CIVICA
Water Management Solutions

VAUGHAN

Integrated Urban Water Plan
Public Information Centre 3

FEBRUARY 5, 2024, 7 P.M.

VAUGHAN

Land Acknowledgment

We respectfully acknowledge that the City of Vaughan is situated in the Territory and Treaty 13 lands of the Mississaugas of the Credit First Nation. We also recognize the traditional territory of the Huron-Wendat and the Haudenosaunee. The City of Vaughan is currently home to many First Nations, Métis and Inuit people today. As representatives of the people of the City of Vaughan, we are grateful to have the opportunity to work and live in this territory.

Purpose of This Meeting

What is the City of Vaughan Integrated Urban Water Plan?

- Focus is on water, wastewater and stormwater infrastructure
- Emphasizing environmental sustainability and resiliency.
- Support the City's Growth Management Strategy expressed in the Official Plan and other key City Planning documents.

The purpose of PIC #3 is to:

- Overview the Master Plan Alternative Solutions and Evaluation Criteria
- Present the Preferred Servicing Recommendations for the:
  - City-wide servicing plan
  - Secondary Plan and Intensification Areas
- Receive your feedback and answer any questions

Goals of the Urban Water Plan

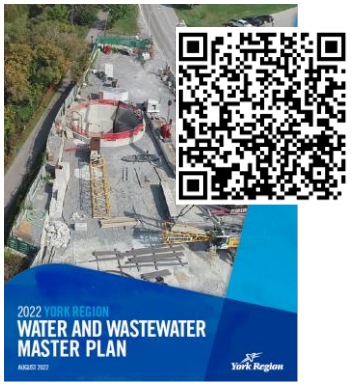
To emphasize environmental sustainability and resiliency by integrating land-use planning and environmental protection

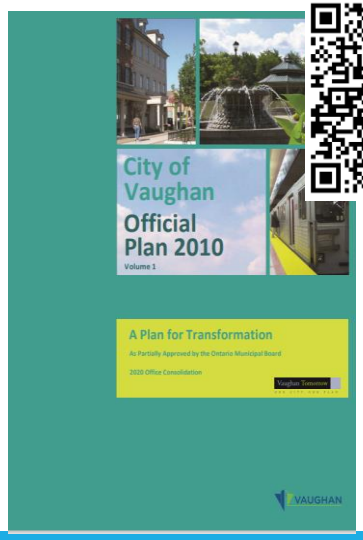
Support the City's plans for growth as expressed in the Vaughan Official Plan and other City master plans.

Identify and evaluate projects that meet future servicing needs

Integrate priorities of Green Directions Vaughan, the City's Community Sustainability Master Plan, and the Vaughan Official Plan

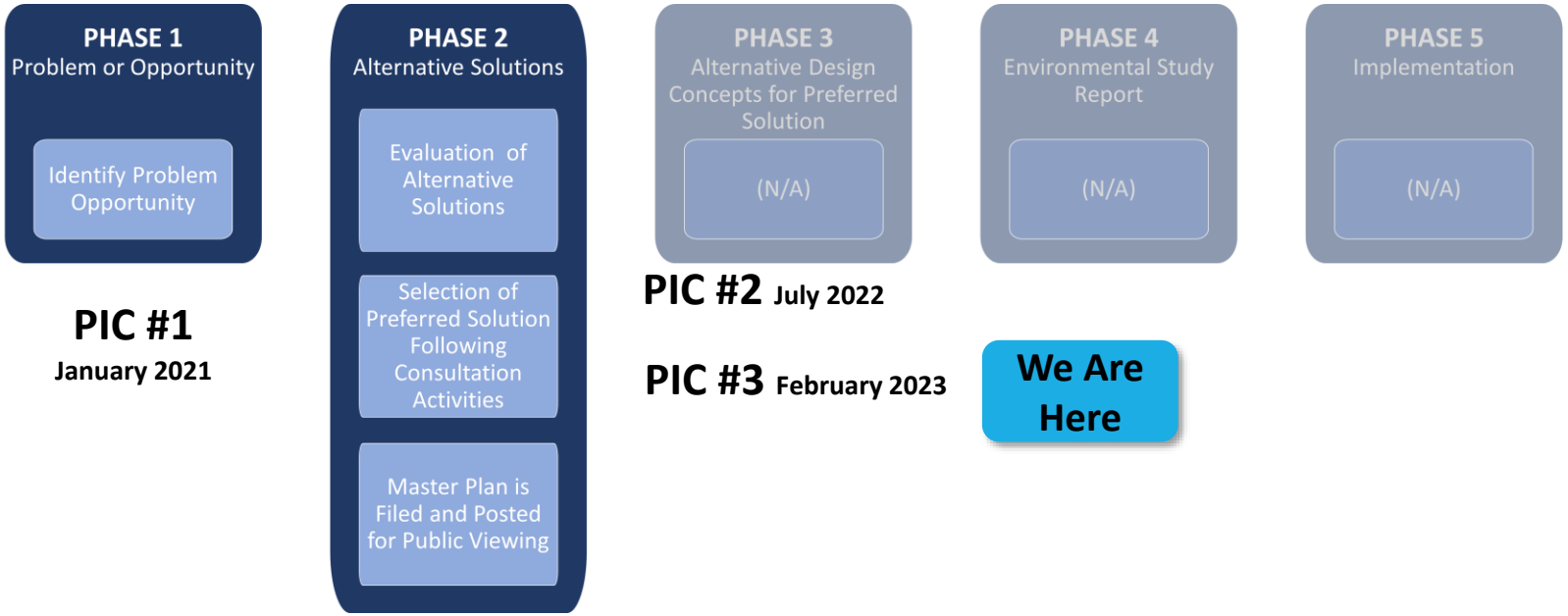
Current Community Support Programs





MEA Process and Consultation

Master Plans are conducted under the framework of the Municipal Engineers Association's (MEA) Class EA process. They are long-range plans that identify infrastructure requirements for existing and future land use within a larger study area, through the application of environmental assessment principles.



