Grand River Source Protection Area

ASSESSMENT REPORT

Chapter 8: Region of Waterloo

July 29, 2025

CHAPTER 8: REGION OF WATERLOO SECTIONS

Chapter 8 of the Assessment Report, including each municipal well system for the Region of Waterloo, is separated into eight section documents as follows:

CURRENT DOCUMENT:

- **Section 8.2** – Waterloo Area Wellfields (Erb Street, William Street, and Waterloo North wells)

REMAINING DOCUMENTS:

- **Section 8.1** – Water Quality Risk Assessment
- **Section 8.3** – Kitchener Area Wellfields (Mannheim (East, West, ASR and Peaking), Greenbrook, Strange Street, Parkway, Strasburg, Pompeii, Woolner and Wilmot Centre)
- **Section 8.4** – Hidden Valley Intake
- **Section 8.5** – Cambridge Area Wellfields (Hespeler, Pinebush, Blair Road, Clemens Mill, Elgin Street, Middleton Street, Shades Mills, Fountain Street, and Willard)
- **Section 8.6** – Rural Area Wellfields (Ayr, Branchton Meadows, Elmira, Foxboro Green, Heidelberg, Linwood, Maryhill, New Dundee, New Hamburg, Roseville, St. Clements, Wellesley)
- **Section 8.7** – Limitations, Data Gaps and Uncertainty
- **Section 8.8** – Summary

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8.0 REGION OF WATERLOO

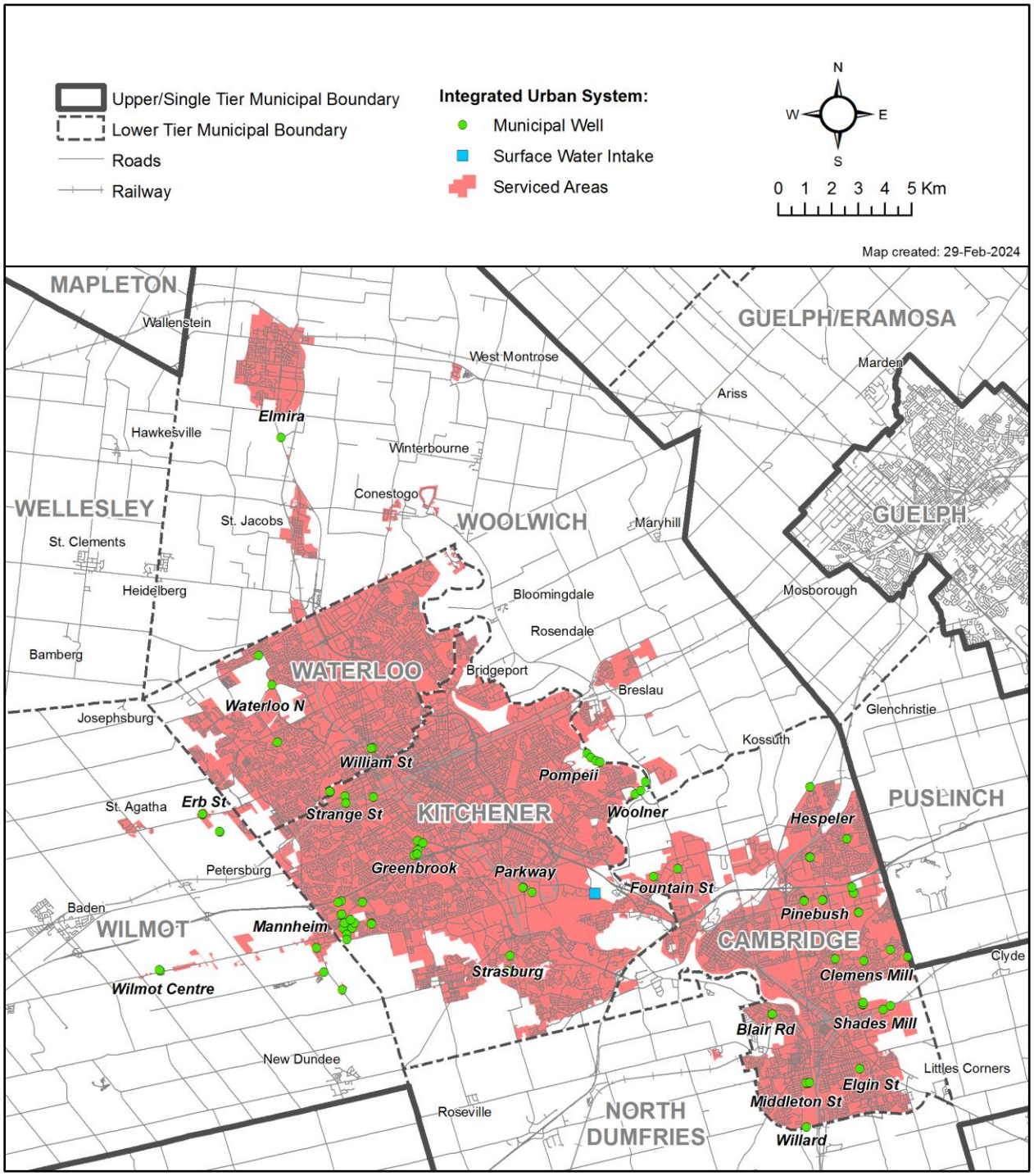
8.2 Waterloo Area Wellfields

The Waterloo Area Wellfields, including: Erb Street, William Street, and Waterloo North wellfields are described in further detail in the following subsections.

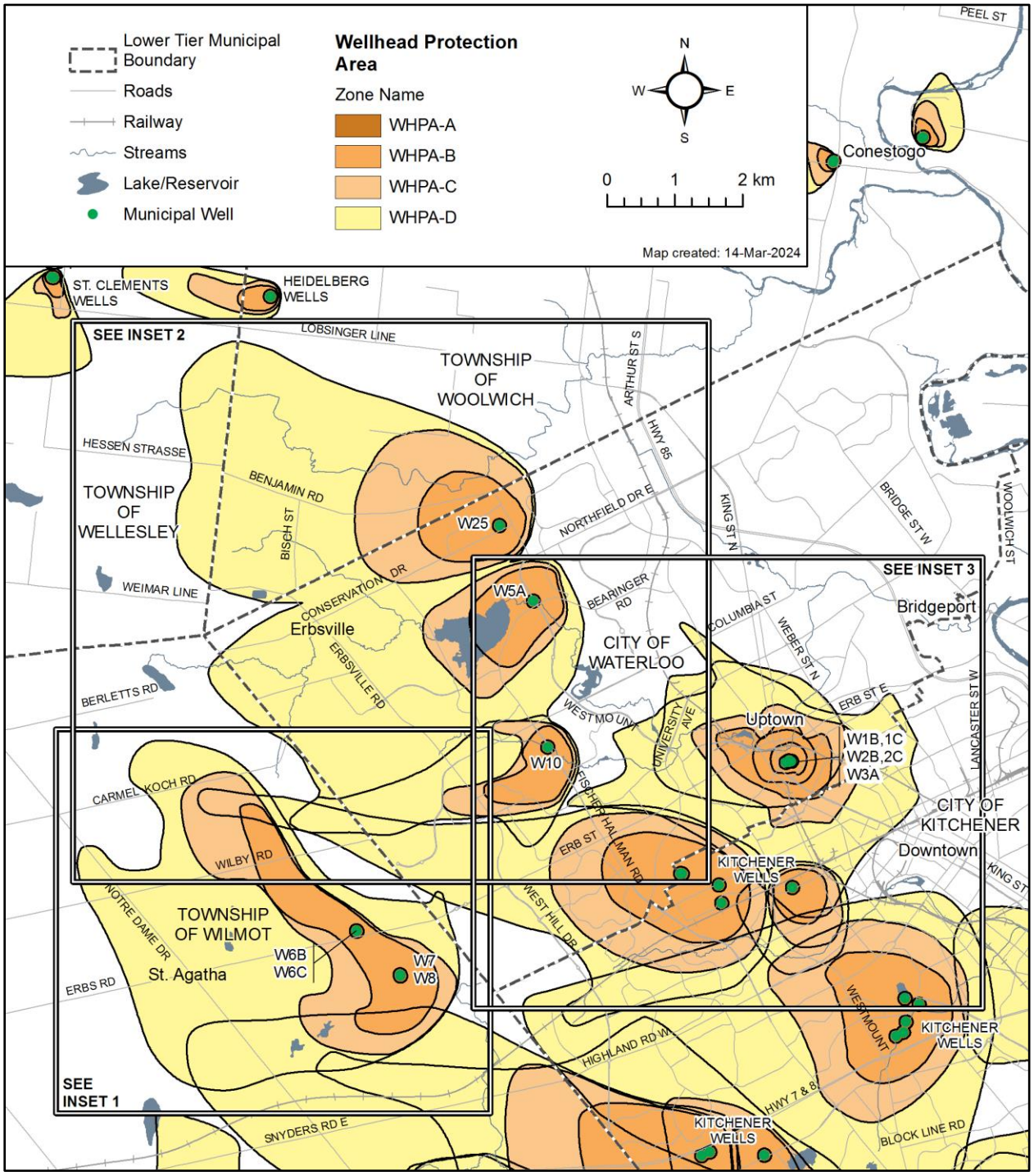
An overview of the serviced areas for the Waterloo, Kitchener and Cambridge area wellfields (as part of the IUS) is provided in **Map 8.2—1.**

An overview of the WHPAs for the Waterloo area wellfields is provided in **Map 8.2—2**. Three insets provide a more detailed local scale perspective

Map 8.2—1: Integrated Urban System Serviced Areas



Map 8.2—2: Waterloo Area Well Supplies Wellhead Protection Areas Overview



8.2.1 Erb Street Wellfield

The water supply for the Erb Street Wellfield was obtained from Production Wells W6A, W6B, W7 and W8. Production Well W6A has become problematic and a replacement well W6C has been constructed adjacent to W6A and was connected to the municipal system in 2023. All of the production wells are completed within the sand and gravel Middle Waterloo Moraine Sands (AFB2) underlain by the Maryhill Till at screen depths ranging from 32 m below ground surface (BGS) to 56 m BGS and supply water to the Region of Waterloo's IUS.

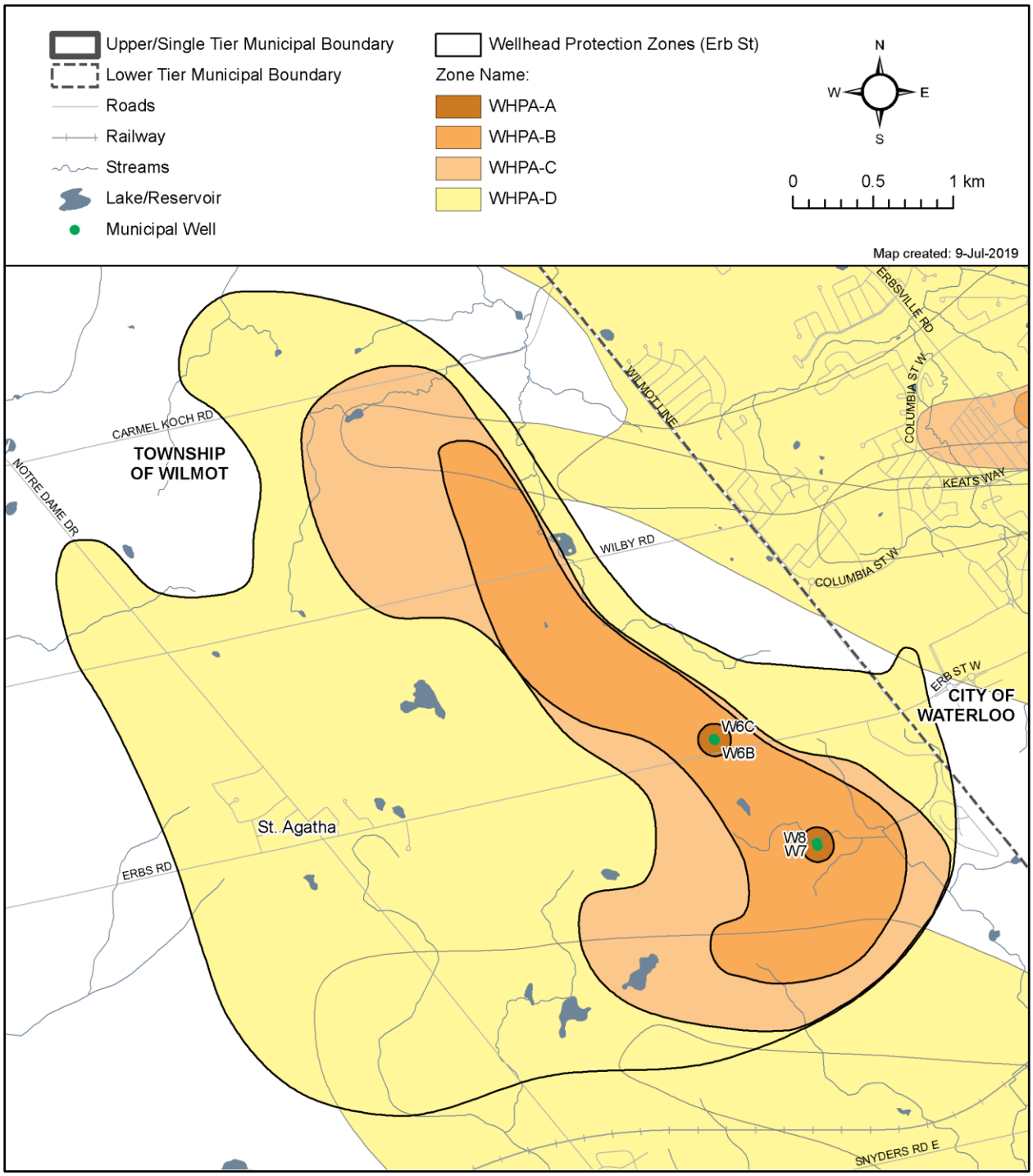
Vulnerability and Transport Pathways

Map 8.2—3 presents the WHPAs for the Erb Street Wellfield. **Map 8.2—4** shows the unadjusted intrinsic vulnerability. Analysis of the attributes of each potential transport pathway in the Erb Street WHPA resulted in the identification of four (4) aggregate pits situated within the WHPA-D, several well clusters situated within the WHPA-A through to the WHPA-D, and some underground services which warranted an increase to the ISI. **Map 8.2—6** and **Map 8.2—7** show these transport pathways and area of influence for the WHPAs. The adjusted intrinsic vulnerability is shown on **Map 8.2—5**, while **Map 8.2—8** shows the final vulnerability scoring for the Erb Street WHPAs.

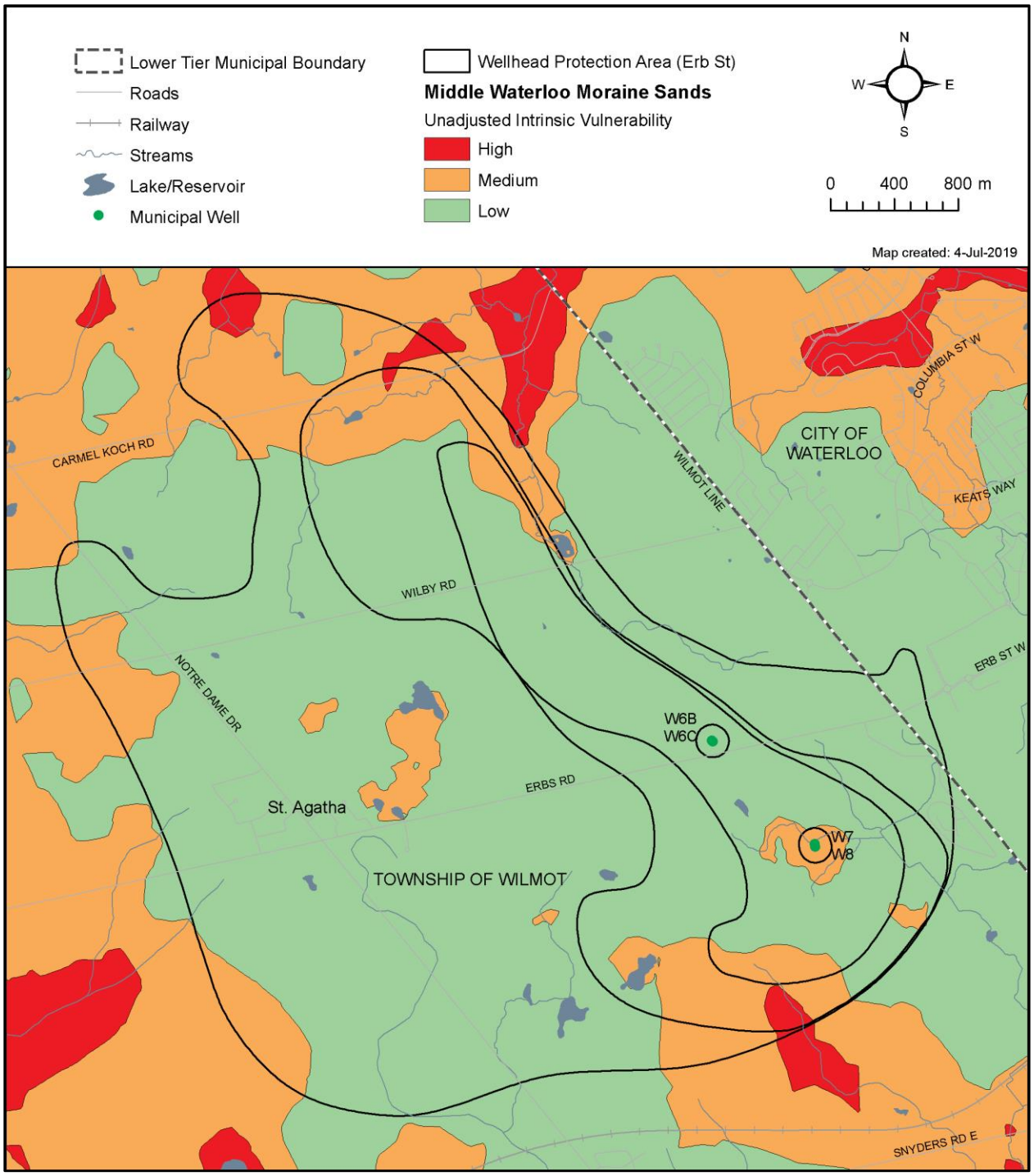
Percent Managed Land, Livestock Density and Salt Loading Potential

The calculations for determining the percent managed land, livestock density, salt loading potential, and corresponding percent impervious surface values followed the methods outlined **in Section 8.1 Water Quality Risk Assessment**. **Map 8.2—9, Map 8.2—10,** and **Map 8.2—11** show the percent managed lands, livestock density, and the percent impervious surface values, respectively.

