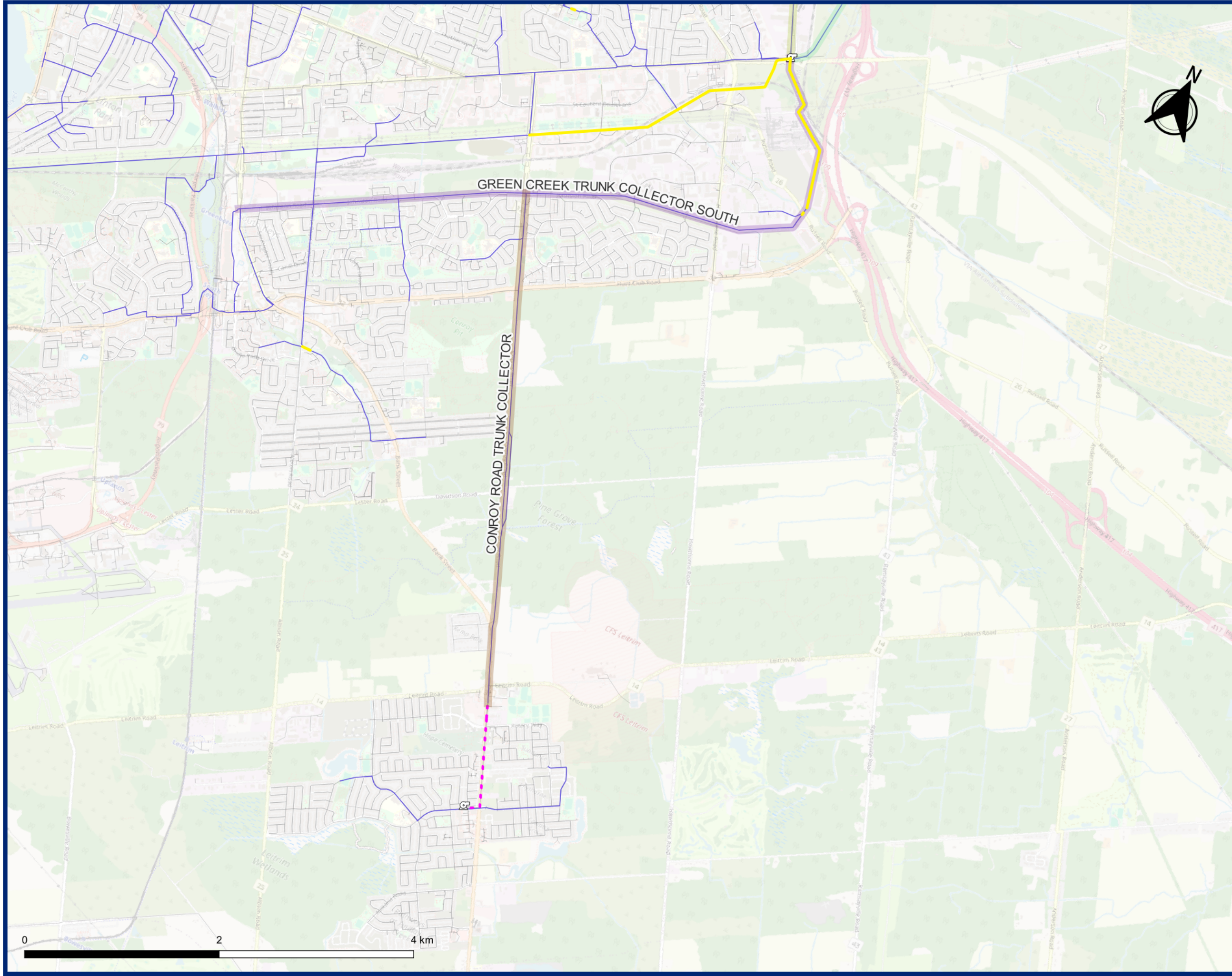


Appendix A

Modelling Results



OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

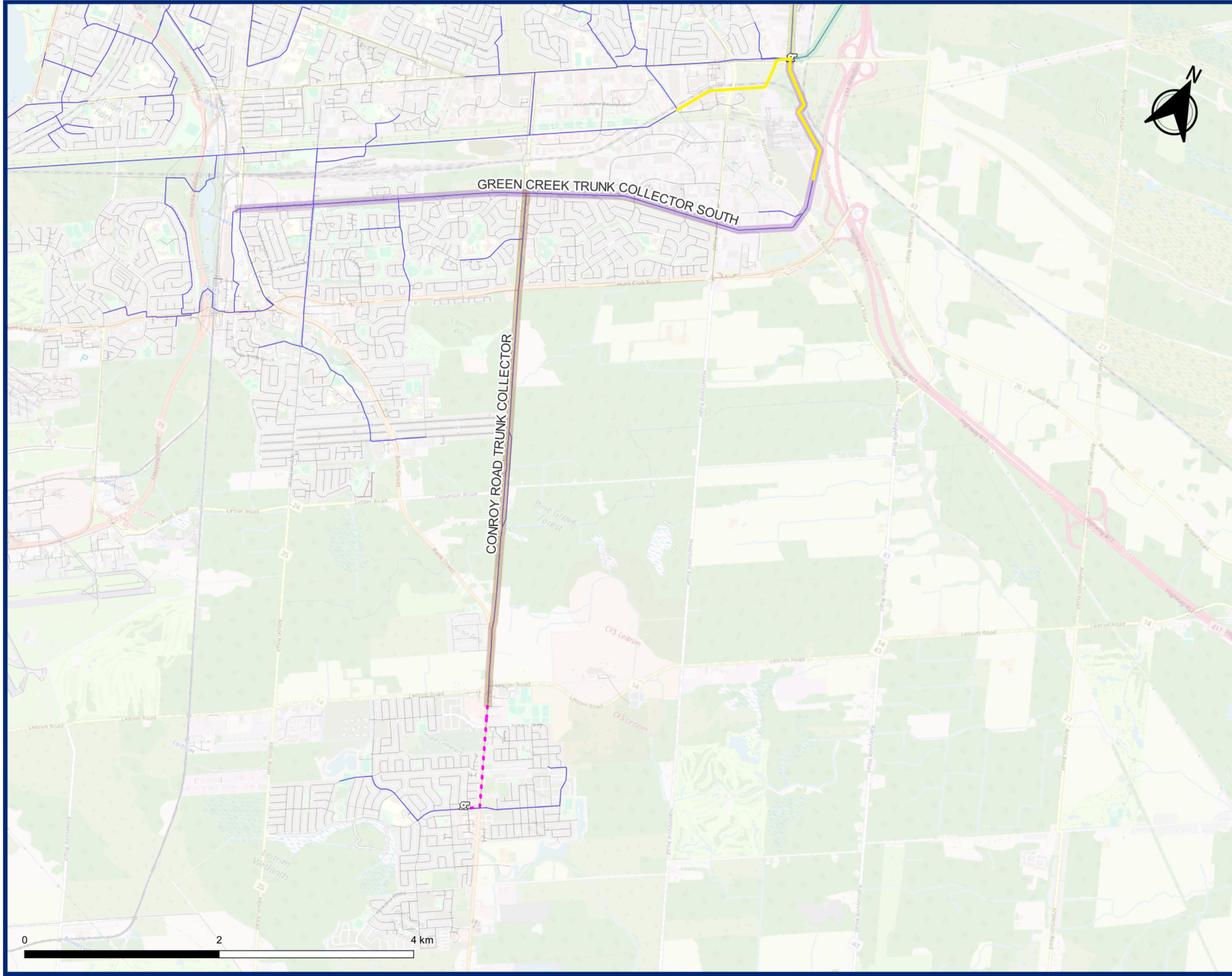
Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

