

November 2024

Re: Renew Sheppard East (Sheppard Avenue East Planning Review): Servicing Capacity Assessment

Introduction

This report provides an overview of the existing municipal servicing within the Renew Sheppard East Study Area, and a capacity assessment of the existing sanitary sewer and water distribution systems considering the projected population growth. This capacity assessment supports planning for growth for the Sheppard Avenue East Planning Review.

Approach

A capacity assessment was undertaken to understand the existing servicing infrastructure performance and identify servicing constraints for the Renew Sheppard East study. The following steps were taken to complete the analysis:

- Develop/update hydraulic models for both the sanitary and water distribution system to reflect existing conditions;
- Conduct existing conditions capacity analysis to serve as a baseline; and
- Conduct future condition capacity analysis based on projection data provided by City Planning.

Criteria for Capacity Assessment

The City's Sewer Capacity Assessment Guidelines (July 2021) provide a clear and consistent approach for assessment of capacity in the City's local sanitary and combined sewer systems. It is used to ensure there is sewer capacity to accommodate growth-related development. The following criteria apply for the Study Area:

- Under design flow conditions (i.e., dry weather flow) sewers are not surcharged; and
- Under extreme wet weather flow (WWF) conditions, prescribed to be the May 12, 2000 event, sewers meet acceptable Hydraulic Grade Line (HGL) levels (greater than 1.8 m below ground) to support the objectives of the City's Basement Flooding Protection Program.

For the water distribution system, the City's Sewer and Watermain Design Criteria (January 2021) outlines the required pressures that the system must operate under daily demand and fire flow scenarios. The primary focus is ensuring that there is adequate hydraulic pressure in the distribution system. The following criteria govern that watermain performance criteria for the servicing assessment:

- preferred design pressure range of 350 kPa (50 psi) to 550 kPa (80 psi) during average day demand (ADD) and maximum day demand (MDD);

- minimum allowable pressure during non-fire scenarios is 275 kPa (40 psi); and,
- minimum residual pressure during maximum day plus fire scenarios will be greater than 140 kPa (20 psi) at any location in water distribution system and the available fire flow shall be at minimum 80 L/s and 83 L/s for residential and commercial uses, respectively.

Scenarios for Assessment

The servicing assessment evaluates the municipal servicing infrastructure under existing and future conditions. The existing condition is reflective of the current conditions and in this assessment is based on the 2021 census population and water usage data for the water hydraulic assessment, and the basement flooding model populations for the sanitary hydraulic assessment. The basement flooding models consisted of Area 29 (completed in 2007), Areas 26 & 27 (completed in 2016), and Area 55 (completed in 2022).

The future condition uses the 2051 projection data provided by City Planning. The scenario represents an evenly distributed intensification within the Renew Sheppard Planning Area, with a large population increase. Projection is distributed according to land-use but favours high-density land-use areas (e.g., apartment neighbourhoods, mixed use). Within the Renew Sheppard Plan East Planning Area, there are no planned sewer or water capacity upgrades in Toronto Water's ten-year capital plan.

Existing Condition Assessment Results

The sanitary sewers were assessed under two conditions: dry weather flow and wet weather flow. The sanitary results are illustrated within the Renew Sheppard East Study Area on Figures 2 and 3, respectively. The results indicate that there is no surcharging of the sewers under dry weather flow (DWF) conditions and hence meet the sewer capacity assessment guideline criteria. During wet weather conditions, the system is surcharged at several locations. The constrained areas within the Renew Sheppard East Study Area are located at the following locations:

- Southeast of Bessarion Road and Sheppard Avenue;
- Red Maple Court; and
- Old Leslie Street.

The water distribution system was assessed under maximum day demand (MDD) plus fire conditions. The results are shown in Figures 4 and 5 for the maximum day demand plus fire scenario, respectively. The results indicate that the water distribution system currently has sufficient capacity to handle the maximum day demands as the system is operating greater than 275 kPa (40 psi). Under a fire scenario, there are 5 locations that currently cannot provide the minimum 80 L/s.

Future Condition Assessment Results

The sewer performance under future (2051) conditions under DWF conditions is shown in Figure 6. Figure 7 presents the results for the future scenario under the WWF condition. The future condition analysis found that several sewers within the Renew Sheppard East Secondary Plan Area will be at capacity under dry weather conditions. The capacity

assessment also suggests additional flows from the 2051 growth will exacerbate locations that are surcharged under existing wet weather flow conditions.

The water distribution system performance under future conditions for the future scenario under MDD conditions is shown in Figure 8. Figure 9 shows the available fire flow for the future scenario. Based on the MDD results, the system has sufficient capacity to accommodate the future growth. However, like the existing condition results, there are locations where the available fire flow is less than the minimum requirement for residential land uses.

For the water distribution future scenario analysis, it should be noted that the 2041 population was applied outside the secondary plan area but within the applicable pressure districts, and the 2051 future population as provided by City Planning applied within the secondary plan area. Future population distribution is expected to vary: development applications need to account for best available population data in the assessment of servicing needs, with upgrades implemented as required before proceeding to building permit.