PIC #1 January 2021

PIC #2 July 2022

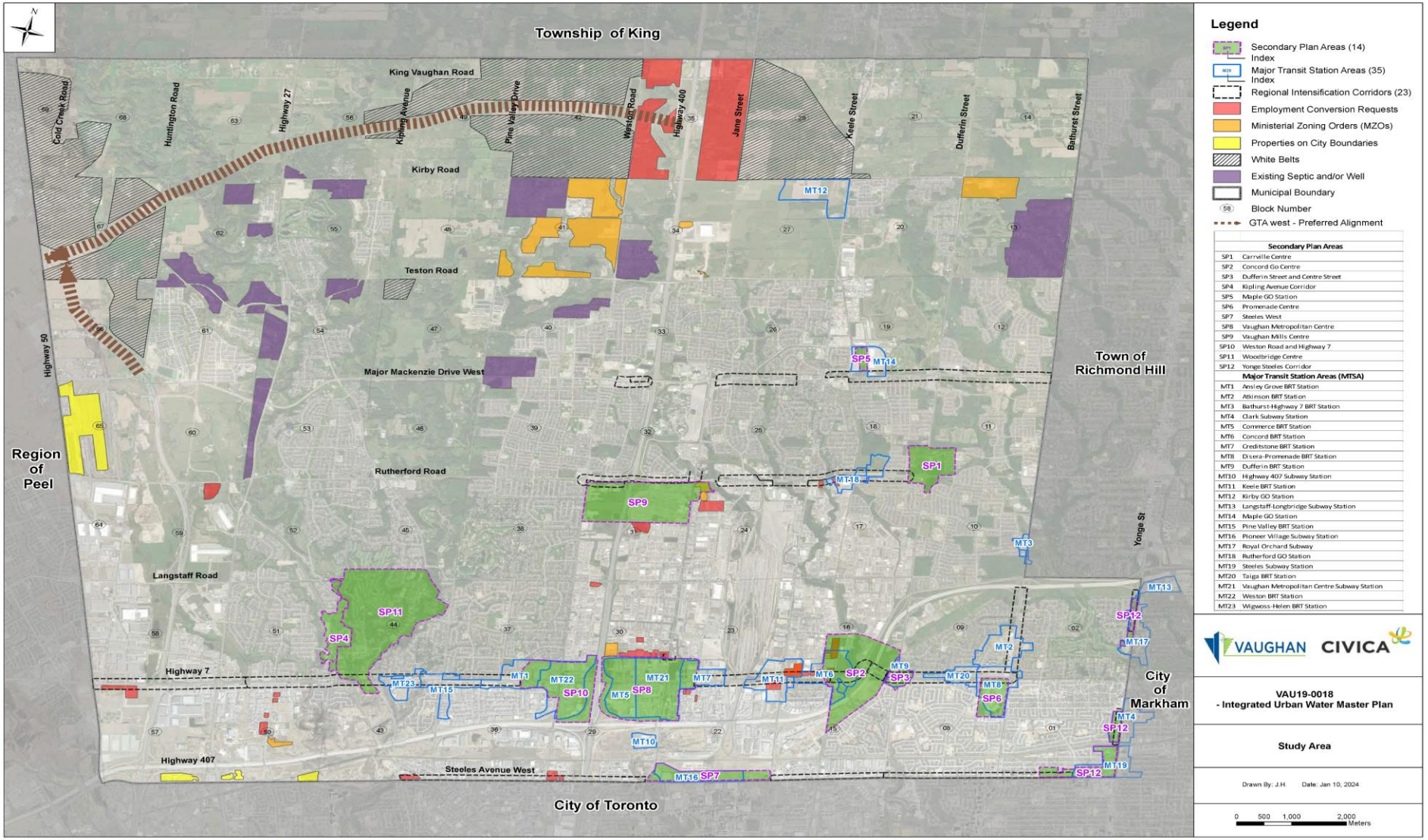
PIC #3 February 2023

We Are Here

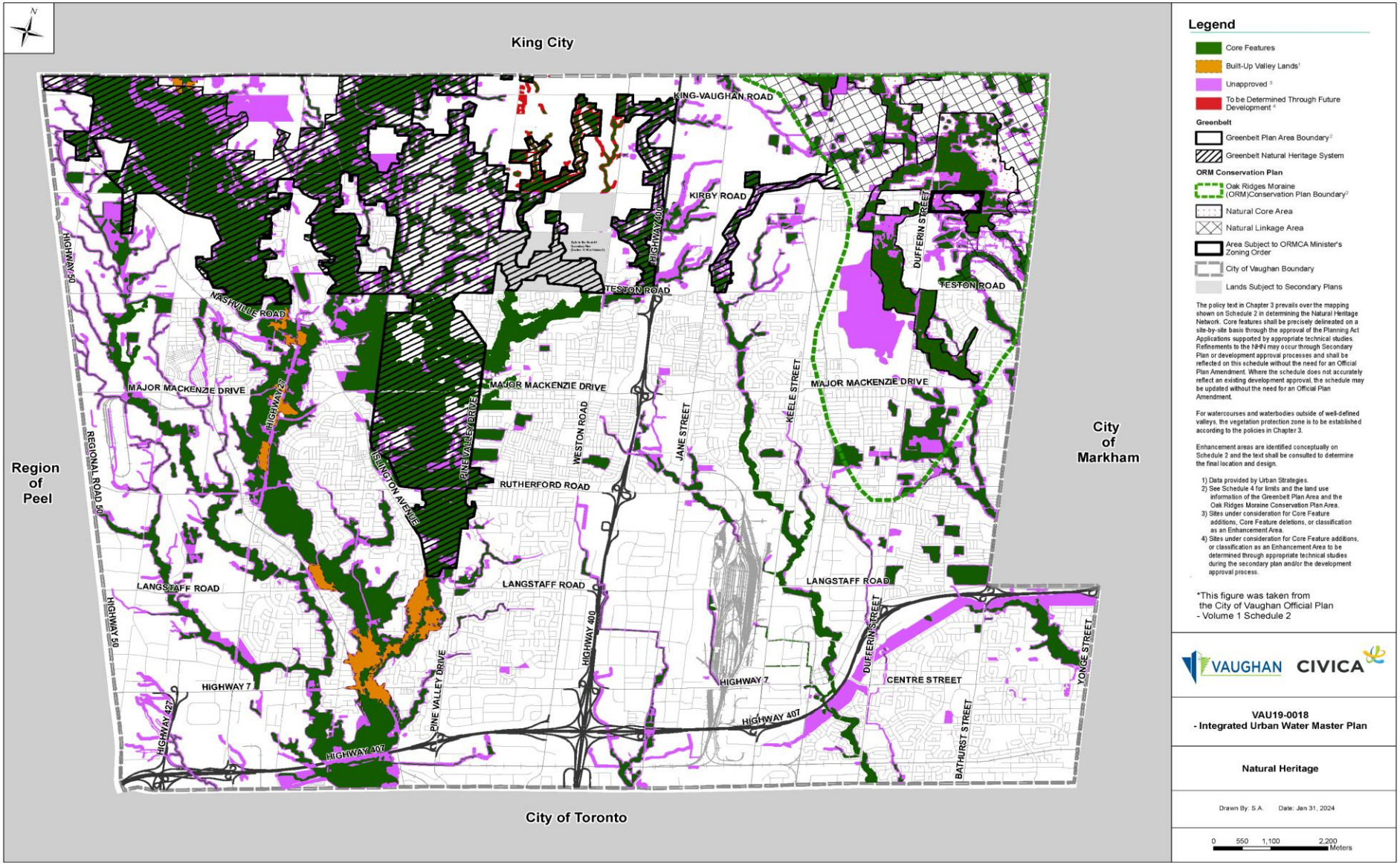
Problem/ Opportunity Statement

To establish a preferred integrated servicing plan for the City's water, wastewater and stormwater systems that meets current needs and supports growth while emphasizing environmental sustainability and resiliency.

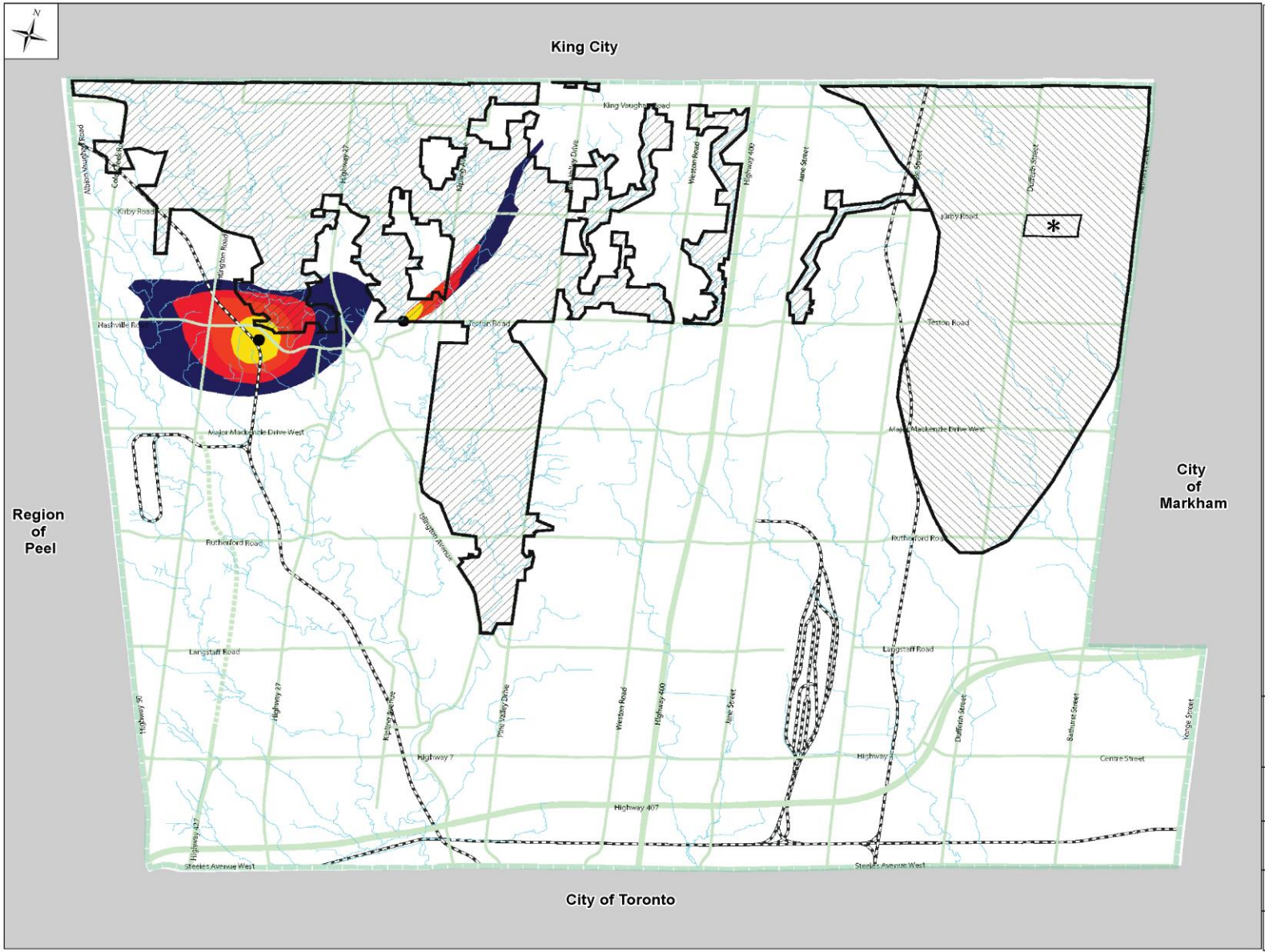
Study Areas


Township of King
King Vaughan Road
Kirby Road
Teston Road
Major Mackenzie Drive West
Rutherford Road
Langstaff Road
Highway 7
Highway 407
Steeles Avenue West
City of Toronto
Region of Peel
Town of Richmond Hill
City of Markham
Yonge St
Cold Creek Road
Huntington Road
Highway 27
Kipling Avenue
Pine Valley Drive
Weston Road
Highway 400
Jane Street
Keele Street
Dufferin Street
Bathurst Street
Highway 50
Legend
Secondary Plan Areas (14) Index
Major Transit Station Areas (35) Index
Regional Intensification Corridors (23)
Employment Conversion Requests
Ministerial Zoning Orders (MZOs)
Properties on City Boundaries
White Belts
Existing Septic and/or Well
Municipal Boundary
Block Number
GTA west - Preferred Alignment
Secondary Plan Areas
SP1 Carrville Centre
SP2 Concord Go Centre
SP3 Dufferin Street and Centre Street
SP4 Kipling Avenue Corridor
SP5 Maple GO Station
SP6 Promenade Centre
SP7 Steeles West
SP8 Vaughan Metropolitan Centre
SP9 Vaughan Mills Centre
SP10 Weston Road and Highway 7
SP11 Woodbridge Centre
SP12 Yonge Steeles Corridor
Major Transit Station Areas (MTSA)
MT1 Ansley Grove BRT Station
MT2 Atkinson BRT Station
MT3 Bathurst-Highway 7 BRT Station
MT4 Clark Subway Station
MT5 Commerce BRT Station
MT6 Concord BRT Station
MT7 Creditstone BRT Station
MT8 Disera-Promenade BRT Station
MT9 Dufferin BRT Station
MT10 Highway 407 Subway Station
MT11 Keele BRT Station
MT12 Kirby GO Station
MT13 Langstaff-Longbridge Subway Station
MT14 Maple GO Station
MT15 Pine Valley BRT Station
MT16 Pioneer Village Subway Station
MT17 Royal Orchard Subway
MT18 Rutherford GO Station
MT19 Steeles Subway Station
MT20 Taiga BRT Station
MT21 Vaughan Metropolitan Centre Subway Station
MT22 Weston BRT Station
MT23 Wigwoss-Helen BRT Station
VAUGHAN CIVICA
VAU19-0018
- Integrated Urban Water Master Plan
Study Area
Drawn By: J.H. Date: Jan 10, 2024
0 500 1,000 2,000 Meters