Figure 2-1
Existing Conditions
1-in-25-Year June 2014 Event
Leirim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

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- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

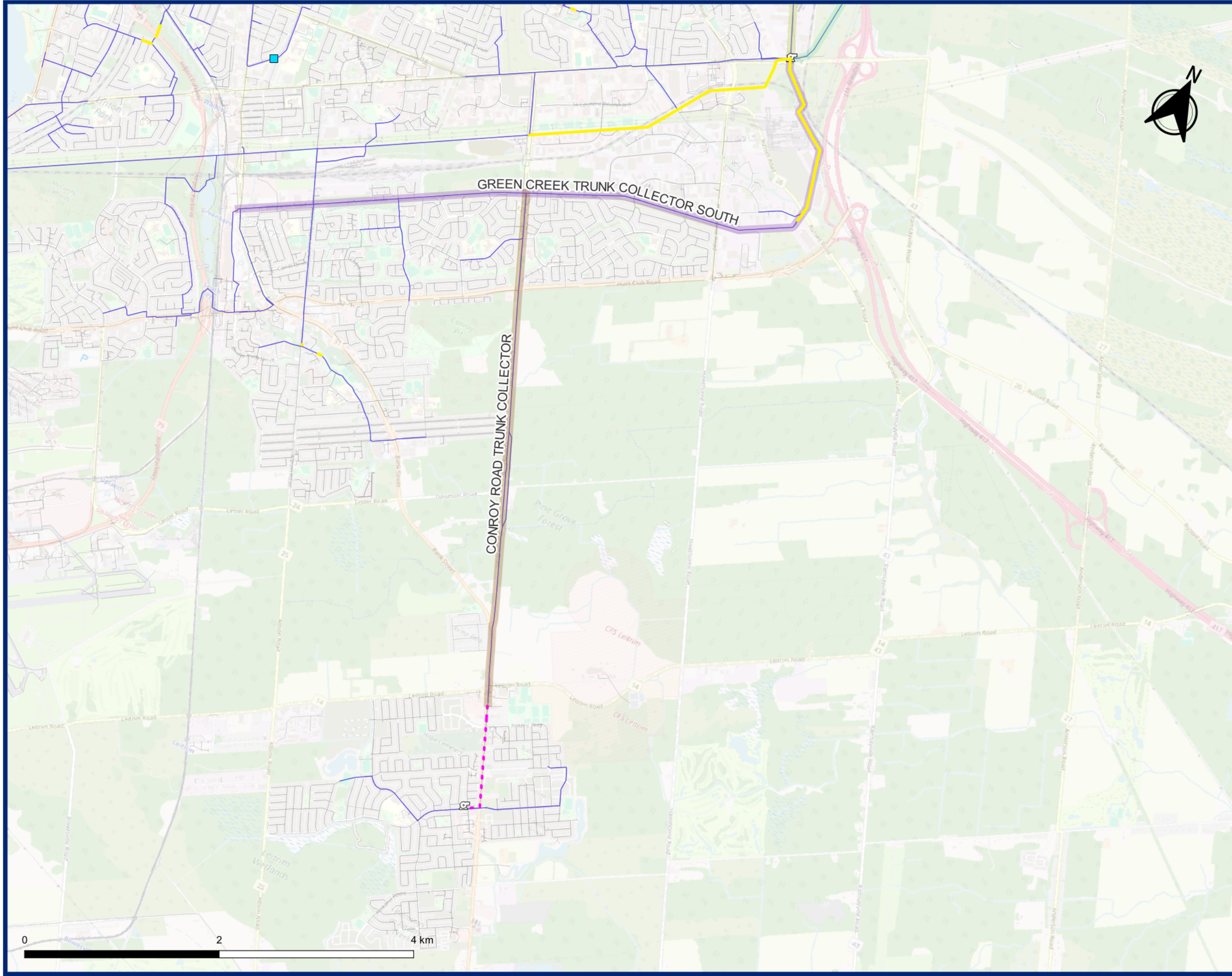
Network

- Gravity Sewer
- Forcemain
- Local Sewer

Figure 2-2
Existing Conditions
1-in-5-Year June 2014 Event
Leirim



July, 2025
2501074-WW-003
Projection EPSG:32189



OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

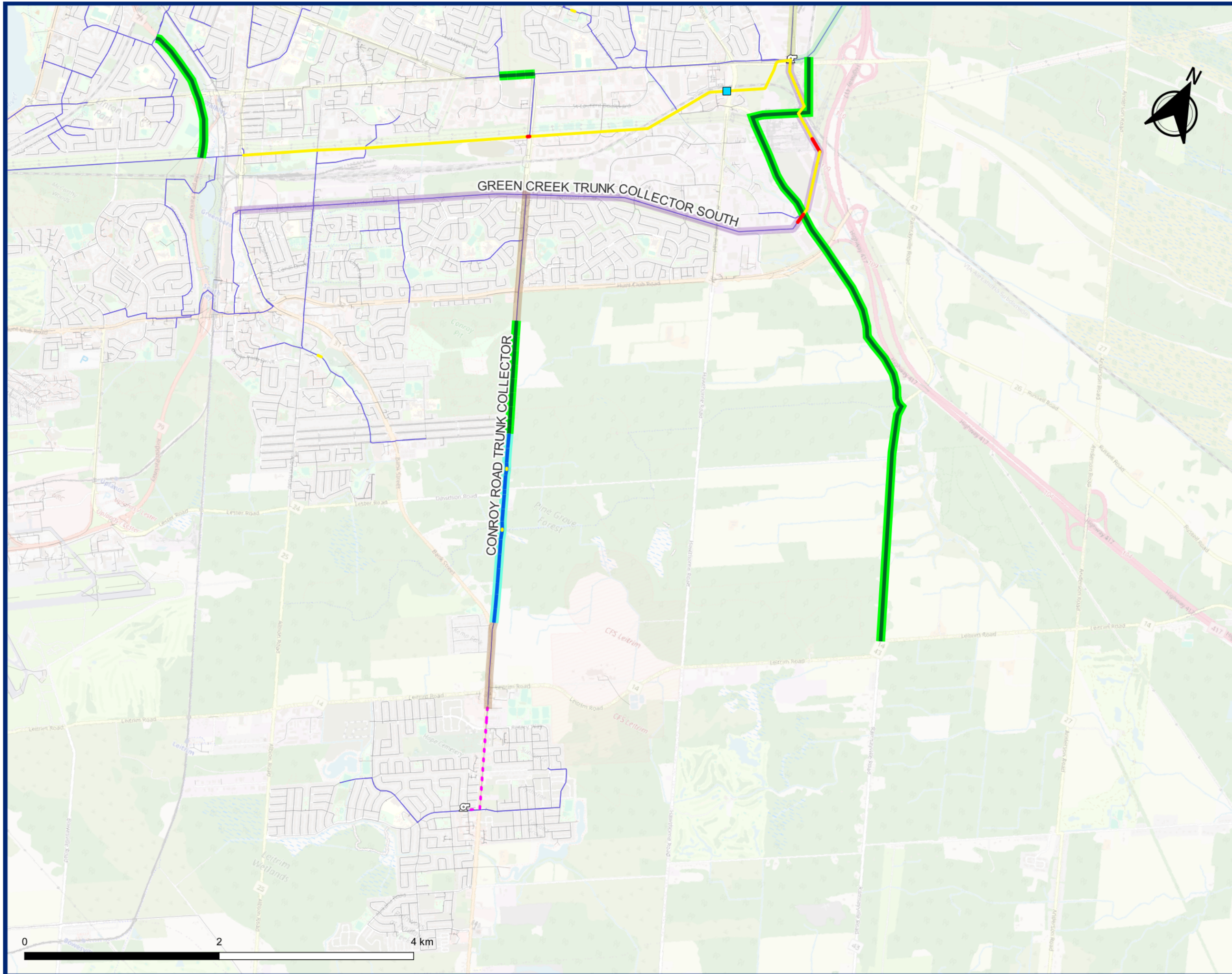
Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