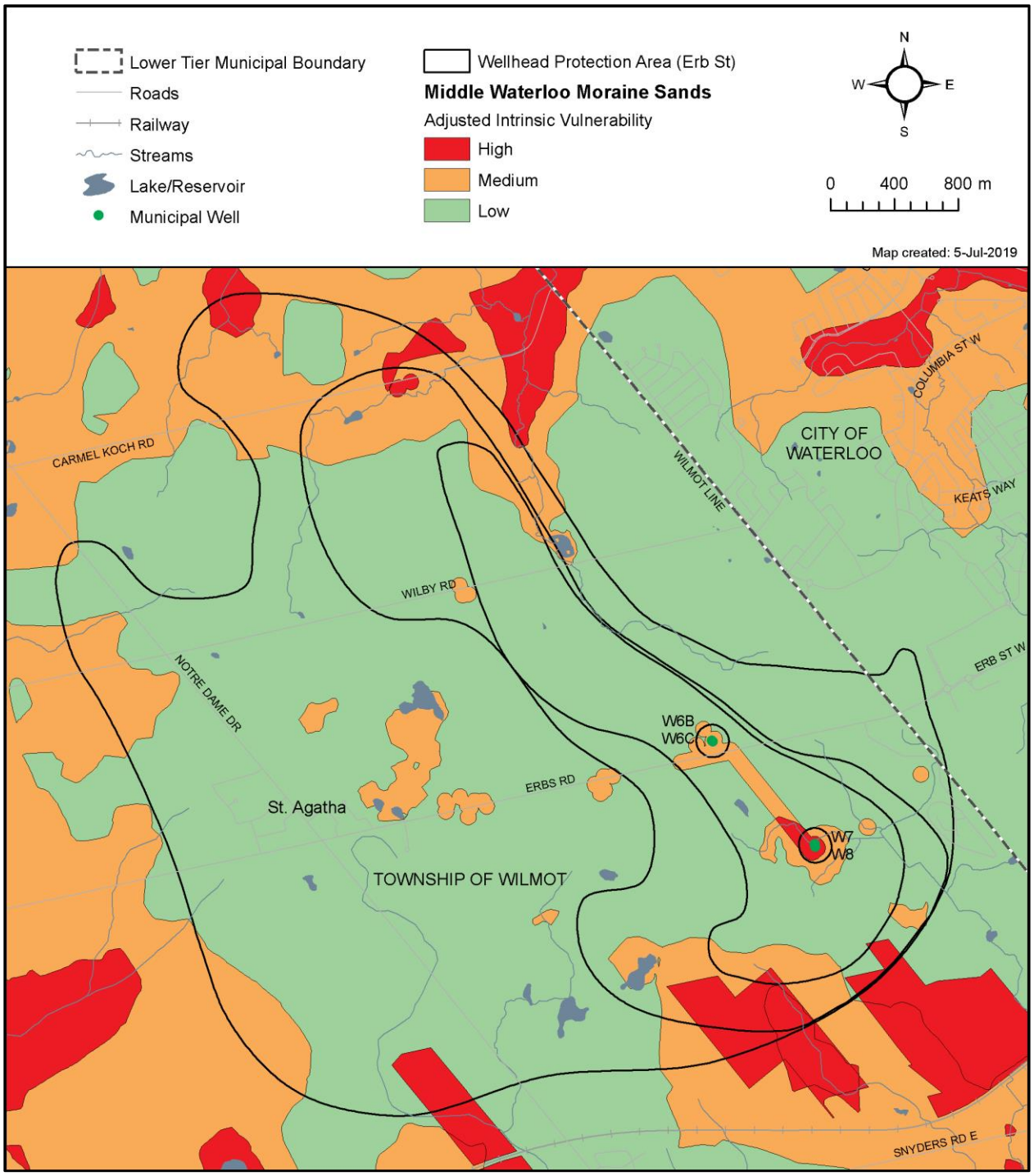
Map 8.2—3: Waterloo Area Inset 1: Erb Street Well Supply Wellhead Protection Areas



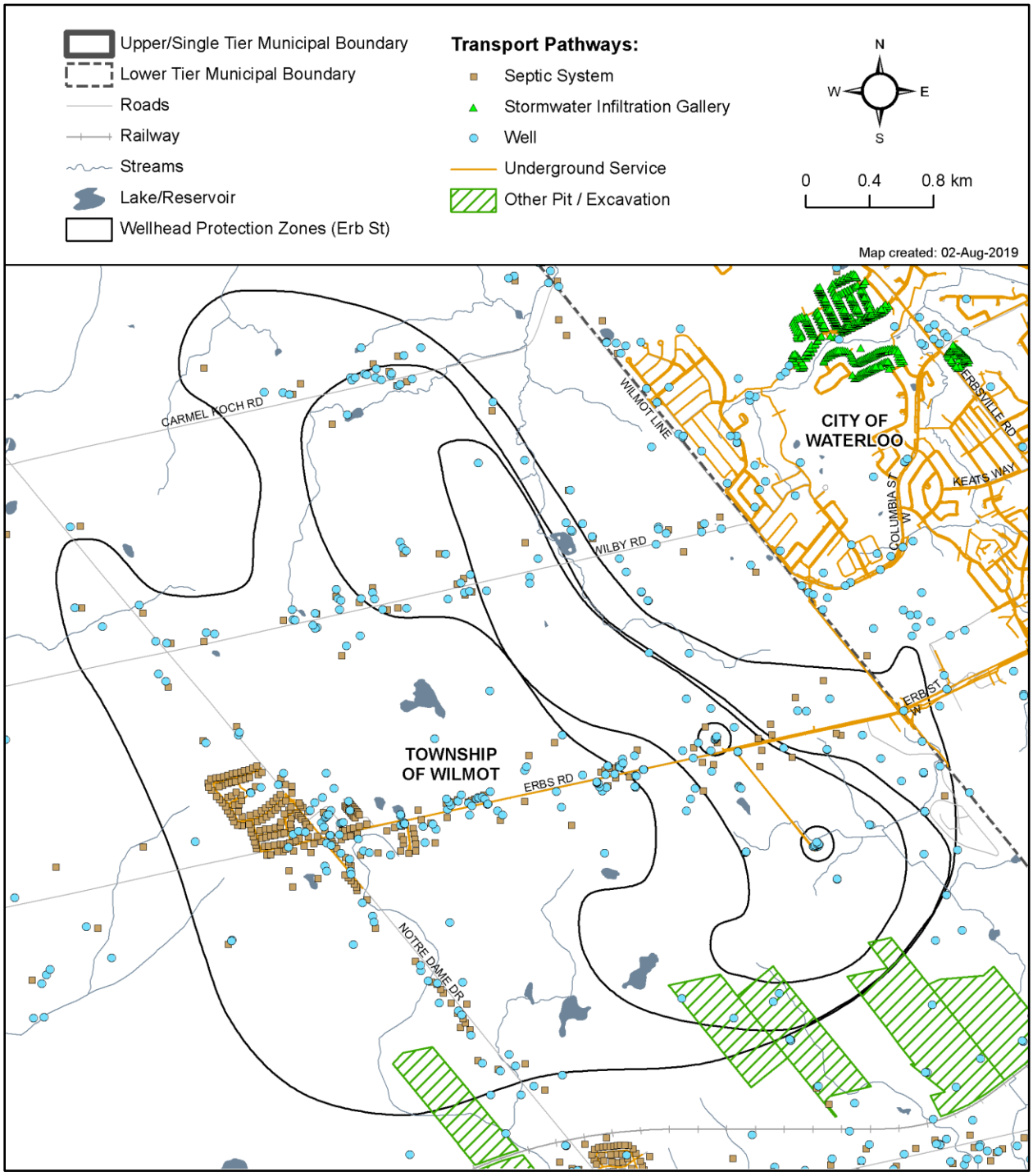
Map 8.2—4: Waterloo Area Inset 1: Erb Street Well Supply Wellhead Protection Area Unadjusted Intrinsic Vulnerability



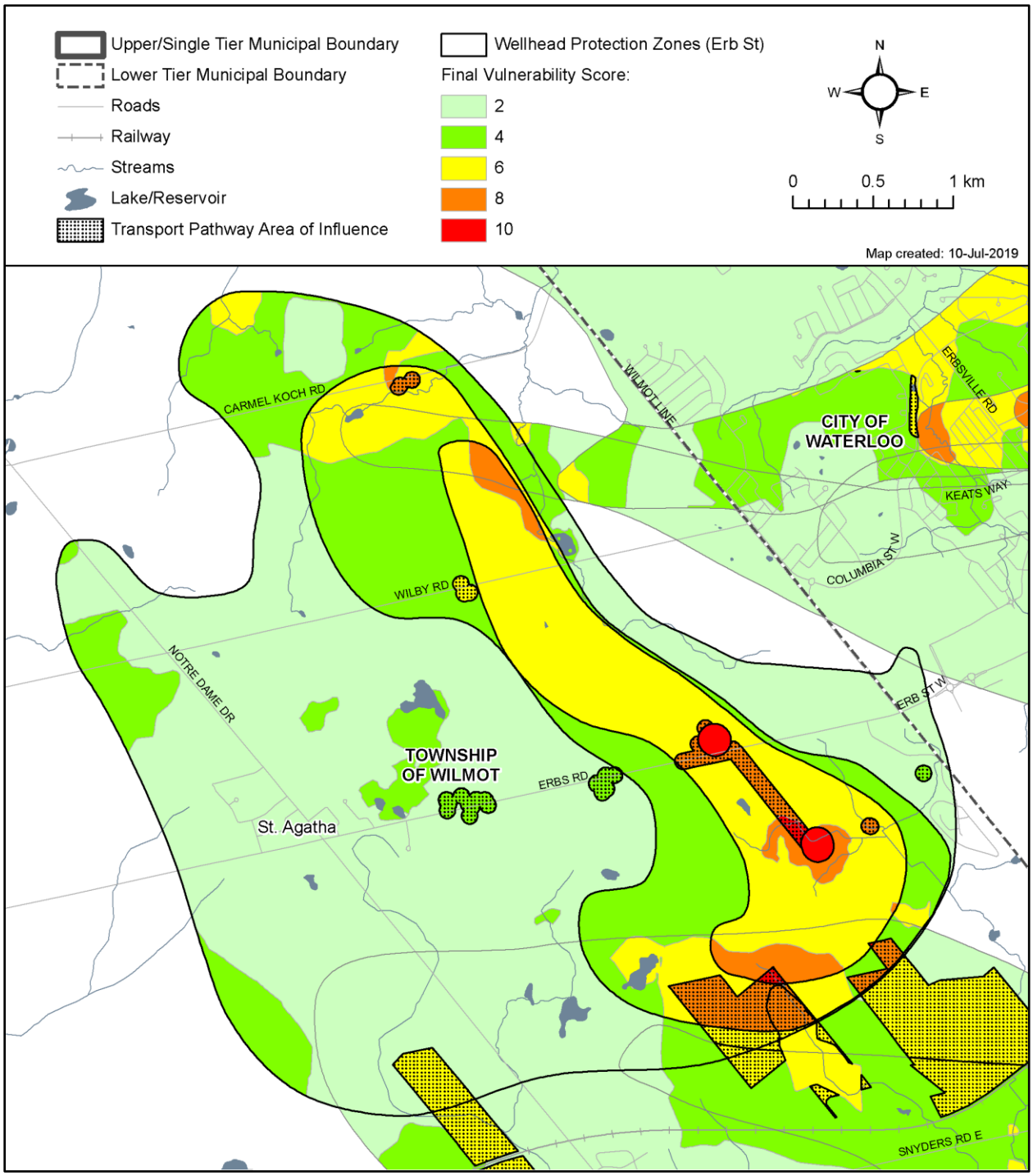
Map 8.2—5: Waterloo Area Inset 1: Erb Street Well Supply Wellhead Protection Area Adjusted Intrinsic Vulnerability



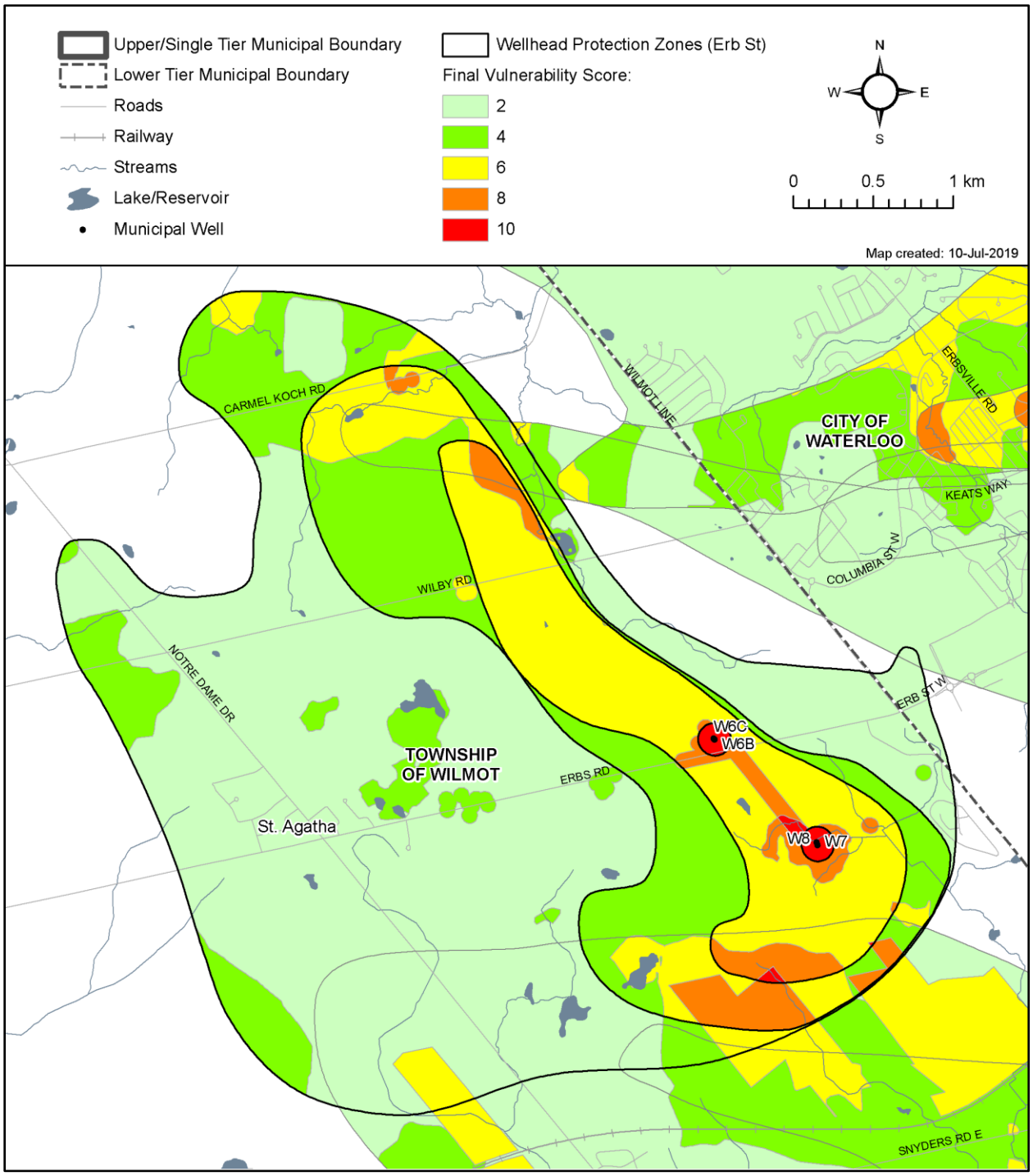
Map 8.2—6: Waterloo Area Inset 1: Erb Street Well Supply Transport Pathways