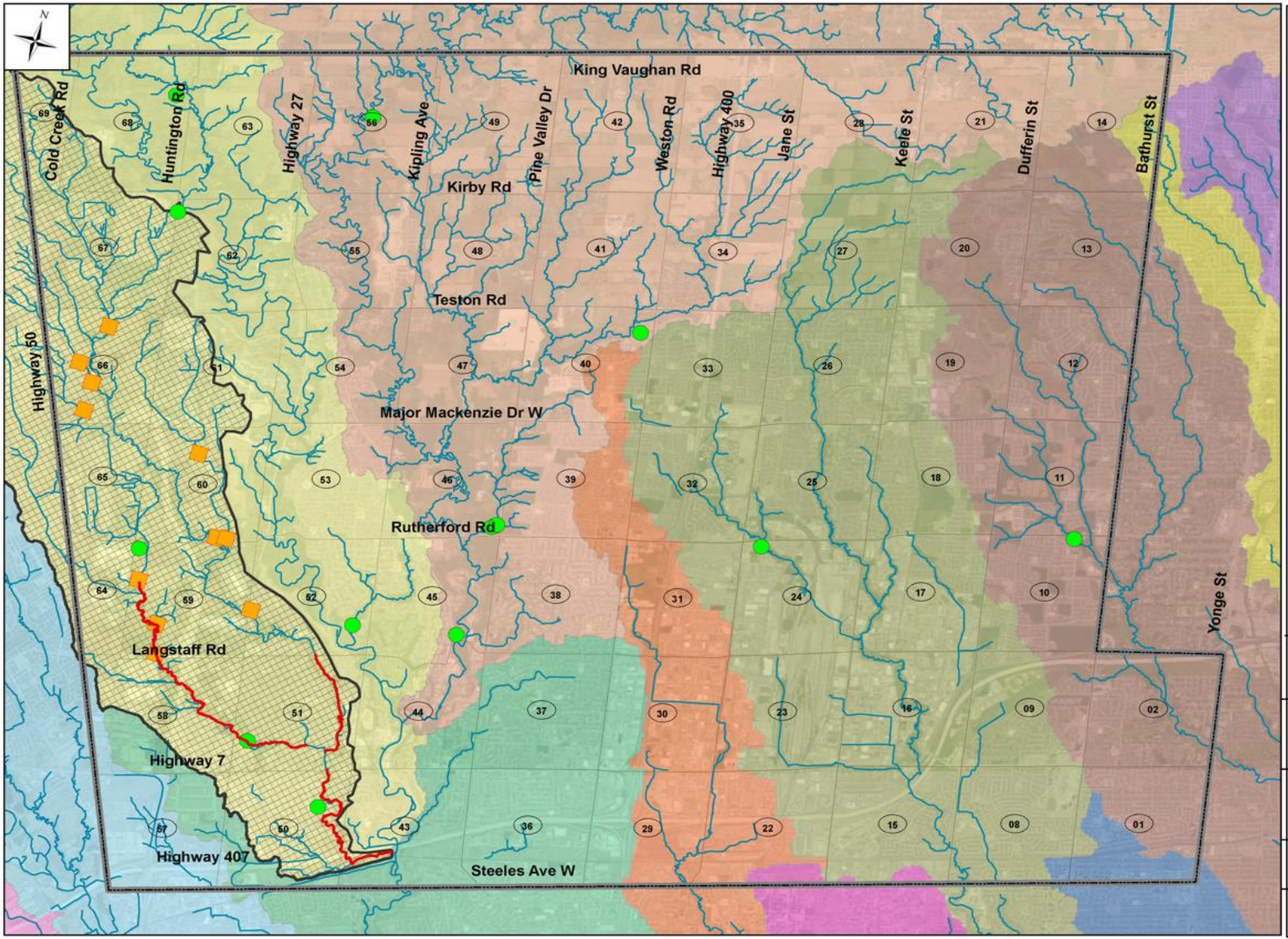
Hydrogeological Environment



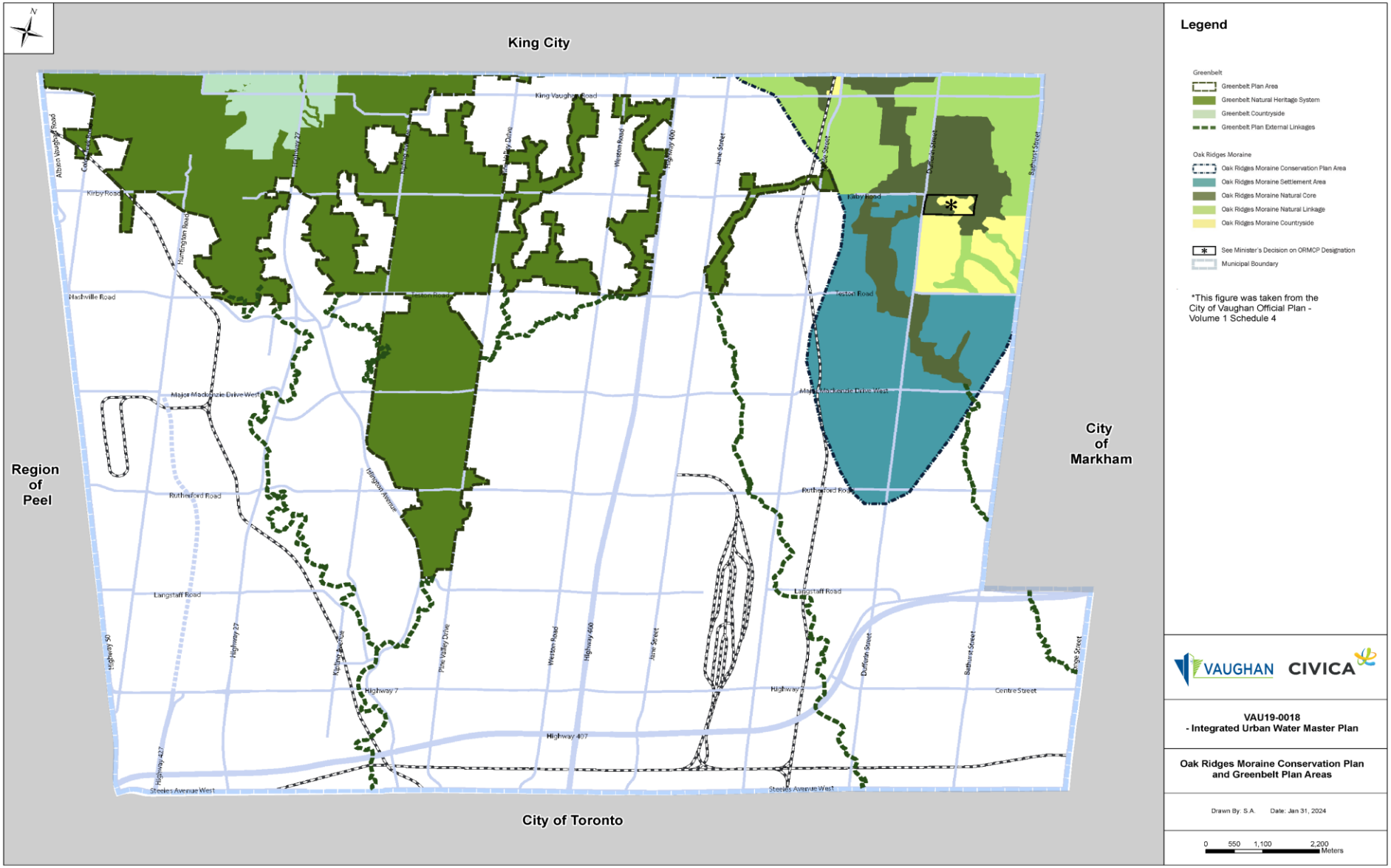
Wellhead Protection Areas



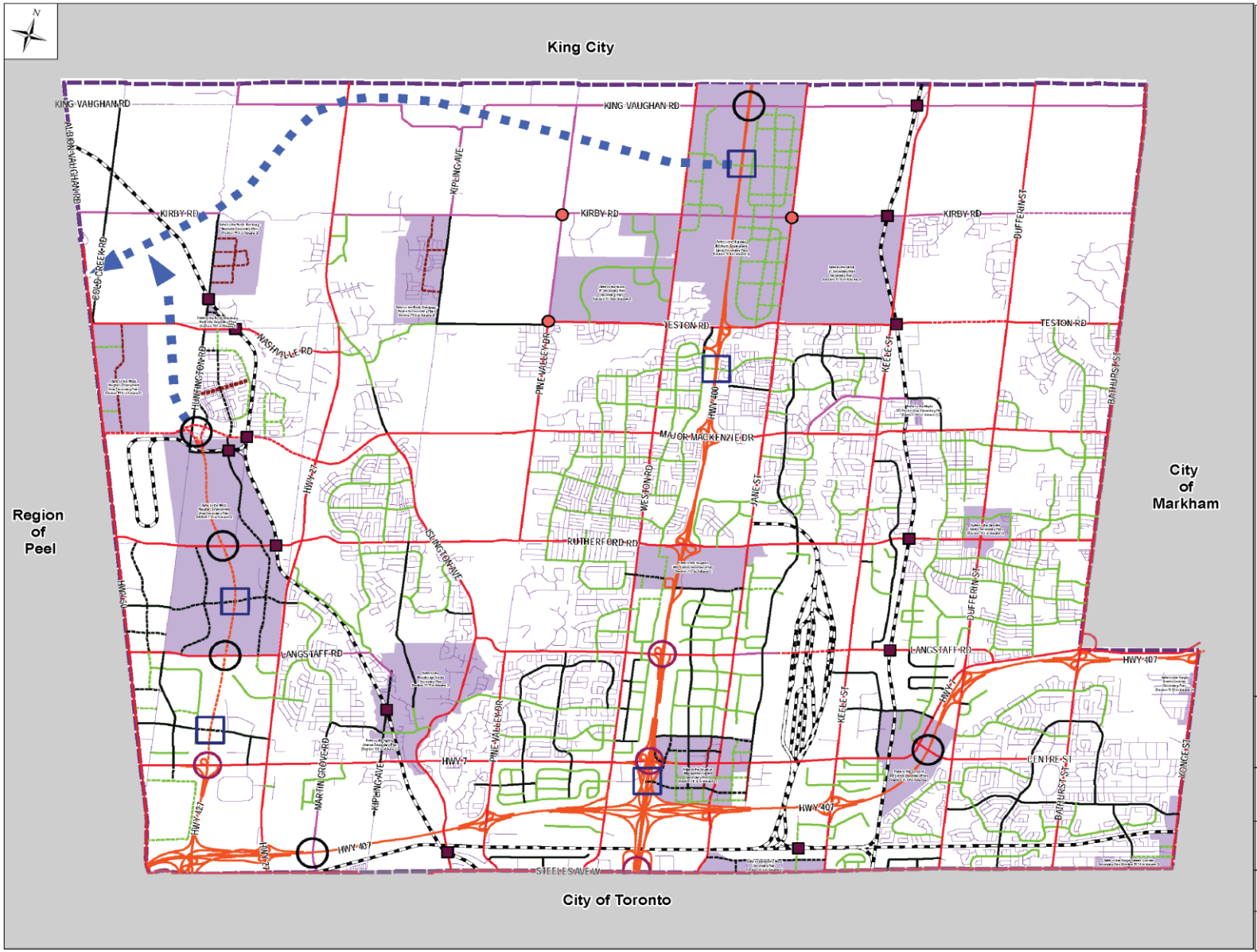
Watershed Environment



Geophysical Environment



Future Transportation Network



Legend

- Freeway (Provincial)
- Major Arterial (Regional)
- Minor Arterial (36m)
- Major Collector (26m)
- Minor Collector (24m proposed/23m existing)
- Special Classification (Refer to Secondary Plans)
- Local
- Proposed New Road Link[1]
- GTA West Corridor[2] and Hwy. 427 extension[3]
- Interchange Improvements
- New Interchanges
- Future Hwy 400 Series Road Crossings
- Grade Seperation
- Jog Elimination
- Railway
- Areas Subject to Secondary Plans
- City of Vaughan Boundary

[1]Alignments are conceptual

[2]Alignments are conceptual and subject to an Environmental Assessment

[3]Alignment and Corridor are currently under consideration by the Province

*This figure was taken from the City of Vaughan Official Plan - Volume 1 Schedule 9

VAUGHAN CIVICA

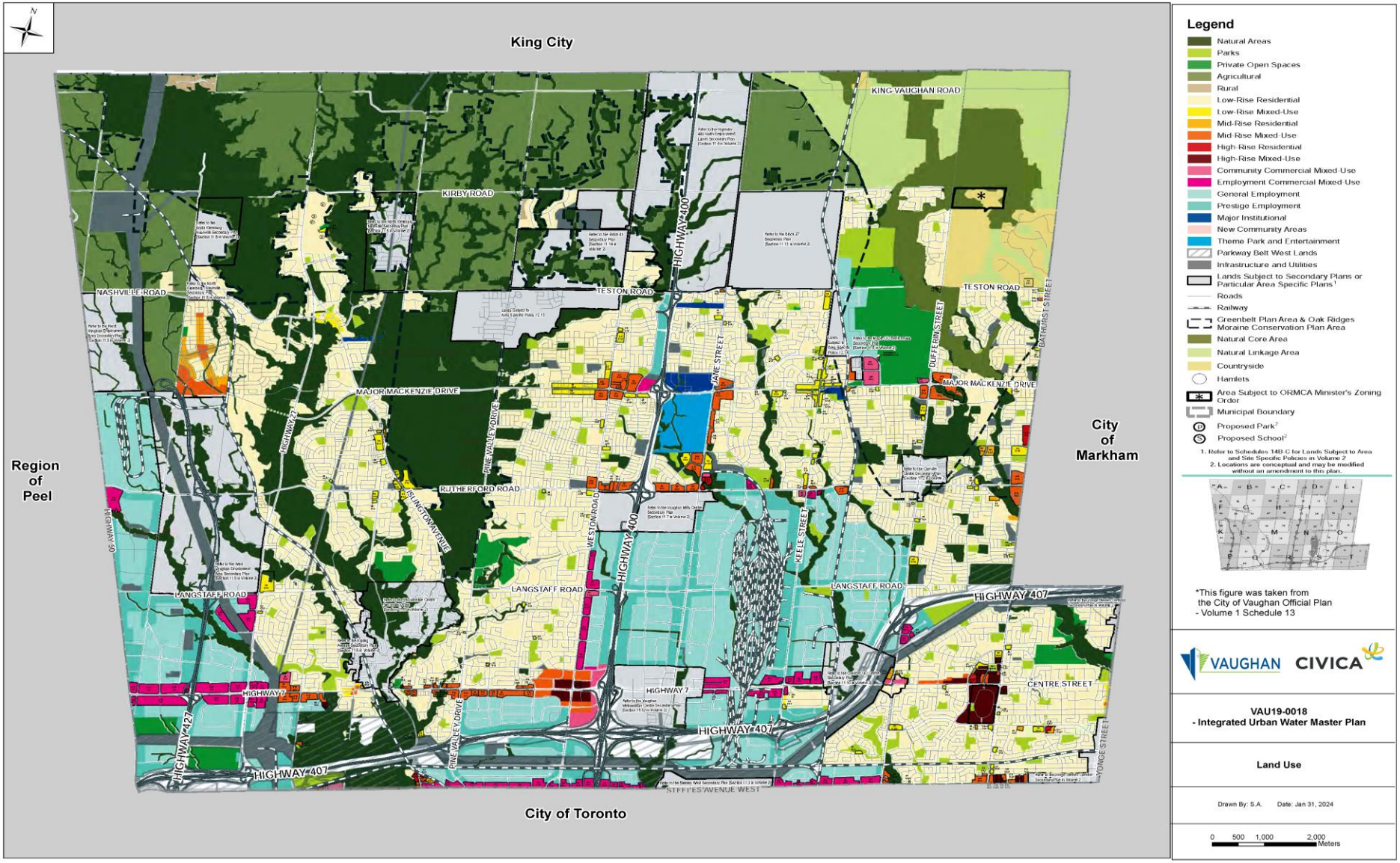
VAU19-0018
- Integrated Urban Water Master Plan

Future Transportation Network

Drawn By: S.A. Date: Jan 31, 2024

0 500 1,000 2,000 Meters

Land Use


King City
Region of Peel
City of Markham
City of Toronto
KING-VAUGHAN ROAD
KIRBY ROAD
NASHVILLE ROAD
TESTON ROAD
MAJOR MACKENZIE DRIVE
