

Master Plans for
Urban Water Infrastructure in
The City of Vaughan

**City-Wide Water & Wastewater
Master Plan Class EA**

**APPENDIX I
Water & Wastewater Master Plan
Projects Technical Memorandum**

JUNE 2014

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Prepared on behalf of:

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Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	400 mm dia. PVC watermain	1700	m	\$1,030	\$1,751,000
2	PRV Valve and Chamber	0	ea	\$0	\$0
3	Connect to existing	2	ea	\$15,000	\$30,000
4	Tunnelling	120	m	\$2,500	\$300,000
5					
6					
7					
Sub-Total Construction:					\$2,081,000
8	Non-Recoverable H.S.T.			1.76%	\$36,626
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,117,626
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$312,150
2	Non-Recoverable H.S.T.			1.76%	\$5,494
Total Design:					\$317,644
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$2,435,269
D Treasury Administration					
				3.00%	\$73,058
PROJECT TOTAL:					\$2,508,328

NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: assume 750mm diameter steel liner.

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.

CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W1 - PD8 East Improvements

Connections to New Region of York Infrastructure, Additional Study and Provision for Further Improvement



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W1 - PD8 East Improvements

Connections to New Region of York Infrastructure, Additional Study and Provision for Further Improvement



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	Connect to existing	2	ea	\$50,000	\$100,000
2	Fire Flow Study	1	ea	\$50,000	\$50,000
3	Provisional for Improvements		LS		\$1,000,000
4					
5					
6					
7					
Sub-Total Construction:					\$1,150,000
8	Non-Recoverable H.S.T.			1.76%	\$20,240
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$1,170,240
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$172,500
2	Non-Recoverable H.S.T.			1.76%	\$3,036
Total Design:					\$175,536
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$1,345,776
D Treasury Administration					
				3.00%	\$40,373
PROJECT TOTAL:					\$1,386,149

NOTES & ASSUMPTIONS
1. Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W3 - Teston Road PD7 Watermain Twinning / Hwy 400 Crossing
1,400 m of 900 mm Dia. CPP



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W3 - Teston Road PD7 Watermain Twinning / Hwy 400 Crossing
1,400 m of 900 mm Dia. CPP



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	900 mm dia. CPP	1400	m	\$2,330	\$3,262,000
2	PRV Valve and Chamber	0	ea	\$0	\$0
3	Connect to existing	2	ea	\$30,000	\$60,000
4	Tunnelling	200	m	\$4,500	\$900,000
5					
6					
7					
Sub-Total Construction:					\$4,222,000
8	Non-Recoverable H.S.T.			1.76%	\$74,307
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$4,296,307
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$633,300
2	Non-Recoverable H.S.T.			1.76%	\$11,146
Total Design:					\$644,446
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$4,940,753
D Treasury Administration					
				3.00%	\$148,223
PROJECT TOTAL:					\$5,088,976

NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: assume 1200 mm diameter steel liner

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W4 - Block 35 PD8 Watermain
 10,000 m of 500 mm Dia. CPP



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W4 - Block 35 PD8 Watermain
 4,000 m of 500 mm Dia. CPP



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	500 mm dia. CPP	10000	m	\$1,510	\$15,100,000
2	CV Valve and Chamber	1	ea	\$50,000	\$50,000
3	Connect to existing	3	ea	\$30,000	\$90,000
4	Tunnelling	800	m	\$3,500	\$2,800,000
5					
6					
7					
Sub-Total Construction:					\$18,040,000
8	Non-Recoverable H.S.T.			1.76%	\$317,504
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$18,357,504
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$2,706,000
2	Non-Recoverable H.S.T.			1.76%	\$47,626
Total Design:					\$2,753,626
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$21,111,130
D Treasury Administration					
				3.00%	\$633,334
PROJECT TOTAL:					\$21,744,463

NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2013).
- Installation location: Average/Hybrid of "Urban" & "Greenfield"
- Tunnelling: assume 750 mm diameter steel liner under creek and highway crossings



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W5 - Weston Road PD7 Watermain
2,000 m of 400 mm Dia. PVC



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W5 - Weston Road PD7 Watermain
2,000 m of 400 mm Dia. PVC

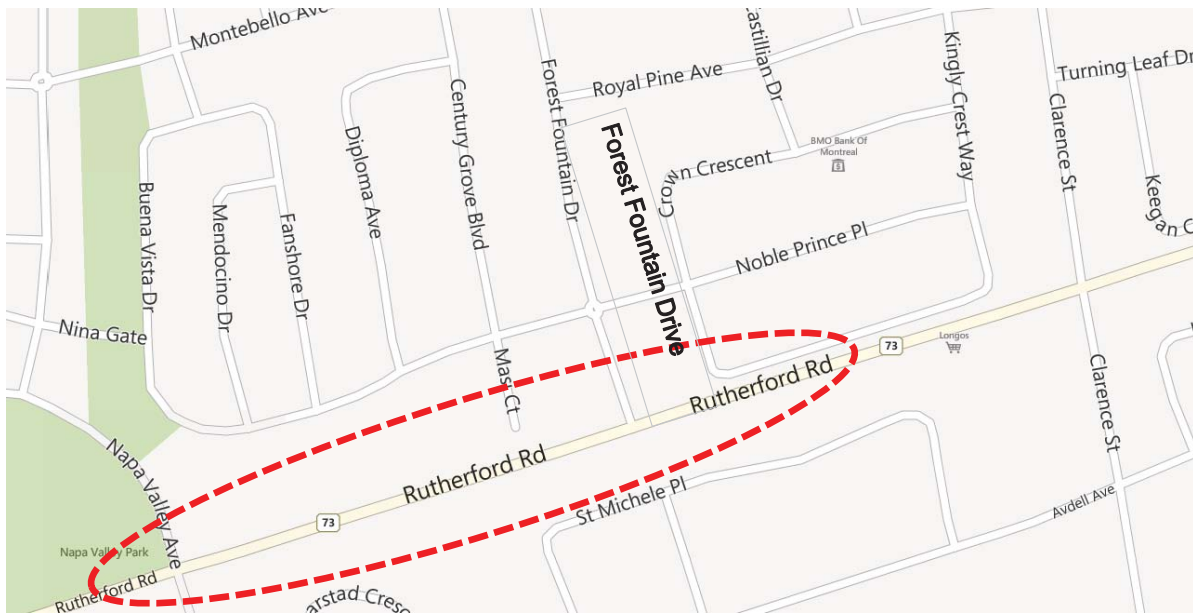


Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	400 mm dia. PVC	2000	m	\$1,030	\$2,060,000
2	PRV Valve and Chamber	0	ea	\$0	\$0
3	Connect to existing	2	ea	\$15,000	\$30,000
4	Tunnelling	0	m	\$0	\$0
5					
6					
7					
Sub-Total Construction:					\$2,090,000
8	Non-Recoverable H.S.T.			1.76%	\$36,784
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,126,784
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$313,500
2	Non-Recoverable H.S.T.			1.76%	\$5,518
Total Design:					\$319,018
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$2,445,802
D Treasury Administration					
				3.00%	\$73,374
PROJECT TOTAL:					\$2,519,176

