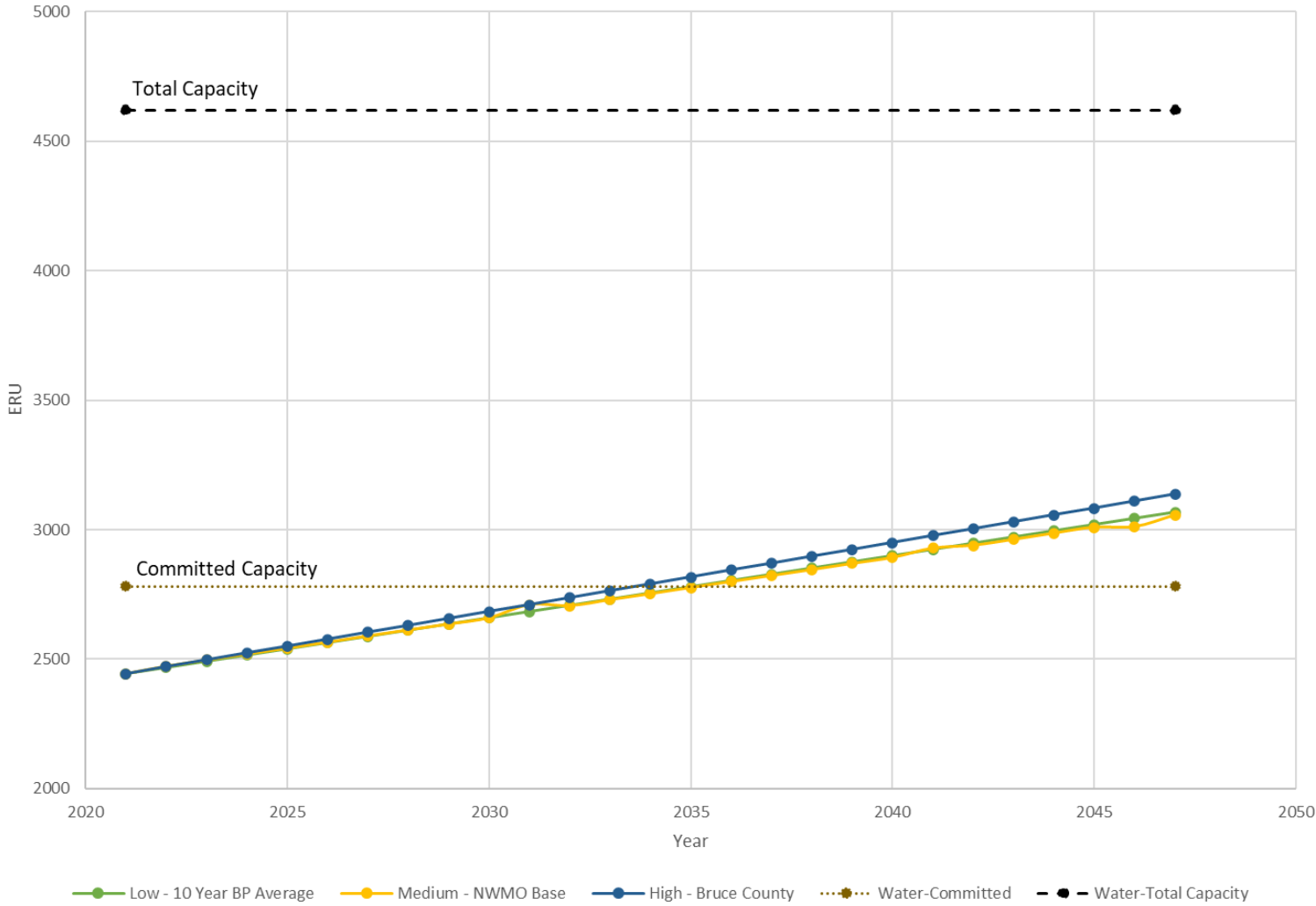
# Ripley Water Treatment Capacity

Ripley Growth (ERU) and Wastewater Treatment Capacity



# Ripley Wastewater Treatment Capacity

Lakeshore Growth (ERU) and Water Capacity



# Lakeshore Water Capacity

# Water Storage Capacity

<b>Water Storage Location</b>	<b>Total Current Storage (m<sup>3</sup>)</b>	<b>Recommended Storage – Existing (m<sup>3</sup>)</b>	<b>Recommended Storage – Existing + Commitments (m<sup>3</sup>)</b>
Lucknow	1,600 <sup>1</sup>	1,168	1,338
Ripley	1,465	912	1,477
Lakeshore	1,500 <sup>2</sup>	4,067	4,419