Figure 2-3
Existing Conditions
1-in-100-Year June 2014 Event
Leirim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

- Trunk Sewers**
- SOUTH OTTAWA TUNNEL
 - CONROY ROAD TRUNK COLLECTOR
 - GREEN CREEK TRUNK COLLECTOR NORTH
 - GREEN CREEK TRUNK COLLECTOR SOUTH

- Modelling Results**
- Junctions (Maintenance Holes)
- Flooding
 - HGL Near Surface (<1.8m Depth)
- Conduits (Sewer Pipes)
- $d/D \geq 0.8$
 - $q/Q \geq 1$

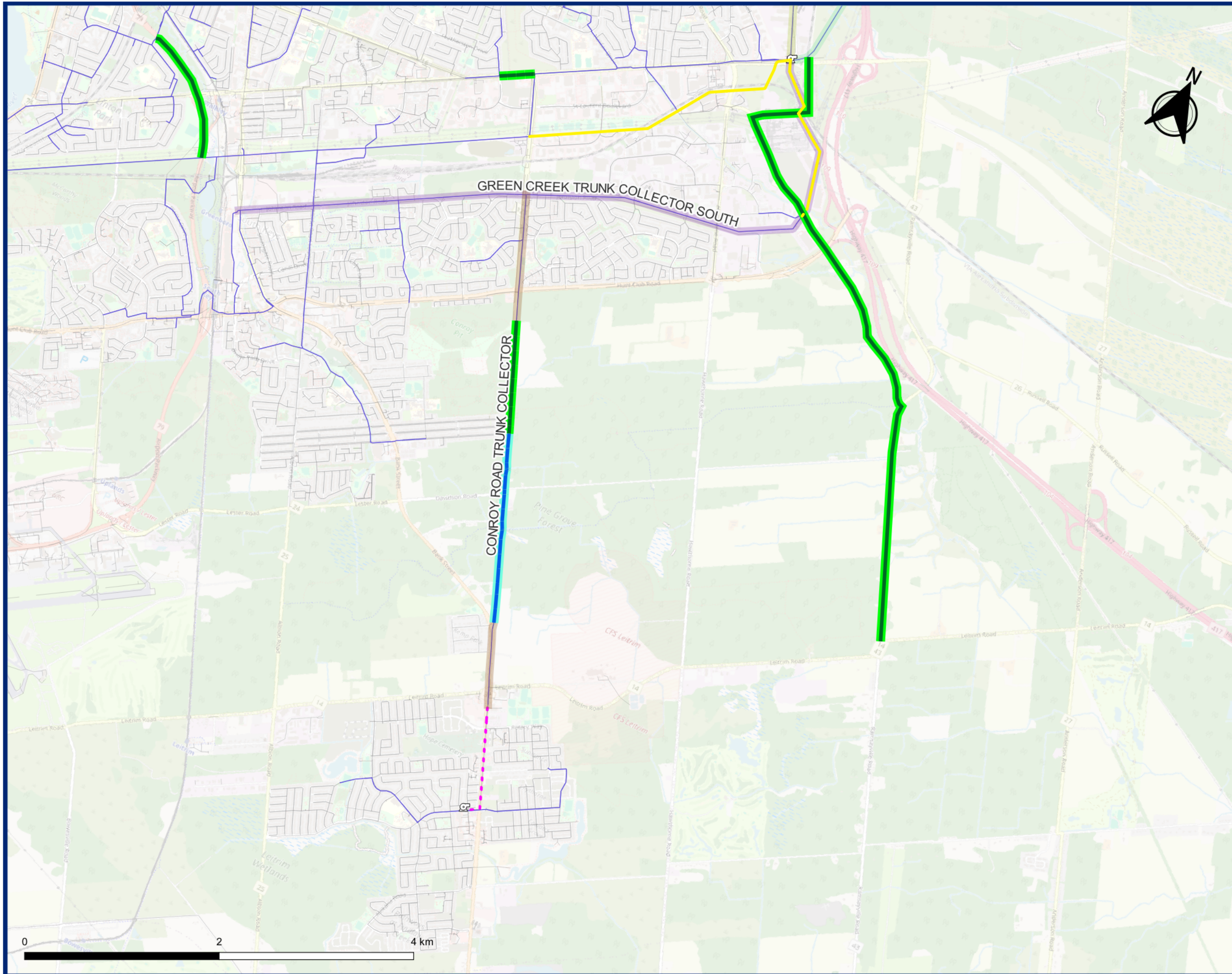
- Existing Sanitary Sewer Infrastructure (VERTICAL)**
- WW Facilities
- WWPS
 - WWTP

