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## MEMORANDUM

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DATE	January 2, 2017
TO	<b>John Vandenberg, Township of King</b>
CC	
SUBJECT	King Township Master Plan Water Servicing Recommendations
FROM	Kevin Brown, P.Eng.
PROJECT NUMBER	14100

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Upon review of King Township's water distribution systems via water models prepared by TMIG, we have prepared a list of recommended water servicing projects aimed at supporting the ongoing use of the existing infrastructure as well as its expansion into approved and designated development lands. The projects are described below; their triggers and estimated costs are listed in **Table 1**; and locations and a preliminary cost estimate breakdown are provided on project information sheets in the attached **Appendix A**.

### **W-K-1: West King City Watermain Looping**

This project contemplates expanding upon the currently-contemplated watermain network through future development areas in West King City, and looping the network to King Road via Jane Street. This will also bolster the available fire flows through the planned employment lands. This project contains two components:

- A. The portion along the public right-of-way (Jane Street); and,
- B. The portion along private lands.

The component along private lands should be considered during the development application, once the extent of the development and alignment of internal roads are confirmed.

### **W-K-2: Kinghorn Road Watermain**

This project contemplates the construction of a watermain between the approved low density residential neighbourhood northeast of Jane Street and King Road and the designated estate residential neighbourhood to the north. This infrastructure is recommended in order to deliver the required fire flows to these future neighbourhoods at an acceptable minimum pressure of 140 kPa (20 psi). This watermain will also provide looping to eliminate the dead end water networks of both proposed developments. This project contains two components:

- A. The portion along the public right-of-way (Jane Street); and,
- B. The portion along private lands.

The component along private lands should be considered during the development application, once the extent of the development and alignment of internal roads are confirmed.

### **W-K-3: Valley Point Crescent Watermain**

This project contemplates the extension of a watermain starting at Nicort Road at Dufferin Street and ending within the designated low density residential neighbourhood southwest of Dufferin Street and Nicort Road. While not integral to the servicing of the proposed development, adding this second watermain connection to Dufferin Street is recommended to ensure security of supply.

This project should be considered during the development application.

**W-K-4: Dufferin Street Watermain**

This project contemplates the construction of a new 300 mm watermain along Dufferin Street, from King Road north to 15<sup>th</sup> Sideroad. This watermain provides the primary feed around the perimeter of the proposed development in northeast King City, and will also supply the Country Day School.

This construction will include one creek crossing, which is anticipated can be installed via trenchless technologies.

**W-K-5: 15<sup>th</sup> Sideroad Watermain**

This project contemplates the construction of a new 300 mm watermain along 15<sup>th</sup> Sideroad, from Keele Street east to Dufferin Street. This watermain provides the primary feed around the perimeter of the proposed development in northeast King City, and will also supply Seneca College.

This construction will include two creek crossings, which are anticipated can be installed via trenchless technologies.

**W-K-6: Mary Lake Estates Watermain**

This project contemplates the extension of a watermain from the proposed Mary Lake Estates Development to Keele Street. While not integral to the servicing of the proposed development, adding this second watermain connection to Keele Street is recommended to ensure security of supply.

This project is proceeding through the development application.

**W-N-1: Crestview Road Watermain**

This project contemplates the extension of the Crestview Road watermain south to the designated residential development to the south. The infrastructure is expected to provide looping to eliminate the dead end Crestview Road watermain.

This project should be considered during the development application.

**W-S-1: Roselena Drive Watermain**

This project contemplates the construction of a watermain starting at the west end of Roselena Drive and ending at Church Street near the Schomberg Elevated Tank. The infrastructure is expected to provide additional water supply to the south end of the Schomberg water network, providing additional looping to the area.

This project should be considered during the development of the designated lands in southwest Schomberg.

**Table 1 – Recommended Water Servicing Projects**

ID	Description	Trigger	Anticipated Class EA Schedule	Estimated Cost (2015 dollars)
W-K-1A	West King Watermain Looping (Jane Street)	Providing sufficient fire flows at the minimum required pressure to support development of the employment lands.	A+	\$550,000
W-K-1B	West King Watermain Looping (Private Lands)	Providing sufficient fire flows at the minimum required pressure to support development of the employment lands.	Exempt <sup>(1)</sup>	\$650,000
W-K-2A	Kinghorn Road Watermain	Dead end water networks within developments west of Manitou Dr. and northeast of Jane St. and King Rd.	A+	\$400,000
W-K-2B	Kinghorn Road Watermain	Dead end water networks within developments west of Manitou Dr. and northeast of Jane St. and King Rd.	A+	\$200,000
W-K-3	Valley Point Crescent Watermain	Dead end water network at Valley Point Cres.	Exempt <sup>(1)</sup>	\$100,000
W-K-4	Dufferin Street Watermain	Servicing of future development in northeast King City and Country Day School	A+	\$1,400,000
W-K-5	15 <sup>th</sup> Sideroad Watermain	Servicing of future development in northeast King City and Seneca College	A+	\$1,600,000
W-K-6	Mary Lake Estates Watermain	Security of supply to approved development.	Exempt <sup>(1)</sup>	\$300,000
W-N-1	Crestview Road Watermain	Dead end water network at Crestview Rd.	Exempt <sup>(1)</sup>	\$125,000
W-S-1	Roselena Drive Watermain	Low available fire flows along Roselena Dr.	Exempt <sup>(1)</sup>	\$275,000
<b>Note:</b>				
1. This project is to be undertaken by Private Sector developers and considered exempt from the EA Act.				