Conclusions

This high-level servicing capacity assessment identifies constraints in the sewer and water distribution systems considering projected growth. It accounts for broad population growth, distributed per the future growth scenario as advised by City Planning. The analysis cannot account for individual applications and as such, developers will need to confirm adequate capacity exists to service the development and if required, identify upgrades through the application process. The results are based on available information at the time of analysis and future analyses by others will need to update parameters to reflect best available information.

This report and the servicing capacity results are available to developers submitting individual development applications. Any infrastructure upgrades required to provide adequate capacity to meet the demands due to the development application will have to be assessed by the developer and implemented prior to the development proceeding to building permit.

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Figure 8	Water Distribution System - Future Condition, Preferred Scenario, Maximum Day Demand
Figure 9	Water Distribution System - Future Condition, Preferred Scenario, Available Fire Flow

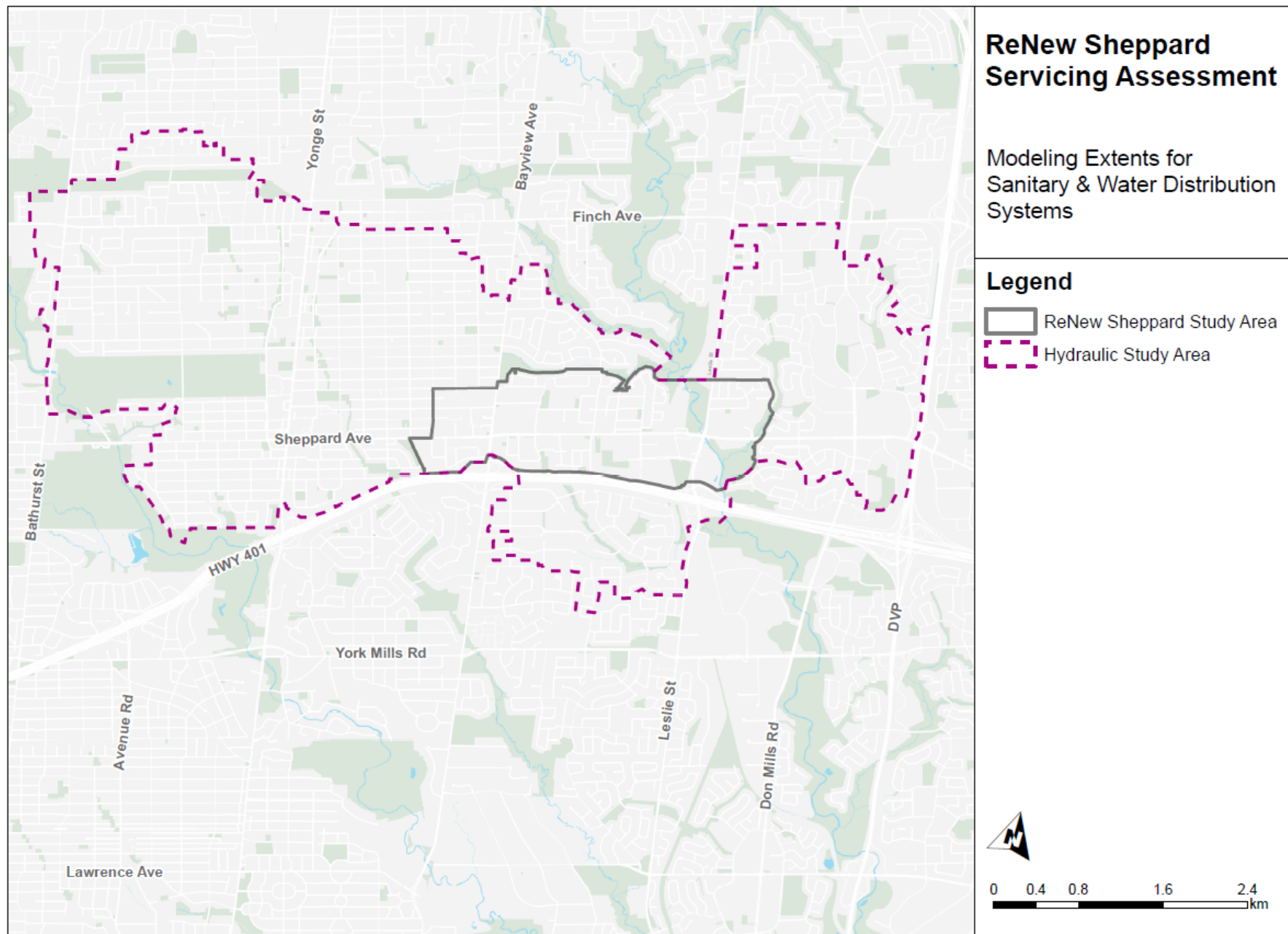


Figure 1 – Modeling Extents for Sanitary and Water Distribution Systems

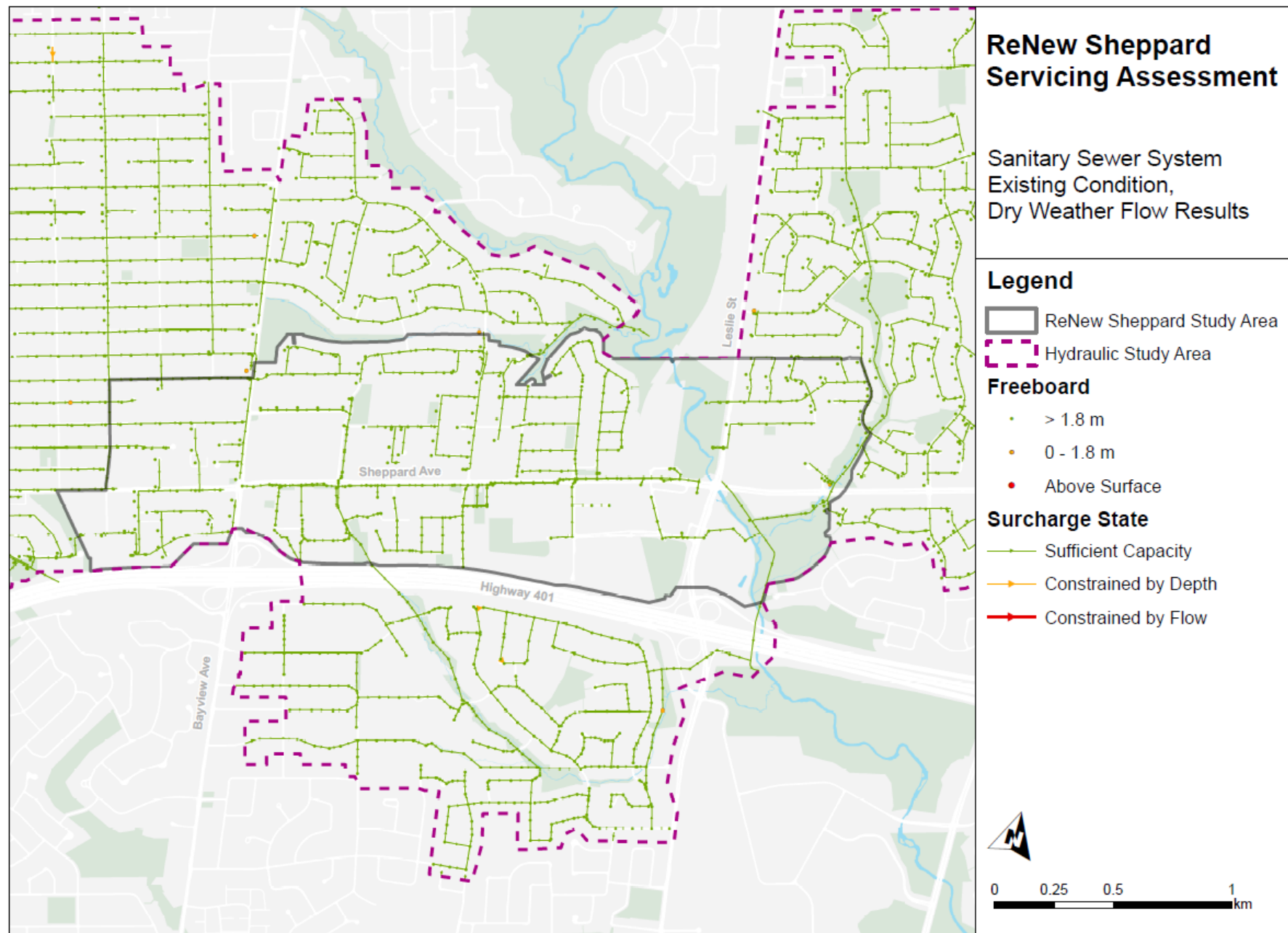


Figure 2 - Sanitary Sewer - Existing Condition, Dry Weather Flow Results

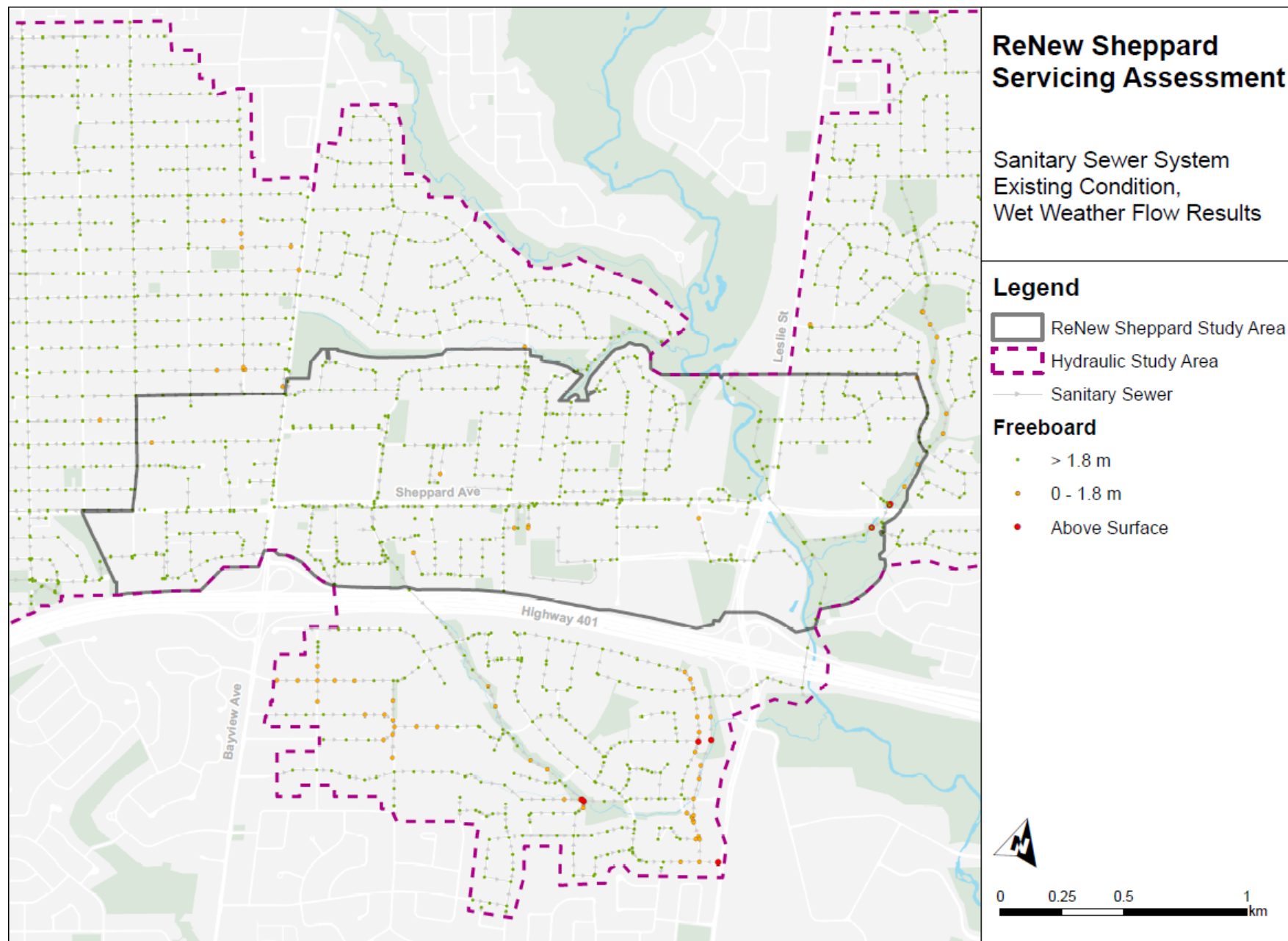


Figure 3 - Sanitary Sewer - Existing Condition, Wet Weather Flow Results (May 12, 2000)