NOTES & ASSUMPTIONS
1. Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W6 - Woodbridge Expansion Area PD6 Watermain Connection
400 mm Dia. PVC connection with PRV to 1800 mm Dia. CPP



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W6 - Woodbridge Expansion Area PD6 Watermain Connection
400 mm Dia. PVC connection with PRV to 1800 mm Dia. CPP

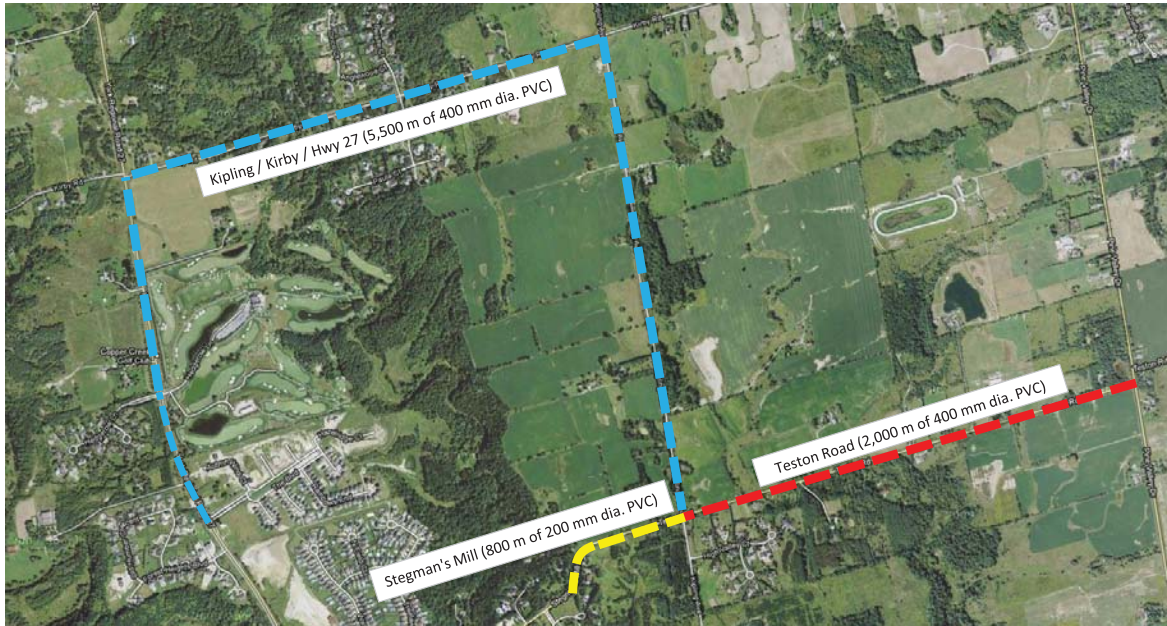


Item	Description	Qty	Unit	Rate	Amount	
A Construction						
1	400 mm dia. PVC	40	m	\$1,030	\$41,200	
2	PRV Valve and Chamber	1	ea	\$60,000	\$60,000	
3	Connect to existing	1	ea	\$50,000	\$50,000	
4	Tunnelling	40	m	\$3,500	\$140,000	
5						
6						
7						
Sub-Total Construction:					\$291,200	
8	Non-Recoverable H.S.T.			1.76%	\$5,125	
9	E.N.R. Index			0.00%	\$0	
Total Construction:					\$296,325	
B Design						
1	Engineering (Design, Supervision, Administration)			15.00%	\$43,680	
2	Non-Recoverable H.S.T.			1.76%	\$769	
Total Design:					\$44,449	
C Land Acquisition						
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0	
Total Land Acquisition:					\$0	
Sub-Total Project:					\$340,774	
D Treasury Administration						
					3.00%	\$10,223
PROJECT TOTAL:					\$350,997	

NOTES & ASSUMPTIONS

1. Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: assume 750 mm steel liner for Rutherford Rd. crossing