RUTHERFORD ROAD
LANGSTAFF ROAD
HIGHWAY 400
HIGHWAY 407
HIGHWAY 427
HIGHWAY 7
HIGHWAY 27
JANE STREET
DUFFERIN STREET
BATHURST STREET
PINE VALLEY DRIVE
WESTON ROAD
KEELE STREET
YONGE STREET
CENTRE STREET
HUNTINGTON AVENUE
STEELES AVENUE WEST
Legend
Natural Areas
Parks
Private Open Spaces
Agricultural
Rural
Low-Rise Residential
Low-Rise Mixed-Use
Mid-Rise Residential
Mid-Rise Mixed-Use
High-Rise Residential
High-Rise Mixed-Use
Community Commercial Mixed-Use
Employment Commercial Mixed-Use
General Employment
Prestige Employment
Major Institutional
New Community Areas
Theme Park and Entertainment
Parkway Belt West Lands
Infrastructure and Utilities
Lands Subject to Secondary Plans or Particular Area Specific Plans[1]
Roads
Railway
Greenbelt Plan Area & Oak Ridges Moraine Conservation Plan Area
Natural Core Area
Natural Linkage Area
Countryside
Hamlets
Area Subject to ORMCA Minister's Zoning Order
Municipal Boundary
Proposed Park[2]
Proposed School[2]
1. Refer to Schedules 14B-C for Lands Subject to Area and Site Specific Policies in Volume 2
2. Locations are conceptual and may be modified without an amendment to this plan.
*This figure was taken from the City of Vaughan Official Plan - Volume 1 Schedule 13
VAUGHAN
CIVICA
VAU19-0018
- Integrated Urban Water Master Plan
Land Use
Drawn By: S.A.
Date: Jan 31, 2024
0 500 1,000 2,000 Meters