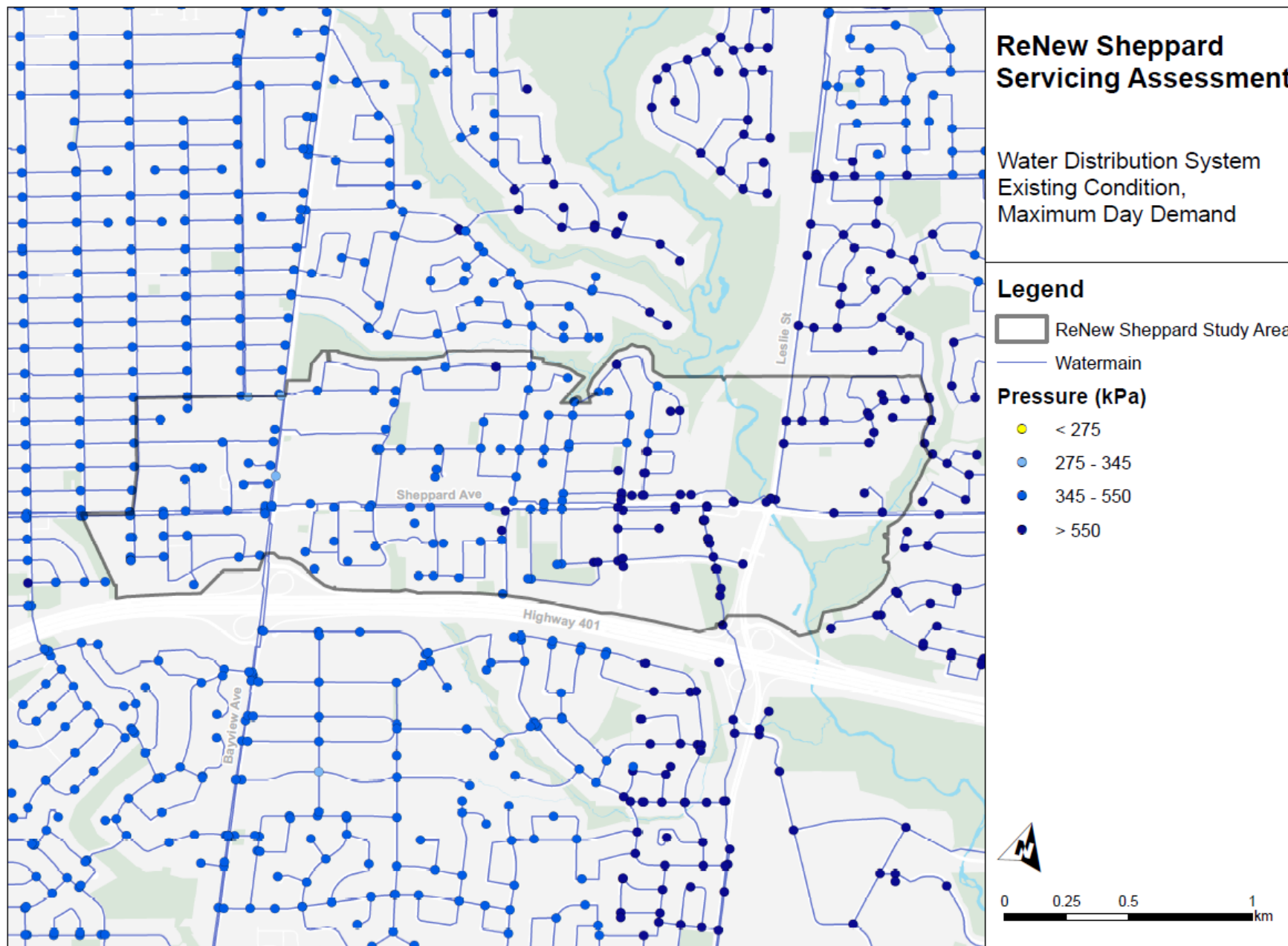


Figure 4 – Water Distribution System - Existing Condition, Maximum Day Demand

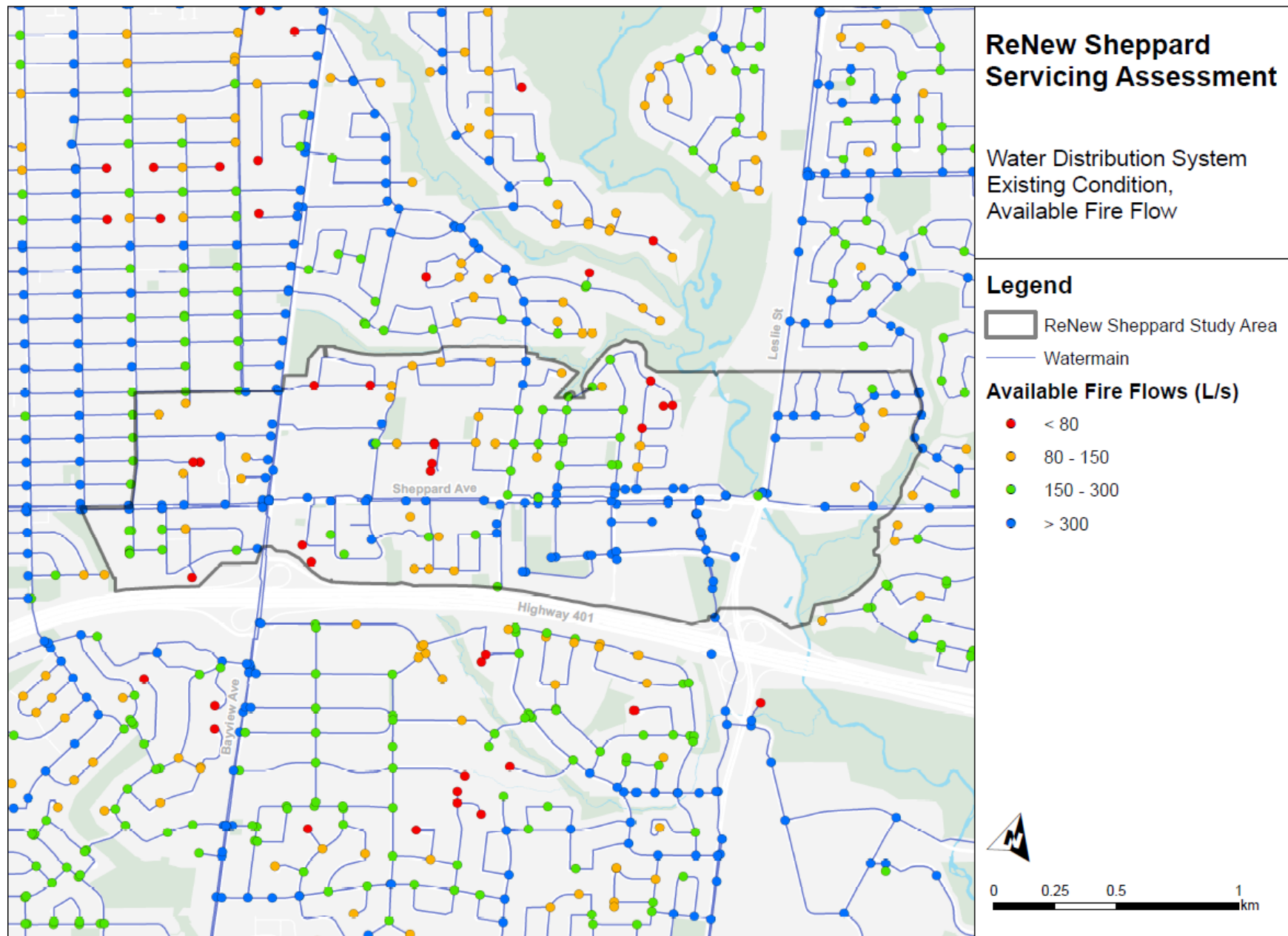