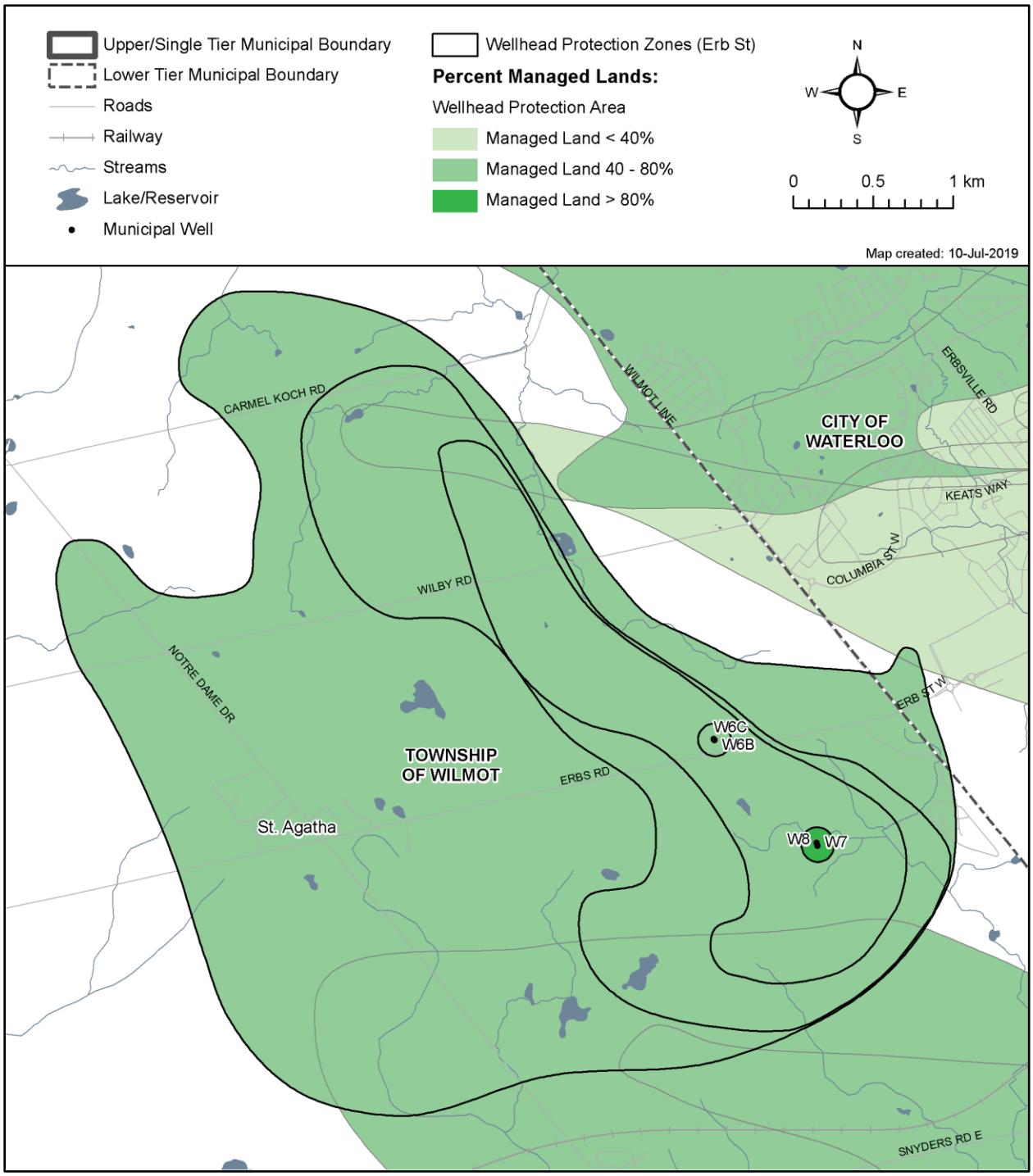
Map 8.2—7:Waterloo Area Inset 1: Erb Street Well Supply Transport Pathways Area of Influence



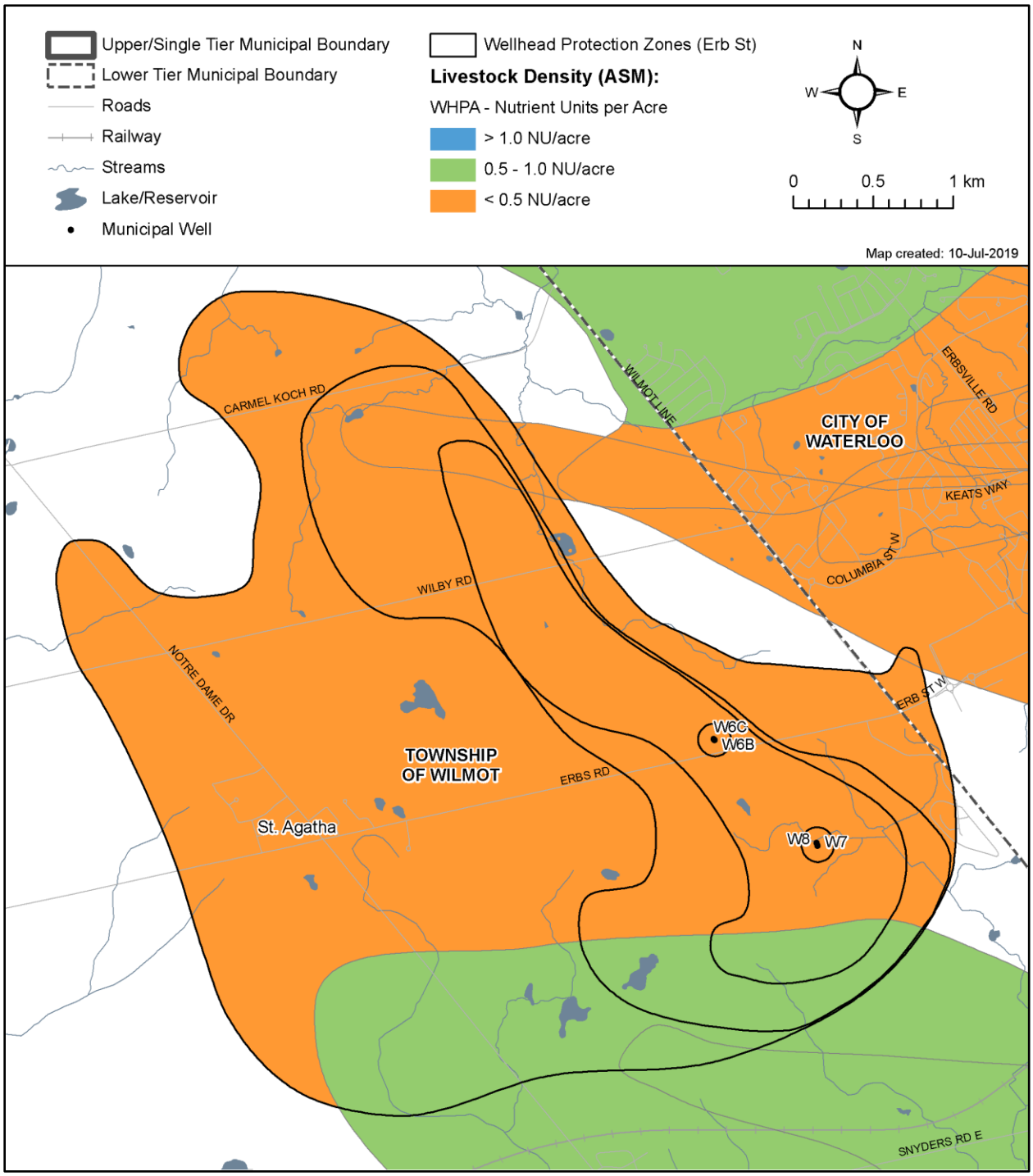
Map 8.2—8: Waterloo Area Inset 1: Erb Street Well Supply Wellhead Protection Area Final Vulnerability



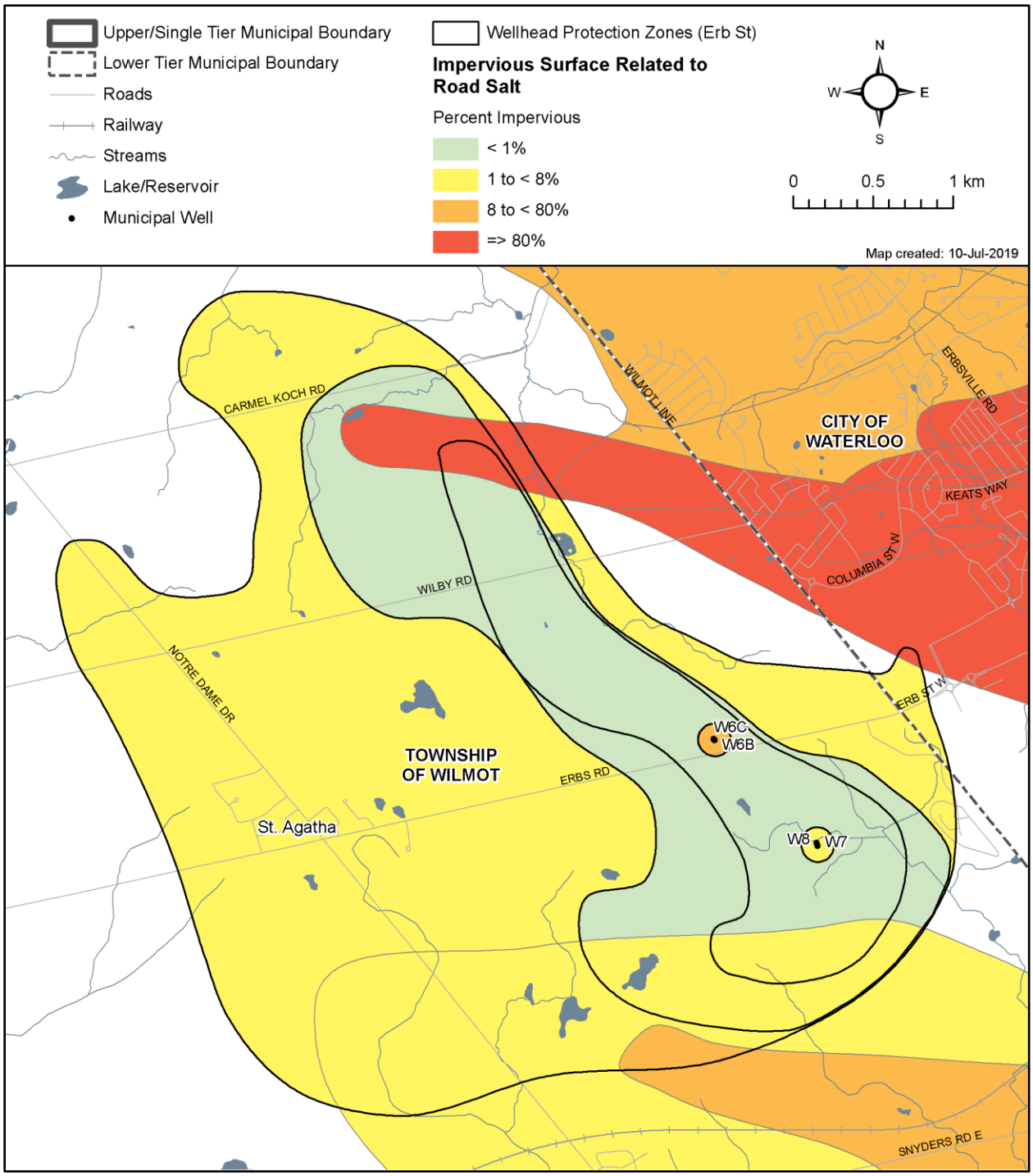
Map 8.2—9: Waterloo Area Inset 1: Erb Street Well Supply Percent Managed Lands



Map 8.2—10: Waterloo Area Inset 1: Erb Street Well Supply Percent Livestock Density



Map 8.2—11: Waterloo Area Inset 1: Erb Street Well Supply Percent Impervious Surfaces



Identification of Significant, Moderate and Low Drinking Water Threats in the Erb Street Wellhead Protection Areas

The identification of a land use activity as a significant, moderate, or low drinking water threat depends on its risk score, determined by considering the circumstances of the activity and the type and vulnerability score of any underlying protection zones, as set out in the Tables of Drinking Water Threats. Information on drinking water threats is also accessible through the Source Water Protection Information Portal. The information above can be used with the vulnerability scores shown in **Map 8.2—8** to help the public determine where certain activities are or would be significant, moderate and low drinking water threats.

Table 8.2—1 provides a summary of the threat levels possible in the Erb Street Wellfield for Chemicals, Dense Non-Aqueous Phase Liquids (DNAPLs), and Pathogens. “Yes” indicates that the threat classification level is possible for the indicated threat type under the corresponding vulnerable area / vulnerable score; “No" indicates that it is not. The colours shown for each vulnerability score correspond to those shown in **Map 8.2—8**: Waterloo Area Inset 1: Erb Street Well Supply Wellhead Protection Area Final Vulnerability.

Table 8.2—1: Identification of Drinking Water Quality Threats in the Erb Street Wellhead Protection Areas

Threat Type	Vulnerable Area	Vulnerability Score	Significant Threats	Moderate Threats	Low Threats
Chemicals	WHPA-A/B	10	Yes	Yes	Yes
Chemicals	WHPA-B/C	8	Yes	Yes	Yes
Chemicals	WHPA-B/C/D	6	No	Yes	Yes
Chemicals	WHPA-C/D	2 & 4	No	No	No
DNAPLs	WHPA-A/B/C	Any Score	Yes	No	No
DNAPLs	WHPA-D	6	No	Yes	Yes
DNAPLs	WHPA-D	2 & 4	No	No	No
Pathogens	WHPA-A/B	10	Yes	Yes	No
Pathogens	WHPA-B	8	No	Yes	Yes
Pathogens	WHPA-B	6	No	No	Yes

Threats and Issues Enumeration for the Erb Street Wellfield

The protection area for the Erb Street Wellfield overlaps with the Mannheim East, Mannheim Peaking, and Strange Street Wellfield areas. However, threat ranking results related to the Mannheim East, Mannheim Peaking, and Strange Street Wellfields are presented in **Section 8.3 – Kitchener Area Wellfields.**

The total number of identified significant drinking water threats in this wellfield is 18. The number of properties in this Wellfield protection area with identified significant drinking water threats is 7. Details surrounding the types of threats and circumstances found in the Erb Street WHPA are outlined in **Table 8.2—2**.

No Significant Conditions were identified in this wellfield as per Technical Rule 126.

No drinking water Issues have been identified in this wellfield as per Technical Rule 114.

Table 8.2—2: Significant Drinking Water Quality Threats in the Erb Street Wellhead Protection Areas (current to February 2019)

PDWT[1] #	Threat Subcategory[2]	Number of Activities	Vulnerable Area
2	Sewage system or sewage works - onsite sewage systems	3	WHPA-A WHPA-B
	Sewage system or sewage works – onsite sewage systems holding tanks	1	WHPA-B
3	Application of agricultural source material (ASM) to land	2	WHPA-A WHPA-B
4	Storage of agricultural source material (ASM)	1	WHPA-A
8	Application of commercial fertilizer to land	3	WHPA-A
9	Storage of commercial fertilizer	1	WHPA-A
10	Application of pesticide to land	4	WHPA-A WHPA-B
11	Storage of a pesticide	1	WHPA-A
15	Storage and handling of fuel	1	WHPA-A
17	Storage of an organic solvent	1	WHPA-A
Total Number of Significant Threat Activities		**18**	
Total Number of Properties with Significant Threats		**7**	

[1] Prescribed Drinking Water Quality Threat Number refers to the prescribed drinking water threat listed in O. Reg. 287/07 s.1.1 (1)

[2] Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.

8.2.2 Waterloo North Wellfields and William Street

Waterloo North Wellfield

The water supply for the Waterloo North Wellfield consists of Production Wells W5A, W10 and W25. The Region ceased full-time production at W5 in the mid to late 1970s due to water quality concerns – mainly elevated TDS, hardness, iron and sulphate – and the well was physically disconnected from the IUS in 2000. As part of exploratory work for new supplies, W5 was overdrilled and reconstructed as W5A in 2006 due to the deteriorated condition of the well casing. A Class Environmental Assessment was completed in 2011 for the addition of a new well adjacent to the Laurel Tank (W25) to the Waterloo North Wellfield (Aecon, 2011). An addendum to the Environmental Assessment was undertaken to limit construction of treatment facilities for only W25 (and not W5A) as demand did not warrant bringing W5A on line in the short term (Stantec, 2017). Production well W5A was screened within the Pre-Catfish Creek Aquifer (AFD1) at a depth of approximately 34 m BGS to 39 m BGS. W25 is also

screened within the Pre-Catfish Creek Aquifer (AFD1) at a depth of approximately 75 m BGS to 78 m BGS. W10 is screened within the Upper Waterloo Moraine Sands (AFB1) at a depth of approximately 9 m BGS to 18 m BGS, and is classified as *Groundwater Under the Direct Influence (GUDI*) *of surface water with effective filtration*. These two aquifer systems are separated by confining aquitards corresponding to the Maryhill and Catfish Creek Tills.