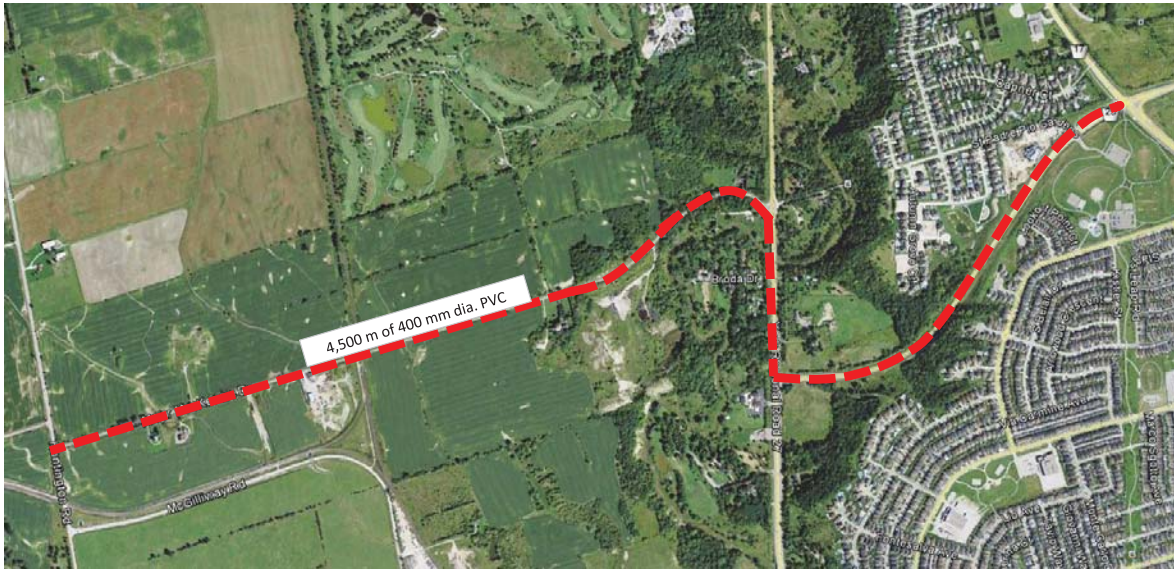


Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	400 mm dia. PVC (Teston)	2000	m	\$815	\$1,630,000
2	200 mm dia. PVC (Stegman)	800	m	\$770	\$616,000
3	400 mm dia. PVC (Kirby, etc.)	5500	m	\$815	\$4,482,500
4	PRV Valve and Chamber (400)	1	ea	\$60,000	\$60,000
5	PRV Valve and Chamber (200)	1	ea	\$40,000	\$40,000
6	Connect to existing	6	ea	\$15,000	\$90,000
7	Tunnelling	200	m	\$3,500	\$700,000
Sub-Total Construction:					\$7,618,500
8	Non-Recoverable H.S.T.			1.76%	\$134,086
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$7,752,586
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$1,142,775
2	Non-Recoverable H.S.T.			1.76%	\$20,113
Total Design:					\$1,162,888
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$8,915,473
D Treasury Administration					
				3.00%	\$267,464
PROJECT TOTAL:					\$9,182,938

NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
- Installation location: Average/Hybrid of "Urban" & "Greenfield" for 400mm
- Tunnelling: assume 2 locations, 750 mm diameter liner

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	400 mm dia. PVC	4500	m	\$1,030	\$4,635,000
2	300 mm dia. PVC	0	m	\$860	\$0
3	PRV Valve and Chamber	0	ea	\$0	\$0
4	Connect to existing	2	ea	\$15,000	\$30,000
5	Tunnelling	200	m	\$3,500	\$700,000
6					
7					
Sub-Total Construction:					\$5,365,000
8	Non-Recoverable H.S.T.			1.76%	\$94,424
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$5,459,424
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$804,750
2	Non-Recoverable H.S.T.			1.76%	\$14,164
Total Design:					\$818,914
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$6,278,338
D Treasury Administration					
				3.00%	\$188,350
PROJECT TOTAL:					\$6,466,688

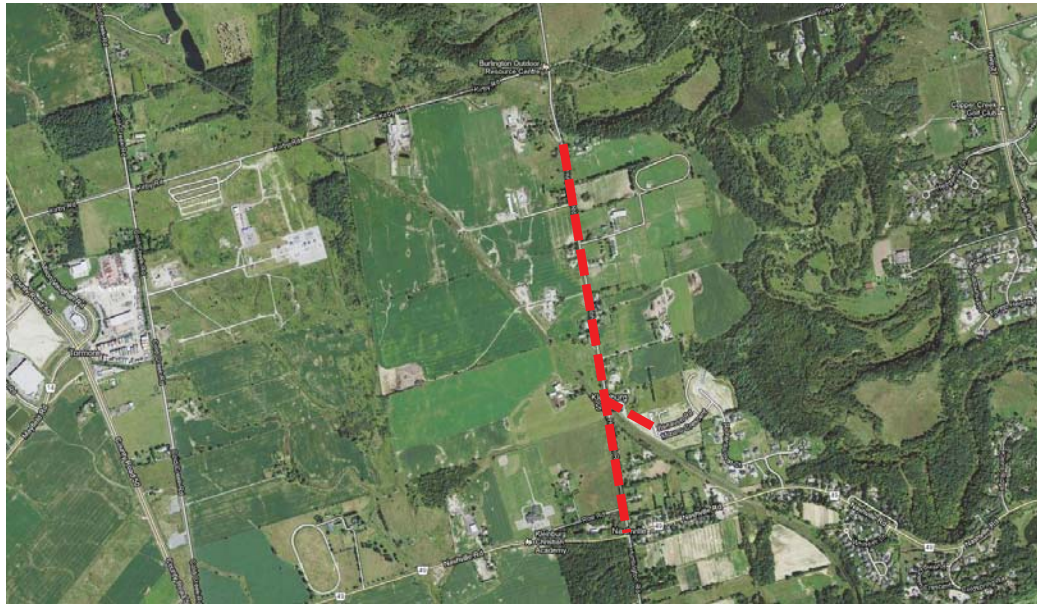
NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: assume 2 locations, 750 mm diameter liner

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.

CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W9 - Huntington Road Watermain
 2,200 m of 400 mm Dia. PVC



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W9 - Huntington Road Watermain
 2,200 m of 400 mm Dia. PVC

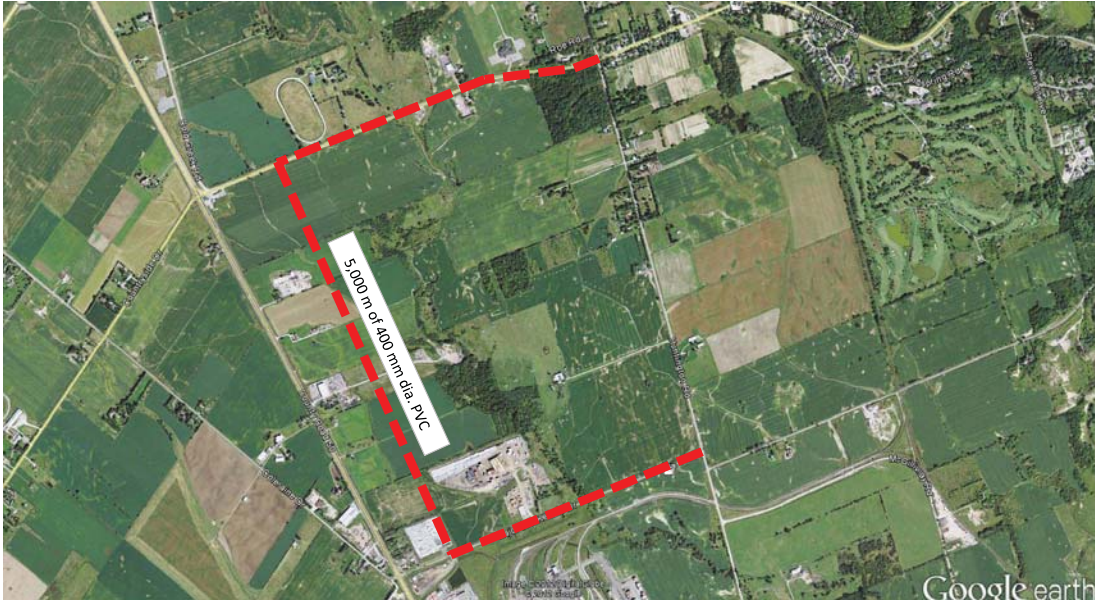


Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	400 mm dia. PVC (urban)	2000	m	\$1,030	\$2,060,000
2	400 mm dia. PVC (greenfield)	200	m	\$600	\$120,000
3	PRV Valve and Chamber	0	ea	\$0	\$0
4	Connect to existing	1	ea	\$15,000	\$15,000
5	Connect to existing (Mizuno)	1	ea	\$5,000	\$5,000
6	Tunnelling	50	m	\$3,500	\$175,000
7					
Sub-Total Construction:					\$2,375,000
8	Non-Recoverable H.S.T.			1.76%	\$41,800
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,416,800
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$356,250
2	Non-Recoverable H.S.T.			1.76%	\$6,270
Total Design:					\$362,520
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$2,779,320
D Treasury Administration					
				3.00%	\$83,380
PROJECT TOTAL:					\$2,862,700