- Existing Sanitary Sewer Infrastructure (LINEAR)**
- Network
- Gravity Sewer
 - Forcemain
 - Local Sewer

- Future Sanitary Sewer Infrastructure**
- 2013 Capital Project
 - 2046 Capital Project

Figure 3-1
Future Conditions (no Leitrim)
1-in-25-Year June 2014 Event
Leitrim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

Future Sanitary Sewer Infrastructure

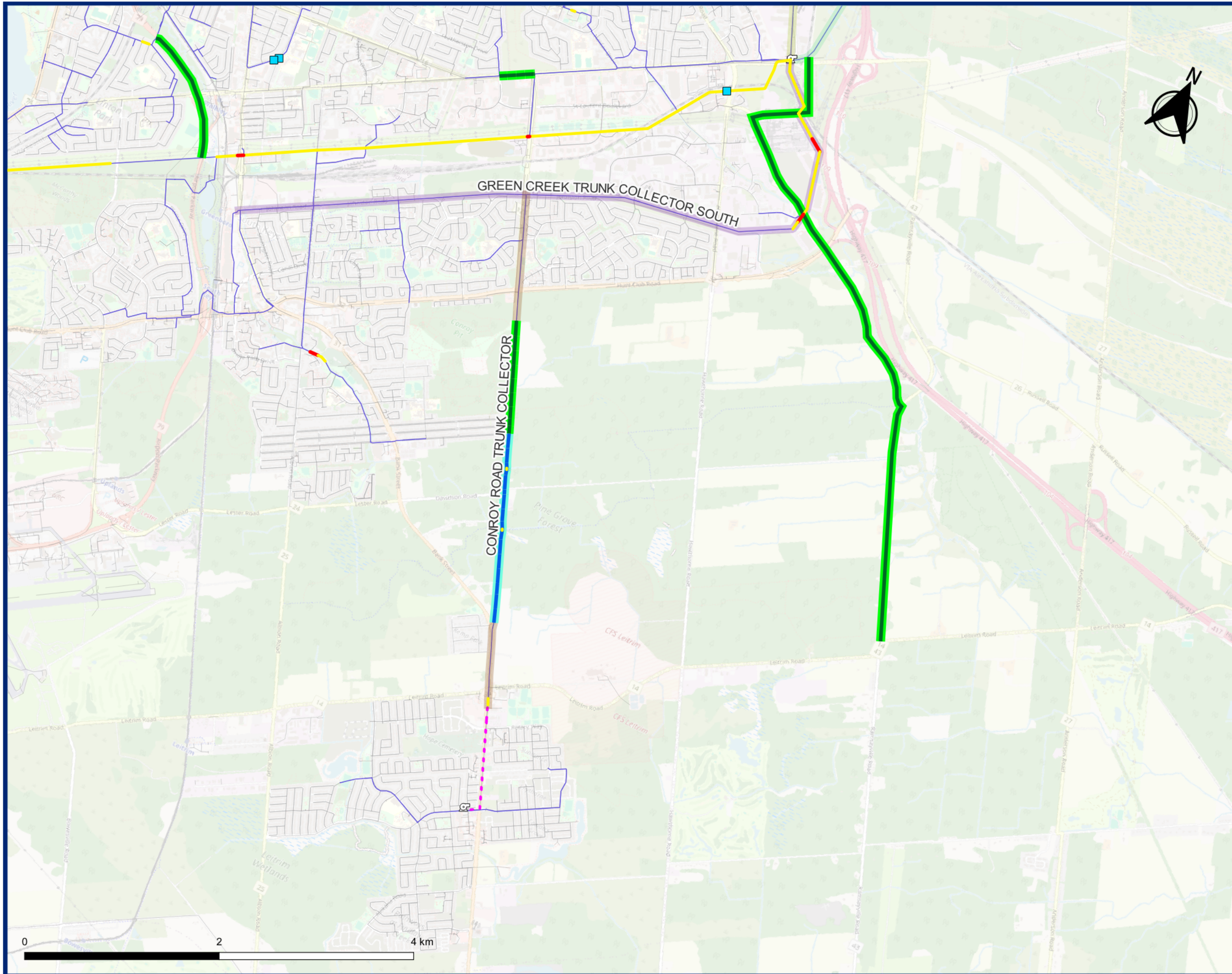
- 2013 Capital Project
- 2046 Capital Project