Map 8.2—12 presents the Wellhead Protection Areas A to D for the Waterloo North Wellfield.

William Street Wellfield

The William Street Wellfield paused operation in 2023 for upgrades to the wells and water treatment system. Until 2023 the wellfield included four overburden wells (W1B, W1C, W2 and W2A) and one bedrock well (W3). Bedrock well W3 was not used for water supply since 2002 due to highly mineralized water. In 2016, the Region completed a Class Environmental Assessment (XCG, 2016) that identified a solution to combine and centralize water treatment at the Strange Street Water Treatment Plant to better use the water supply from the William Street and Strange Street wellfields. The Region constructed wells W2B and W2C within the AFB2 aquifer as replacements for wells W2 and W2A to restore extraction capacity from the overburden aquifer at the William Street Wellfield. Wells W2B and W2C are direct replacements for W2 and W2A and completed in the same aquifer. A new bedrock well W3A was constructed as a replacement for W3. The upgrade project planned for completion in 2025 will decommission wells W2, W2A and W3 as they will no longer be used.

All of the production wells when put into operation will discharge to a common treatment plant where raw water will be blended with water from Strange Street wells, treated and pumped to the IUS (**Table 8.2—1**).

The overburden production wells are screened at depths ranging from approximately 27m BGS to 34 m BGS within the Waterloo Moraine stratified sand and gravel deposits (AFB2). This is overlain intermittently by Middle Maryhill Till (ATB2).

Map 8.2—27 presents the Wellhead Protection Areas A to D for the William Street Wellfield. Refer to **Section 8.1 Water Quality Risk Assessment** for discussion of WHPA updates.

Vulnerability and Transport Pathways: Waterloo North Wellfield

The unadjusted intrinsic vulnerability is shown on **Map 8.2—13** and **Map 8.2—14** and the adjusted intrinsic vulnerability is shown on **Map 8.2—15** and **Map 8.2—16.**

At the Waterloo North Wellfield, analysis of the attributes of each potential transport pathway resulted in the identification of many clusters of wells and several closely spaced underground services found within the WHPA-A through D zones that warranted an ISI increase.

Map 8.2—17 and **Map 8.2—18** show these transport pathways and their associated area of influence and **Map 8.2—19** shows the final vulnerability scoring.

Waterloo North production well W10 is classified as *GUDI* and therefore a WHPA-E capture zone has been delineated for well W10. The WHPA-E including the vulnerability

score is shown on **Map 8.2—23**. This map also shows the reference location of the surface water feature used to delineate the WHPA-E.

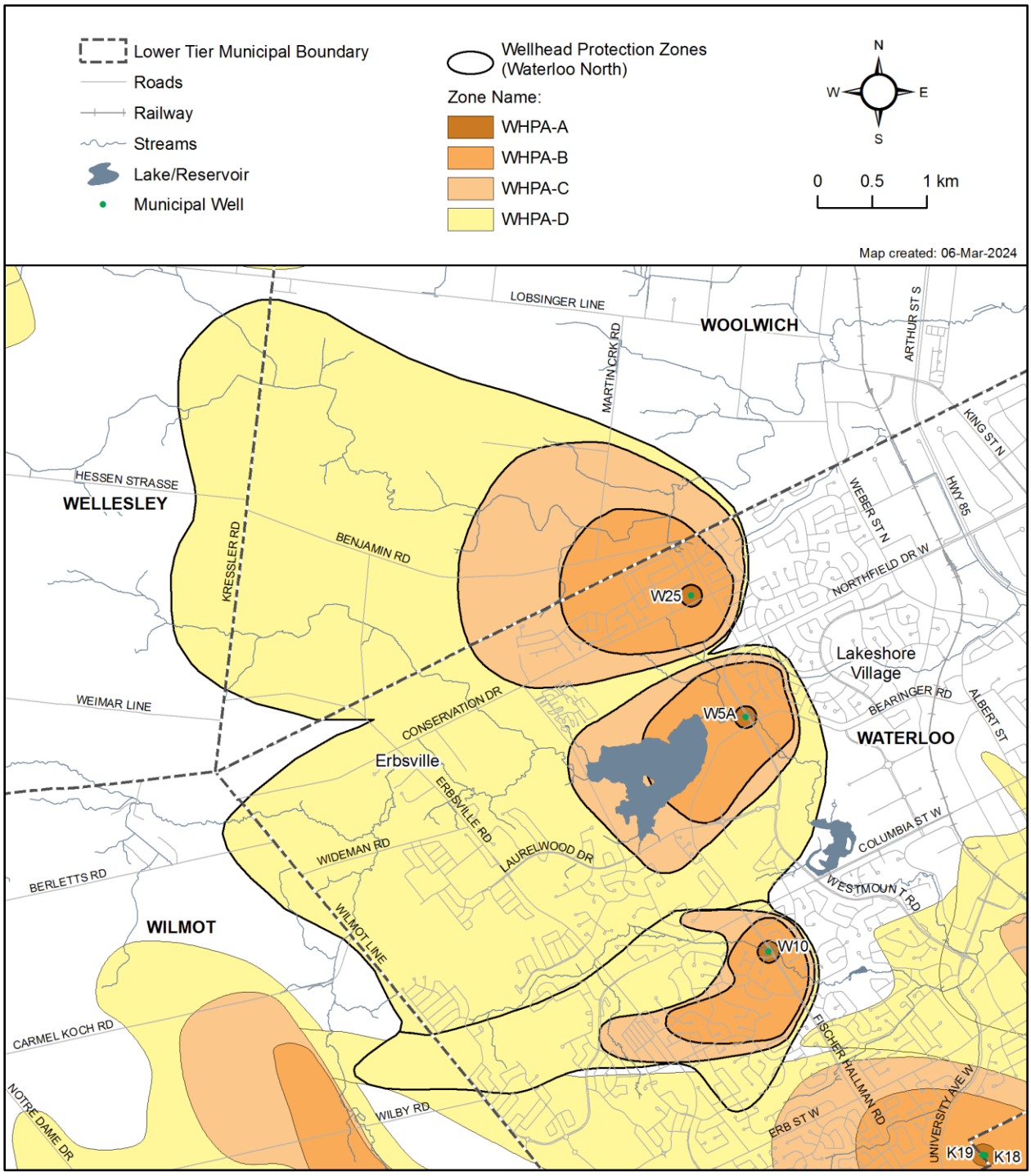
Vulnerability and Transport Pathways: William Street Wellfield

Analysis of the attributes of each potential transport pathway in the William Street WHPA resulted in the identification of a number of features (e.g., deep excavations, well clusters, closely spaced underground services) situated within the WHPA-A through to the WHPA-D that warranted an increased ISI for the overburden aquifer. The unadjusted intrinsic vulnerability is shown on **Map 8.2—28** and the adjusted intrinsic vulnerability is shown on **Map 8.2—29.** No ISI adjustments were made for the bedrock aquifer. The associated intrinsic vulnerability is shown on **Map 8.2—30. Map 8.2—31** and **Map 8.2—32** show the final vulnerability scoring, the former of which highlights the area of influence for the transport pathway adjustments in the overburden aquifer.

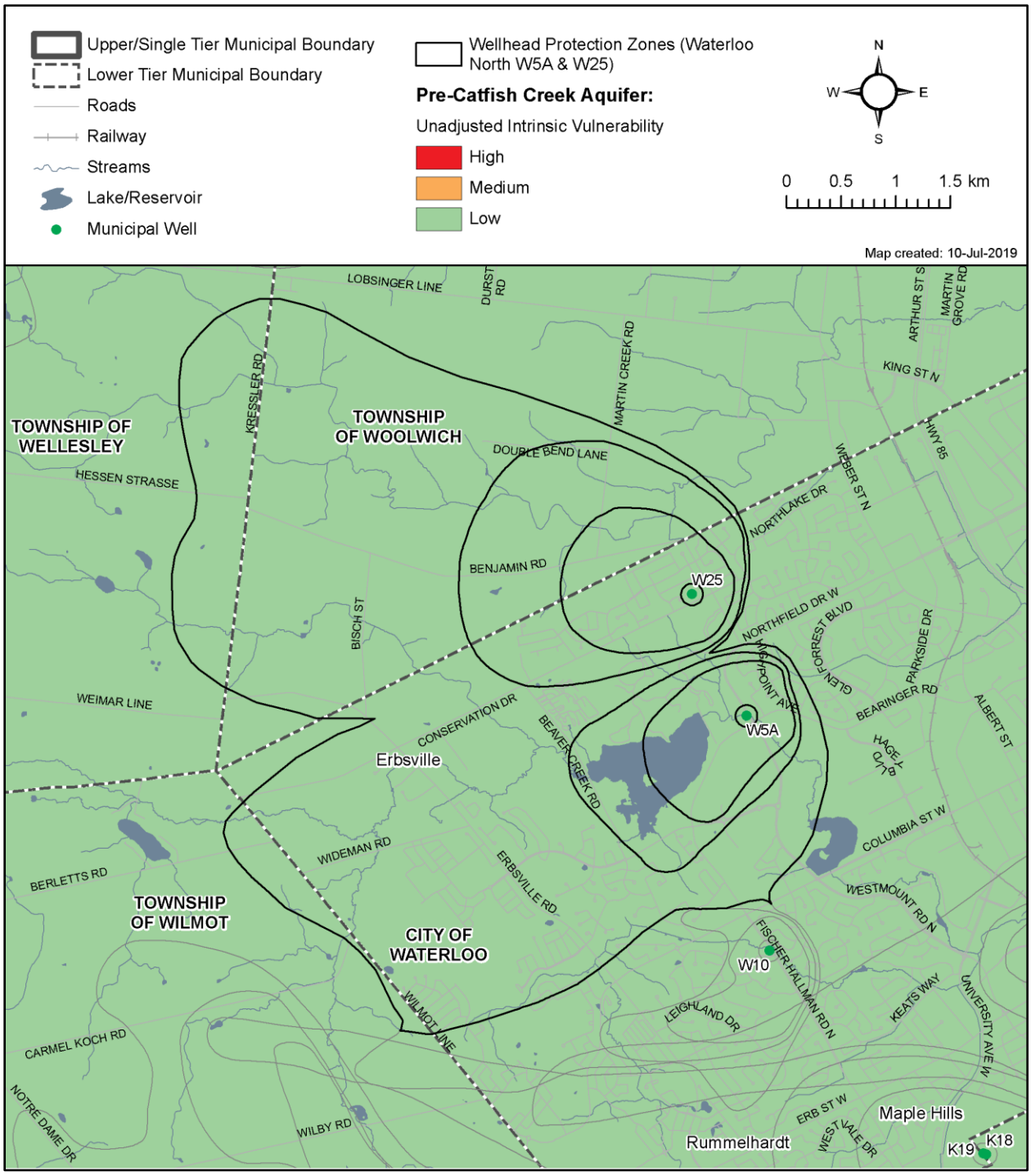
Percent Managed Land, Livestock Density and Salt Loading Potential

The calculations for determining the percent managed land, livestock density, salt loading potential and corresponding percent impervious surface values for the William Street and Waterloo North Wellfields followed the methods outlined in **Section 8.1 Water Quality Risk Assessment**. This data was updated in 2024 for the William Street Wellfield to align with updated WHPAs (see **Section 8.1 Water Quality Risk Assessment**). **Map 8.2—20**, **Map 8.2—21** and **Map 8.2—22** show the percent managed lands, livestock density, and percent impervious surface for the Waterloo North Wellfield. **Map 8.2—33**, **Map 8.2—34**, and **Map 8.2—35** show the percent managed lands, livestock density, and percent impervious surface for the William Street Wellfield.

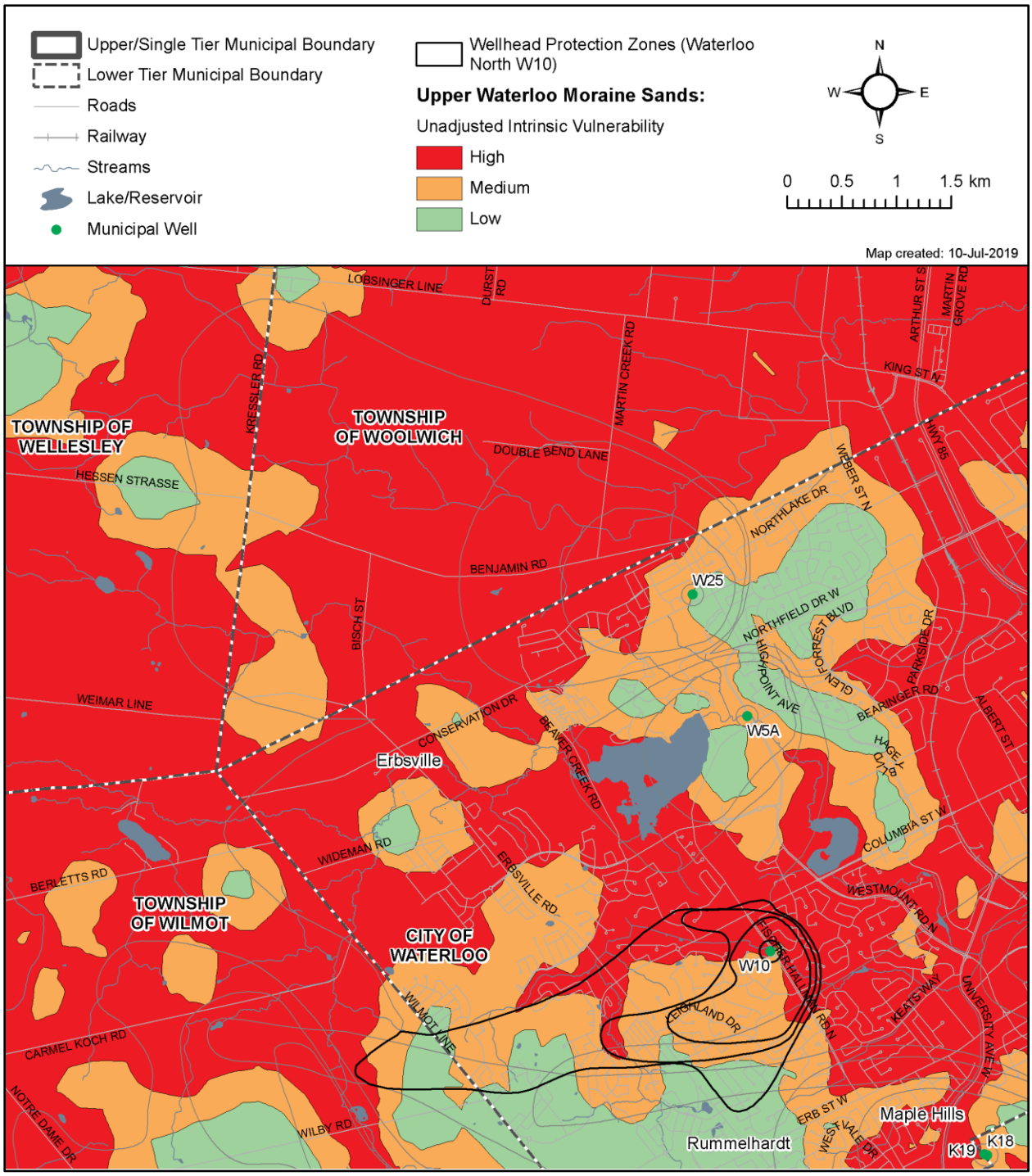
Map 8.2—12: Waterloo Area Inset 2: Waterloo North (W5A, W10, W25) Well Supply Wellhead Protection Areas