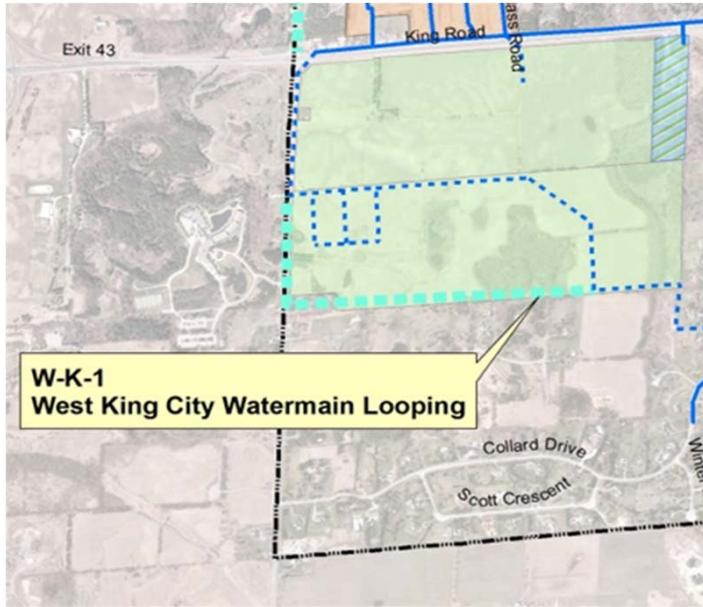
**APPENDIX A**  
**Detailed Cost Estimates**

TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-1A - West King Watermain Looping

800m of 300mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-1A - West King Watermain Looping

800m of 300mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	300mm PVC (SDR 41) watermain	800	m	\$ 500	\$ 400,000
2	Connect to existing	1	LS	\$ 75,000	\$ 75,000
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 475,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 63,053
2					
3					
Subtotal					\$ 63,100
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 16,143
<b>TOTAL</b>					\$ 555,000

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.

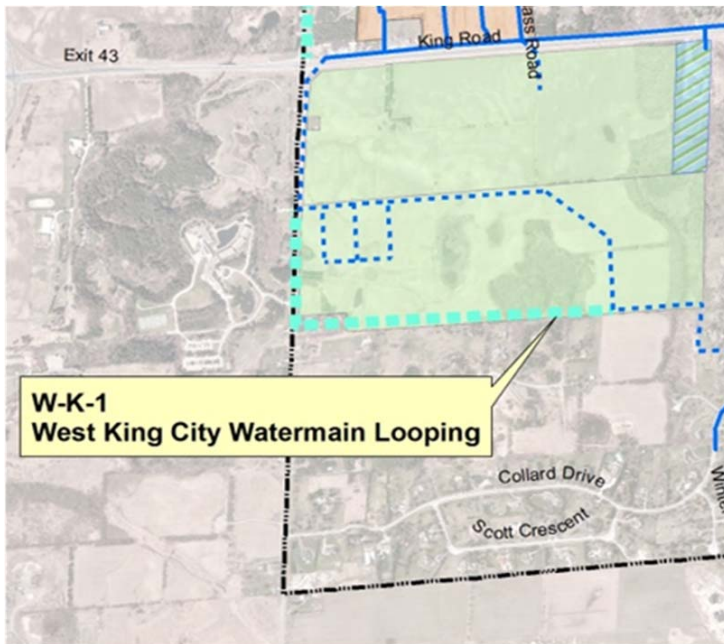


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-1B - West King Watermain Looping

900m of 300mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-1B - West King Watermain Looping

900m of 300mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	300mm PVC (SDR 41) watermain	900	m	\$ 500	\$ 450,000
2	Connect to existing	1	LS	\$ 75,000	\$ 75,000
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 525,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 69,690
2					
3					
Subtotal					\$ 69,700
<b>C Land Acquisition</b>		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>				3%	\$ 17,841
<b>TOTAL</b>					\$ 613,000

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.

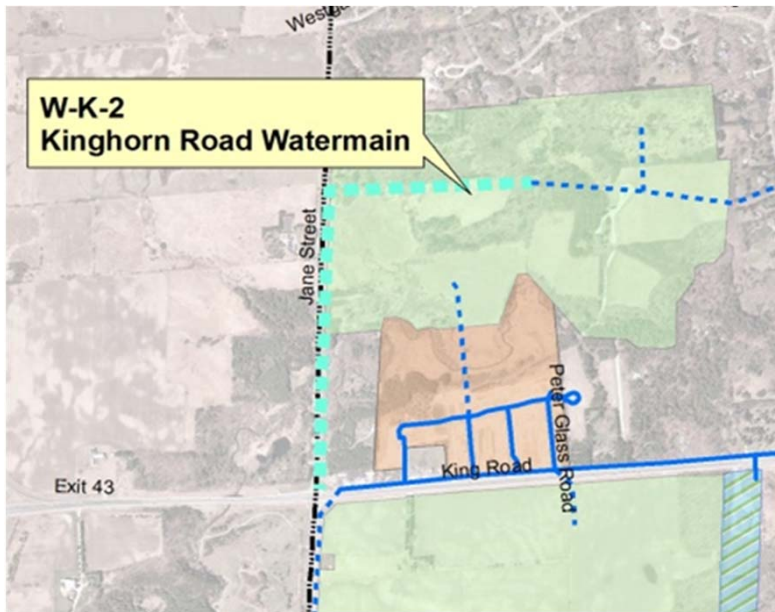


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-2A - Kinghorn Road Watermain

850m of 200mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-2A - Kinghorn Road Watermain

850m of 200mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	200mm PVC (Class 150) watermain	850	m	\$ 400	\$ 340,000
2					\$ -
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 340,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 45,133
2					
3					
Subtotal					\$ 45,200
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 11,556
<b>TOTAL</b>					<b>\$ 397,000</b>

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.