NOTES & ASSUMPTIONS
1. Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban" for road, "Greenfield" for Mizuno connection
3. Tunnelling: assume 750 mm diameter liner under CN Rail



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W13 - Block 66 West PD6 Watermain
400 mm Dia. PVC Watermain



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items
W13 - Block 66 West PD6 Watermain
400 mm Dia. PVC Watermain



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	400 mm dia. PVC	5000	m	\$815	\$4,075,000
2	300 mm dia. PVC	0	m	\$640	\$0
3	PRV Valve and Chamber	2	ea	\$50,000	\$100,000
4	Connect to existing	2	ea	\$15,000	\$30,000
5	Tunnelling	200	m	\$3,500	\$700,000
6					
7					
Sub-Total Construction:					\$4,905,000
8	Non-Recoverable H.S.T.			1.76%	\$86,328
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$4,991,328
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$735,750
2	Non-Recoverable H.S.T.			1.76%	\$12,949
Total Design:					\$748,699
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$5,740,027
D Treasury Administration					
				3.00%	\$172,201
PROJECT TOTAL:					\$5,912,228

NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: assume 2 locations, 750 mm diameter liner



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W14 - PD9 Servicing

Condition Assessment of Existing PS, Decommissioning and Replacement of Existing PS (Provisional)



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for City Wide Development Charge Items

W14 - PD9 Servicing

Condition Assessment of Existing PS, Decommissioning and Replacement of Existing PS (Provisional)



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	Condition Assessment	1	ea	\$300,000	\$300,000
2	Decommission Existing PS	1	ea	\$300,000	\$300,000
3	New PS (Provisional)	1	ea	\$2,000,000	\$2,000,000
4					
5					
6					
7					
Sub-Total Construction:					\$2,600,000
8	Non-Recoverable H.S.T.			1.76%	\$45,760
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,645,760
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$390,000
2	Non-Recoverable H.S.T.			1.76%	\$6,864
Total Design:					\$396,864
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$3,042,624
D Treasury Administration					
				3.00%	\$91,279
PROJECT TOTAL:					\$3,133,903

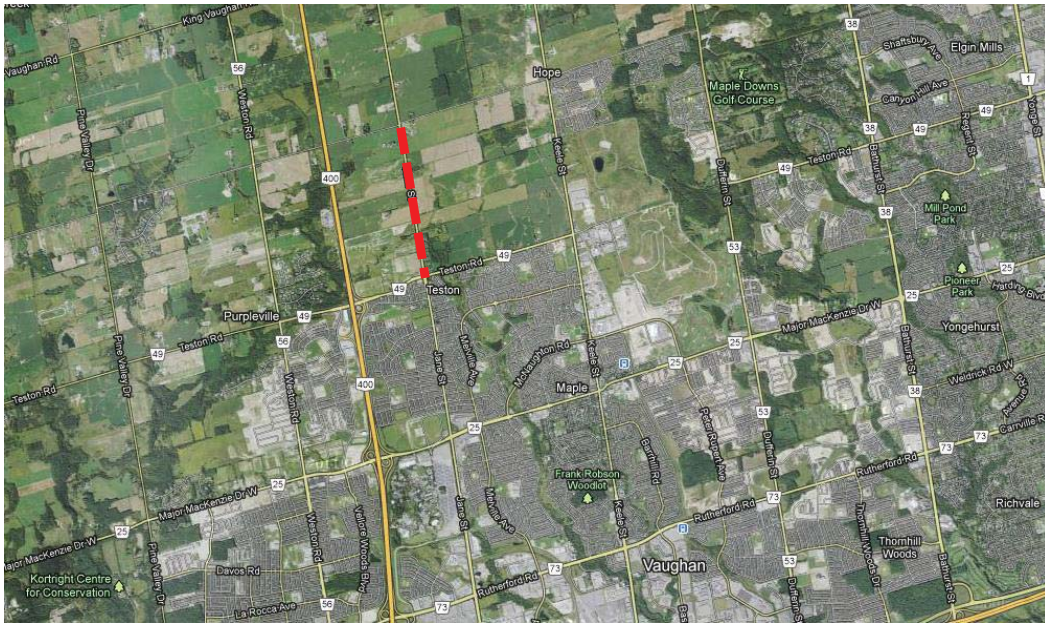
NOTES & ASSUMPTIONS

- Unit rates for watermain from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: none

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW1 - Jane Street Sub-Trunk Sanitary Sewer
 2,000 m of 600 mm Diameter Concrete Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW1 - Jane Street Sub-Trunk Sanitary Sewer
 2,000 m of 600 mm Diameter Concrete Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	600 mm dia. Conc. sewer	2000	m	\$1,250	\$2,500,000
2					
3					
4					
5					
6					
7					
Sub-Total Construction:					\$2,500,000
8	Non-Recoverable H.S.T.			1.76%	\$44,000
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,544,000
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$375,000
2	Non-Recoverable H.S.T.			1.76%	\$6,600
Total Design:					\$381,600
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$2,925,600
D Treasury Administration					
				3.00%	\$87,768
PROJECT TOTAL:					\$3,013,368

NOTES & ASSUMPTIONS

- Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW2 - Block 27 Sub-Trunk Sanitary Servicing
 2,000 m of 600 mm Diameter Conc. Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW2 - Block 27 Sub-Trunk Sanitary Servicing
 2,000 m of 600 mm Diameter Conc. Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	600 mm dia. Conc. sewer	2000	m	\$540	\$1,080,000
2	Tunnelling	50	m	\$2,500	\$125,000
3					
4					
5					
6					
7					
Sub-Total Construction:					\$1,205,000
8	Non-Recoverable H.S.T.			1.76%	\$21,208
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$1,226,208
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$180,750
2	Non-Recoverable H.S.T.			1.76%	\$3,181
Total Design:					\$183,931
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$1,410,139
D Treasury Administration					
				3.00%	\$42,304
PROJECT TOTAL:					\$1,452,443