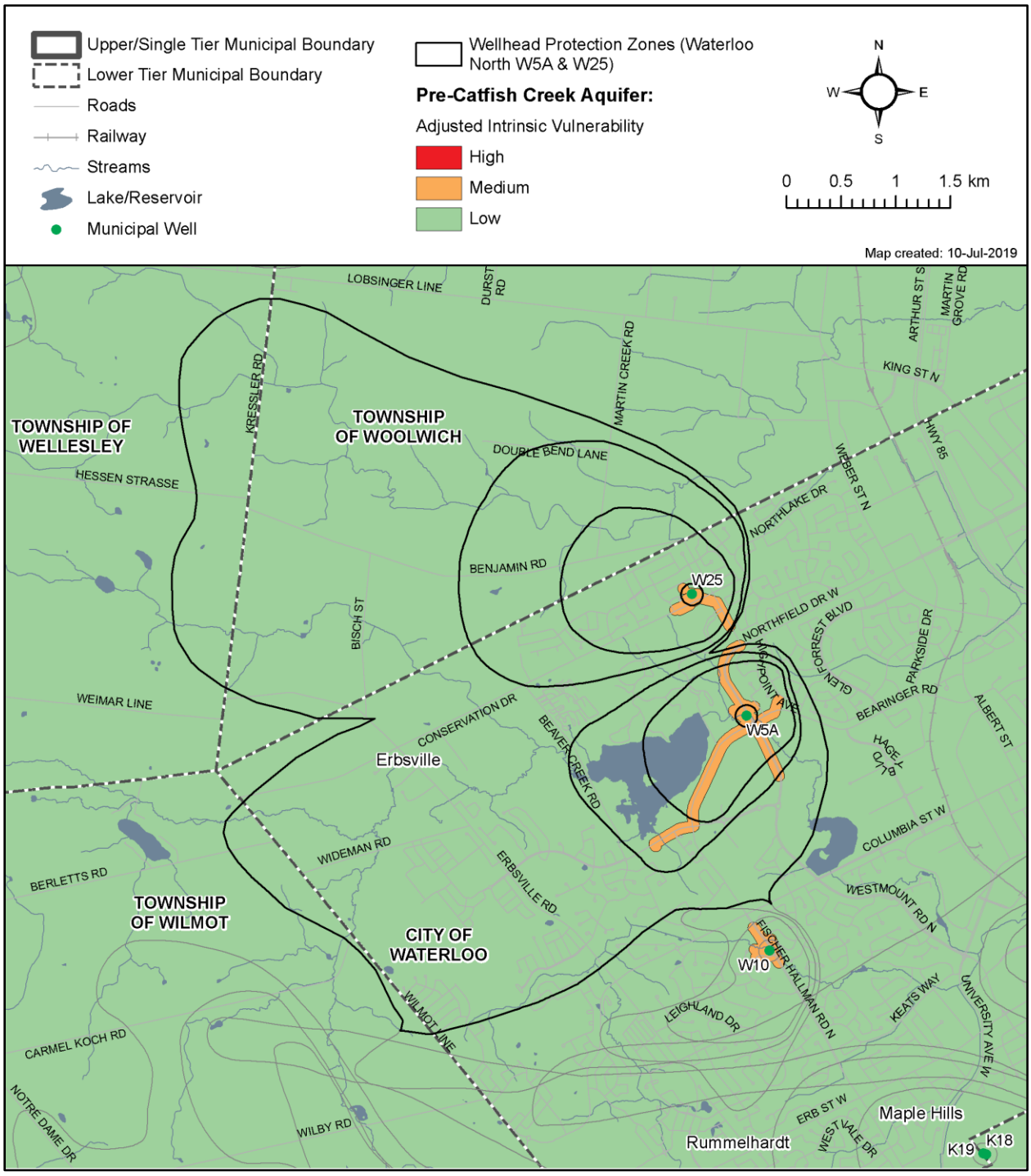
Map 8.2—13: Waterloo Area Inset 2: Waterloo North (W5A and W25) Well Supply Wellhead Protection Area Unadjusted Intrinsic Vulnerability



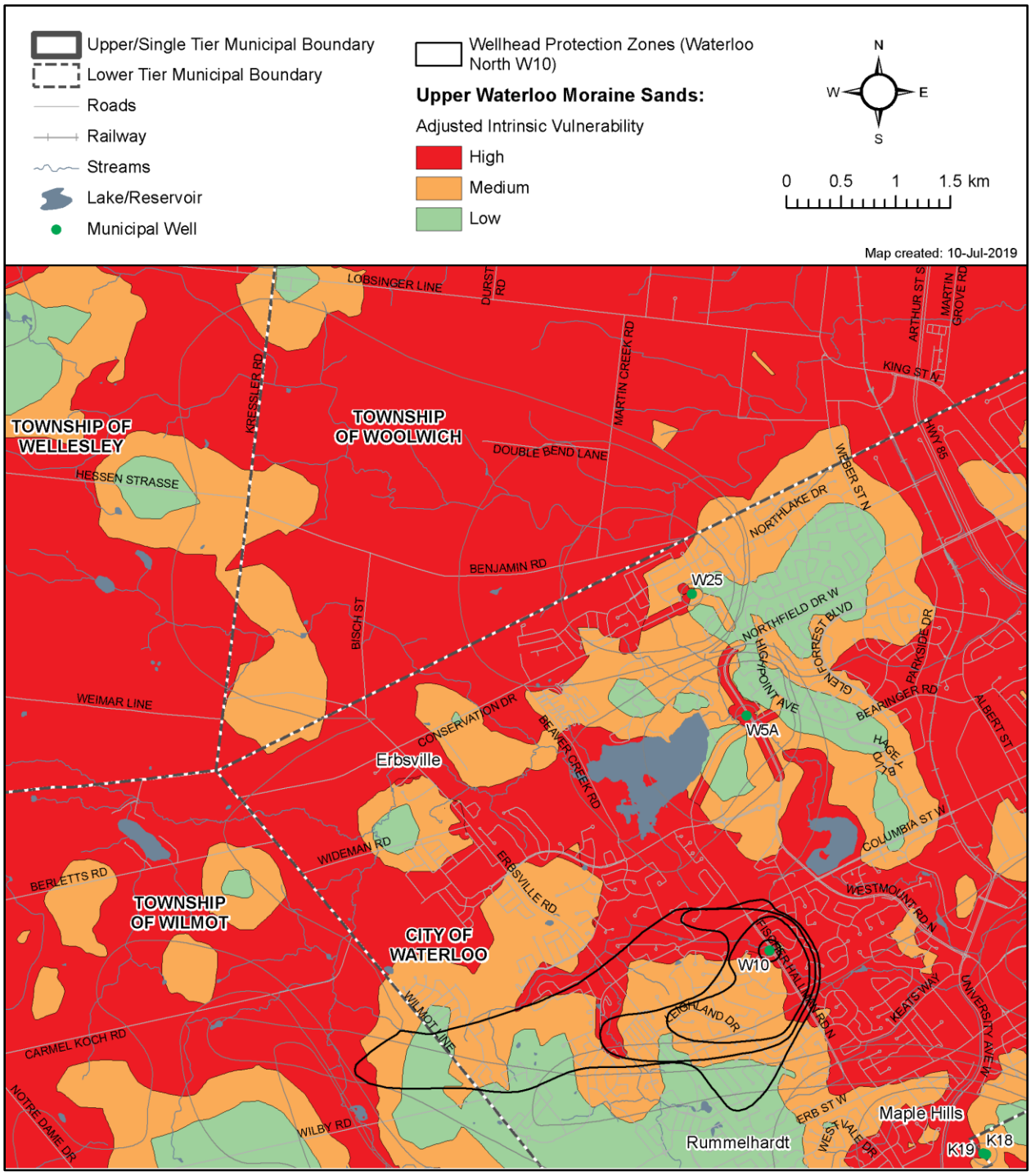
Map 8.2—14: Waterloo Area Inset 2: Waterloo North (W10) Well Supply Wellhead Protection Area Unadjusted Intrinsic Vulnerability



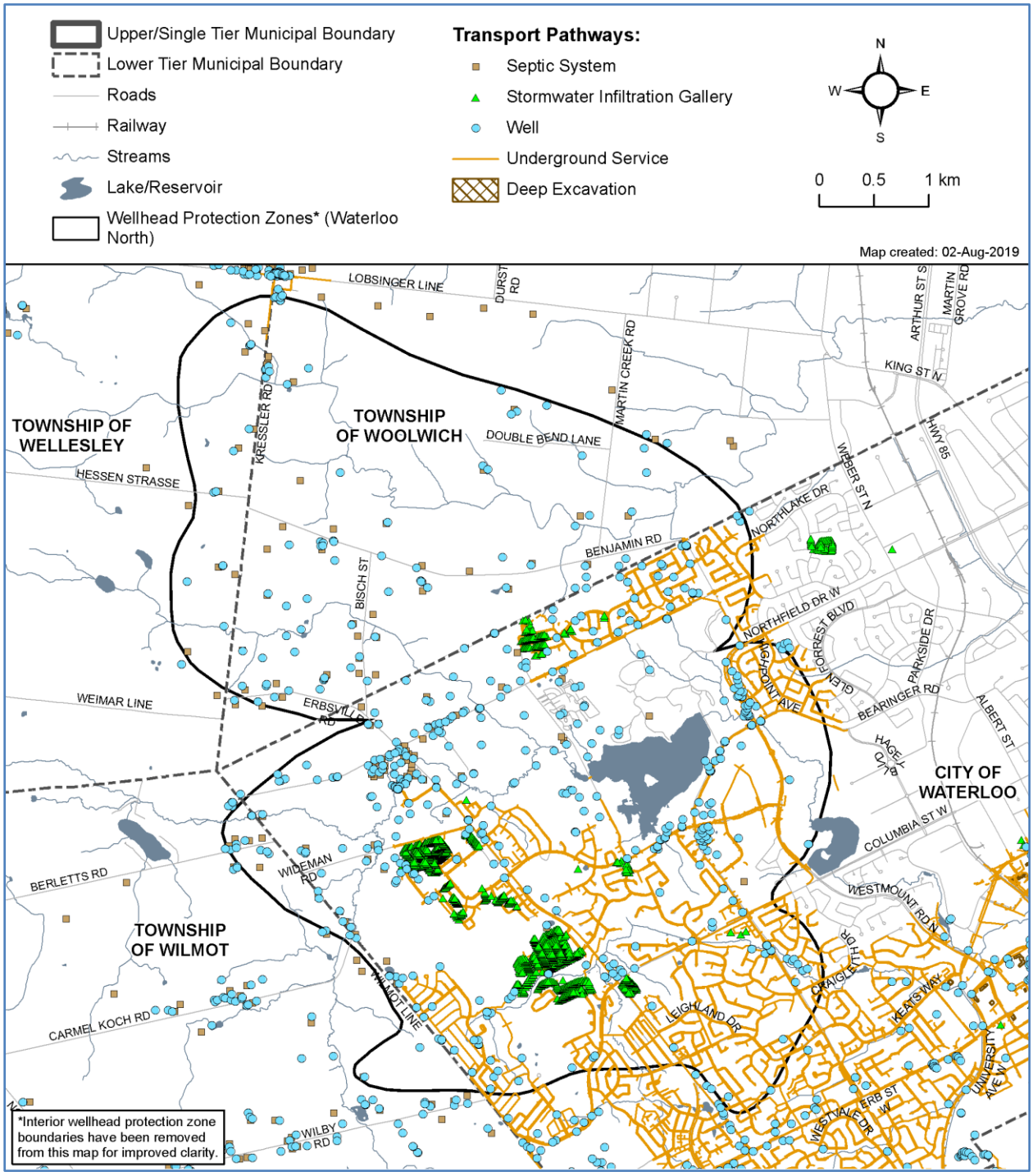
Map 8.2—15: Waterloo Area Inset 2: Waterloo North (W5A, W25) Well Supply Wellhead Protection Area Adjusted Intrinsic Vulnerability



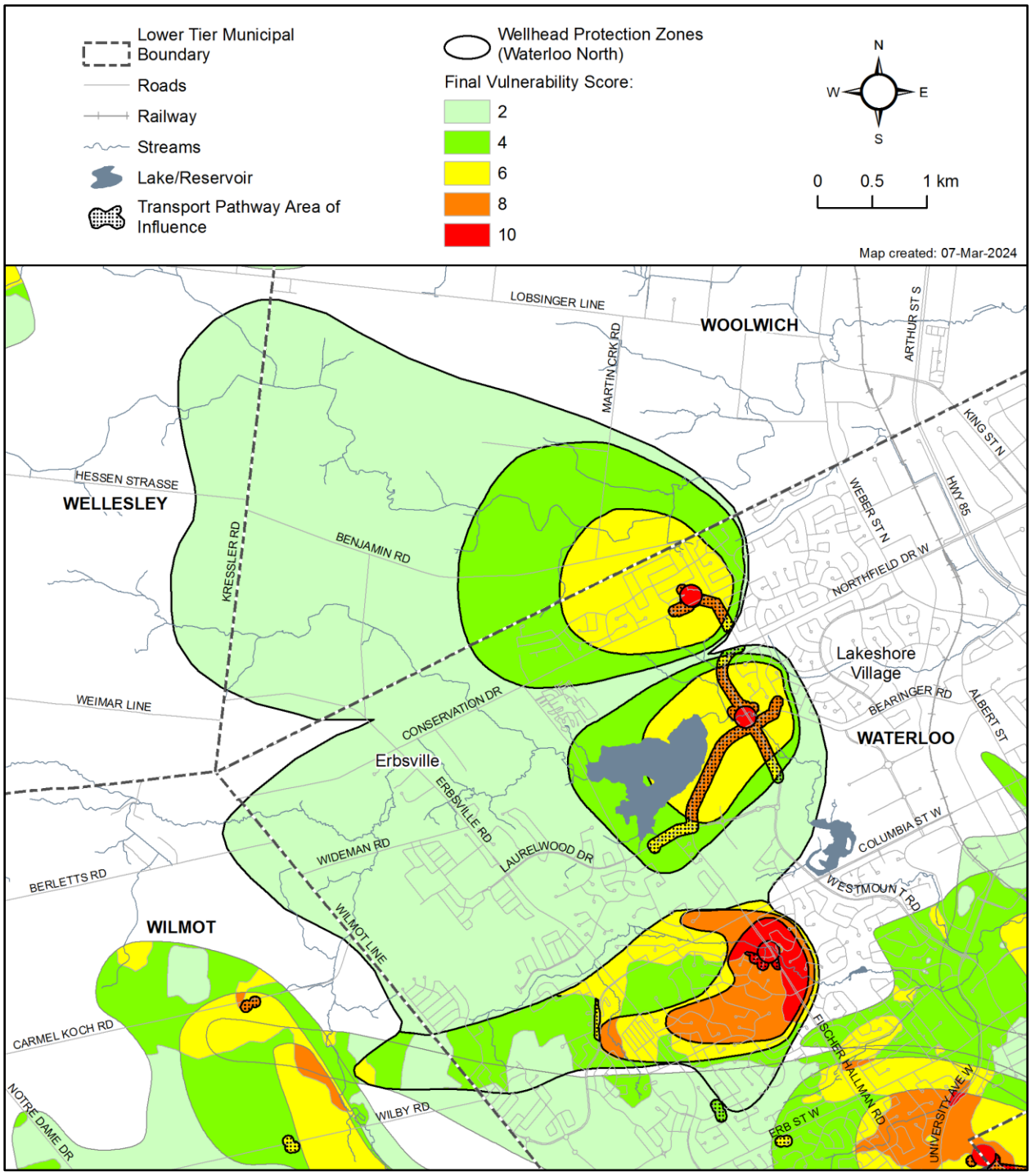
Map 8.2—16: Waterloo Area Inset 2: Waterloo North (W10) Well Supply Wellhead Protection Area Adjusted Intrinsic Vulnerability



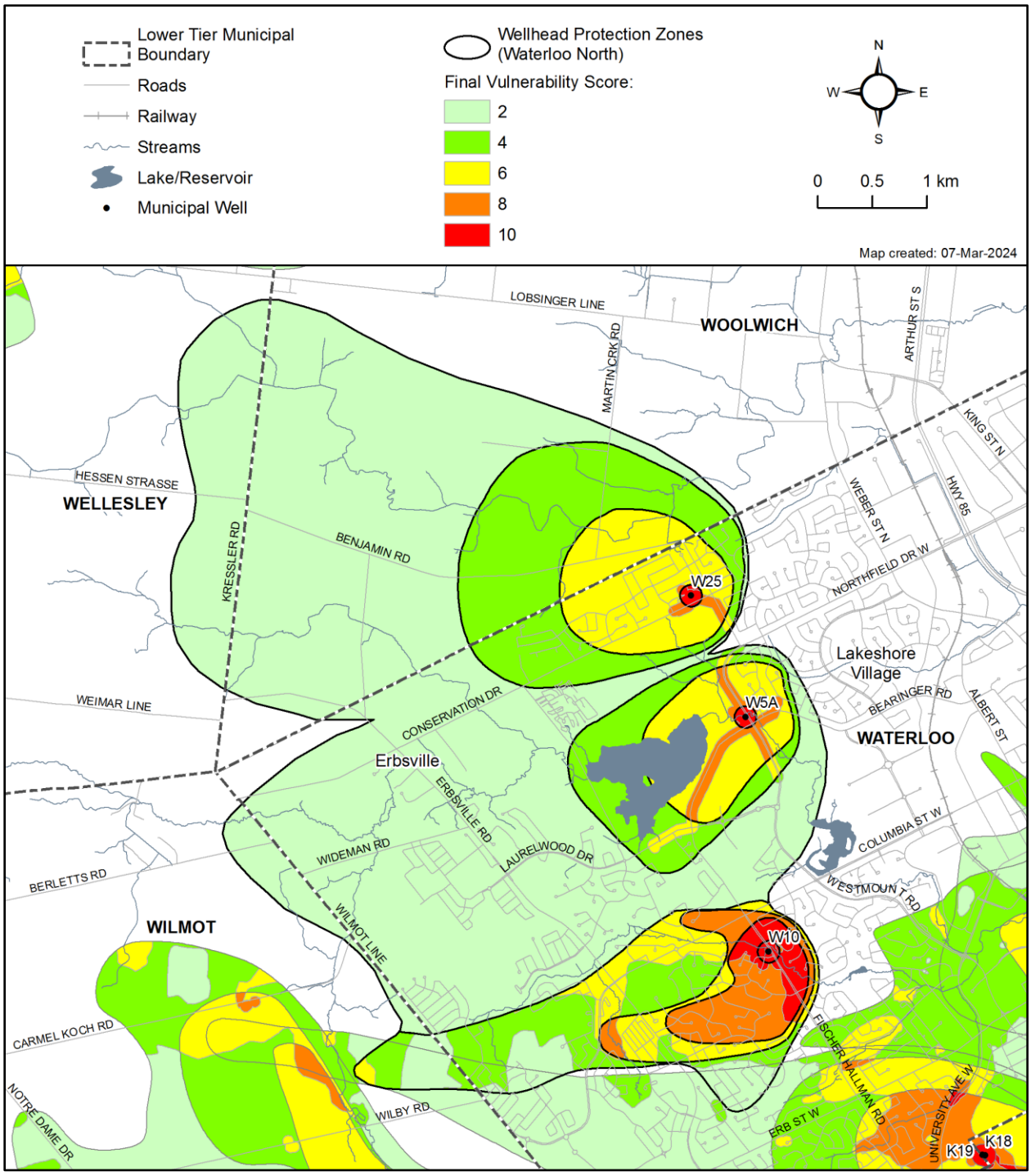
Map 8.2—17: Waterloo North (W5A, W10, W25) Well Supply Transport Pathways