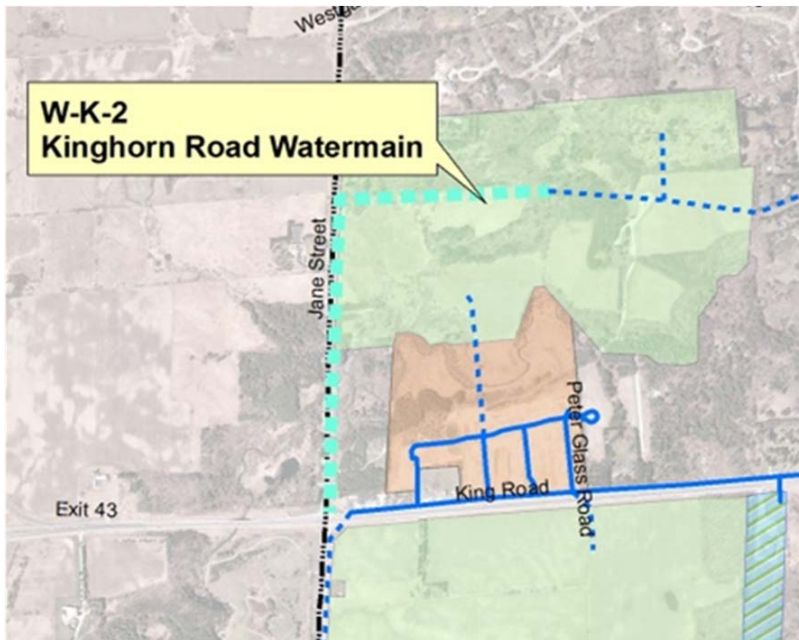


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-2B - Kinghorn Road Watermain

360m of 200mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-2B - Kinghorn Road Watermain

360m of 200mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	200mm PVC (Class 150) watermain	550	m	\$ 300	\$ 165,000
2					\$ -
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 165,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 21,903
2					
3					
Subtotal					\$ 22,000
<b>C Land Acquisition</b>		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>				3%	\$ 5,610
<b>TOTAL</b>					\$ 193,000

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.



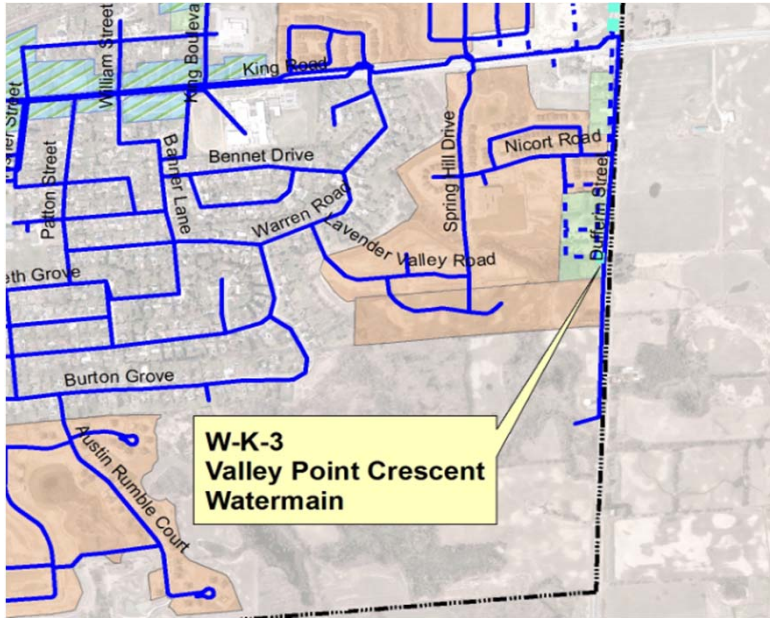


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-3 - Valley Point Crescent Watermain

30m of 200mm diameter PVC watermain



**W-K-3  
Valley Point Crescent  
Watermain**



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-3 - Valley Point Crescent Watermain

30m of 200mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	200mm PVC (Class 150) watermain	30	m	\$ 300	\$ 9,000
2	Connect to existing	1	LS	\$ 50,000	\$ 50,000
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 59,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 7,832
2					\$ -
3					\$ -
Subtotal					\$ 7,900
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 2,007
<b>TOTAL</b>					\$ 69,000

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.

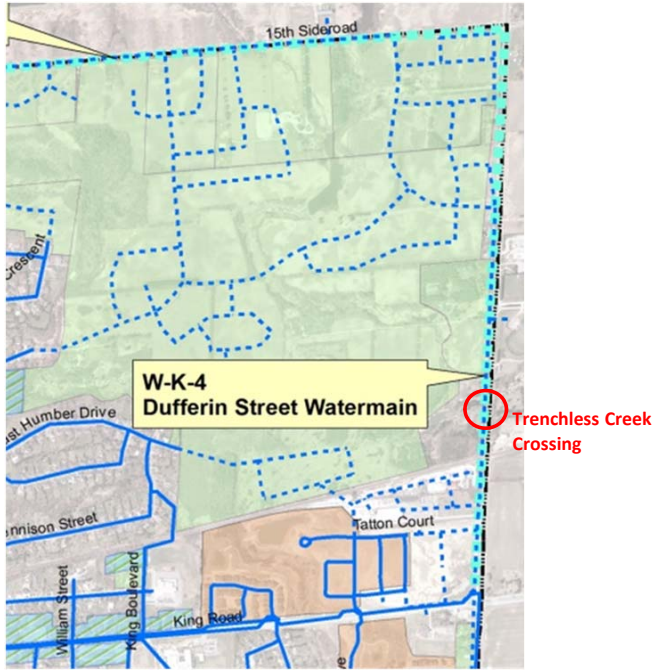


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-4 - Dufferin Street Watermain

2,000m of 300mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-4 - Dufferin Street Watermain

2,000m of 300mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	300mm PVC (SDR 41) watermain	2000	m	\$ 500	\$ 1,000,000
2	Trenchless Creek Crossing	50	m	\$ 2,500	\$ 125,000
3	Connect to existing	1	LS	\$ 75,000	\$ 75,000
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 1,200,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 159,292
2					\$ -
3					\$ -
Subtotal					\$ 159,300
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 40,779
<b>TOTAL</b>					\$ 1,401,000

Notes and Assumptions:  
1. Installation rates based on TMIG unit rates for 2015.



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-4 - 15th Sideroad Watermain

2,000m of 300mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-4 - 15th Sideroad Watermain

2,000m of 300mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	300mm PVC (SDR 41) watermain	2000	m	\$ 500	\$ 1,000,000
2	Trenchless Creek Crossing	50	m	\$ 2,500	\$ 125,000
3	Trenchless Creek Crossing	50	m	\$ 2,500	\$ 125,000
4	Connect to existing	1	LS	\$ 75,000	\$ 75,000
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 1,325,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 175,885
2					\$ -
3					\$ -
Subtotal					\$ 175,900
<b>C Land Acquisition</b>		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>				3%	\$ 45,027
<b>TOTAL</b>					\$ 1,546,000

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.