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Greenfield"
3. Tunnelling: allow for 1 creek crossing



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW3 - Teston Road Sub-Trunk Sanitary Sewer & Pumping Station
 1,050 m of 600 mm Diameter Conc. Sanitary Sewer & 950 m of 400 mm Diameter Forcemain



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW3 - Teston Road Sub-Trunk Sanitary Sewer & Pumping Station
 1,050 m of 600 mm Diameter Conc. Sanitary Sewer & 950 m of 400 mm Diameter Forcemain



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	600 mm dia. Conc. sewer	1050	m	\$1,250	\$1,312,500
2	400 mm Forcemain	950	m	\$1,030	\$978,500
3	Highway 400 Crossing	500	m	\$2,500	\$1,250,000
4	Pumping Station	1	ea.	\$4,000,000	\$4,000,000
5					
6					
7					
Sub-Total Construction:					\$7,541,000
8	Non-Recoverable H.S.T.			1.76%	\$132,722
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$7,673,722
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$1,131,150
2	Non-Recoverable H.S.T.			1.76%	\$19,908
Total Design:					\$1,151,058
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$8,824,780
D Treasury Administration					
				3.00%	\$264,743
PROJECT TOTAL:					\$9,089,523

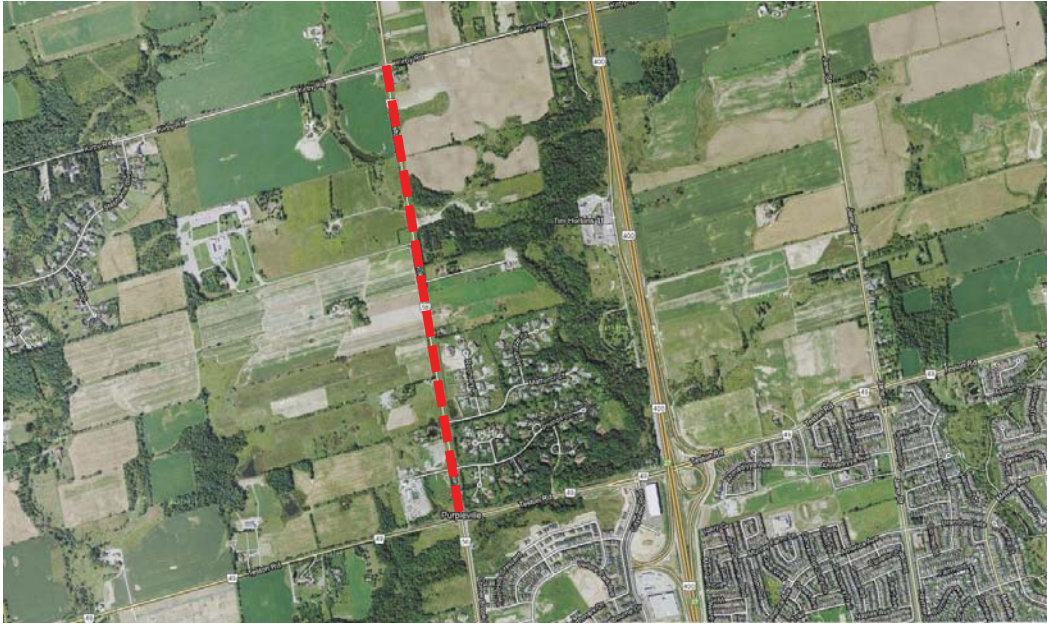
NOTES & ASSUMPTIONS

- Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: Highway 400 Crossing

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW4 - Weston Road Trunk Sanitary Servicing (Teston Rd. to Kirby Rd.)
 2,000 m of 450 mm diameter concrete Sanitary Sewer



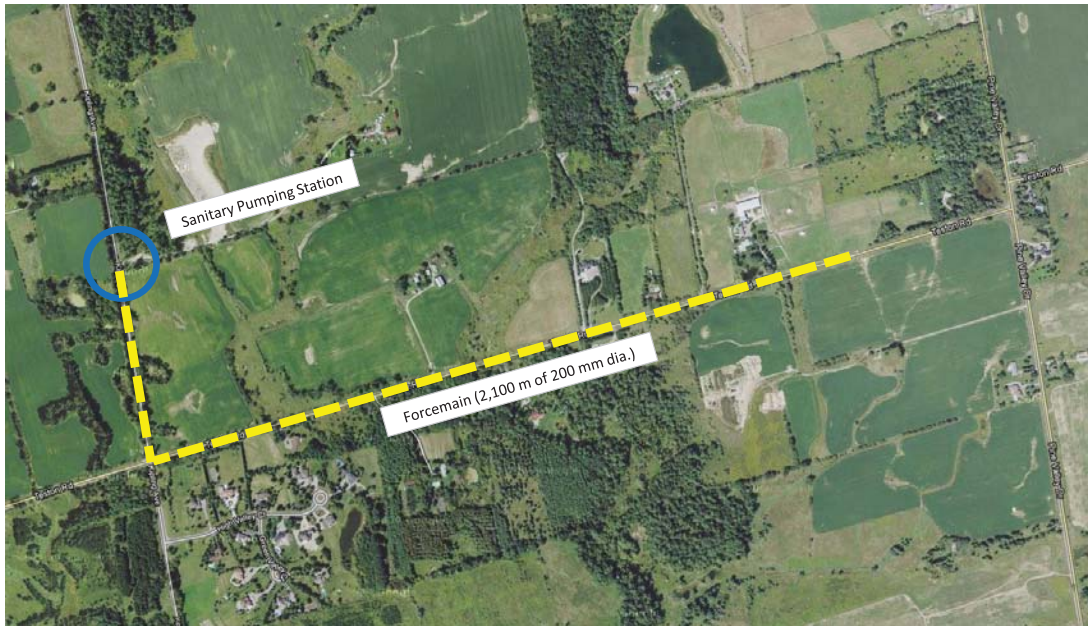
CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW4 - Weston Road Trunk Sanitary Servicing (Teston Rd. to Kirby Rd.)
 2,000 m of 450 mm diameter concrete Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	450 mm dia. Conc. sewer	2000	m	\$980	\$1,960,000
2					
3					
4					
5					
6					
7					
Sub-Total Construction:					\$1,960,000
8	Non-Recoverable H.S.T.			1.76%	\$34,496
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$1,994,496
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$294,000
2	Non-Recoverable H.S.T.			1.76%	\$5,174
Total Design:					\$299,174
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$2,293,670
D Treasury Administration					
				3.00%	\$68,810
PROJECT TOTAL:					\$2,362,481