Figure 5 – Water Distribution System - Existing Condition, Available Fire Flow

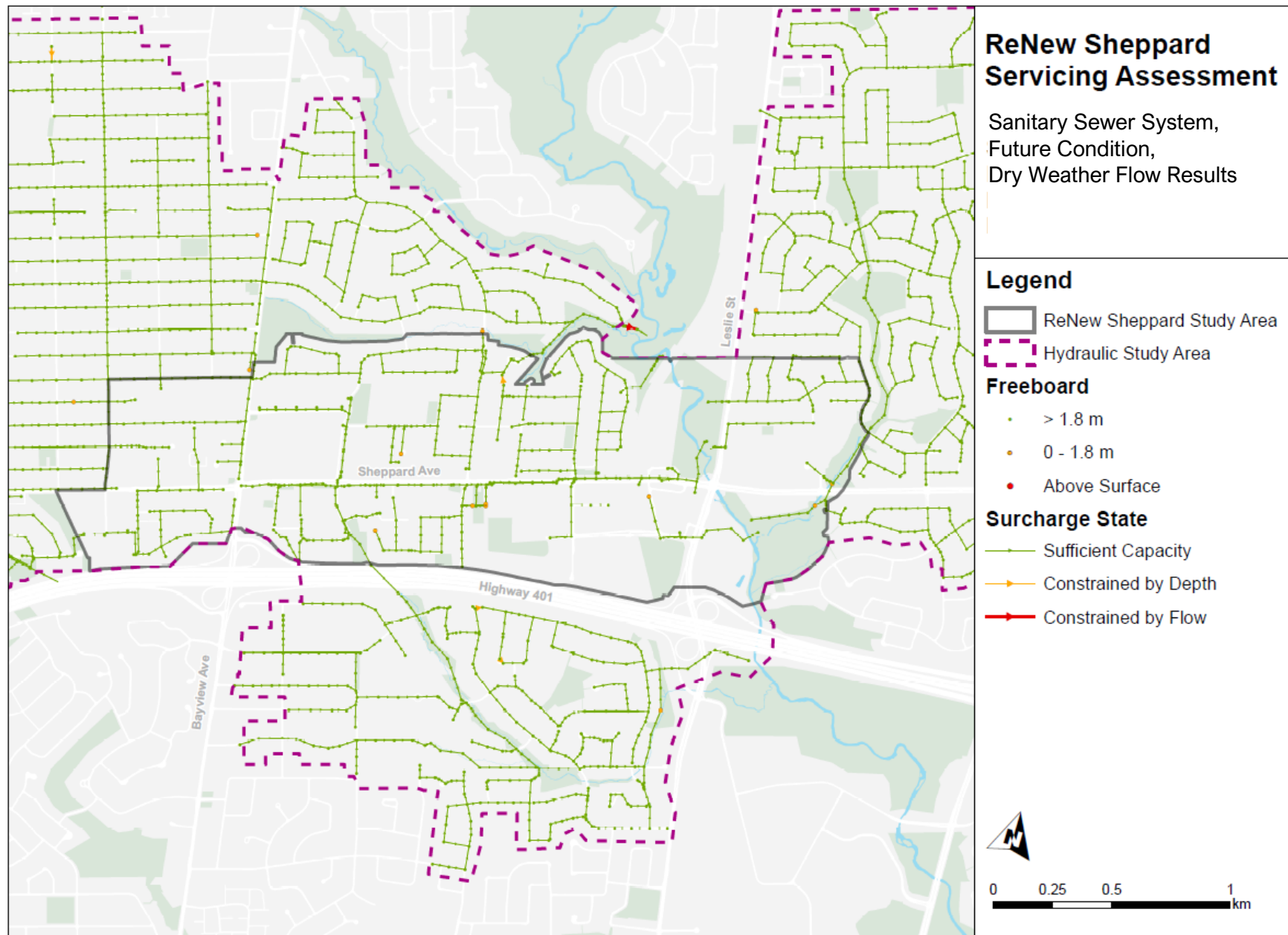


Figure 6 - Sanitary Sewer - Future Condition , Dry Weather Flow

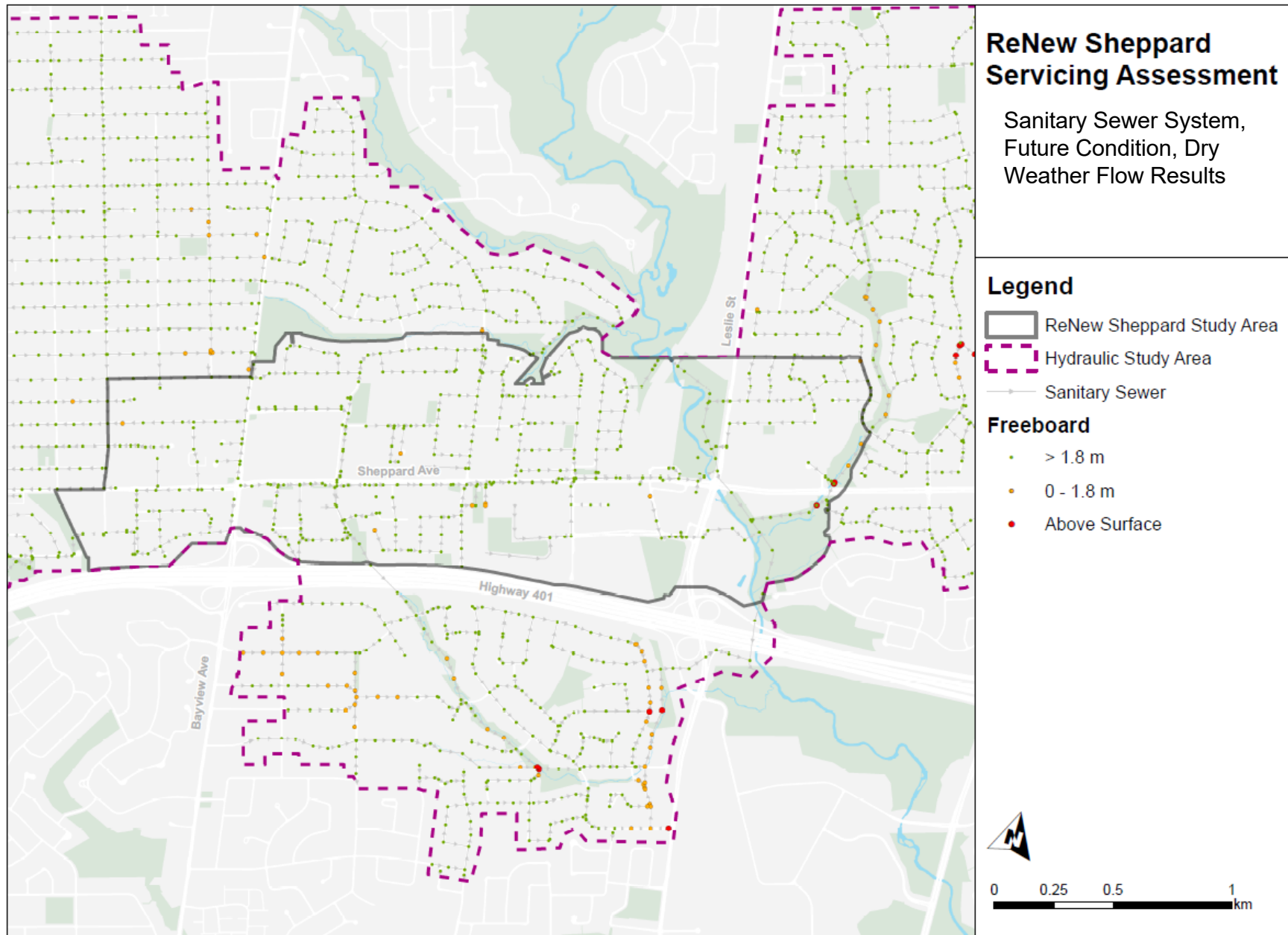


Figure 7 - Sanitary Sewer - Future Condition, Wet Weather Flow (May 12, 2000)