Alternative Solutions

Wastewater Conservation and Environmental Enhancements

HIGH EFFICIENCY FIXTURES

INFLOW AND INFILTRATION REDUCTION

CROSS CONNECTION ELIMINATION

CONSERVATION

PUBLIC EDUCATION

Water Conservation and Environmental Enhancements

EFFICIENCY

REDUCE WASTE

SYSTEM LEAK REDUCTION

OPTIMIZE SYSTEM PRESSURE

OUTDOOR WATER USE MANAGEMENT

PUBLIC EDUCATION

Stormwater Conservation and Environmental Enhancements

COLLECTION AND REUSE

RAINFALL HARVESTING

RECHARGE SYSTEMS

CHEMICAL USE AWARENESS

DISCHARGE QUANTITY AND QUALITY CONTROL

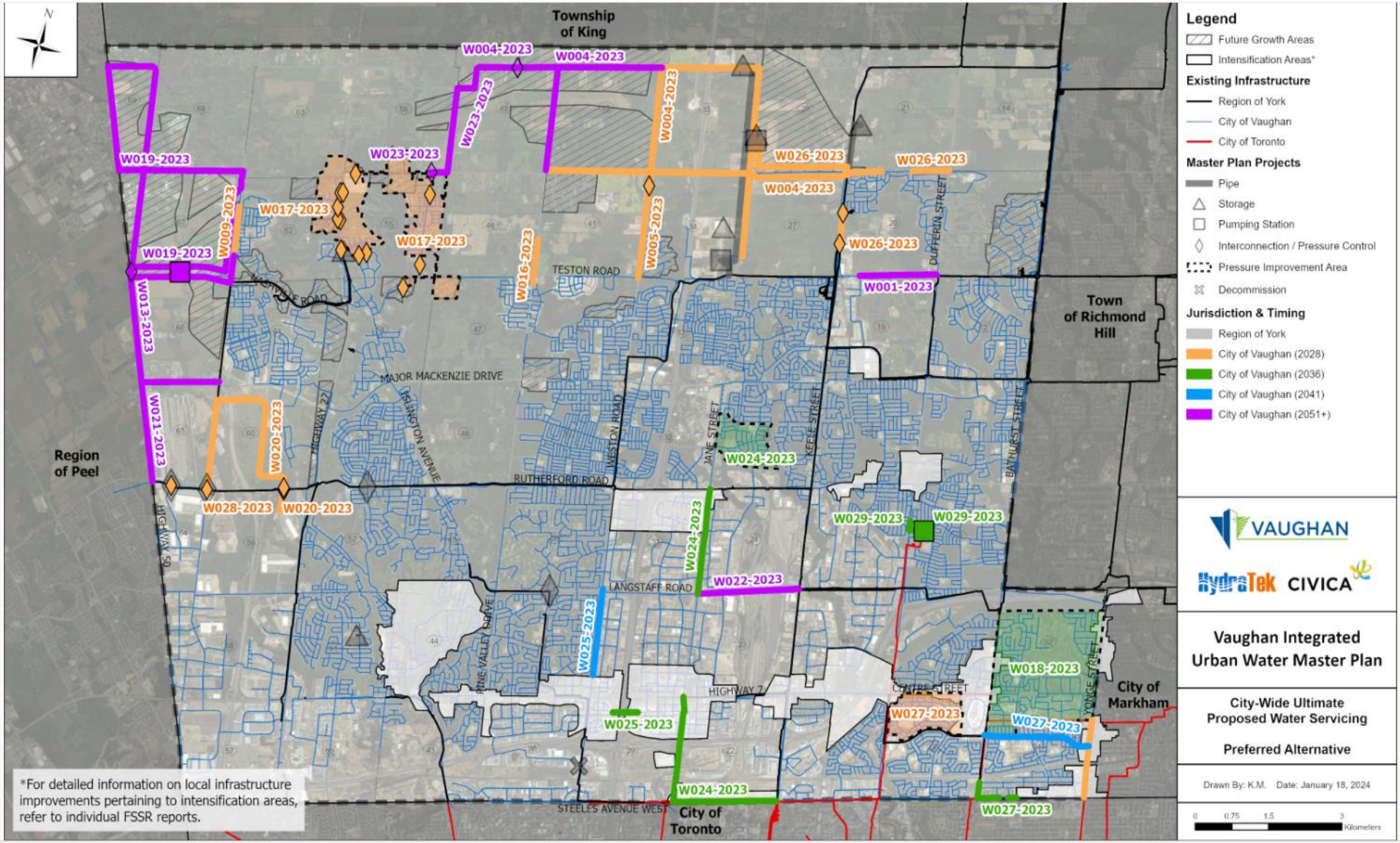
Evaluation Criteria

- Technical Merit
- Impact on the Natural Environment
- Socio-economic Impact
- Financial Impact

City Wide

1. Water and Wastewater
   - City wide proposed solutions presented for both Water and Wastewater servicing system
   - Proposed solutions of the system are presented, and the phasing of the projects are indicated
   - These figures only identify the solutions for areas outside of the FSSR areas. Project details for each FSSR area are presented in the individual FSSR area figures
   - Cost estimate for both the Water and Wastewater proposed solutions are provided along with the completion date and the EA Schedule.
2. Stormwater
   - TRCA and MOE policies on the watershed and sub-watersheds within the City of Vaughan has been reviewed and ensured that the stormwater sewer servicing system complies with watershed management objectives where possible.

City Wide Water Infrastructure Needs

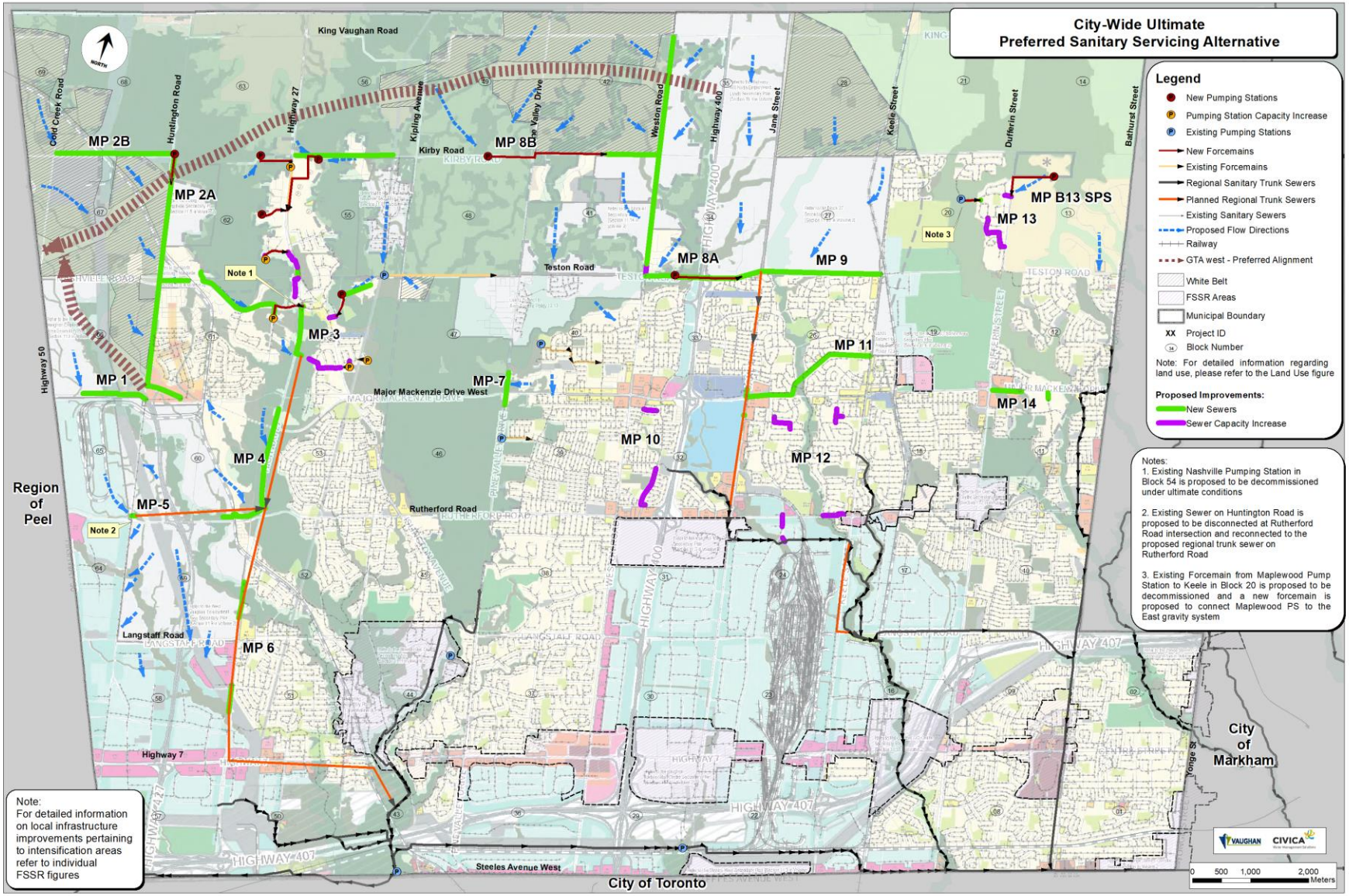


City Wide – Water Cost Estimate

2023 Master Plan Project ID	2014 Master Plan Project ID (Carry-Over)		Description	Trigger/Timing	Anticipated Class EA Schedule	Estimated Cost (2023 dollars)
	Original Convention	Revised Convention				
W001-2023	W1	W001-2014	Teston Road PD8 Watermain (Preferred Option: Watermain from Rodinea Road to Dufferin Street)	At time of road construction	Exempt	$7,120,000
W004-2023	W4	W004-2014	PD8 Watermains • North side of Blocks 27, 34, 35 and 41; West side of Blocks 28, 35 • North side of Blocks 42 and 49; West side of Block 42	 2028 2051	 B B	 $87,850,000 $27,270,000
W005-2023	W5	W005-2014	Weston Road PD7 Watermain	2028	Exempt	$11,170,000
W009-2023	W9	W009-2014	Huntington Road PD6 Watermain • New 400Ø watermain north of existing 300Ø watermain terminus • Replace existing 300Ø watermain with 400Ø	 2028 2051	 Exempt Exempt	 $4,650,000 $2,600,000
W011-2023	W11	W011-2014	Water Loss Monitoring & Control System	Ongoing/continuous	TBD (Generally Exempt)	$2,500,000
W013-2023	W13	W013-2014	Block 66W PD6 Watermains	2051	B	$41,310,000
W015-2023	W15	W015-2014	City-Wide Water Conservation	Ongoing/continuous	n/a	n/a
W016-2023	n/a	n/a	Pine Valley Drive PD7 Watermain	2028	Exempt	$3,860,000
W017-2023			PDKN Servicing (Preferred Option: Pressure Zone Realignment)	2028	Exempt	$3,650,000
W018-2023			Easterly PD6 Pressure Management	2036	Exempt	$1,830,000
W019-2023			Northwest Vaughan Water Servicing (Preferred Option: Booster Pumping Station located along Nashville Road between Cold Creek and Huntington Roads)	2051	B	$101,180,000
W020-2023			Block 60W PD6 Watermains	2028	Exempt	$29,280,000
W021-2023			Highway 50 PD6 Watermain	2051	B	$12,360,000
W022-2023			Langstaff Road PD6 Watermain	At time of road construction	Exempt	$14,440,000
W023-2023			Block 49W & 56E Watermains	2051	B	$24,080,000
W024-2023			Central PD6 System Enhancement (Preferred Option: Watermain System Improvements + Ongoing Monitoring/Study)	2036	Exempt/B (TBC)	$75,020,000
W025-2023			Highway 7 & Weston Road PD6 Supply Enhancement (Preferred Option: Watermain System Improvements + Ongoing Monitoring/Study) • Highway 400 watermain crossing • Weston Road watermain from Blue Willow Drive to Langstaff Road	 2036 2041	 B Exempt	 $7,580,000 $8,670,000
W026-2023			PD9 Watermains	2028	Exempt	$45,470,000
W027-2023			PD5 East Watermain Improvements (Preferred Option: Watermain System Improvements + Ongoing Monitoring/Study) • Yonge Street watermain • Pressure zone realignment • Bathurst Street and Steeles Avenue West watermains • Clark Avenue watermain	 2028 2028 2036 2041	 Exempt Exempt Exempt Exempt	 $18,370,000 $0 $6,740,000 $15,510,000
W028-2023			PD6 PRV Chamber Improvements	2028 (or earlier)	Exempt	$230,000
W029-2023			PD6 Pumping Station	2036	B	$28,400,000
Total						**$581,140,000**