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none





Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	250 mm dia. PVC forcemain	2100	m	\$760	\$1,596,000
2	Sanitary pumping station	1	ea	\$2,500,000	\$2,500,000
3					
4					
5					
6					
7					
Sub-Total Construction:					\$4,096,000
8	Non-Recoverable H.S.T.			1.76%	\$72,090
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$4,168,090
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$614,400
2	Non-Recoverable H.S.T.			1.76%	\$10,813
Total Design:					\$625,213
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$4,793,303
D Treasury Administration					
				3.00%	\$143,799
PROJECT TOTAL:					\$4,937,102

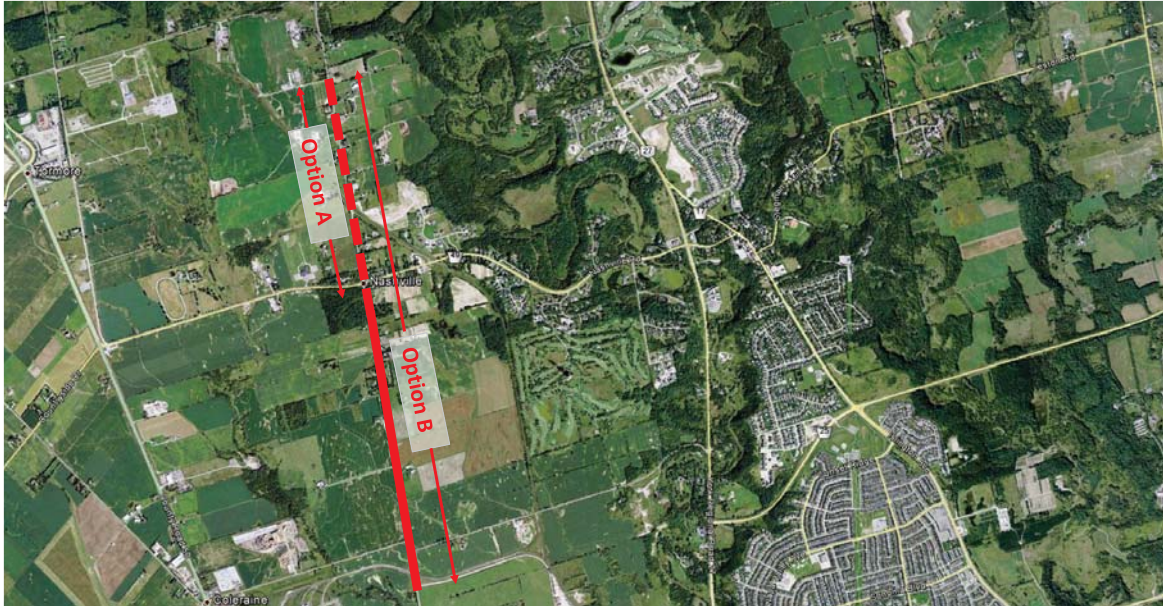
NOTES & ASSUMPTIONS

1. Installation location: "Urban"
2. Tunnelling: none

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.

CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW6 - Huntington Road Sub-Trunk Sanitary Sewer
 450 mm Diameter Concrete Sanitary Sewer (Option A - 1,500m; Option B - 3,900m)



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW6 - Huntington Road Sub-Trunk Sanitary Sewer - Option A
 1,500 m of 450 mm Diameter Concrete Sanitary Sewer



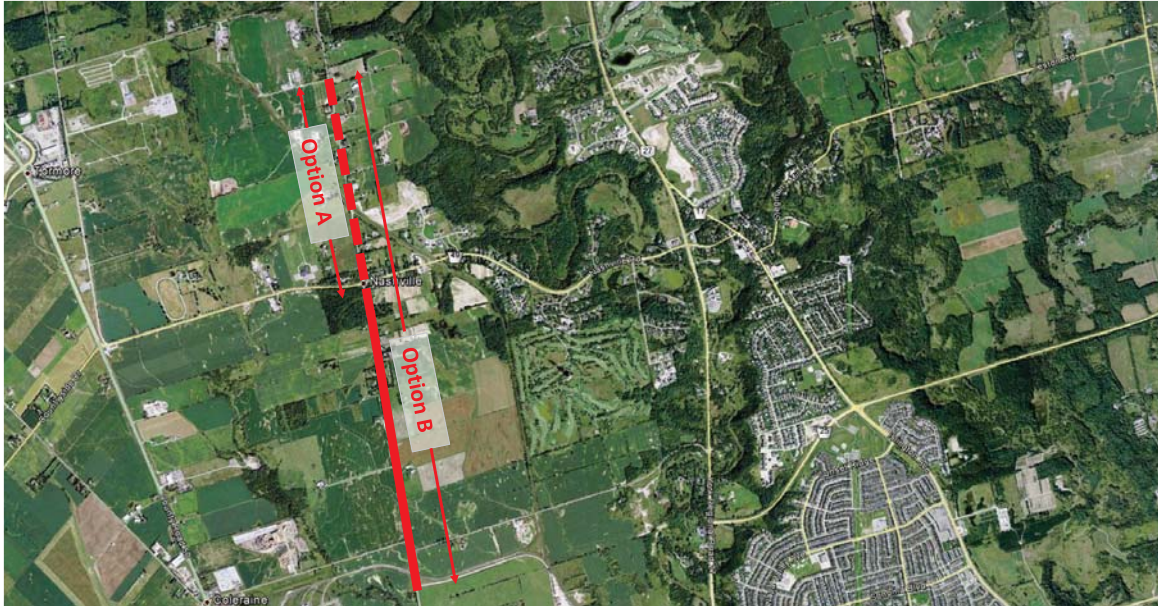
Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	450 mm dia. Conc. sewer	1500	m	\$980	\$1,470,000
2	Tunnelling (CN Rail)	50	m	\$2,500	\$125,000
3					
4					
5					
6					
7					
Sub-Total Construction:					\$1,595,000
8	Non-Recoverable H.S.T.			1.76%	\$28,072
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$1,623,072
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$239,250
2	Non-Recoverable H.S.T.			1.76%	\$4,211
Total Design:					\$243,461
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$1,866,533
D Treasury Administration					
				3.00%	\$55,996
PROJECT TOTAL:					\$1,922,529