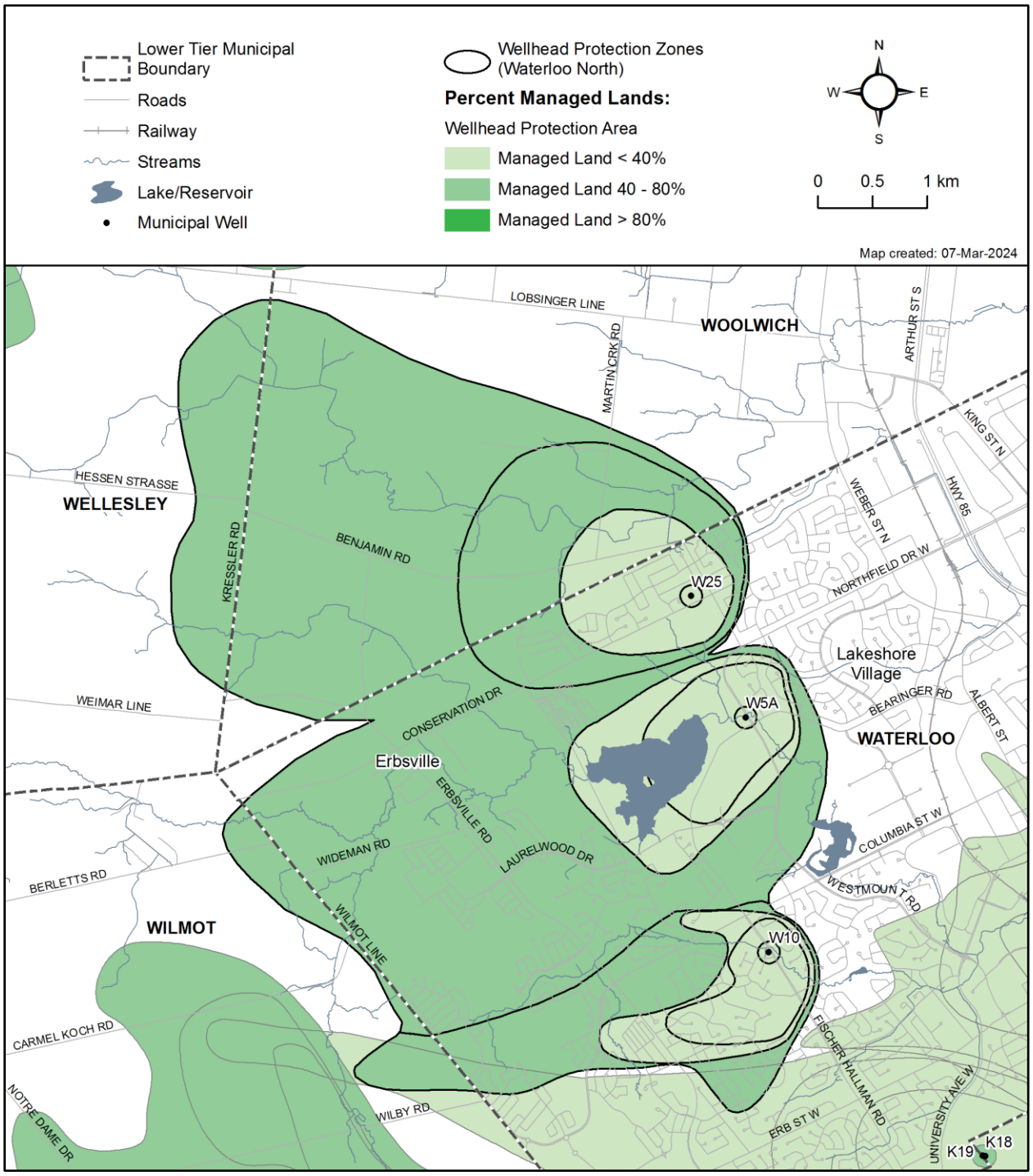
Map 8.2—18: Waterloo North (W5A, W10, W25) Well Supply Transport Pathways Area of Influence



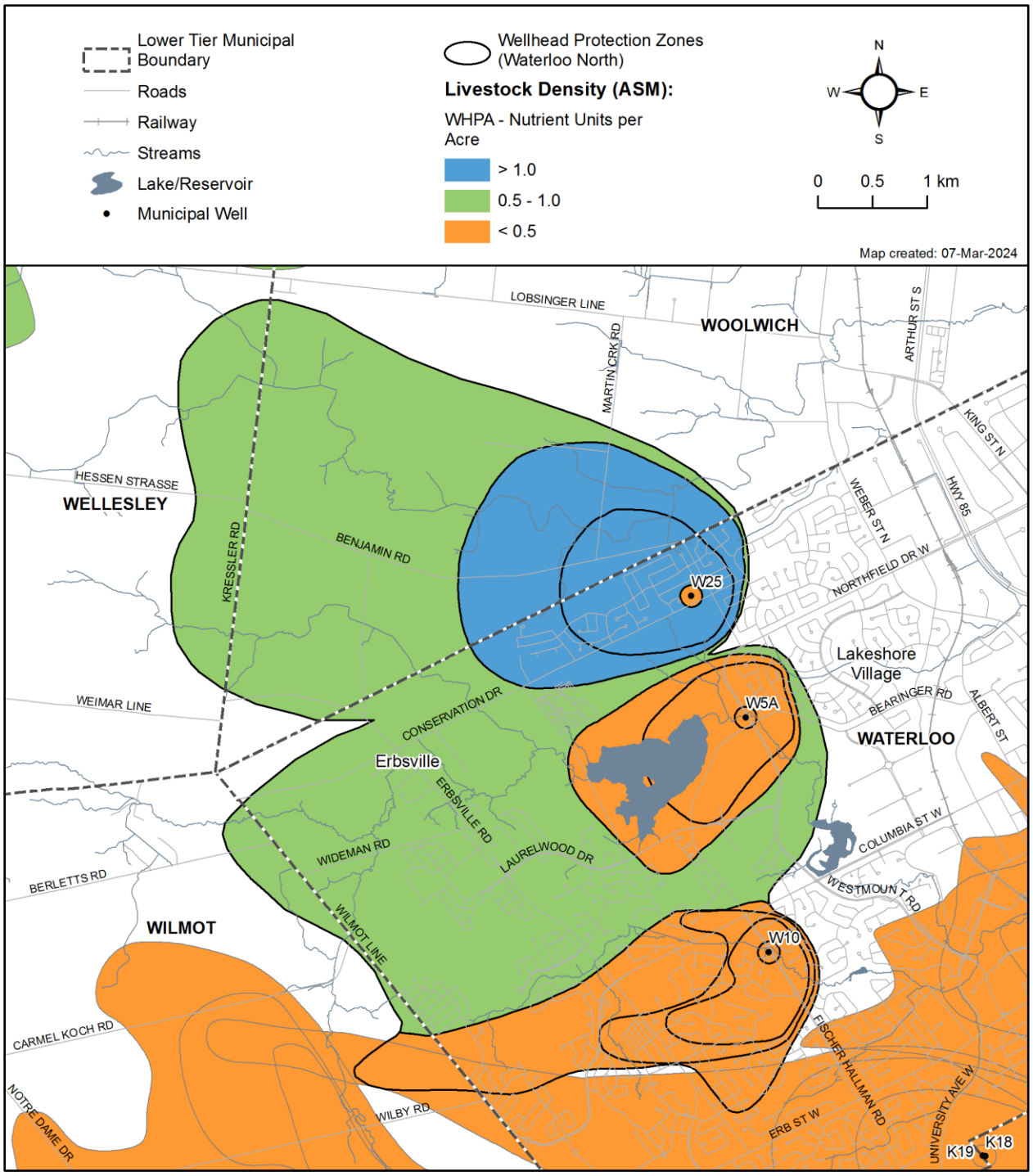
Map 8.2—19: Waterloo North (W5A, W10, W25) Well Supply Wellhead Protection Area Final Vulnerability



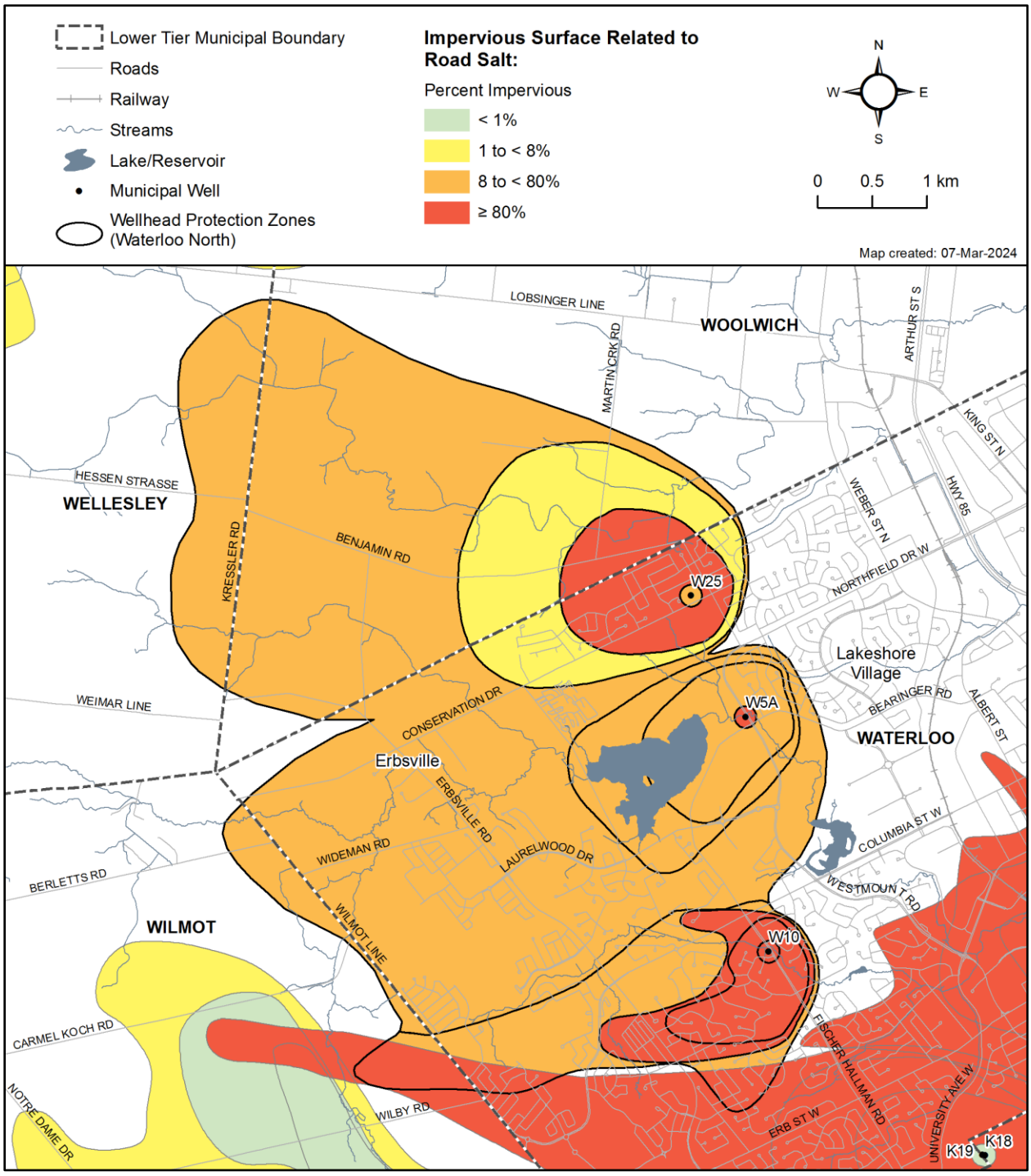
Map 8.2—20: Waterloo Area Inset 2: Waterloo North (W5A, W10, W25) Well Supply Percent Managed Land



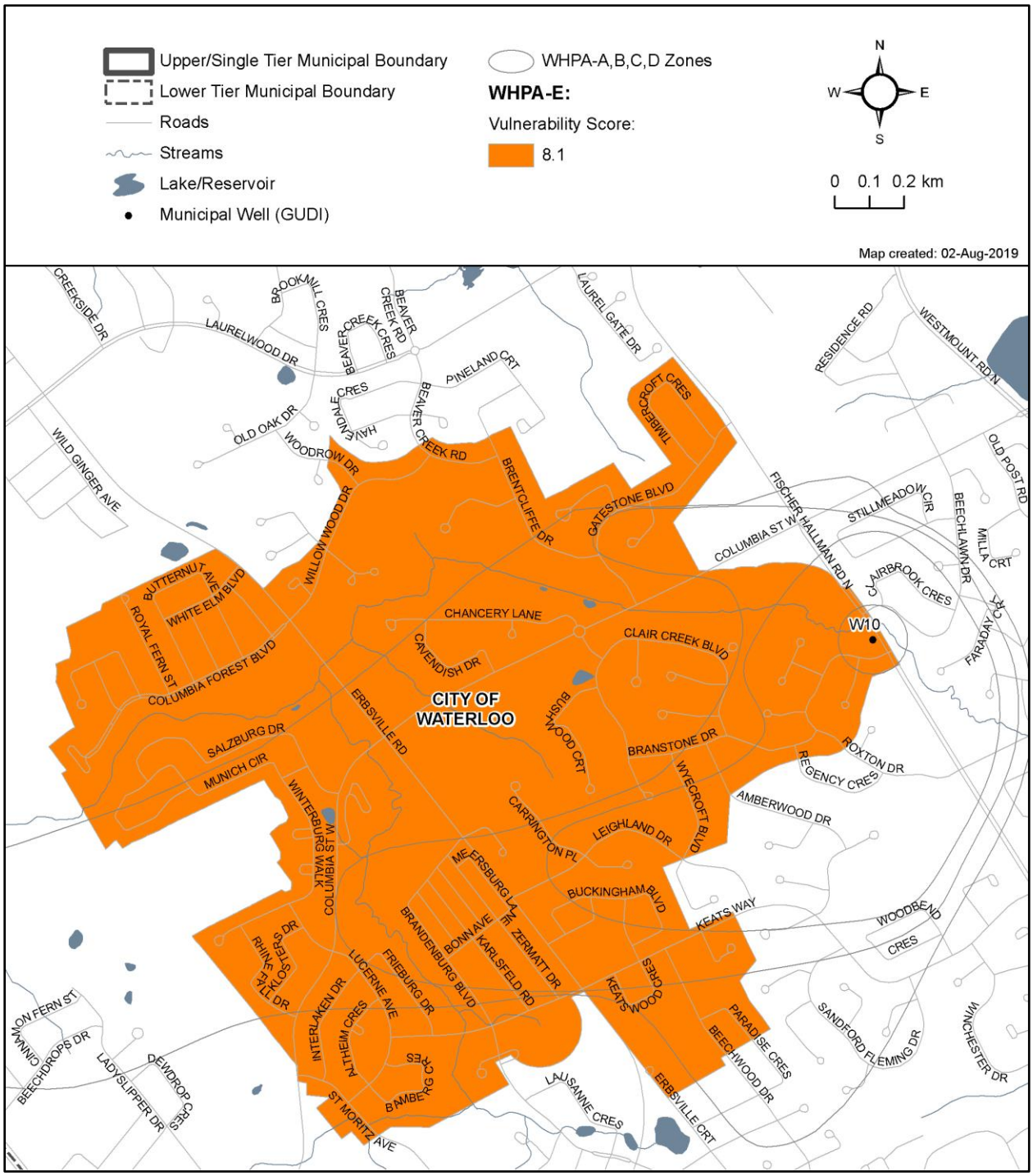
Map 8.2—21: Waterloo Area Inset 2: Waterloo North (W5A, W10, W25) Well Supply Livestock Density