The total cost estimate presented

City Wide Wastewater Infrastructure Needs



Citywide – Wastewater Cost Estimate

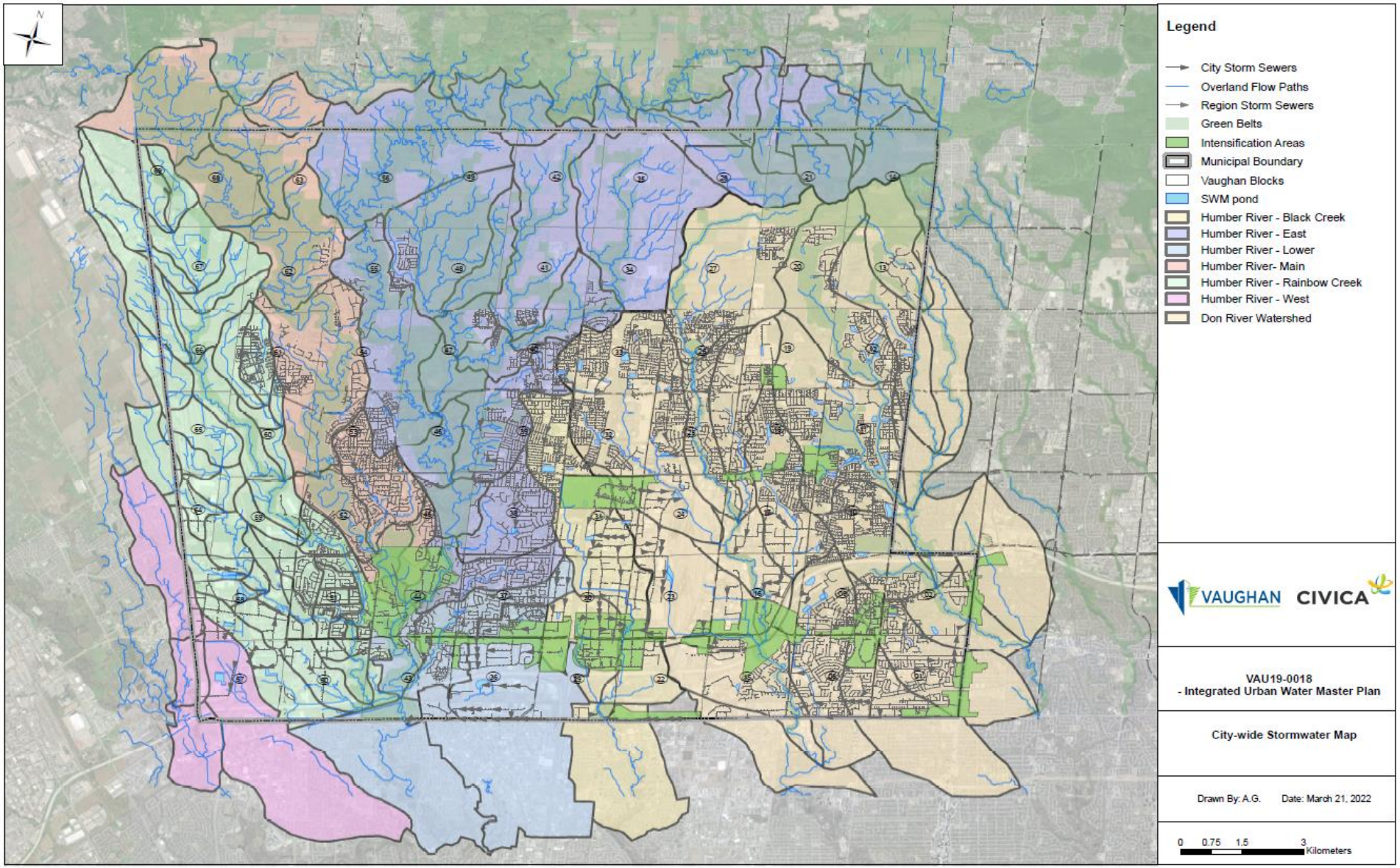
Project ID	2014 MP Project ID	Description	Trigger/ Timing	Class EA Schedule	Total Cost (2024)
MP 1		Major Mackenzie Drive and Huntington Rd (1,116m of 450mm some tunneling)	Prior 2028	Exempt	$13,000,000
MP 2A	WW6 (A and B)	Kirby Road and south on Huntington Rd to Major Mackenzie Drive (492m of 250mm, 1,416m of 750mm, 2,731m of 675mm some tunneling)	Prior 2028	Schedule B	$35,400,000
MP 2B	WW6 (A and B)	Kirby Road and south on Huntington Rd to Major Mackenzie Drive (200 l/s PS, 2566m of 450mm some tunneling)	Prior 2051	Schedule B	$36,400,000
MP 3	WW12	HYW 27 extension to YDSS and Pumping station additions and expansions in Kleinburg (PS1, 2, 3, 4, 5, 6, 7, 8, 9, PS upgrade 20L/s, 1,594m of 200mm, 6,831m of 250mm, 1,434m of 375mm, 29m of 450mm, 881m of 525mm)	Prior 2028	Schedule B	$115,200,000
MP 4		HYW 27 Major Mackenzie Drive to YDSS (848m of 450mm, 1,761m of 600mm some tunnel)	Prior 2028	Exempt	$25,400,000
MP 5		Rutherford Road East to HWY 27 YDSS point (63m of 900mm)	Prior 2028	Exempt	$1,000,000
MP 6		Hwy 27 section additions (625m of 375mm tunnel, 468m of 750mm)	Prior 2028	Exempt	$8,300,000
MP 7		Major Mackenzie Drive and Pine Valley (564m of 250mm)	Prior 2028	Exempt	$2,800,000
MP 8A	WW3, 4, 13	Teston Road, Kirby Road and Weston Road servicing area (PS2 1,200l/s, 2036m of 600mm, 1,886m of 750mm, 721m of 825mm, 1,161 of 975mm, 341m of 1,050mm)	Prior 2028	Schedule B	$109,000,000
MP 8B	WW3, 4, 13	Teston Road, Kirby Road and Weston Road servicing area (PS1 420l/s, 2,050m of 450mm FM, 892m of 450mm)	Prior 2051	Schedule B	$45,000,000
MP 9	WW1, 2	Teston Road to Jane Street (883m of 450mm, 876m of 900mm tunneling)	Prior 2028	Exempt	$19,000,000
MP 10		Rutherford Road and Weston Road areas upgrade (626m of 250mm, 356m of 300mm)	Prior 2028	Exempt	$5,400,000
MP 11		McNaughton Road to Major Mackenzie Drive to YDSS point (2,609m of 525 some tunnel)	Prior 2028	Exempt	$19,700,000
MP 12		Keele Street and Rutherford Road expansion (712m of 250, 825m of 300mm, 165m of 375mm)	Prior 2028	Exempt	$11,400,000
MP 13		Dufferin Street and Teston Road expansion (213m of 250mm, 804m of 375mm)	Prior 2028	Schedule B	$5,800,000
MP B13 SPS		Dufferin Street and Teston Road expansion PS 55l/s, 980m of 250mm FM, 116m of 300mm)	Prior 2028	Schedule B	$13,400,000
MP 14		Major Mackenzie Drive and Dufferin Street addition (107m of 200mm tunneling, 500m of 375mm)	Prior 2028	Exempt	$9,800,000
Monitoring		Flow Monitoring and Sewer Capacity Analysis Studies	Prior 2028		$15,000,000
I/I		City-Wide Infiltration/Inflow (I/I) Monitoring and Reduction	Prior 2028		$15,000,000
Total					**$506,000,000**

Land cost allowance of $10M in addition to above total for 5 new PS sites

Wastewater Pumping Stations

Pumping Station ID	Scope	Existing Population	Existing Capacity in the Model (Peak Flow L/s)	2051 Population	Proposed Capacity (Peak Flow L/s)	Construction
MP 2-PS1	New		NA	10,540	200	Beyond 2031
MP 3-PS1	Expand	620	17	750	20	2028-2031
MP 3-PS2 (Kirby Rd East of Hwy 27)	New		NA	3,750	84	2028-2031
MP 3-PS3 (Kirby Rd West of Hwy 27)	New		NA	130	10	2028-2031
MP 3-PS4	New		NA	110	25	2028-2031
MP 3-PS5 (Sevilla)	Expand	830	20	870	60	2028-2031
MP 3-PS6 (Molise)	Expand	390	36	1,430	60	2028-2031
MP 3-PS7	Expand	90	6	100	13	2028-2031
MP 3-PS8	New		NA	80	10	2028-2031
MP 3-PS9	Expand	185	20	220	30	2028-2031
MP 8-PS1 (Kirby)	New		NA	20,750	420	Beyond 2031
MP 8-PS2 (Teston)	New		NA	56,000	1,200	Beyond 2031
MP 13-PS1 (Block 13)	New		NA	2,900	60	2028-2031
Nashville - Decommission						2028-2031
Cortellucci Hospital PS Decommissioning						2028-2031