Figure 3-2

Future Conditions (no Leirrim)
1-in-5-Year June 2014 Event
Leirrim



July, 2025
2501074-WW-003
Projection EPSG:32189



OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

Future Sanitary Sewer Infrastructure

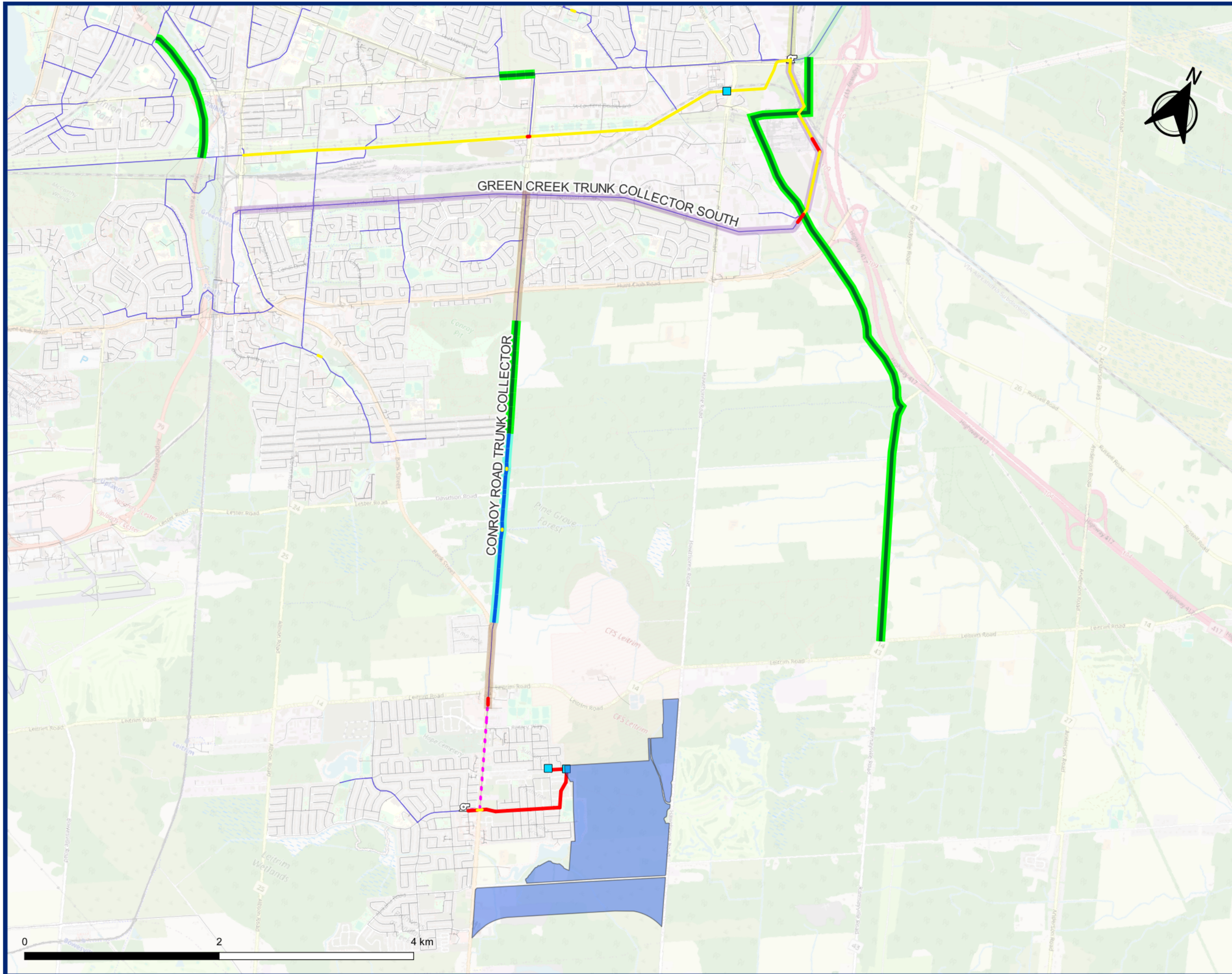
- 2013 Capital Project
- 2046 Capital Project