Notes 1. Based on new elevated tank

2. Effective storage is less

From examination of water storage capacity, additional water storage is recommended for the Lakeshore water system.



# Treatment and Storage Summary - Ripley

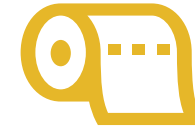
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## Water

Current rated water capacity is sufficient to meet forecasted demands.

Have sufficient water storage.



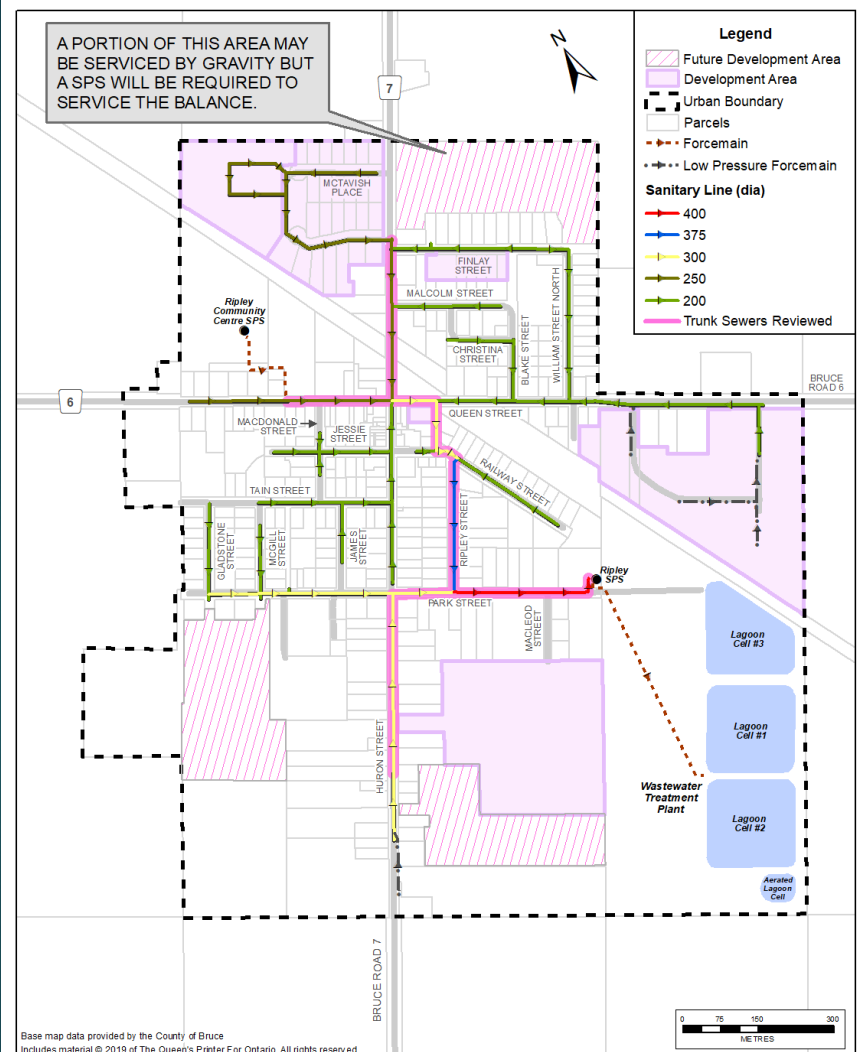
## Wastewater

Wastewater treatment capacity is theoretically over-committed.