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: assume 600 mm steel liner for CN Rail crossing



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW6 - Huntington Road Sub-Trunk Sanitary Sewer
 450 mm Diameter Concrete Sanitary Sewer (Option A - 1,500m; Option B - 3,900m)



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW6 - Huntington Road Sub-Trunk Sanitary Sewer - Option B
 1,500 m of 450 mm Diameter Concrete Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	450 mm dia. Conc. sewer	3900	m	\$980	\$3,822,000
2	Tunnelling (CN Rail)	100	m	\$2,500	\$250,000
3					
4					
5					
6					
7					
Sub-Total Construction:					\$4,072,000
8	Non-Recoverable H.S.T.			1.76%	\$71,667
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$4,143,667
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$610,800
2	Non-Recoverable H.S.T.			1.76%	\$10,750
Total Design:					\$621,550
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$4,765,217
D Treasury Administration					
				3.00%	\$142,957
PROJECT TOTAL:					\$4,908,174

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: assume 600 mm steel liner for CN Rail crossing



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW7 - Major Mackenzie Drive Sub-Trunk Sanitary Sewer
 1,500 m of 600 mm Diameter Concrete Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW7 - Major Mackenzie Drive Sub-Trunk Sanitary Sewer
 1,500 m of 600 mm Diameter Concrete Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	600 mm dia. Conc. sewer	1500	m	\$1,250	\$1,875,000
2	Tunelling	50	m	\$2,500	\$125,000
3					
4					
5					
6					
7					
Sub-Total Construction:					\$2,000,000
8	Non-Recoverable H.S.T.			1.76%	\$35,200
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,035,200
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$300,000
2	Non-Recoverable H.S.T.			1.76%	\$5,280
Total Design:					\$305,280
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$2,340,480
D Treasury Administration					
				3.00%	\$70,214
PROJECT TOTAL:					\$2,410,694

NOTES & ASSUMPTIONS

- Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunelling: Railway Crossing

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW8 - Carrville Centre Sanitary Sewer
 1,100 m of 525 mm Diameter Concrete Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW8 - Carrville Centre Sanitary Sewer
 1,100 m of 525 mm Diameter Concrete Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	525 mm dia. Conc. sewer	1100	m	\$1,040	\$1,144,000
2					
3					
4					
5					
6					
7					
Sub-Total Construction:					\$1,144,000
8	Non-Recoverable H.S.T.			1.76%	\$20,134
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$1,164,134
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$171,600
2	Non-Recoverable H.S.T.			1.76%	\$3,020
Total Design:					\$174,620
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$1,338,755
D Treasury Administration					
				3.00%	\$40,163
PROJECT TOTAL:					\$1,378,917

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW9 - Vellore Centre Sanitary Sewer
 550 m of 375 mm Diameter Concrete Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW9 - Vellore Centre Sanitary Sewer
 550 m of 375 mm Diameter Concrete Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	375 mm dia. Conc. sewer	550	m	\$970	\$533,500
2					
3					
4					
5					
6					
7					
Sub-Total Construction:					\$533,500
8	Non-Recoverable H.S.T.			1.76%	\$9,390
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$542,890
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$80,025
2	Non-Recoverable H.S.T.			1.76%	\$1,408
Total Design:					\$81,433
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$624,323
D Treasury Administration					
				3.00%	\$18,730
PROJECT TOTAL:					\$643,053

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items



WW10 - South Jane Street Sanitary Sewer Upgrades

1,400 m of 450 mm Diameter Concrete Sanitary Sewer & 200 m replacement of 375 mm with 600 mm Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items



WW10 - South Jane Street Sanitary Sewer Upgrades

1,400 m of 450 mm Diameter Concrete Sanitary Sewer & 200 m replacement of 375 mm with 600 mm Sanitary Sewer

Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	450 mm dia. Conc. sewer	1400	m	\$1,010	\$1,414,000
2	600 mm dia. Conc. sewer	200	m	\$1,250	\$250,000
3					
4					
5					
6					
7					
Sub-Total Construction:					\$1,664,000
8	Non-Recoverable H.S.T.			1.76%	\$29,286
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$1,693,286
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$249,600
2	Non-Recoverable H.S.T.			1.76%	\$4,393
Total Design:					\$253,993
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$1,947,279
D Treasury Administration					
				3.00%	\$58,418
PROJECT TOTAL:					\$2,005,698

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW11 - Pine Valley North SPS & Forcemain
 Sanitary Pumping Station and 1550 m of 400 mm Diameter Forcemain



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW11 - Pine Valley North SPS & Forcemain
 Sanitary Pumping Station and 1550 m of 400 mm Diameter Forcemain