City Wide Stormwater



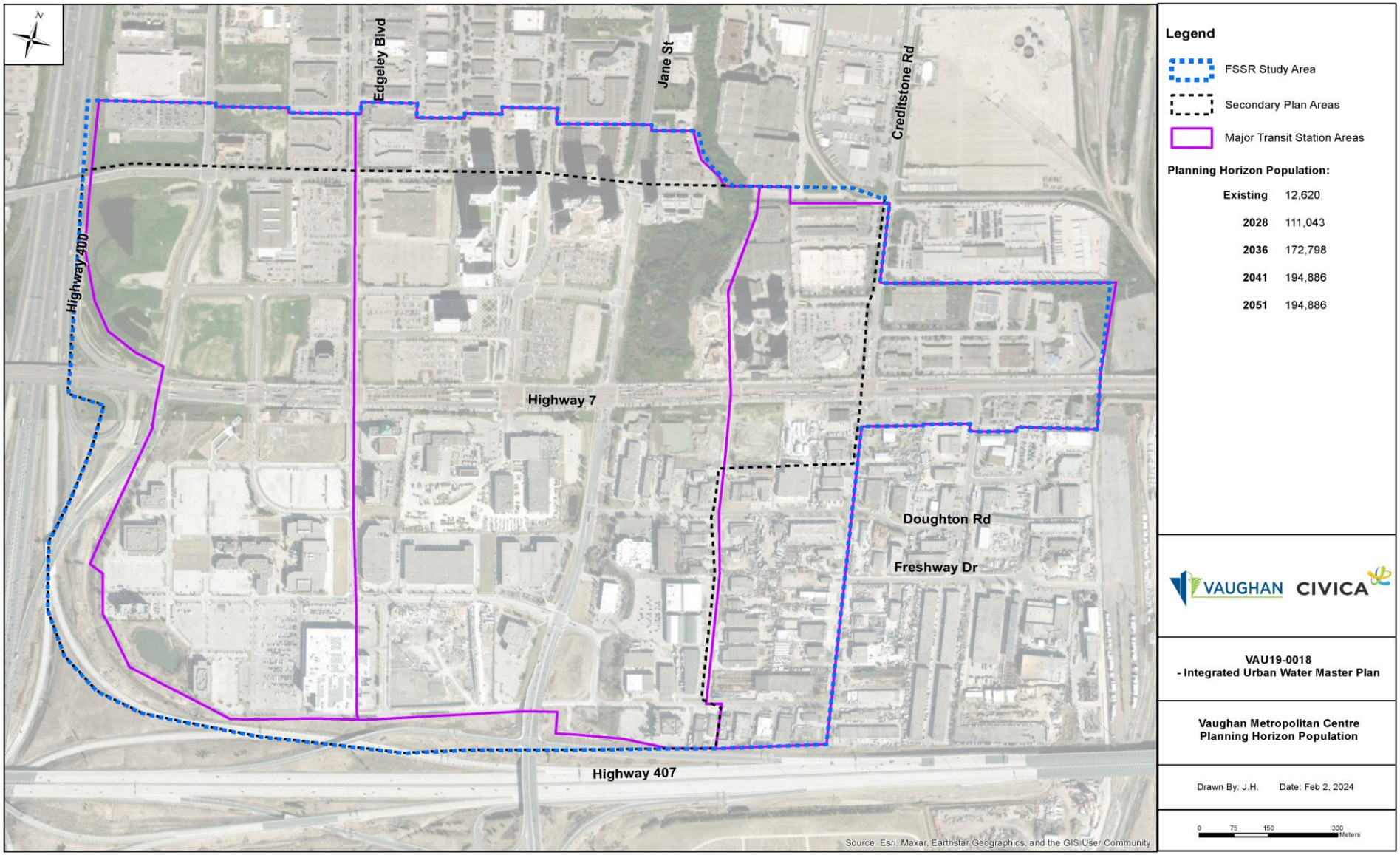
Functional Strategy Servicing Area- Information Presentation

All FSSR Areas available in Part 2 Digital Slides

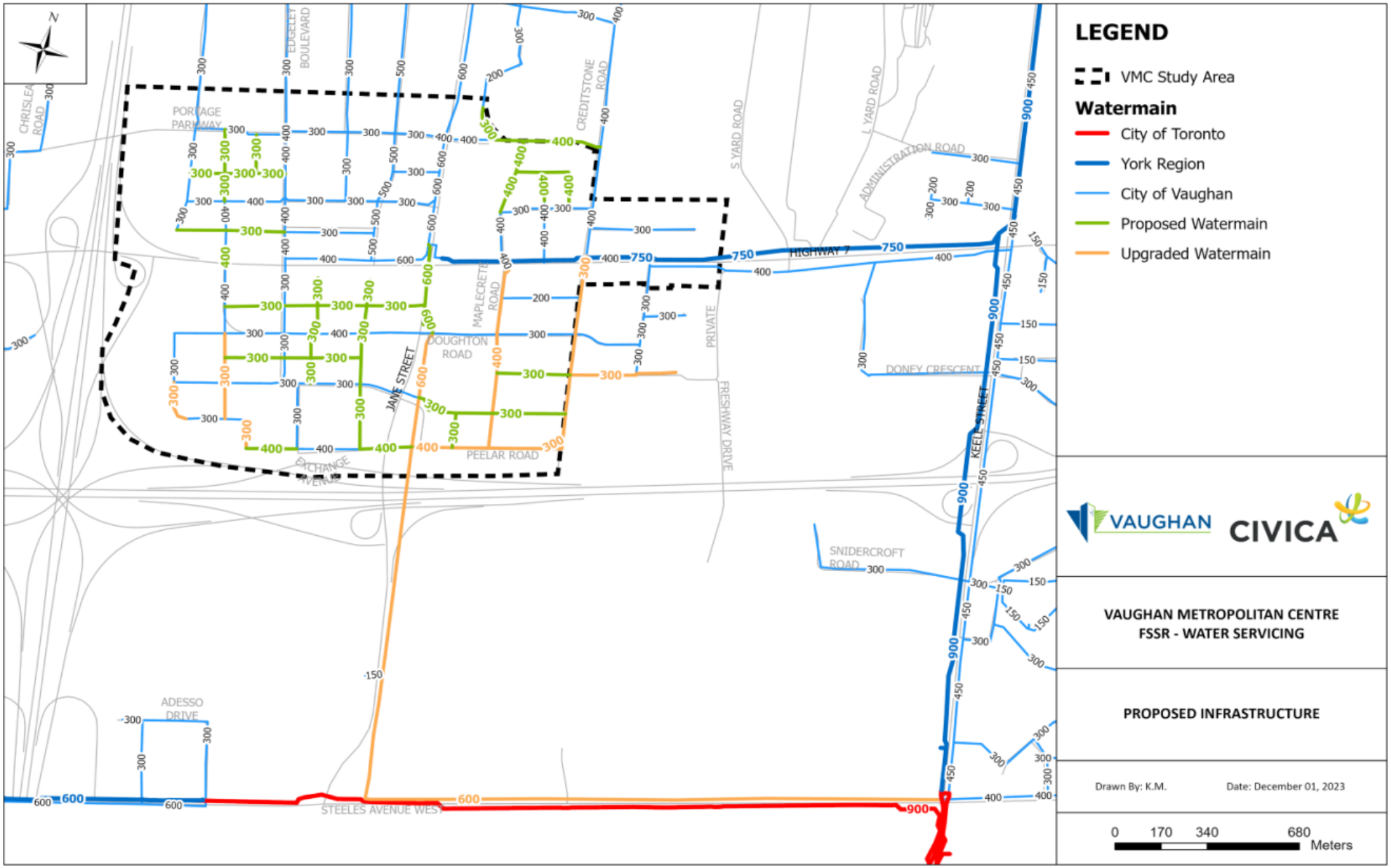
Following is the format for each area with Vaughan Metropolitan Centre as the example area. It includes:

1. Servicing area and population information
2. Proposed Servicing Solutions for:
   - Water
   - Wastewater
   - Stormwater
3. Cost Estimates for the required infrastructure for:
   - Water
   - Wastewater
   - Stormwater