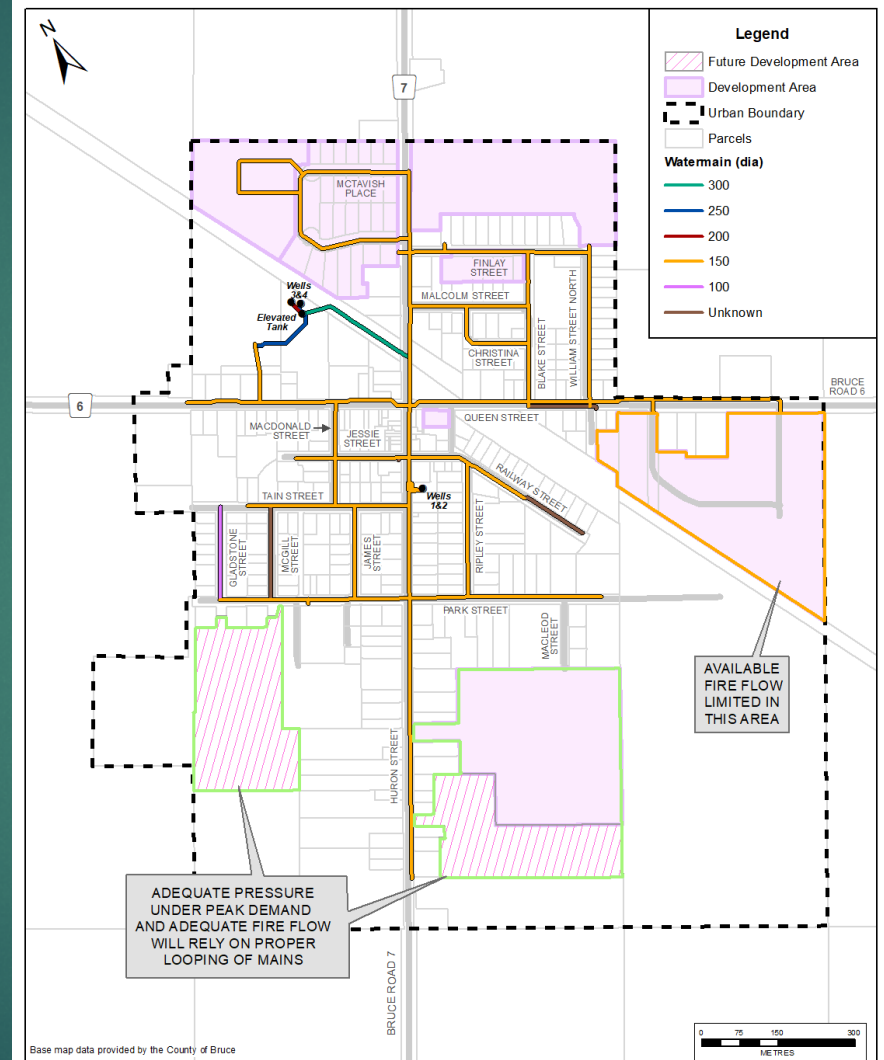
Recommendations:

- Implementing an allocation policy (use it or lose it, or want it – pay for it,)
- Monitoring reserve capacity on 5-year basis.
- Under high growth scenario, WWTP expansion may be needed by 2038. Continue to monitor development and plan to start an EA in approximately 2032 if additional capacity required.
- **An expanded plant, when required, will incorporate different treatment methods (e.g. mechanical works) to achieve modern treatment requirements at higher flows.**

# Ripley – Water Distribution and Wastewater Collection



	<b>TOWNSHIP OF HURON-KINLOSS</b> GROWTH AND SERVICING MASTER PLAN DEVELOPMENT AREAS AND WASTEWATER INFRASTRUCTURE - RIPLEY	
	DATE OCT 2022	PROJECT No. 18265
	SCALE AS SHOWN	FIGURE No.



	<b>TOWNSHIP OF HURON-KINLOSS</b> GROWTH AND SERVICING MASTER PLAN DEVELOPMENT AREAS AND WATER INFRASTRUCTURE - RIPLEY	
	DATE OCT 2022	PROJECT No. 18265
	SCALE AS SHOWN	FIGURE No.