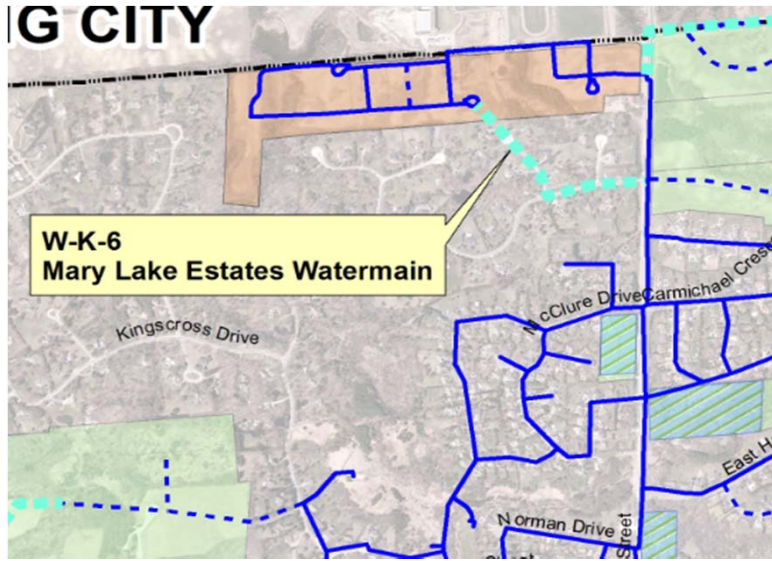


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-6 - Mary Lake Estates Watermain

540m of 150mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-K-6 - Mary Lake Estates Watermain

540m of 150mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	150mm PVC (Class 150) watermain	540	m	\$ 300	\$ 162,000
2	Connect to existing	2	LS	\$ 50,000	\$ 100,000
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 262,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 34,779
2					\$ -
3					\$ -
Subtotal					\$ 34,800
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 8,904
<b>TOTAL</b>					\$ 306,000

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.

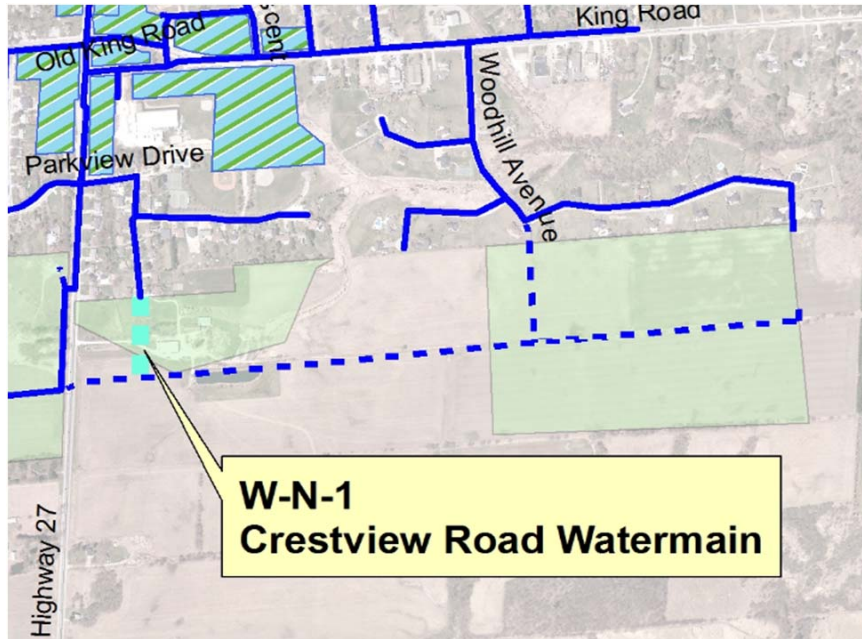


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-N-1 - Crestview Road Watermain

165m of 150mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-N-1 - Crestview Road Watermain

165m of 150mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	150mm PVC (Class 150) watermain	165	m	\$ 300	\$ 49,500
2	Connect to existing	1	LS	\$ 50,000	\$ 50,000
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 99,500
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 13,208
2					\$ -
3					\$ -
Subtotal					\$ 13,300
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 3,384
<b>TOTAL</b>					\$ 117,000

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.



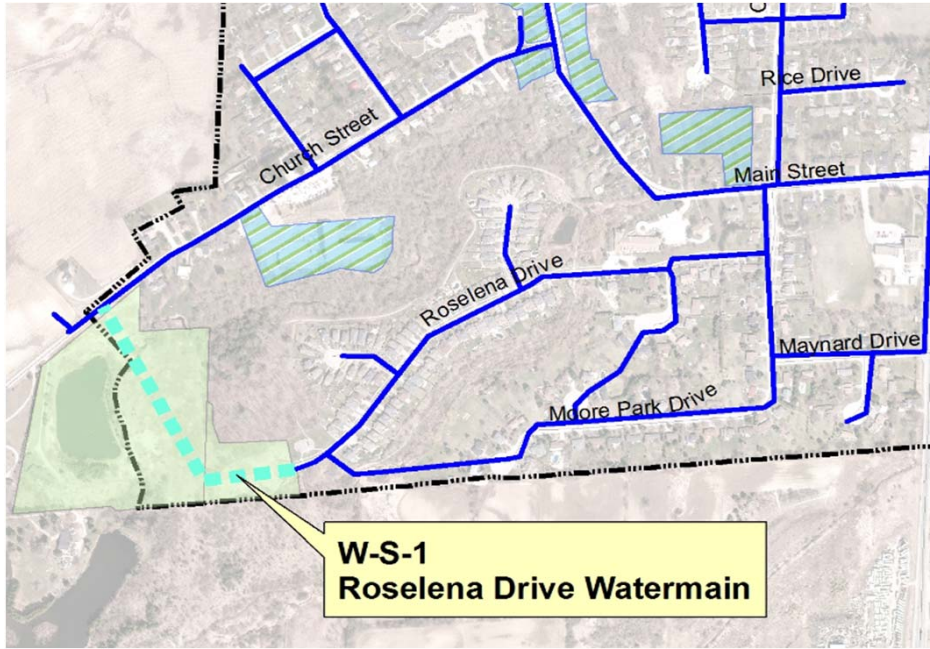


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-S-1 - Roselena Drive Watermain