Figure 3-3

Future Conditions (no Leirrim)
1-in-100-Year June 2014 Event
Leirrim



July, 2025
2501074-WW-003
Projection EPSG:32189



OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Expansion Area

Leirim

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

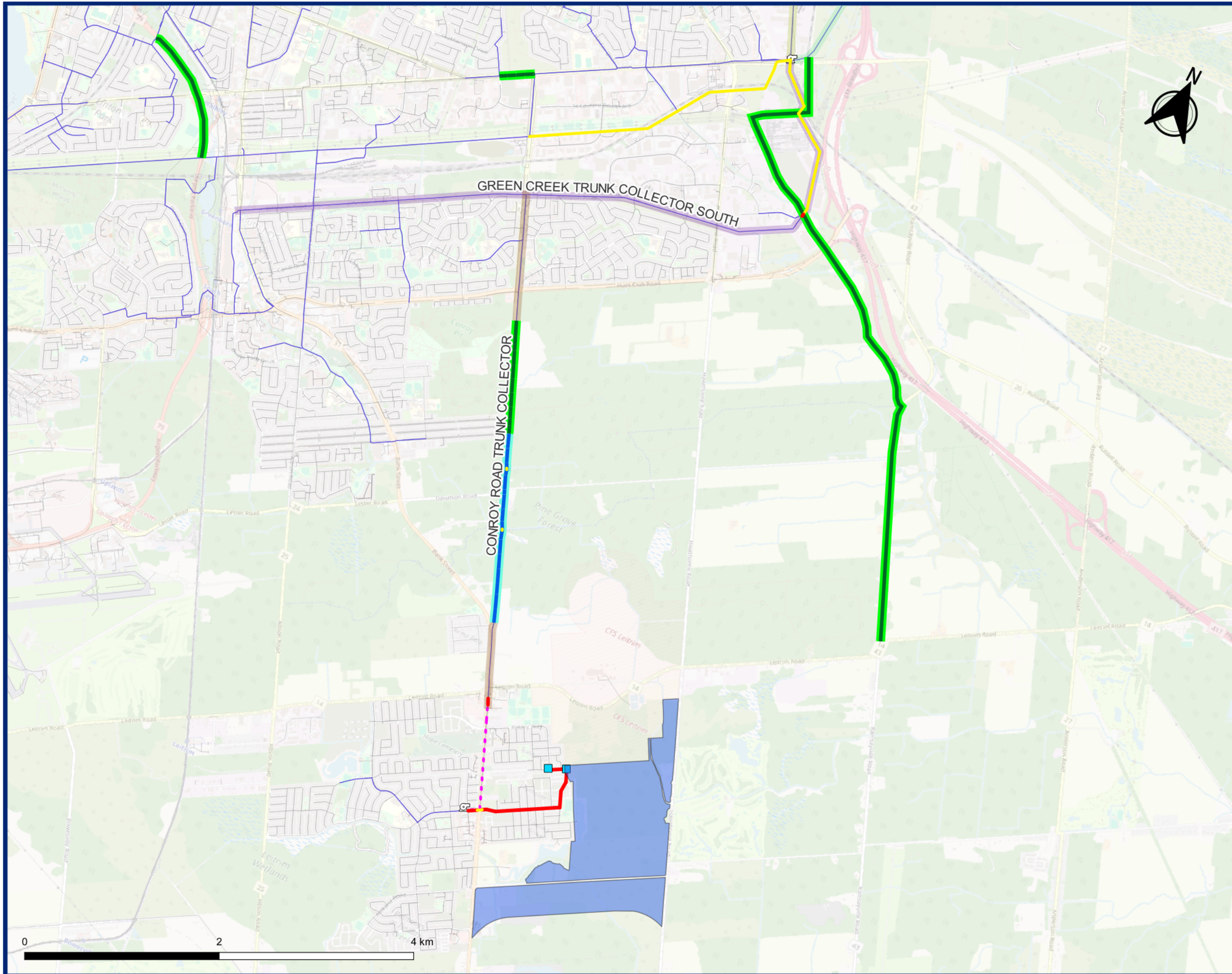
Future Sanitary Sewer Infrastructure

- 2013 Capital Project
- 2046 Capital Project

Figure 4-1

Future Conditions (with Leirim)
1-in-25-Year June 2014 Event
Leirim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Expansion Area

Leirim

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

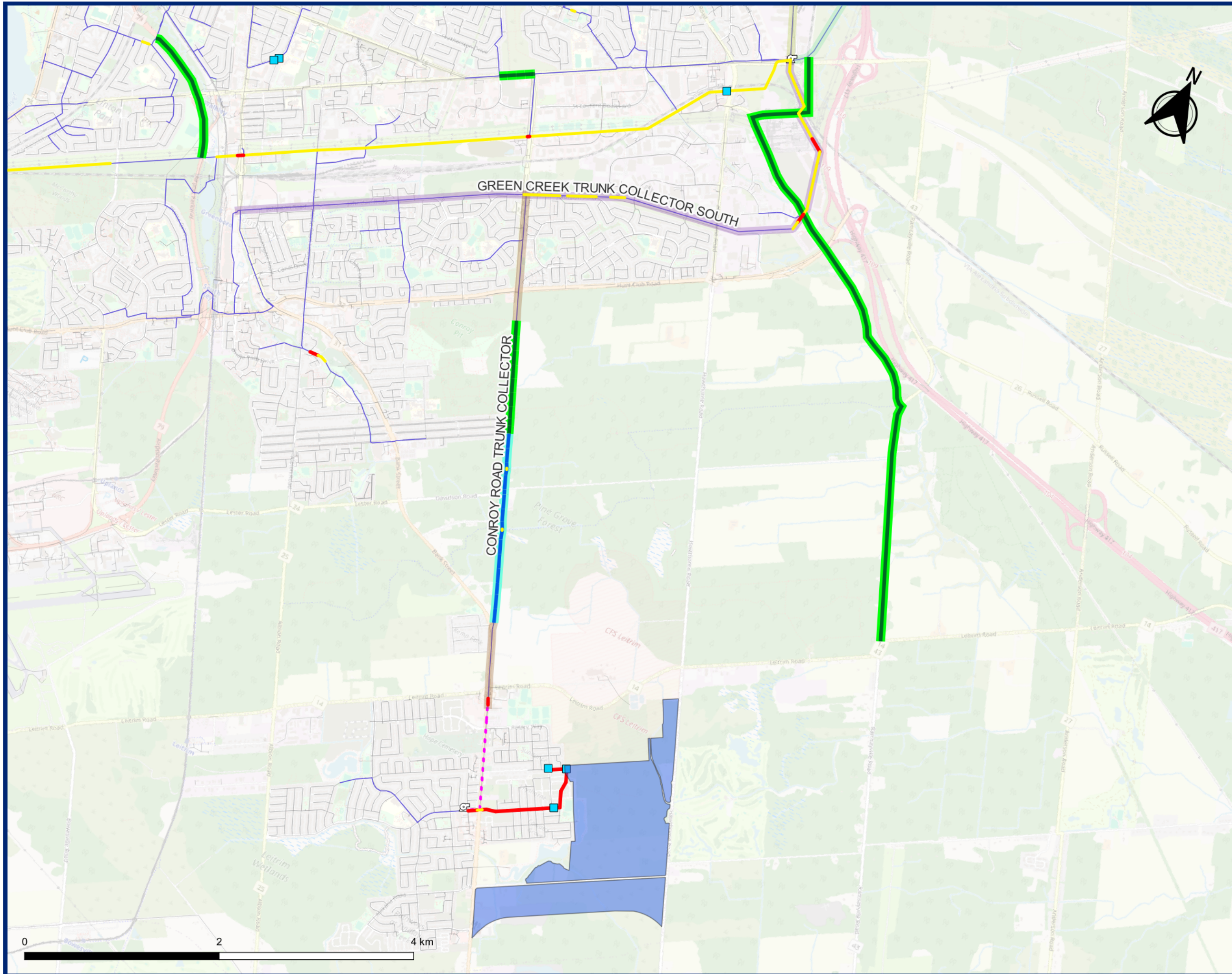
Future Sanitary Sewer Infrastructure

- 2013 Capital Project
- 2046 Capital Project

Figure 4-2

Future Conditions (with Leirim)
1-in-5-Year June 2014 Event
Leirim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Expansion Area

Leirim

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- $d/D \geq 0.8$
- $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