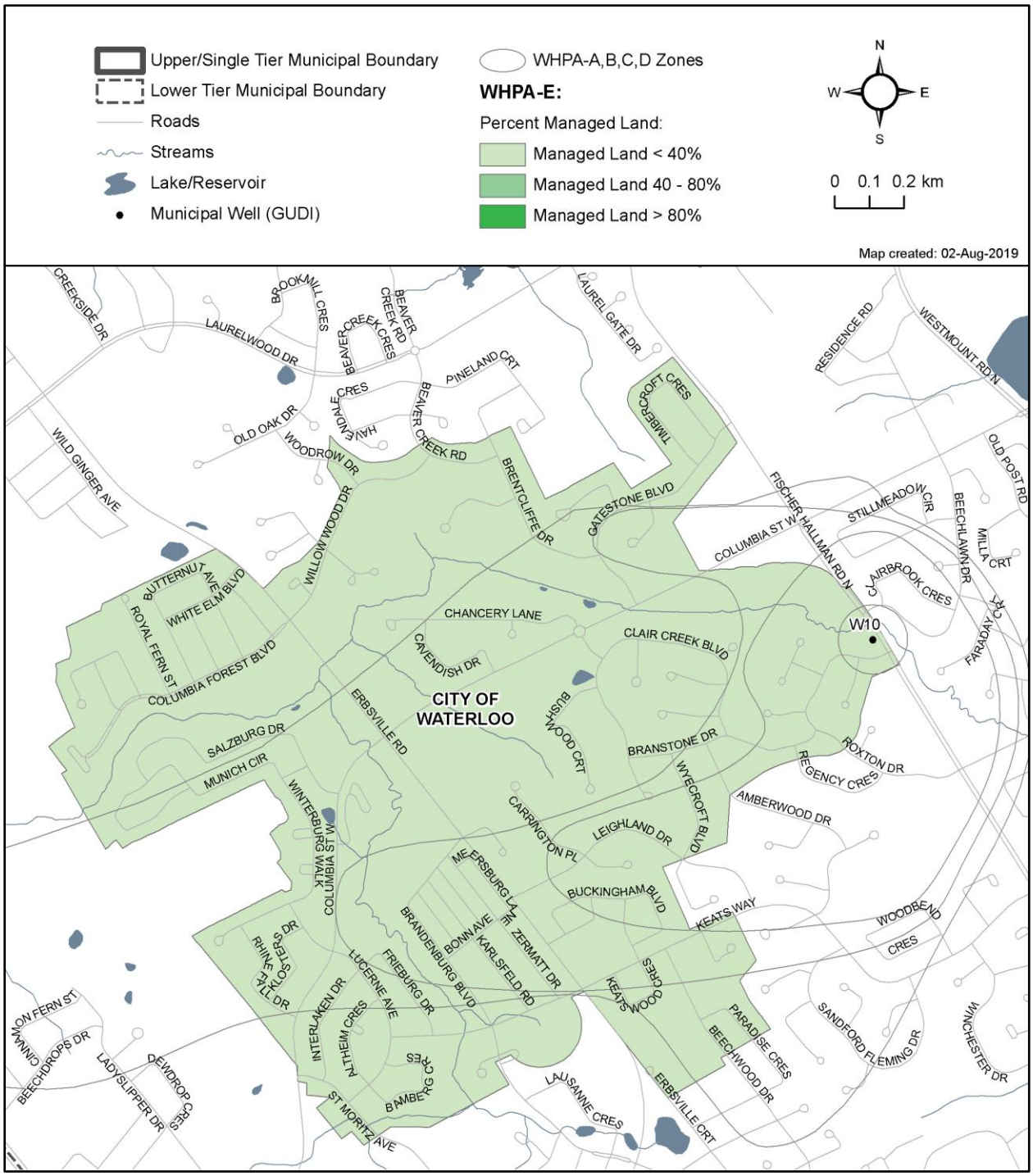
Map 8.2—22: Waterloo Area Inset 2: Waterloo North (W5A, W10, W25) Well Supply Percent Impervious Surfaces



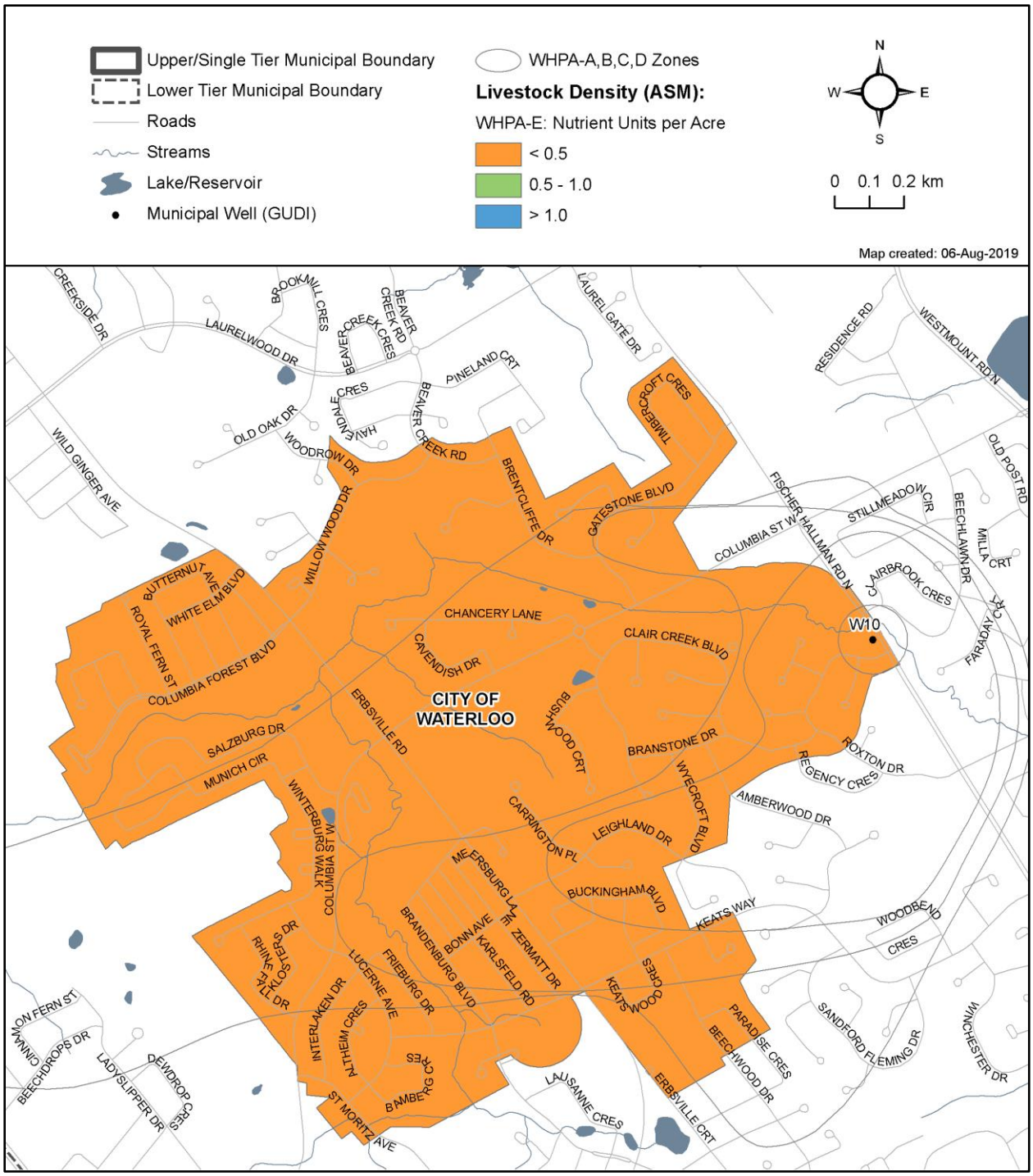
Map 8.2—23: Waterloo Area Inset 2: Waterloo North Well Supply Wellhead Protection Area E



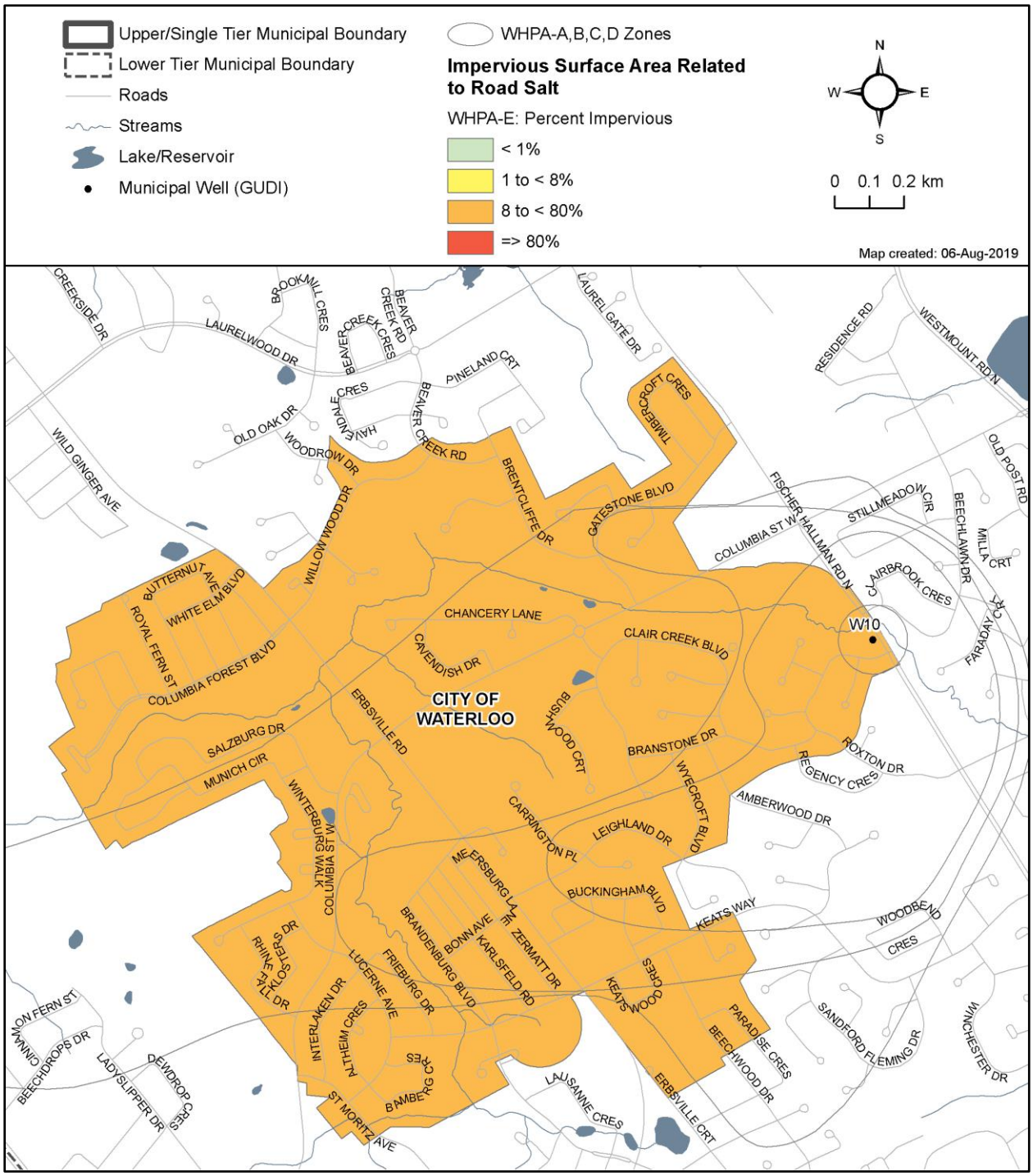
Map 8.2—24: Waterloo Area Inset 2: Waterloo North Well Supply WHPA-E Percent Managed Lands



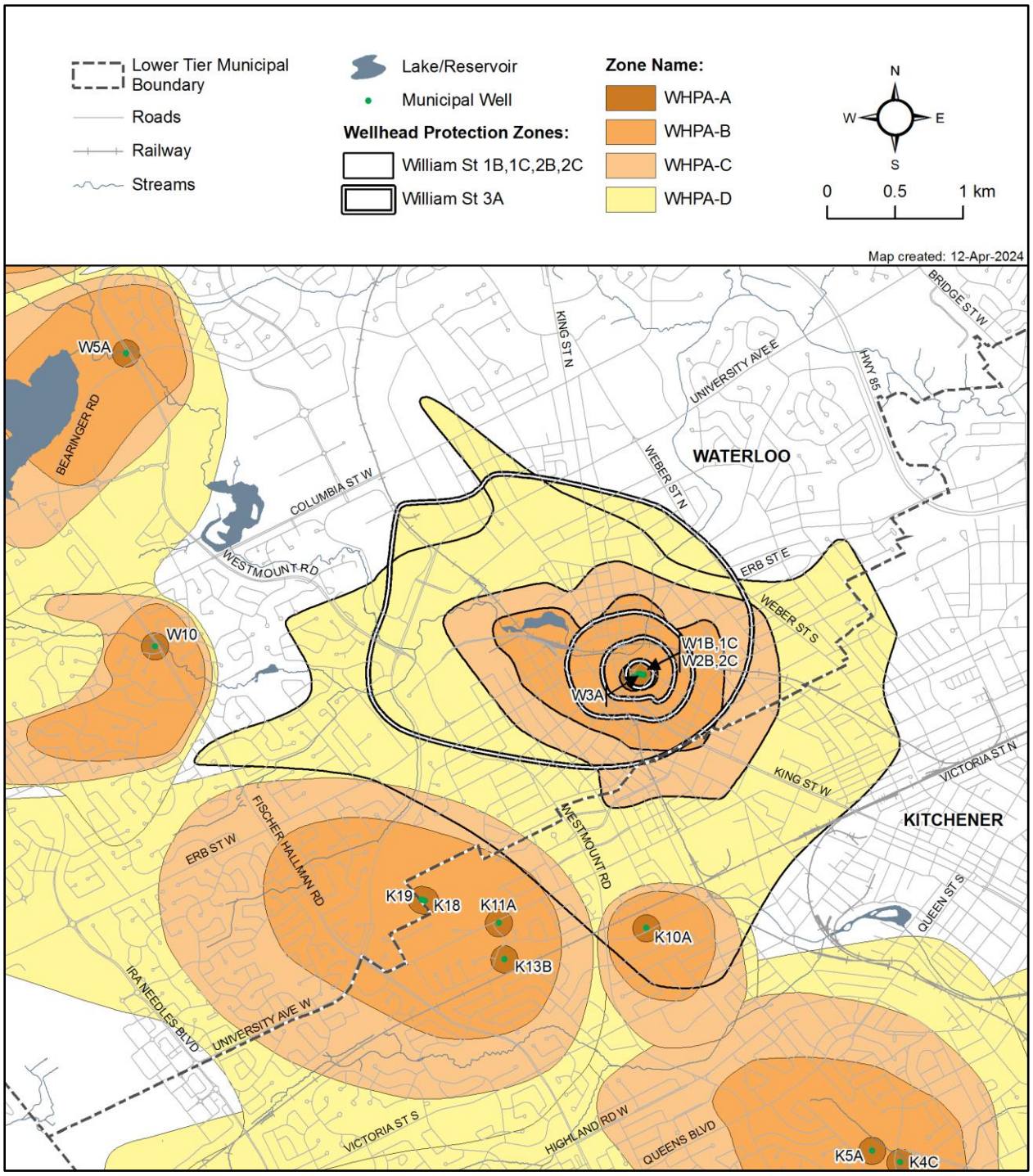
Map 8.2—25: Waterloo Area Inset 2: Waterloo North Well Supply WHPA-E Livestock Density



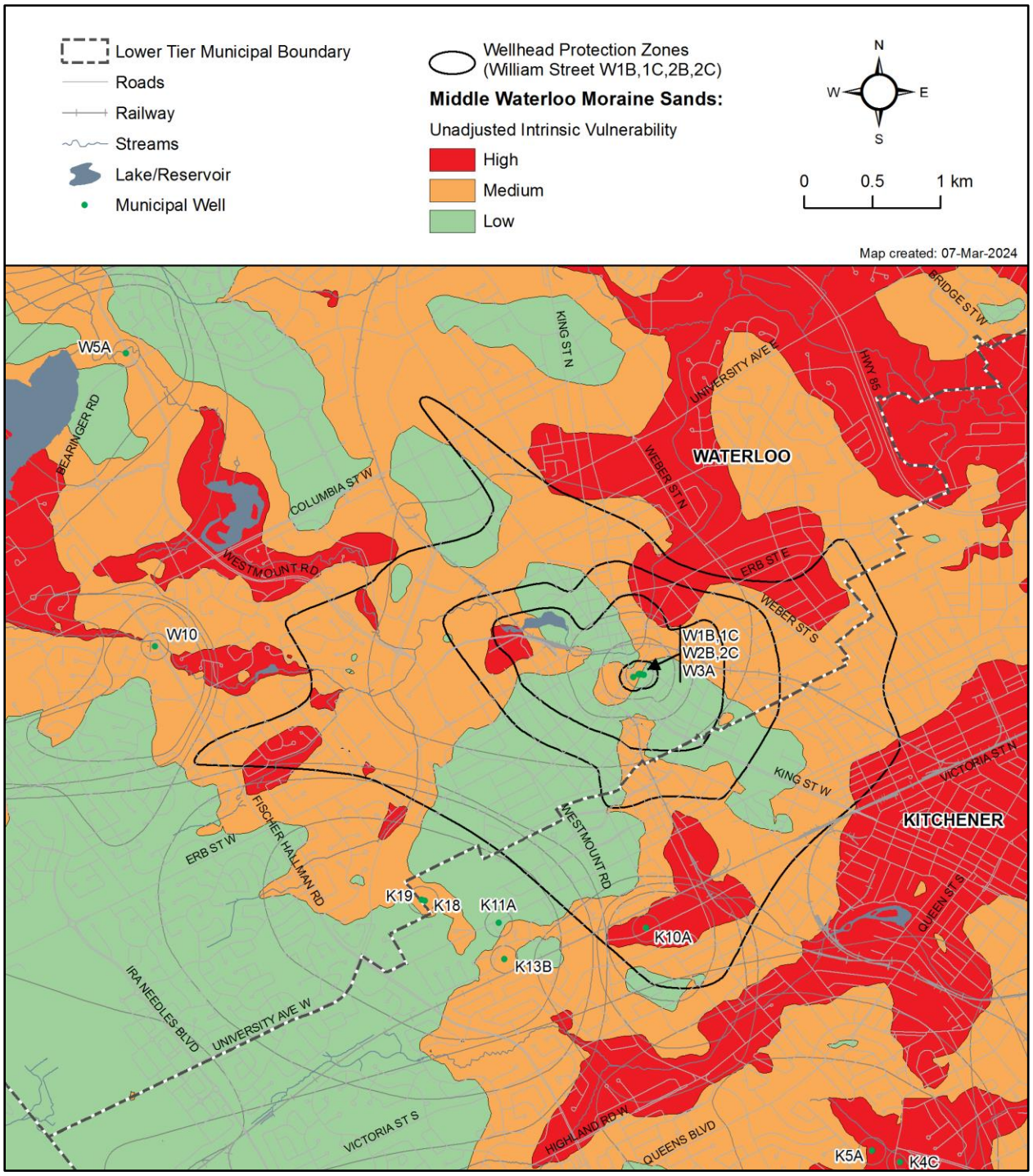
Map 8.2—26: Waterloo Area Inset 2: Waterloo North Well Supply WHPA-E Percent Impervious Surfaces