420m of 150mm diameter PVC watermain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

W-S-1 - Roselena Drive Watermain

420m of 150mm diameter PVC watermain



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	150mm PVC (Class 150) watermain	420	m	\$ 300	\$ 126,000
2	Connect to existing	2	LS	\$ 50,000	\$ 100,000
3					\$ -
4					\$ -
5					\$ -
6					\$ -
7					\$ -
8					\$ -
Subtotal					\$ 226,000
<b>A Engineering</b>					
1	Design/Supervision/Contract Administration			15%	\$ 30,000
2					\$ -
3					\$ -
Subtotal					\$ 30,000
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 7,680
<b>TOTAL</b>					\$ 264,000

Notes and Assumptions:

1. Installation rates based on TMIG unit rates for 2015.



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## MEMORANDUM

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DATE	January 2, 2017
TO	<b>John Vandenberg, Township of King</b>
CC	
SUBJECT	King Township Master Plan Wastewater Servicing Recommendations
FROM	Kevin Brown, P.Eng.
PROJECT NUMBER	14100

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TMIG prepared a list of recommended wastewater servicing projects aimed at supporting the ongoing use of the existing infrastructure as well as its expansion into approved and designated development lands. The projects are described below; their triggers and estimated costs are listed in **Table 1**; and locations and a preliminary cost estimate breakdown are provided on project information sheets in the attached **Appendix A**.

### **WW-K-1: King Road and Keele Street Sewer Upgrade**

This project contemplates upsizing of the existing sewers along King Road and Keele Street upstream of the regional sewage pumping station. This infrastructure upgrade is recommended, as it will provide additional capacity required to service the existing system planned future development in Northeast King and North along Dufferin St (including Seneca College and County Day School).

There may be opportunities to defer this work, subject to detailed flow monitoring upstream of the potential surcharge locations.

### **WW-K-2: Northeast Pumping Station and Force main**

This project contemplates the construction of a new pumping station and force main to service the future development of Northeast King City.

The exact location of the sewage pumping station will be confirmed through the Planning process, but the force main will discharge to the existing sanitary collection system upstream of the Alex Campbell SPS.

### **WW-K-3: Keele Street Sewer**

This project contemplates a new sewer along Keele Street, between 15<sup>th</sup> Side Road and McClure Drive. This new infrastructure is required to service for the development north-west of the King City and Seneca College.

### **WW-K-4: Northwest King City Sewer**

While there is presently no plan to service the estate residential lands in northwest King City, the approved and designated developments north of King Road shall provide ultimate outlets to support the potential servicing of the external unserved areas.

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**WW-K-5: Southwest King City Sewer**

While there is presently no plan to service the estate residential lands in southwest King City, the approved and designated developments south of King Road shall provide ultimate outlets to support the potential servicing of the external unserved areas.

**WW-S-1: Main Street Sewer Upgrade**

This project contemplates upsizing of the existing sewers along Main Street and a portion of Dr. Kay Drive. Hydraulic Modelling has identified that these sewers currently do not have sufficient capacity for the design flows from the existing serviced area. This infrastructure upgrade should be considered, as it will provide additional capacity to the existing system, and ensure that the designated development lands in northwest and southwest Schomberg can also be serviced.

The required timing of this upgrade could be better established by installing a flow meter upstream of the surcharge section, and tracking the flow over time.

**WW-S-2: Dr. Kay Drive Sewer Upgrade East of Dr. Kay Sewage Pumping Station**

This project contemplates upsizing of the existing sewers along Dr. Kay Drive upstream of the Dr. Kay Sewage Pumping Station. Hydraulic Modelling has identified that these sewers currently do not have sufficient capacity for the design flows from the existing serviced area. This infrastructure upgrade should be considered, as it will provide additional capacity to the existing system.

The required timing of this upgrade could be better established by installing a flow meter upstream of the surcharge section, and tracking the flow over time.



**Table 1 – Recommended Wastewater Servicing Projects**

ID	Description	Trigger	Anticipated Class EA Schedule	Estimated Cost (2015 dollars)
WW-K-1	King Road and Keele Street Sewer Upgrade	Development of northeast King City, and lands along 15 <sup>th</sup> Side Road (including Seneca College and Country Day School)	A+	\$1,100,000
WW-K-2	Northeast Pumping Station and Forcemain	Development of northeast King City, (including Country Day School)	Exempt <sup>(1)</sup>	\$5,000,000
WW-K-3	Keele Street Sewer	New gravity sewers are required to service lands along 15 <sup>th</sup> Side Road (including Seneca College)	A+	\$1,400,000
WW-K-4	Northwest King City Sewer	Potential future servicing of the currently-developed lands in northwest King City	Deferred <sup>(2)</sup>	\$1,400,000
WW-K-5	Southwest King City Sewer	Potential future servicing of the currently-developed lands in southwest King City	Deferred <sup>(2)</sup>	\$1,400,000
WW-S-1	Main Street Sewer Upgrade	Currently undersized, based on the Township's Design Criteria.	A+	\$1,000,000
WW-S-2	Dr. Kay Drive Sewer Upgrade East of Dr. Kay Sewage Pumping Station	Currently undersized, based on the Township's Design Criteria.	A+	\$150,000
<p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. This project is to be undertaken by Private Sector developers and considered exempt from the EA Act.</li> <li>2. As there is no current plan to service these already-developed lands, a separate Class EA should be undertaken if servicing is determined to be required. This Master Plan establishes the ultimate servicing strategy for this existing neighbourhood, based on the existing development density. The design capacity of the Kingsview Sewage Pumping Station (which would receive flow from this neighbourhood) is not limiting the serviceability of these lands.</li> </ol>				