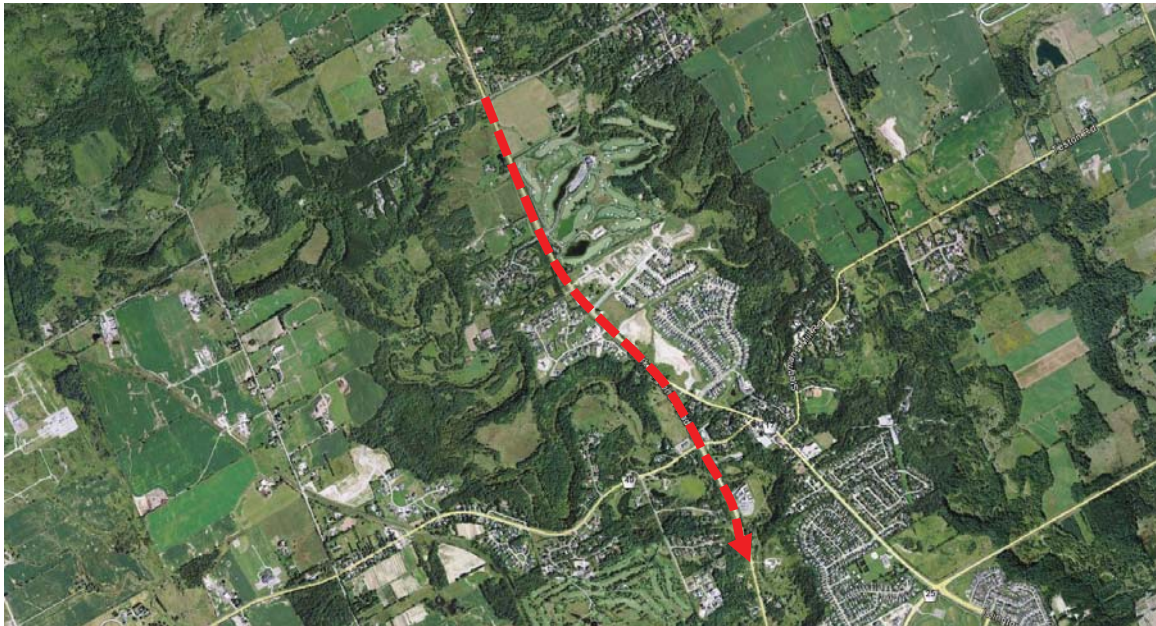


Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	Sanitary Pumping Station	1	ea.	\$20,000	\$20,000,000
2	400 mm dia. Forcemain	1550	m	\$1,070	\$1,658,500
3					
4					
5					
6					
7					
Sub-Total Construction:					\$21,658,500
8	Non-Recoverable H.S.T.			1.76%	\$381,190
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$22,039,690
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$3,248,775
2	Non-Recoverable H.S.T.			1.76%	\$57,178
Total Design:					\$3,305,953
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$25,345,643
D Treasury Administration					
				3.00%	\$760,369
PROJECT TOTAL:					\$26,106,012

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW12 - Highway 27 Sanitary Sewer
 3,000 m of 375 mm Diameter Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items
 WW12 - Highway 27 Sanitary Sewer
 3,000 m of 375 mm Diameter Sanitary Sewer



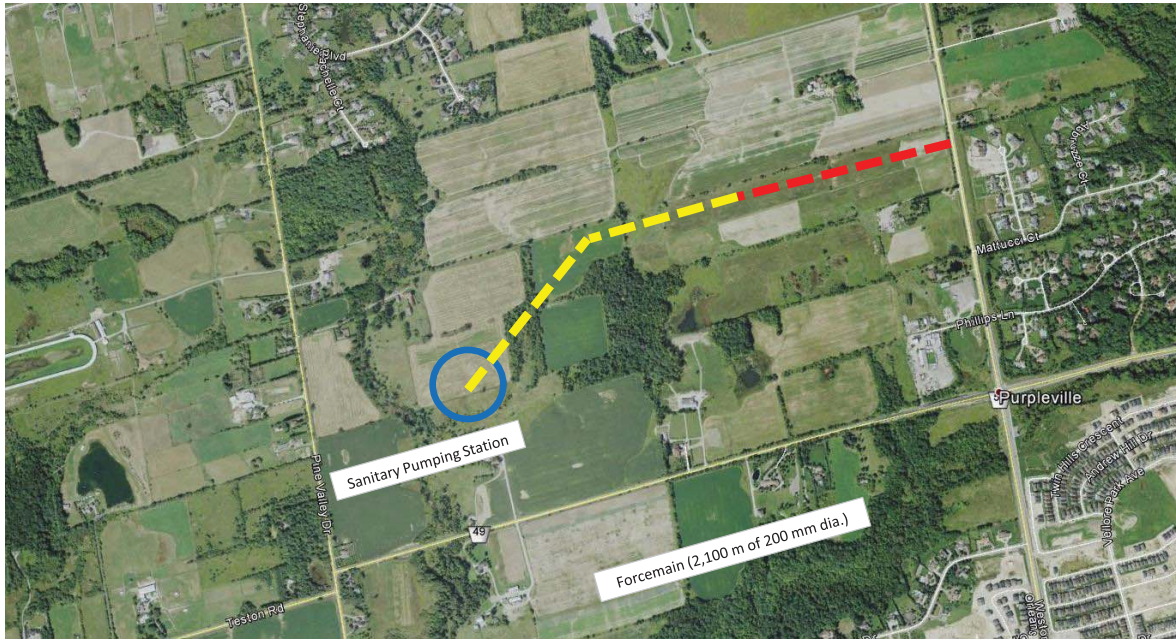
Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	375mm dia. Sanitary Sewer	3000	m	\$900	\$2,700,000
2					
3					
4					
5					
6					
7					
Sub-Total Construction:					\$2,700,000
8	Non-Recoverable H.S.T.			1.76%	\$47,520
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$2,747,520
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$405,000
2	Non-Recoverable H.S.T.			1.76%	\$7,128
Total Design:					\$412,128
C Land Acquisition					
		0.000	Ha	\$0	\$0
1	Non-Recoverable H.S.T.			1.76%	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$3,159,648
D Treasury Administration					
				3.00%	\$94,789
PROJECT TOTAL:					\$3,254,437

NOTES & ASSUMPTIONS
1. Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
2. Installation location: "Urban"
3. Tunnelling: none



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW13 - Block 41 Sanitary Pumping Station, Forcemain and Gravity Sewer
 Sanitary Pumping Station, 650 m of 200 mm Forcemain, 1,100 m of 375 mm Diameter Sanitary Sewer



CITY WIDE WATER/WASTEWATER MASTER PLAN (2012)
Preliminary Cost Estimates for Special Area Development Charge Items

WW13 - Block 41 Sanitary Pumping Station, Forcemain and Gravity Sewer
 Sanitary Pumping Station, 650 m of 200 mm Forcemain, 1,100 m of 375 mm Diameter Sanitary Sewer



Item	Description	Qty	Unit	Rate	Amount
A Construction					
1	375mm dia. Sanitary Sewer	1100	m	\$900	\$990,000
2	200mm dia. PVC Forcemain	650	m	\$710	\$461,500
3	Sanitary pumping station	1	ea.	\$2,500,000	\$2,500,000
4					
5					
6					
7					
Sub-Total Construction:					\$3,951,500
8	Non-Recoverable H.S.T.			1.76%	\$69,546
9	E.N.R. Index			0.00%	\$0
Total Construction:					\$4,021,046
B Design					
1	Engineering (Design, Supervision, Administration)			15.00%	\$592,725
2	Non-Recoverable H.S.T.			1.76%	\$10,432
Total Design:					\$603,157
C Land Acquisition					
1	Non-Recoverable H.S.T.	0.000	Ha	\$0	\$0
Total Land Acquisition:					\$0
Sub-Total Project:					\$4,624,203
D Treasury Administration					
				3.00%	\$138,726
PROJECT TOTAL:					\$4,762,929

NOTES & ASSUMPTIONS

- Unit rates for sewer from the City of Vaughan Cost Estimating Database (2012).
- Installation location: "Urban"
- Tunnelling: none

This project requires completion of a Schedule B Class Environmental Assessment. The City-Wide Master Plan can be used in the support of some of the requirements of Phases 1 and 2 of the EA. It may be necessary to consider site-specific issues through a more detailed study.