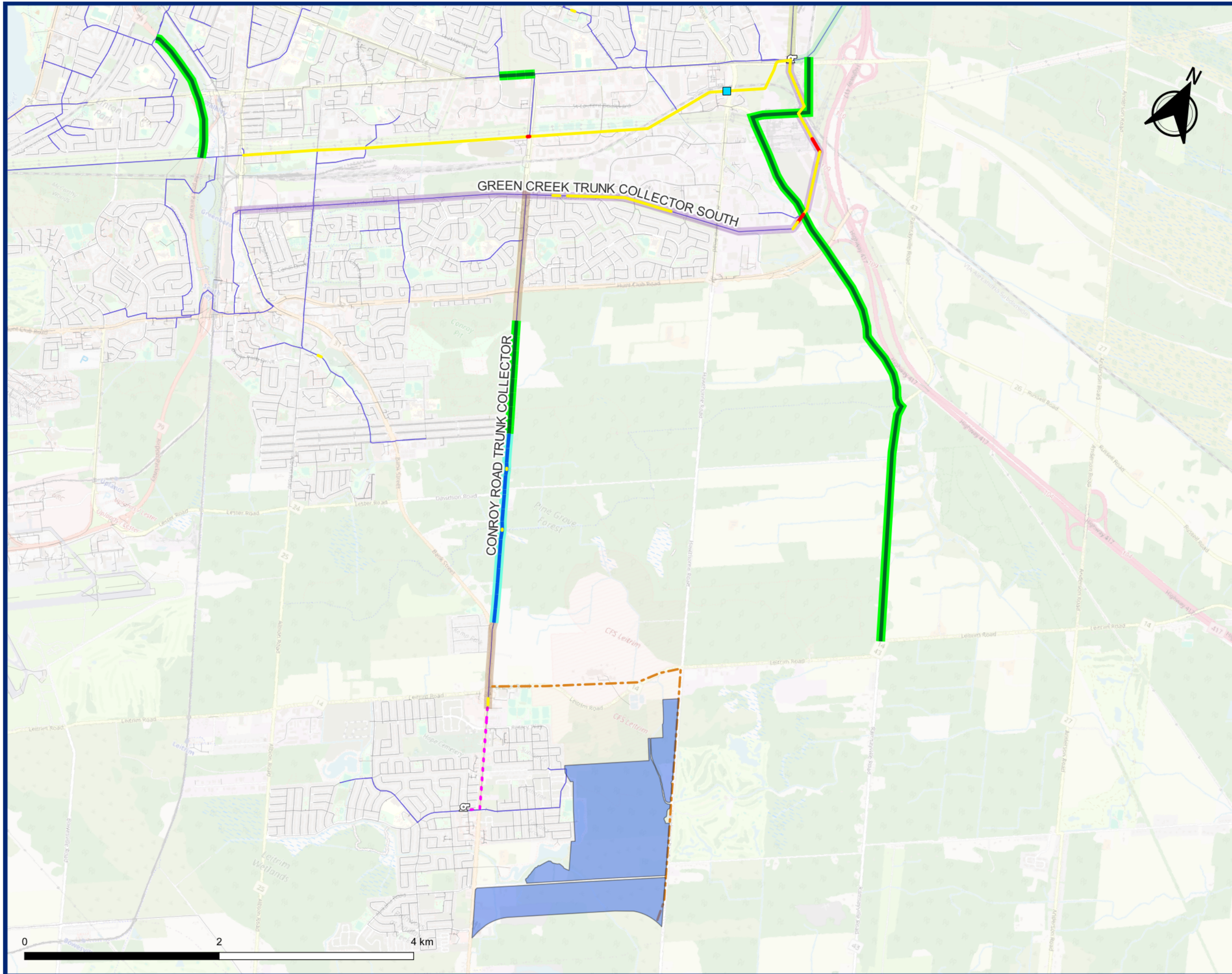
Future Sanitary Sewer Infrastructure

- 2013 Capital Project
- 2046 Capital Project

Figure 4-3

Future Conditions (with Leirim)
1-in-100-Year June 2014 Event
Leirim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Expansion Area

Leirim

Servicing Solution

On-site Pumping Station

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

- Junctions (Maintenance Holes)
- Flooding
 - HGL Near Surface (<1.8m Depth)
- Conduits (Sewer Pipes)
- $d/D \geq 0.8$
 - $q/Q \geq 1$

Existing Sanitary Sewer Infrastructure (VERTICAL)

- WW Facilities
- WWPS
 - WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

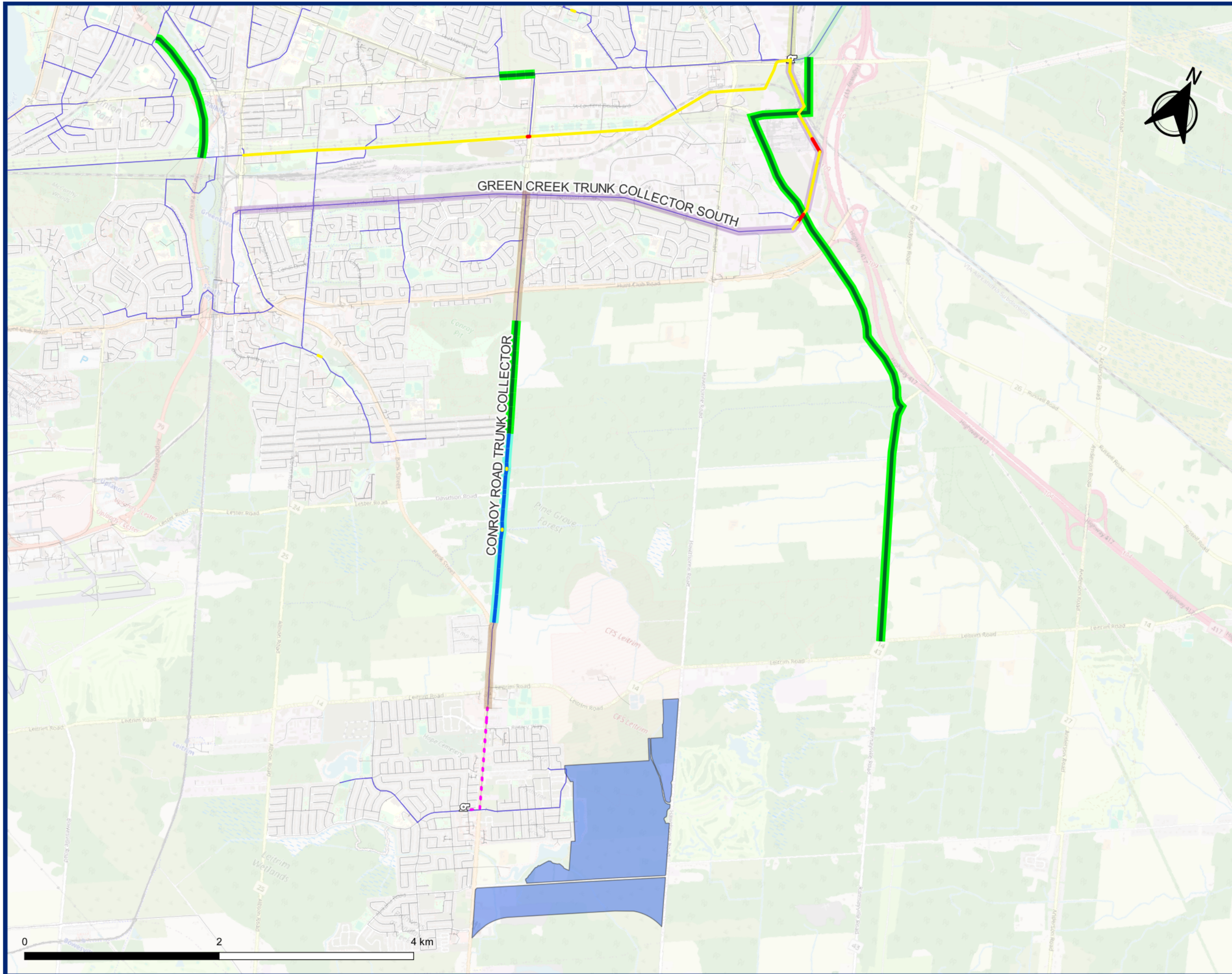
- Network
- Gravity Sewer
 - Forcemain
 - Local Sewer