**APPENDIX A**  
**Detailed Cost Estimates**

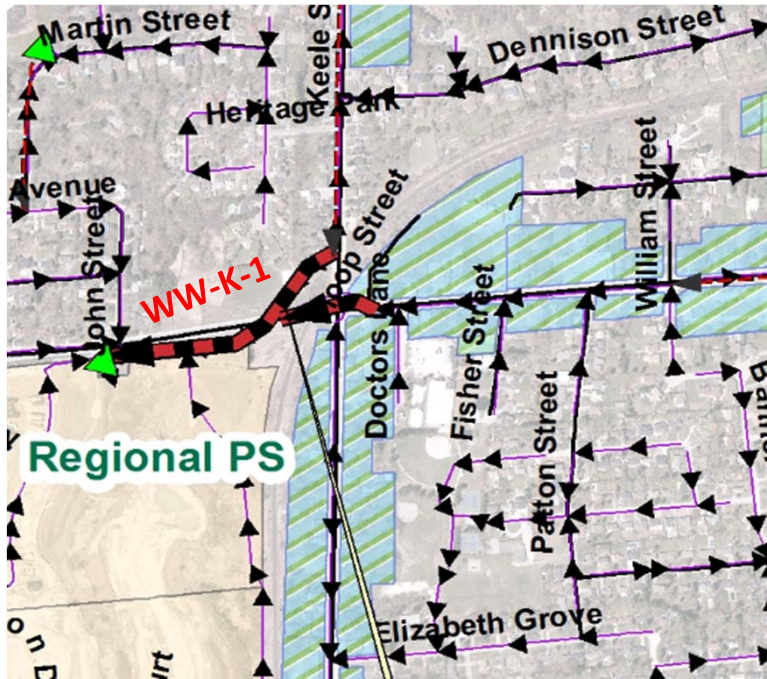
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TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-1 - King Road and Keele St. Sewer Upgrades

210m of 450mm diameter and 276m of 600mm diameter Concrete Pipe



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-1 - King Road and Keele St. Sewer Upgrades

210m of 450mm diameter and 276m of 600mm diameter Concrete Pipe



Item	Description	Qty	Unit	Rate	Cost
<b>A Construction</b>					
1	450mm diameter PVC sewer Depth (<5m deep)	210	m	\$ 1,300	\$ 273,000
2	600mm diameter PVC sewer Depth (5-8m deep)	215	m	\$ 2,000	\$ 430,000
3	600mm diameter PVC sewer Depth (<5m deep)	61	m	\$ 1,500	\$ 91,500
4	Connect to existing	3	LS	\$ 15,000	\$ 45,000
				HST	\$ 109,100
				Subtotal	\$ 948,600
<b>B Engineering</b>					
1	Engineering			15%	\$ 125,900
				HST	\$ 16,400
				Subtotal	\$ 142,300
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 32,700
				<b>TOTAL</b>	\$ 1,124,000

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Urban

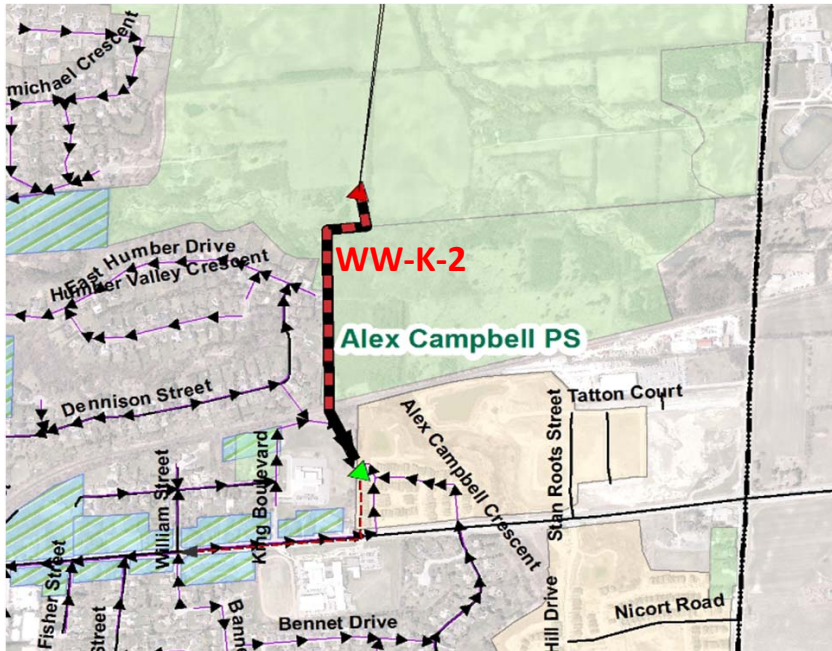


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-2: Northeast Pumping Station and Force Main

66 L/s Sewage Pumping Station and 300mm Sewge Forcemain



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-2: Northeast Pumping Station and Force Main

66 L/s Sewage Pumping Station and 300mm Sewge Forcemain



Item	Description	Qty	Unit	Rate	Cost
<b>A Construction</b>					
1	Pumping Station (66 L/s)	1	No	\$ 2,500,000	\$ 2,500,000
2	300mm PVC forcemain (<5m deep)	1525	No	\$ 925	\$ 1,410,625
3	Connect to existing	1	LS	\$ 15,000	\$ 15,000
					\$ -
					\$ -
				HST	\$ 325,000
				Subtotal	\$ 4,250,700
<b>B Engineering</b>					
1	Design			15%	\$ 564,300
				HST	\$ 73,400
				Subtotal	\$ 637,700
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 146,700
				<b>TOTAL</b>	\$ 5,035,100