# Treatment and Storage Summary - Lucknow

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## Water

Have sufficient capacity for forecasted growth over the next 25 years.

With new elevated storage facility, will have sufficient storage.

Replace Well 5 in next 5-10 years.



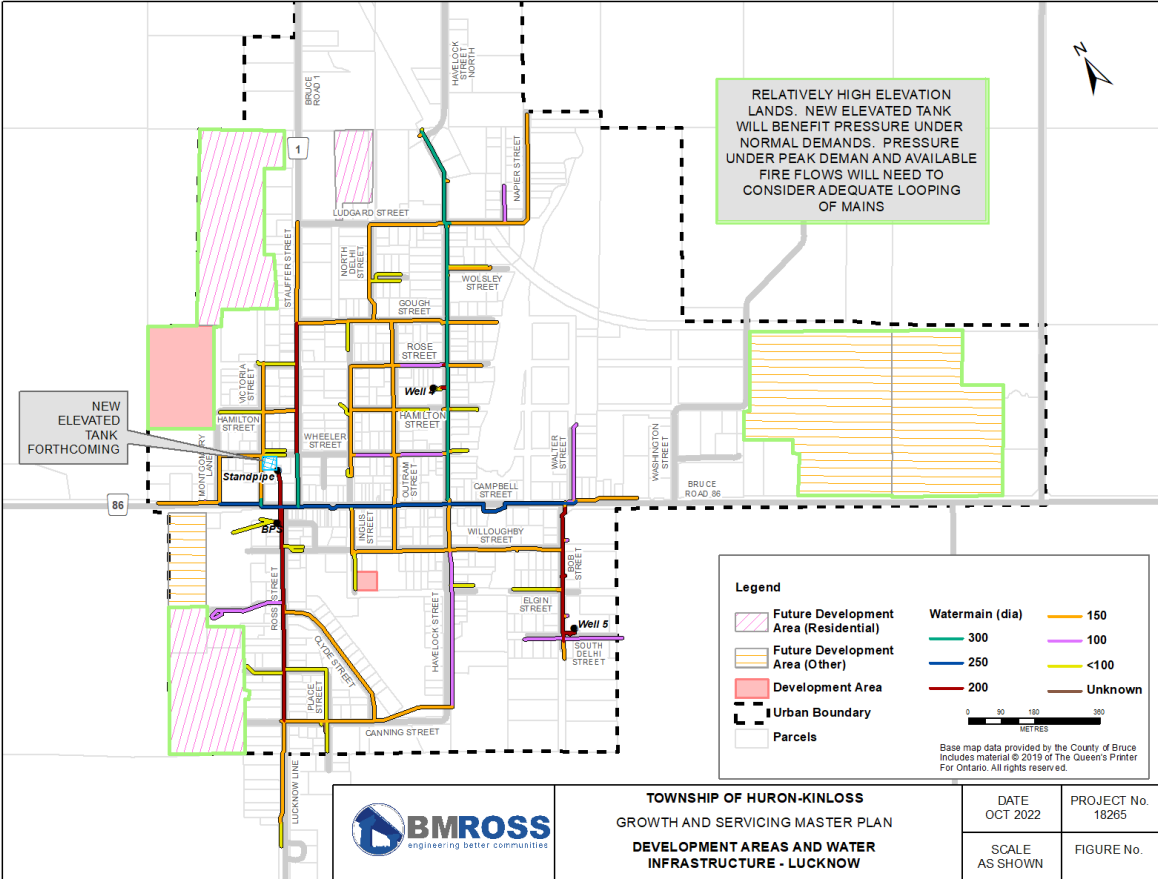
## Wastewater

Forecasted to approach capacity under high growth scenario around 2045.

Continue to monitor capacity as development occurs.