Future Sanitary Sewer Infrastructure

- 2013 Capital Project
- 2046 Capital Project

Figure 5-1
Future Conditions (Servicing Solutions)
1-in-25-Year June 2014 Event
Leirim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Expansion Area

Leitrim

Servicing Solution

On-site Pumping Station

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- d/D >= 0.8
- q/Q >= 1

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

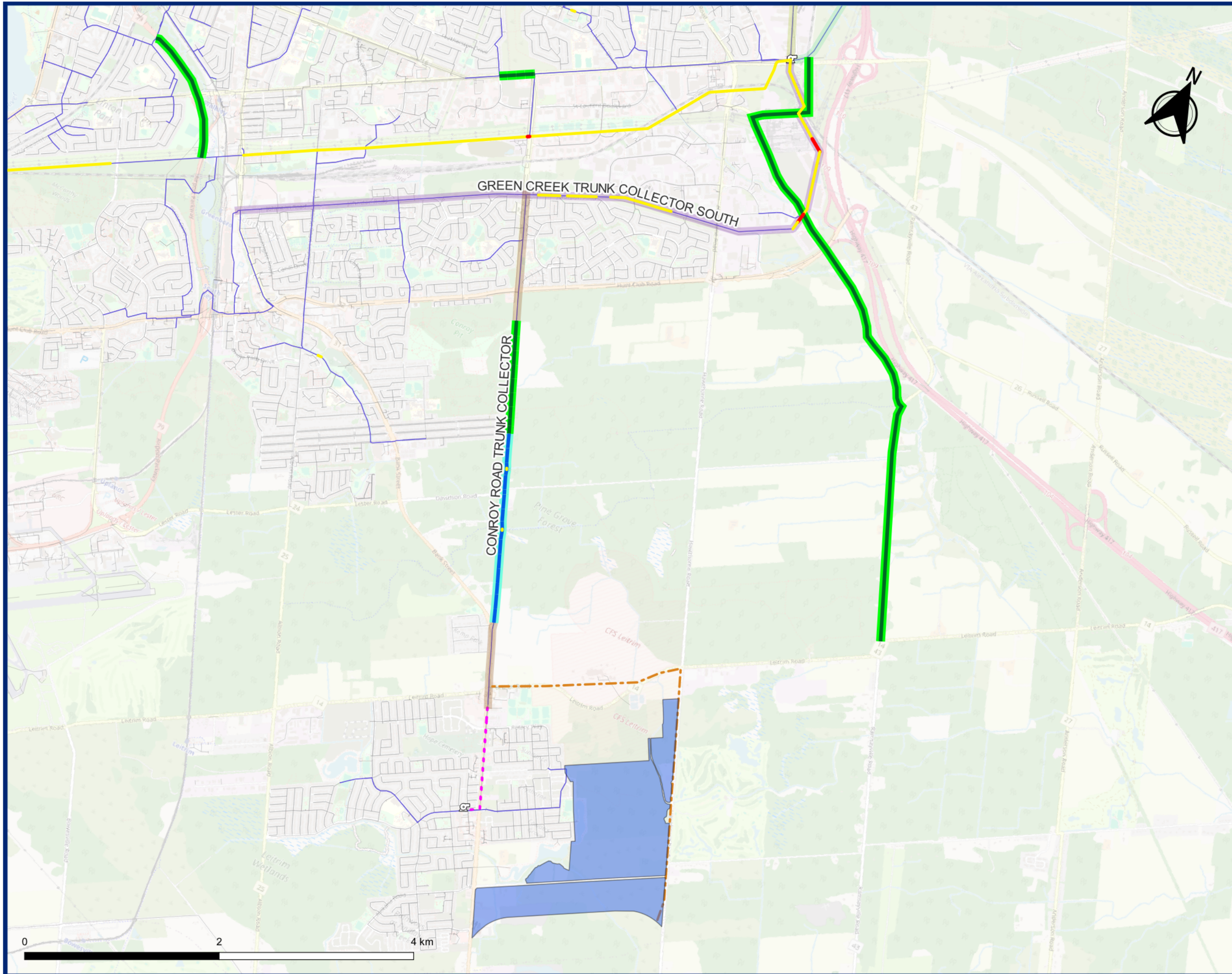
- Gravity Sewer
- Forcemain
- Local Sewer

Future Sanitary Sewer Infrastructure

- 2013 Capital Project
- 2046 Capital Project

Figure 5-2
Future Conditions (Servicing Solutions)
1-in-5-Year June 2014 Event
Leitrim





OPA Urban Boundary Expansion
Wastewater Infrastructure Assessment

Expansion Area

Leirim

Servicing Solution

On-site Pumping Station

Trunk Sewers

- SOUTH OTTAWA TUNNEL
- CONROY ROAD TRUNK COLLECTOR
- GREEN CREEK TRUNK COLLECTOR NORTH
- GREEN CREEK TRUNK COLLECTOR SOUTH

Modelling Results

Junctions (Maintenance Holes)

- Flooding
- HGL Near Surface (<1.8m Depth)

Conduits (Sewer Pipes)

- d/D >= 0.8
- q/Q >= 1

Existing Sanitary Sewer Infrastructure (VERTICAL)

WW Facilities

- WWPS
- WWTP

Existing Sanitary Sewer Infrastructure (LINEAR)

Network

- Gravity Sewer
- Forcemain
- Local Sewer

Future Sanitary Sewer Infrastructure

- 2013 Capital Project
- 2046 Capital Project

Figure 5-3
Future Conditions (Servicing Solutions)
1-in-100-Year June 2014 Event
Leirim