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Rural

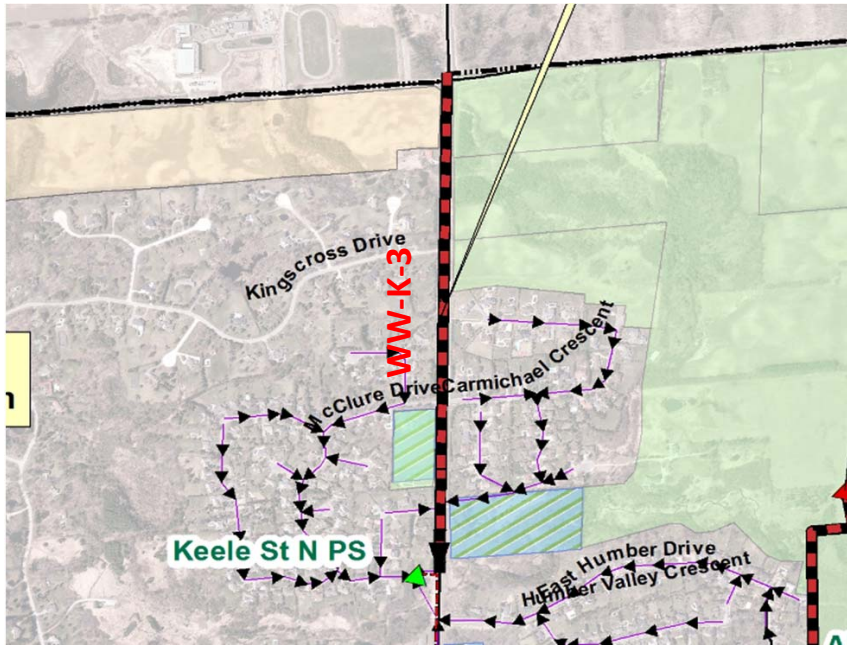


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-3: Keele Street Sewer

1270m 250mm sewer



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-3: Keele Street Sewer

1270m 250mm sewer



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	250mm diameter PVC sewer Depth (<5m deep)	1270	m	\$ 800	\$ 1,016,000
2	Connect to existing	1	LS	\$ 15,000	\$ 15,000
					\$ -
					\$ -
					\$ -
					\$ -
				HST	\$ 134,000
				Subtotal	\$ 1,165,000
<b>A Engineering</b>					
1	Design			15%	\$ 154,600
				HST	\$ 20,100
				Subtotal	\$ 174,700
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 40,200
				<b>TOTAL</b>	\$ 1,379,900

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Urban

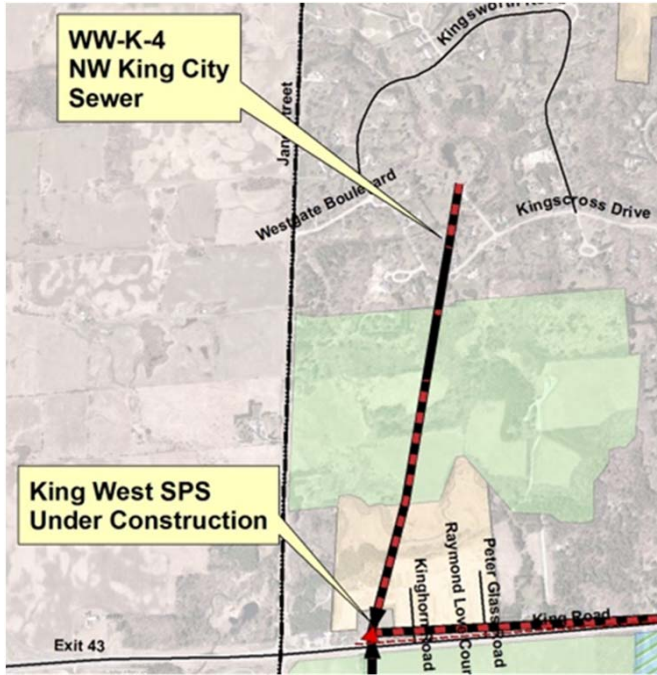


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-4: NW King City Sewer

1575m 250mm sewer



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-4: NW King City Sewer

1575m 250mm sewer



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	250mm diameter PVC sewer (<5m deep)	1575	m	\$ 650	\$ 1,023,750
2	Connect to existing	1	LS	\$ 15,000	\$ 15,000
					\$ -
					\$ -
					\$ -
				HST	\$ 135,000
				Subtotal	\$ 1,173,800
..					
<b>A Engineering</b>					
1	Design			15%	\$ 155,800
				HST	\$ 20,300
				Subtotal	\$ 176,100
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 40,500
				<b>TOTAL</b>	<b>\$ 1,390,400</b>

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Rural



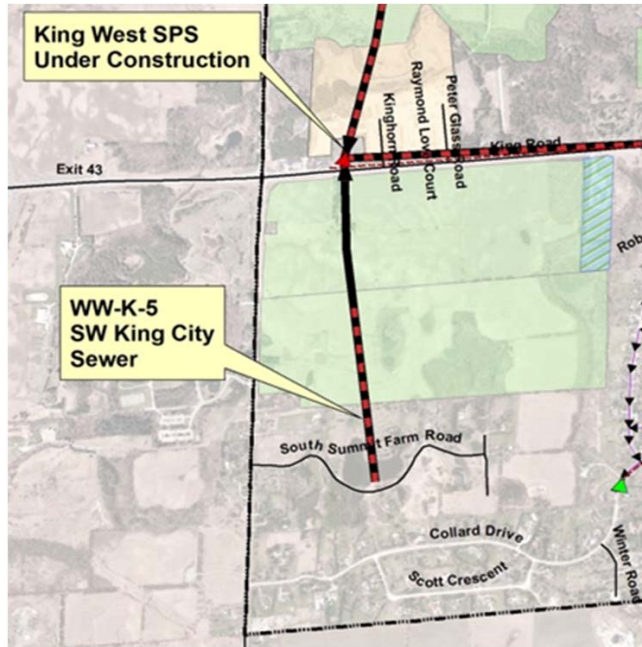


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-5: SW King City Sewer

1500m 250mm sewer



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-K-5: SW King City Sewer

1500m 250mm sewer



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	250mm diameter PVC sewer (<5m deep)	1500	m	\$ 650	\$ 975,000
2	Connect to existing	1	LS	\$ 15,000	\$ 15,000
					\$ -
					\$ -
					\$ -
					\$ -
				HST	\$ 128,700
				Subtotal	\$ 1,118,700
<b>A Engineering</b>					
1	Design			15%	\$ 148,500
				HST	\$ 19,300
				Subtotal	\$ 167,800
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 38,600
				<b>TOTAL</b>	\$ 1,325,100