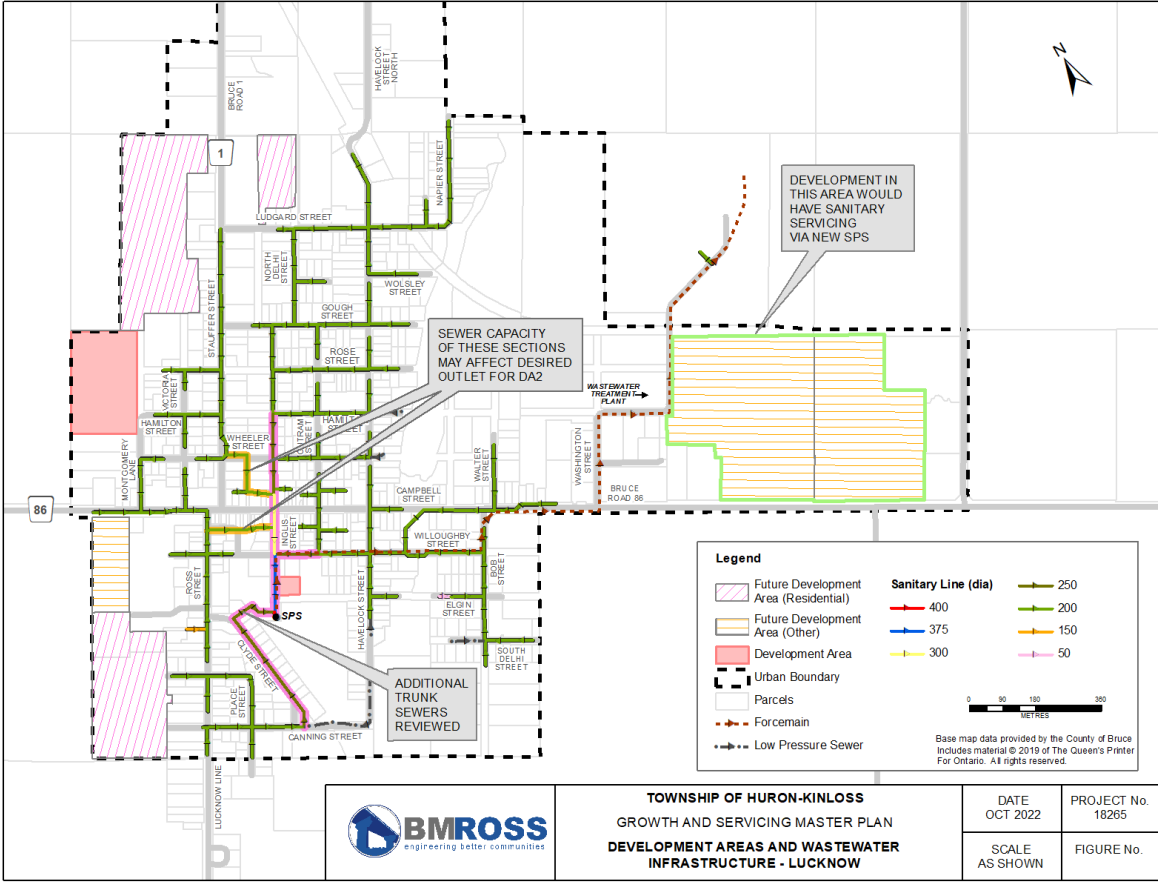
**An expanded plant, when required, will incorporate different treatment methods (e.g. mechanical works) to achieve modern treatment requirements at higher flows.**

# Lucknow – Water Distribution and Wastewater Collection



**TOWNSHIP OF HURON-KINLOSS**  
**GROWTH AND SERVICING MASTER PLAN**  
**DEVELOPMENT AREAS AND WATER INFRASTRUCTURE - LUCKNOW**

DATE OCT 2022	PROJECT No. 18265
SCALE AS SHOWN	FIGURE No.



**TOWNSHIP OF HURON-KINLOSS**  
**GROWTH AND SERVICING MASTER PLAN**  
**DEVELOPMENT AREAS AND WASTEWATER INFRASTRUCTURE - LUCKNOW**

DATE OCT 2022	PROJECT No. 18265
SCALE AS SHOWN	FIGURE No.