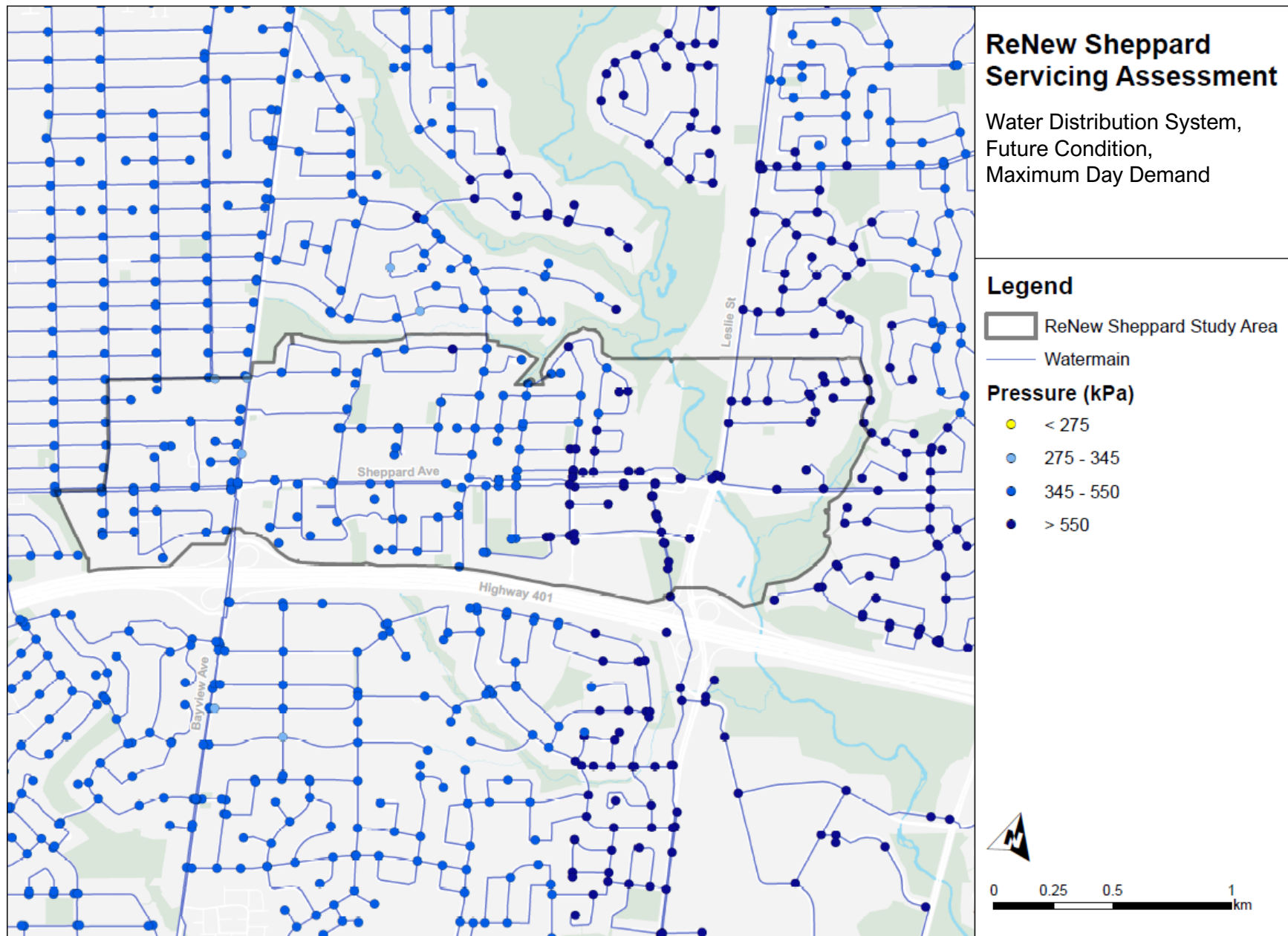


Figure 8 - Water Distribution System - Future Condition, Maximum Day Demand