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Rural

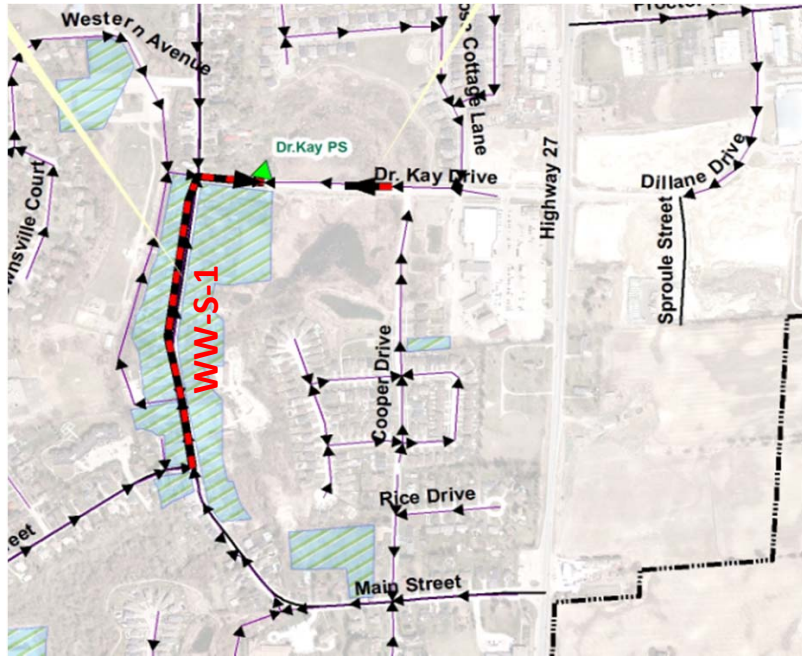


TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-S-1: Main Street Sanitary Sewer Upgrade

631m 375mm sewer



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-S-1: Main Street Sanitary Sewer Upgrade

631m 375mm sewer



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	375mm diameter PVC sewer (<5m Deep)	631	m	\$ 1,200	\$ 757,200
2	Connect to existing	1	LS	\$ 15,000	\$ 15,000
					\$ -
					\$ -
					\$ -
					\$ -
				HST	\$ 100,400
				Subtotal	\$ 872,600
<b>A Engineering</b>					
1	Design			15%	\$ 115,800
				HST	\$ 15,100
				Subtotal	\$ 130,900
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 30,100
				<b>TOTAL</b>	\$ 1,033,600

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Urban

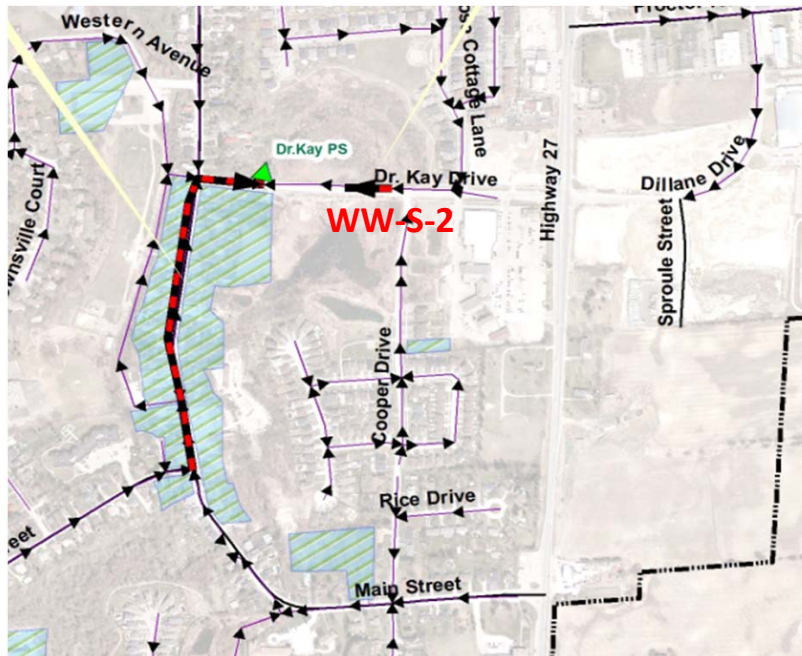




TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-S-2: Dr. Kay Drive Sewer Upgrades East of Dr. Kay Sewage Pumping Station  
90m 250mm sewer



TOWNSHIP OF KING WATER/WASTEWATER/STORMWATER MASTER PLAN (2015)

Preliminary Cost Estimates for Development Charge Items

WW-S-2: Dr. Kay Drive Sewer Upgrades East of Dr. Kay Sewage Pumping Station  
90m 250mm sewer



Item	Description	Qty	Unit	Rate	Cost
<b>B Construction</b>					
1	375mm diameter PVC sewer (<5m Deep)	90	m	\$ 1,000	\$ 90,000
2	Connect to existing	1	LS	\$ 15,000	\$ 15,000
3	1200mm diameter manhole	2	No	\$ 3,600	\$ 7,200
					\$ -
					\$ -
					\$ -
				HST	\$ 13,650
				Subtotal	\$ 125,900
<b>A Engineering</b>					
1	Design			15%	\$ 16,700
				HST	\$ 2,200
				Subtotal	\$ 18,900
<b>C Land Acquisition</b>					
		0	ha	\$ -	\$ -
<b>D Treasury Administration</b>					
				3%	\$ 4,300
				<b>TOTAL</b>	\$ 150,000

**Notes and Assumptions:**

1. Installation rates based on TMIG unit rates for 2015.
2. Installation Location : Urban