Vaughan Metropolitan Centre Servicing Area



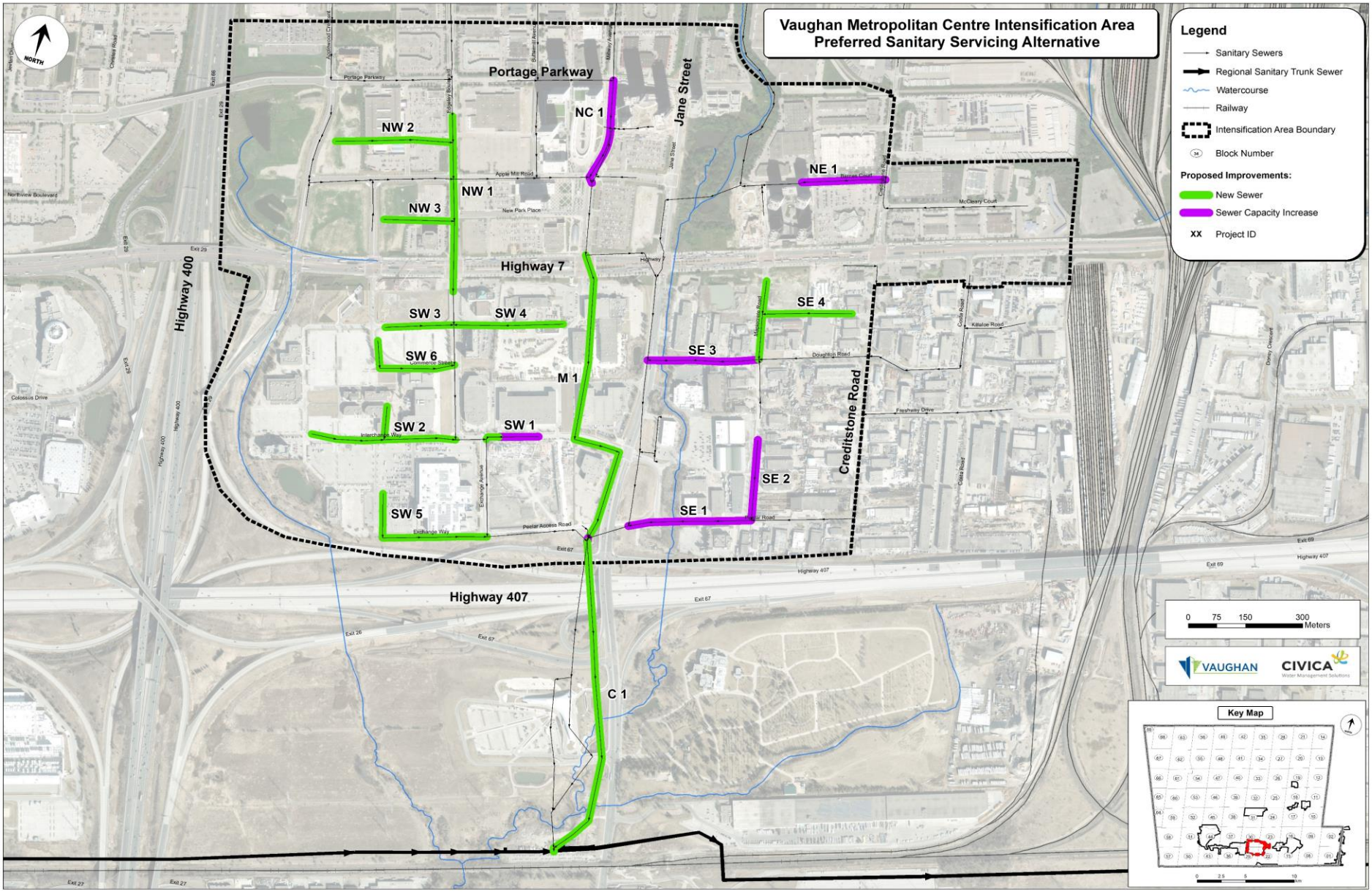
Vaughan Metropolitan Centre – Water



Vaughan Metropolitan Centre – Water Preferred Solution Cost Estimate

Project Item ID	Description	Total Cost (2024)	Completed By	EA Schedule
1	4,200 m of 600Ø watermain along Steeles Avenue West and Jane Street. Crossings of Highway 407, CN Railway, and Highway 7 required.	$32,340,000	2036	Exempt / B (TBC)
2	390 m of 400Ø watermain along Commerce Street. Crossing of Highway 7 required.	$696,000	2028	Exempt
3	310 m of 400Ø watermain along Peelar Road.	$961,000	2028	Exempt
4	710 m of 300Ø watermain along Peelar Road and Creditstone Road.	$1,775,000	2028	Exempt
5	2,250 m of 400Ø watermain.	$6,975,000	2041	B
6	4,940 m of 300Ø watermain.	$12,350,000	2041	Exempt / B
7	1,820 m of 400Ø watermain. (Provisional)	$5,642,000	At time of road construction	Exempt

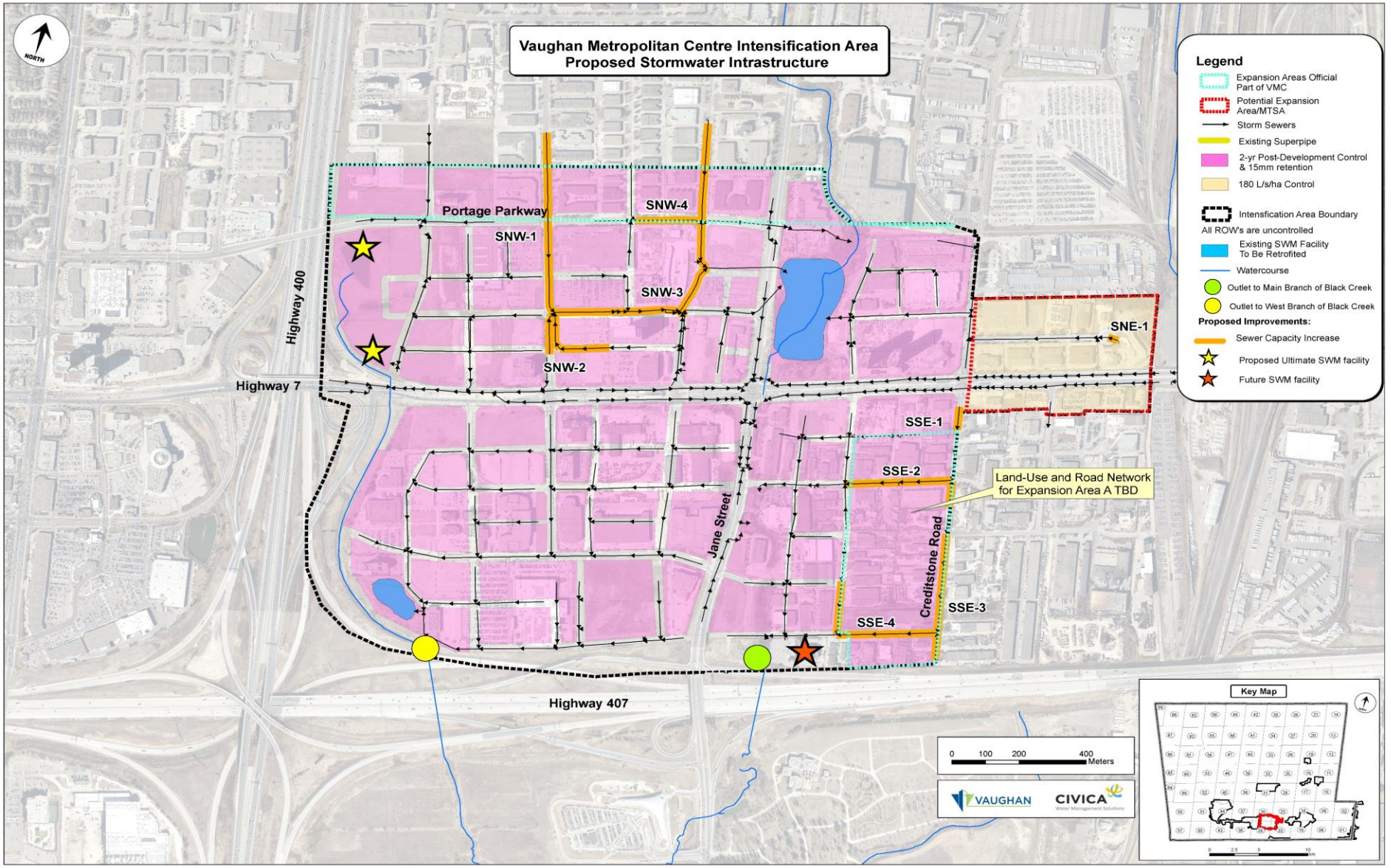
Vaughan Metropolitan Centre – Wastewater Preferred



Vaughan Metropolitan Centre – Wastewater Preferred Solutions Cost Estimate

Project	Description	Total Cost (2024)	Completed By	EA Schedule
NC 1	284m of 750mm	$3,300,000	Prior 2028	Exempted
NW 1	85m of 450mm 388m of 900mm Dia part directional Bore	$10,000,000	Prior 2028	Exempted
NW 2	309m of 450mm	$1,900,000	Prior 2028	Schedule B
NW 3	185m of 450mm	$1,200,000	Prior 2028	Schedule B
SW 1	142m of 375mm	$900,000	2036-2041	Exempted
SW 2	319m of 450mm and 161m of 600mm	$2,600,000	Prior 2028	Exempted
SW 3	181m of 450mm	$1,100,000	Prior 2028	Exempted
SW 4	152m of 450mm and 136m of 525mm	$2,000,000	Prior 2028	Schedule B
SW 5	394m of 375mm	$2,600,000	Prior 2028	Exempted
SW 6	138m of 375mm and 135m of 450mm	$1,600,000	Prior 2028	Exempted
SE 1	324m of 600mm	$2,800,000	Prior 2028	Exempted
SE 2	218m of 450mm	$1,400,000	Prior 2028	Exempted
SE 3	302m of 450mm	$2,100,000	Prior 2028	Exempted
SE 4	236m of 375mm and 214m of 450mm	$2,900,000	Prior 2028	Schedule B
C 1	876m of 1050mm tunnelling	$26,400,000	Prior 2028	Schedule B
M 1	873m of 750mm	$13,100,000	Prior 2028	Schedule B
NE 1	219m of 450mm	$1,800,000	Prior 2028	Exempted
Total		**$77,000,000**		

Vaughan Metropolitan Centre – Stormwater



Vaughan Metropolitan Centre – Stormwater Preferred Solutions Cost Estimate

Project	Description	Total Cost (2024)	Completed By	EA Schedule
SNE-1	101m of 525mm	$700,000	2028-2036	Exempt
SNW-1	283m of 1,800mm	$3,100,000	2028-2036	Exempt
SNW-2	234m of 975, 283m of 1,200mm	$3,100,000	2028-2036	Exempt
SNW-3	508m ranging from 675mm to 2,400mm	$6,100,000	2028-2036	Exempt
SNW-4	580m ranging from 1,500mm to 2,400mm	$8,100,000	2028-2036	Exempt
SSE-1	70m of 600mm	$300,000	2028-2036	Exempt
SSE-2	77m of 450mm, 50m of 600mm, 237m of 1,350mm	$1,800,000	2028-2036	Exempt
SSE-3	77m of 600mm, 92m of 1,200mm, 194m of 1,350mm	$1,800,000	2028-2036	Exempt
SSE-4	153m of 675mm, 270m of 1,500mm	$3,100,000	2028-2036	Exempt
NW Storm Pond	Proposed 33,580 m^3 pond retrofit	$3,400,000	2028-2036	Exempt
SE Storm Pond	Proposed 20,000 m^3 pond (Excluding land cost)	$2,000,000	2028-2036	Schedule B
Total		**$36,200,000**		