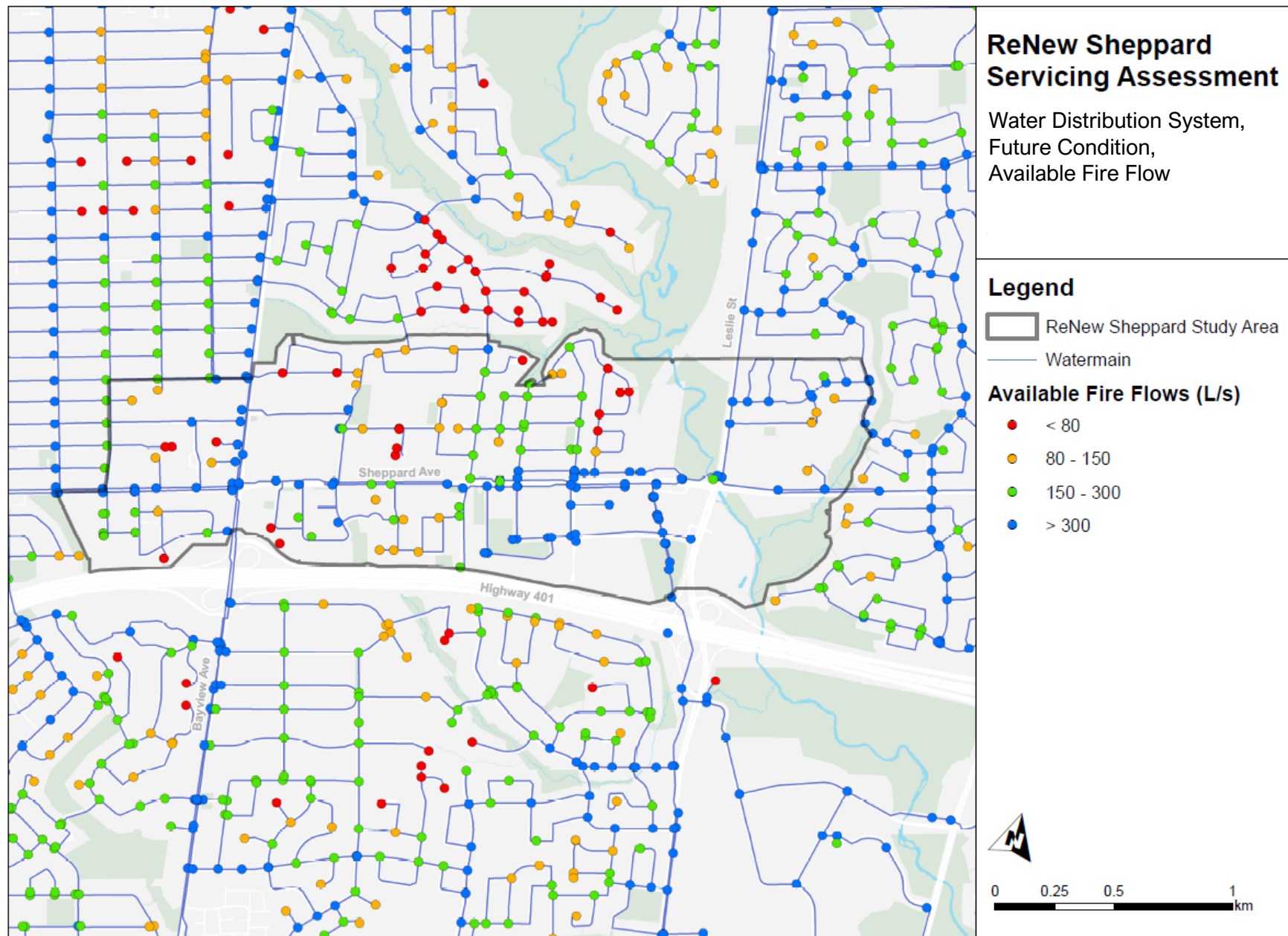


Figure 9 - Water Distribution System - Future Condition, Available Fire Flow