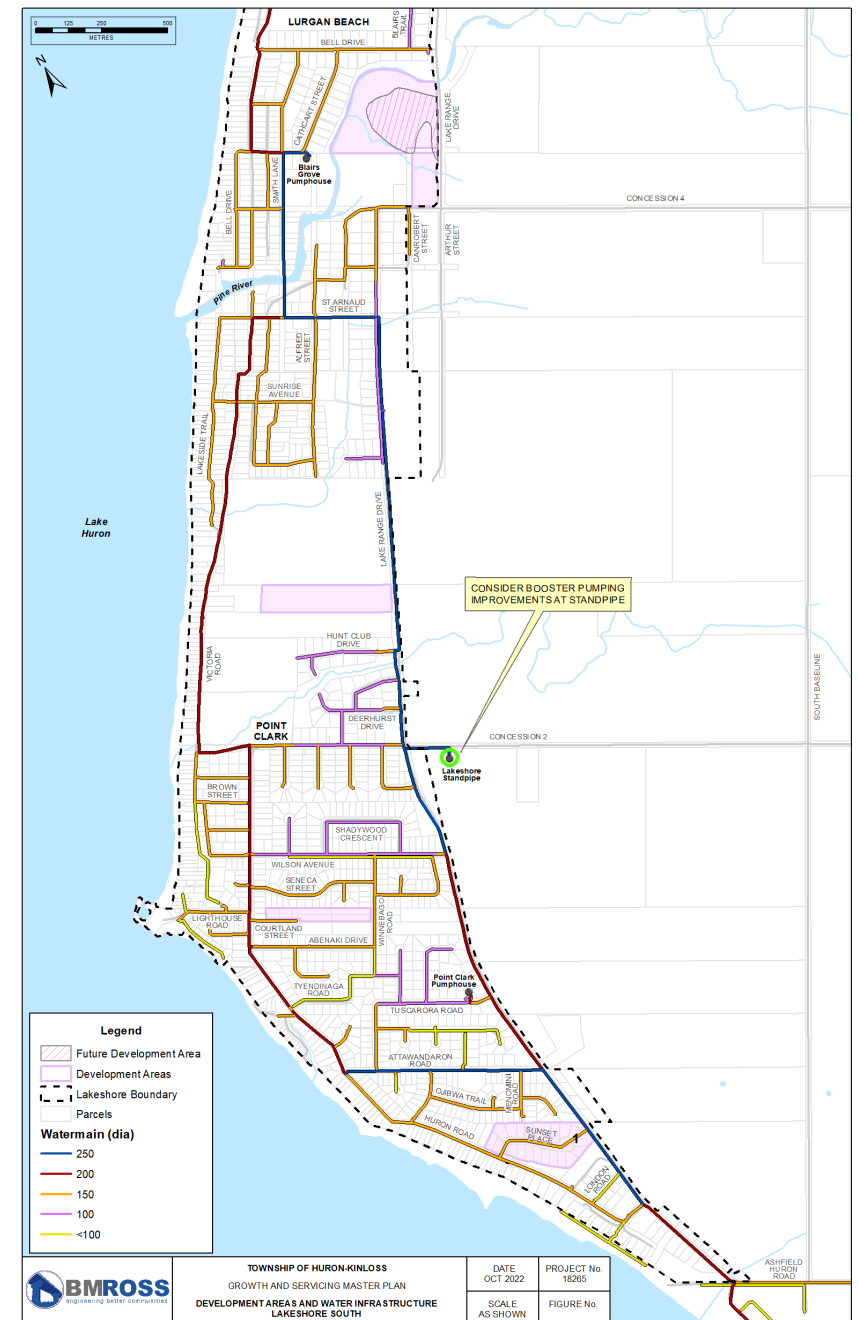
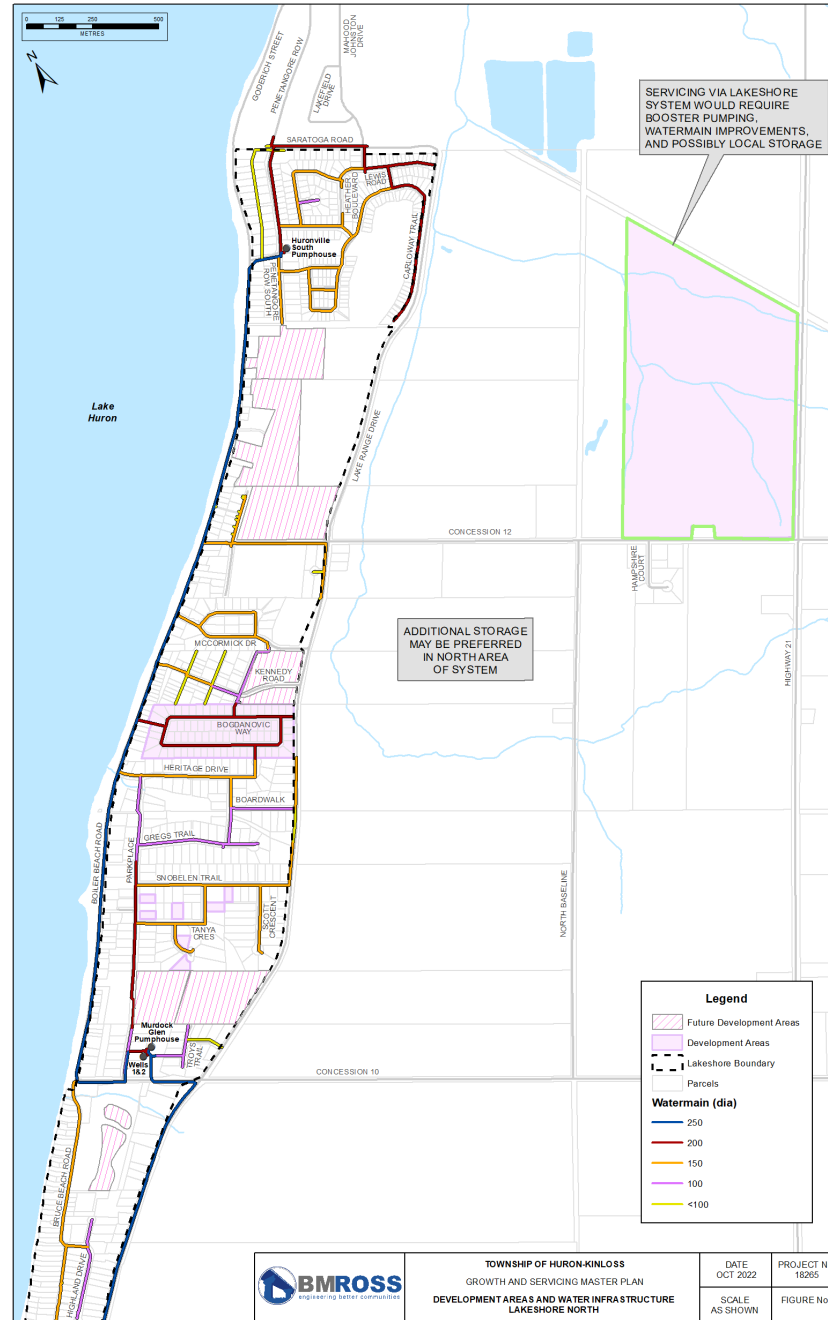
## Water Treatment and Storage Summary – Lakeshore Area

Sufficient supply capacity for forecasted growth

Additional water storage recommended.  
Suggested siting criteria:

- Locating in the northern lakeshore area (i.e. north of Concession 6)
- Ideally site near existing large watermains, at a higher elevation location

# Lakeshore Area Water Distribution



# Lakeshore Area Wastewater Servicing

- ▶ Inverlyn Lake/Huronville and a section of Boiler Beach are connected to municipal sewage services (from Kincardine). Remainder of the Lakeshore is serviced by on-site, private servicing i.e. septic systems.
- ▶ Under Provincial Policy Statement (PPS), where municipal services are not available, planned or feasible, private communal sewage services are preferred.
  - ▶ Partial services only permitted to: address failed on-site sewage services and in settlement areas for infilling and minor rounding out, providing site conditions are suitable and no long-term negative impacts.
- ▶ Given that forecasting shows additional settlement lands will be required over the next 25 years, a strategy for wastewater servicing is needed.

# Lakeshore Servicing Alternatives

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1. Status Quo (Private Services)/Do Nothing	2. Service from Kincardine	3. New Sewage System	4. Private Services and Communal Service
<ul style="list-style-type: none"><li>• Infilling in existing settlement area on septic systems.</li><li>• Continued septic inspection program to address concerns around long-term impacts.</li><li>• Unlikely expanded settlement area would be permitted on septic systems.</li></ul>	<ul style="list-style-type: none"><li>• Extend municipal services from Kincardine.</li><li>• Kincardine does not likely want to service entire Lakeshore area.</li><li>• Potential to service expanded settlement area, however unlikely as Kincardine has its own capacity demands/ needs.</li><li>• Not considered feasible.</li></ul>	<ul style="list-style-type: none"><li>• Construct a municipal sewage treatment and collection system to service all or part of the Lakeshore.</li><li>• Not considered feasible to service entire Lakeshore area – very high cost of collection system, siting of treatment facility.</li></ul>	<ul style="list-style-type: none"><li>• Existing Lakeshore area would remain on private septic systems. Expanded settlement area would be serviced by a communal/ decentralized sewage system.</li></ul>



# Lakeshore Servicing Strategy

- ▶ Continued infill on septic systems within the existing settlement area.
- ▶ Maintain septic inspection program to demonstrate active management of systems and absence of long-term issues.
- ▶ Future expanded settlement area expected to require decentralized/communal wastewater treatment system.
  - ▶ Type, size and location of system will be dependent on proposed development.
  - ▶ Will need to give consideration to technologies, planning (structure and scale of the system) and how system(s) will be managed – ownership, financing, operations and maintenance.
  - ▶ Expect that a system will likely require consultation with Ministry of Environment, Conservation and Parks, and a Schedule C Municipal Class Environmental Assessment.

# Identified Projects

## Immediate Needs

- Develop and implement allocation policy for water/wastewater.
- In Ripley – update/monitor wastewater reserve capacity calculations on 5-year basis.

## Near-term (5-10 years)

- Additional storage in Lakeshore.
  - Schedule B Municipal Class EA for new storage site.
- Replace Well 5 in Lucknow.
  - Schedule B if new well is at a new location.

## Long-term (10-25 years)

- Prepare Settlement Capacity Study for Lakeshore Area expansion.
- Potential expansion of Ripley WWTP (2039), Lucknow WWTP (2045). Timing of need to start EA (Schedule C) studies will be dependent on development.
  - Start EAs approx. 5 years before capacity needed.

# Growth & Servicing Outside of Settlement Areas

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## Opportunities

- There are a number of small inland lakes that could be a residential development opportunity.
- Could be an adaptive re-use of rehabilitated quarries/aggregate operations.
- Presents opportunity for rural development.
- Could be a locally, unique real estate market.
- Utilizes non-prime agriculture land.
- Communal servicing may reduce lot size requirements and promote more efficient development pattern.
- Development comes with recreational opportunities.
- Increase tax base.

## Constraints

- Development restricted in and adjacent to significant wetlands, hazard areas.
- Availability of land within existing settlement areas and hamlets for development.
- Potential for environmental impacts related to development around inland lakes.
- Will increase service demands and levels - roads, garbage etc.
- Currently, there are few paved roads in the Kinloss portion of the Township.
- Must meet MDS formulae.
- Must avoid aggregate operations and areas of mineral deposits.
- In estate-type developments, individual servicing and partial servicing is not permitted, must use communal or full services.
- Potential for conflict with agricultural and aggregate operations.

# Next Steps of the Master Plan

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Finalize Report and Issue  
Notice of Completion



30-day public review  
period.

# Questions and Comments