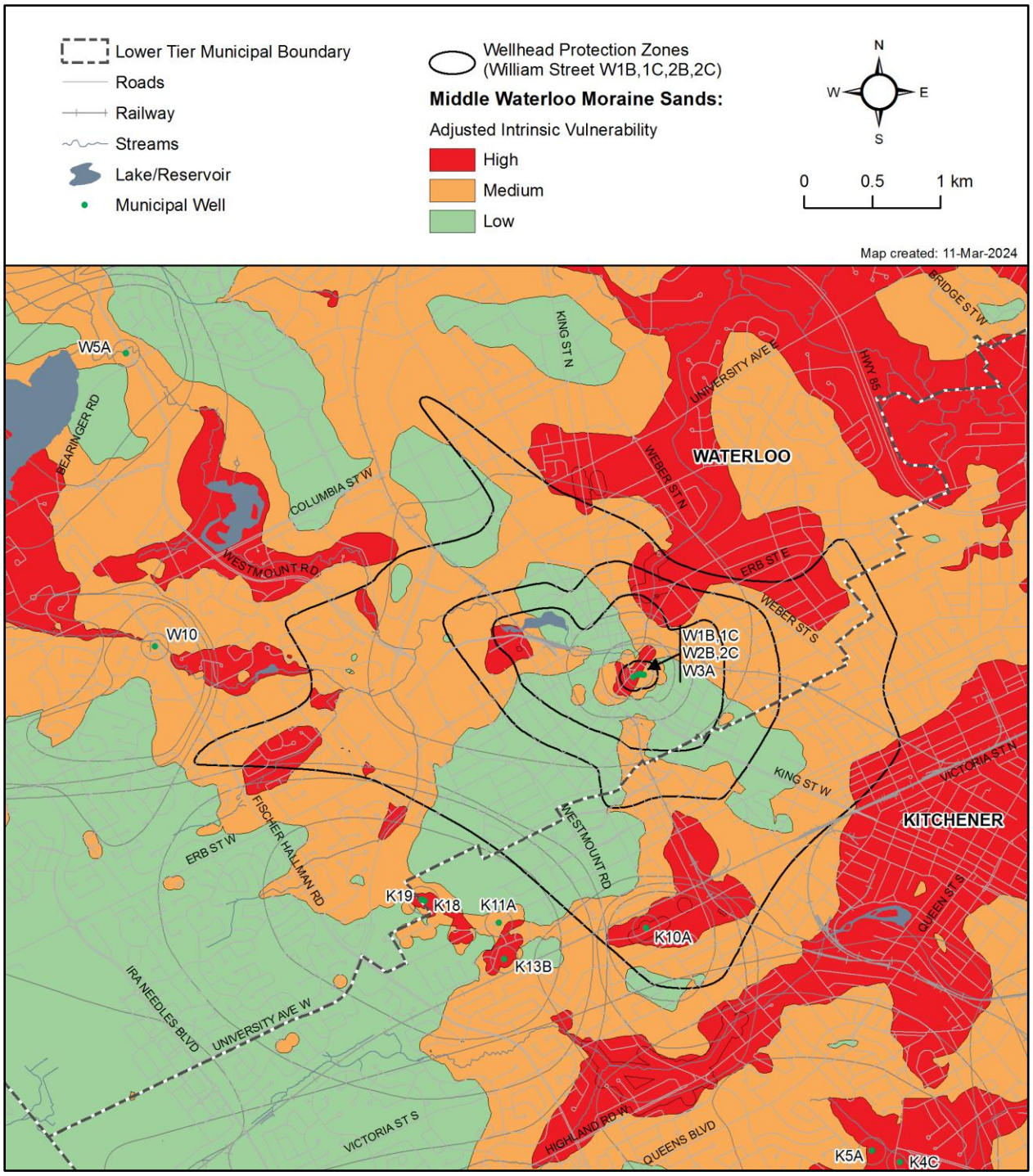
Map 8.2—27: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C, W3A) Well Supply Wellhead Protection Areas



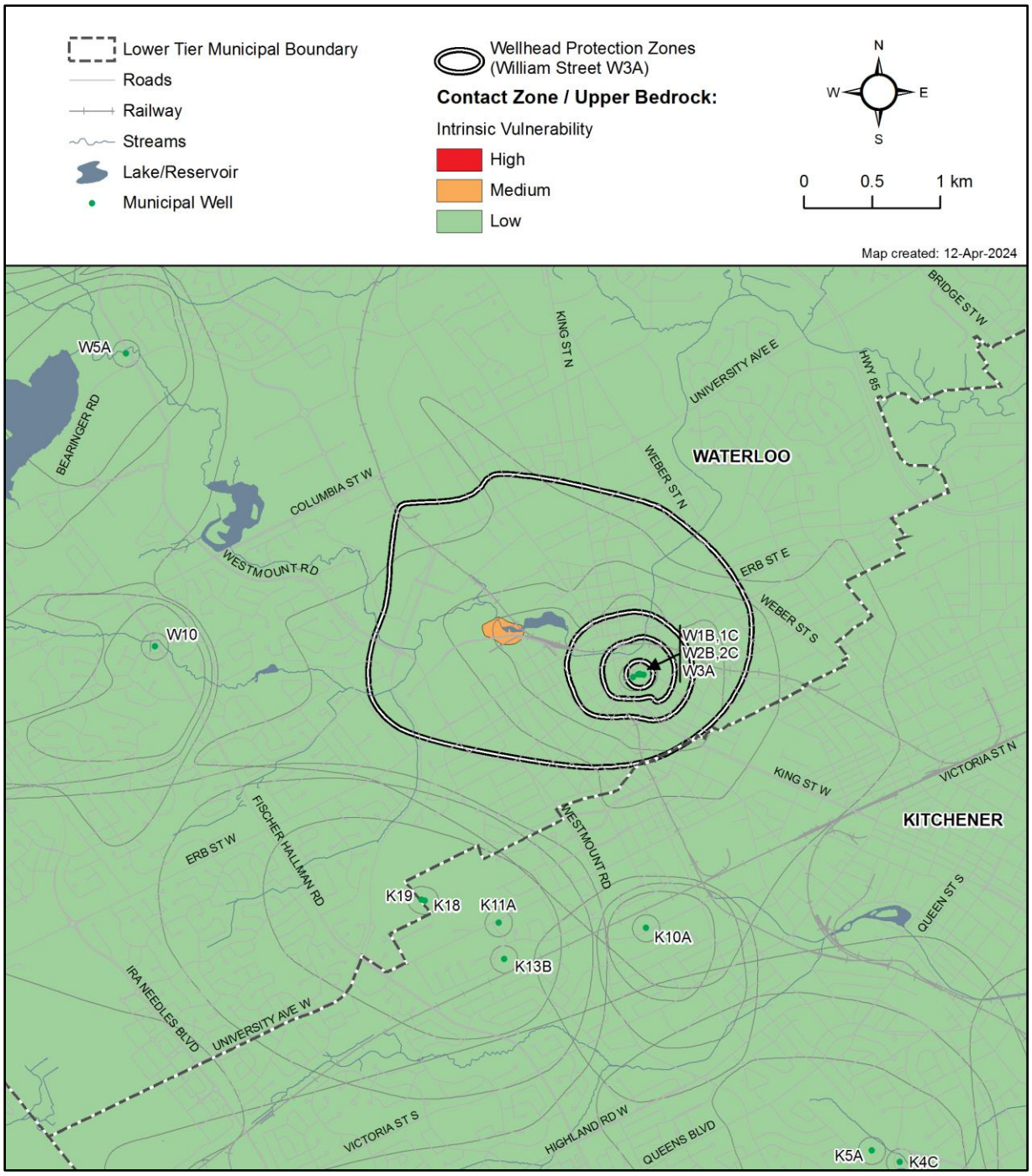
Map 8.2—28: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C) Well Supply Wellhead Protection Area Unadjusted Intrinsic Vulnerability



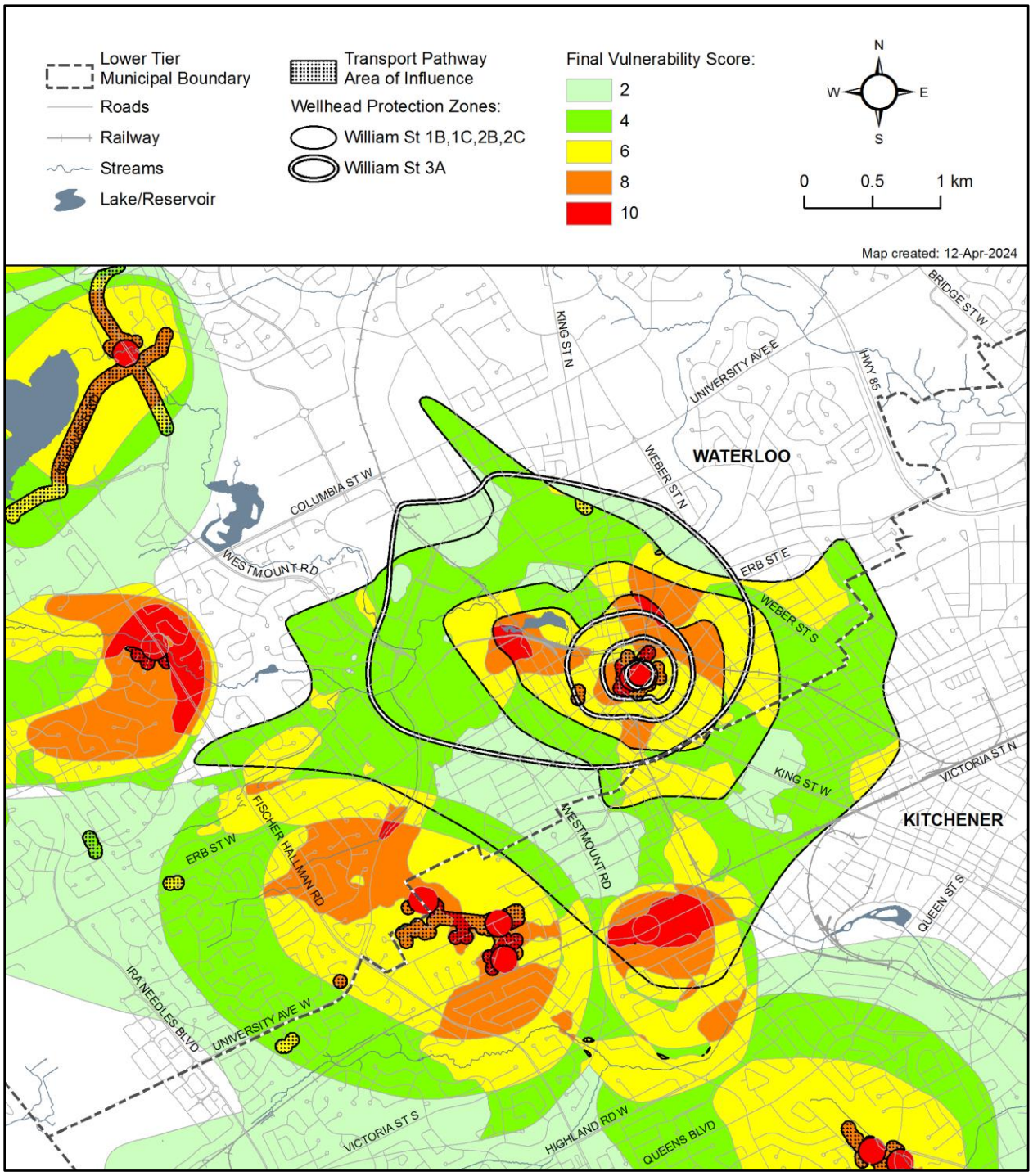
Map 8.2—29: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C) Well Supply Wellhead Protection Area Adjusted Intrinsic Vulnerability



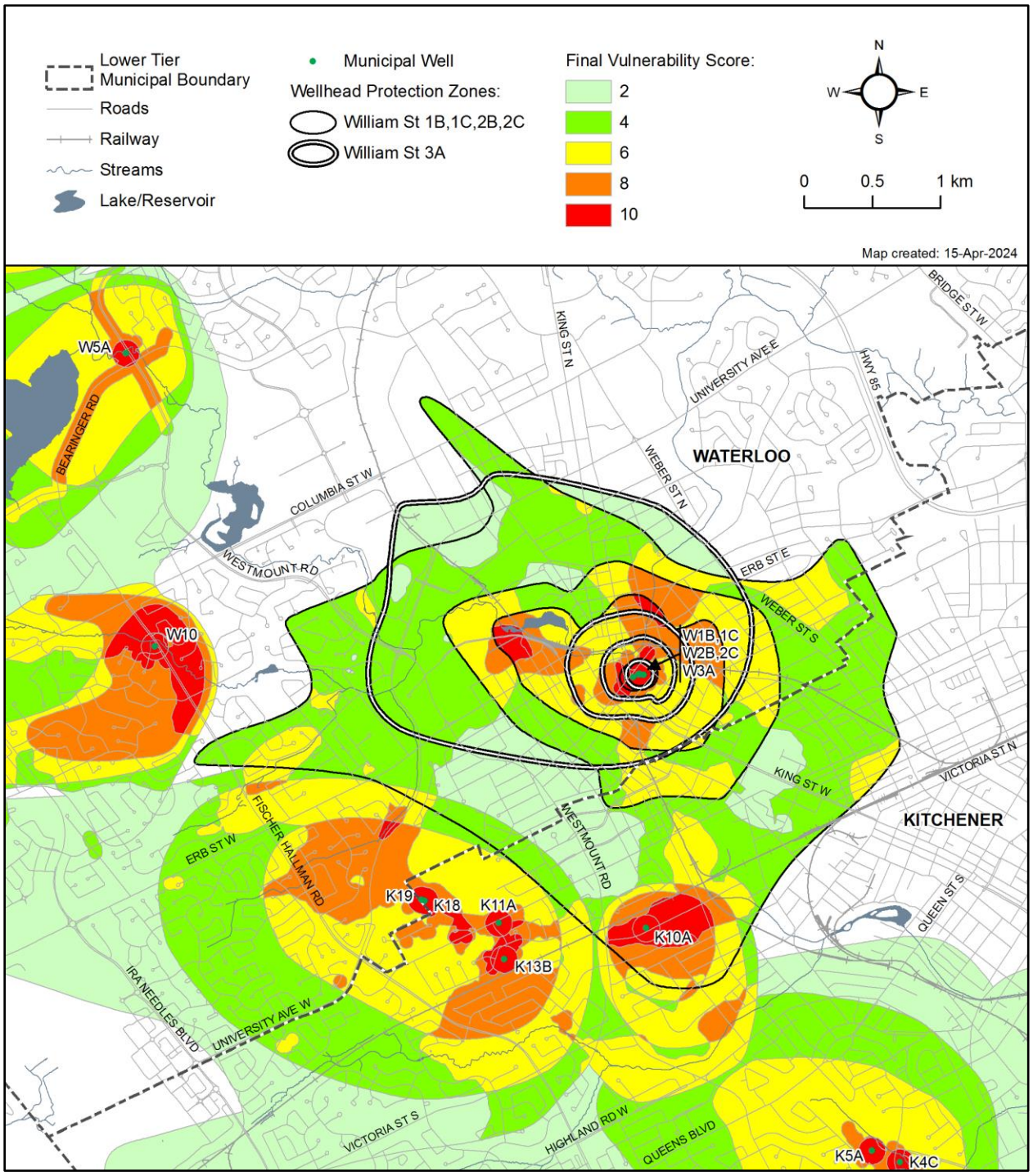
Map 8.2—30: Waterloo Area Inset 3: William Street (W3A) Well Supply Wellhead Protection Area Intrinsic Vulnerability



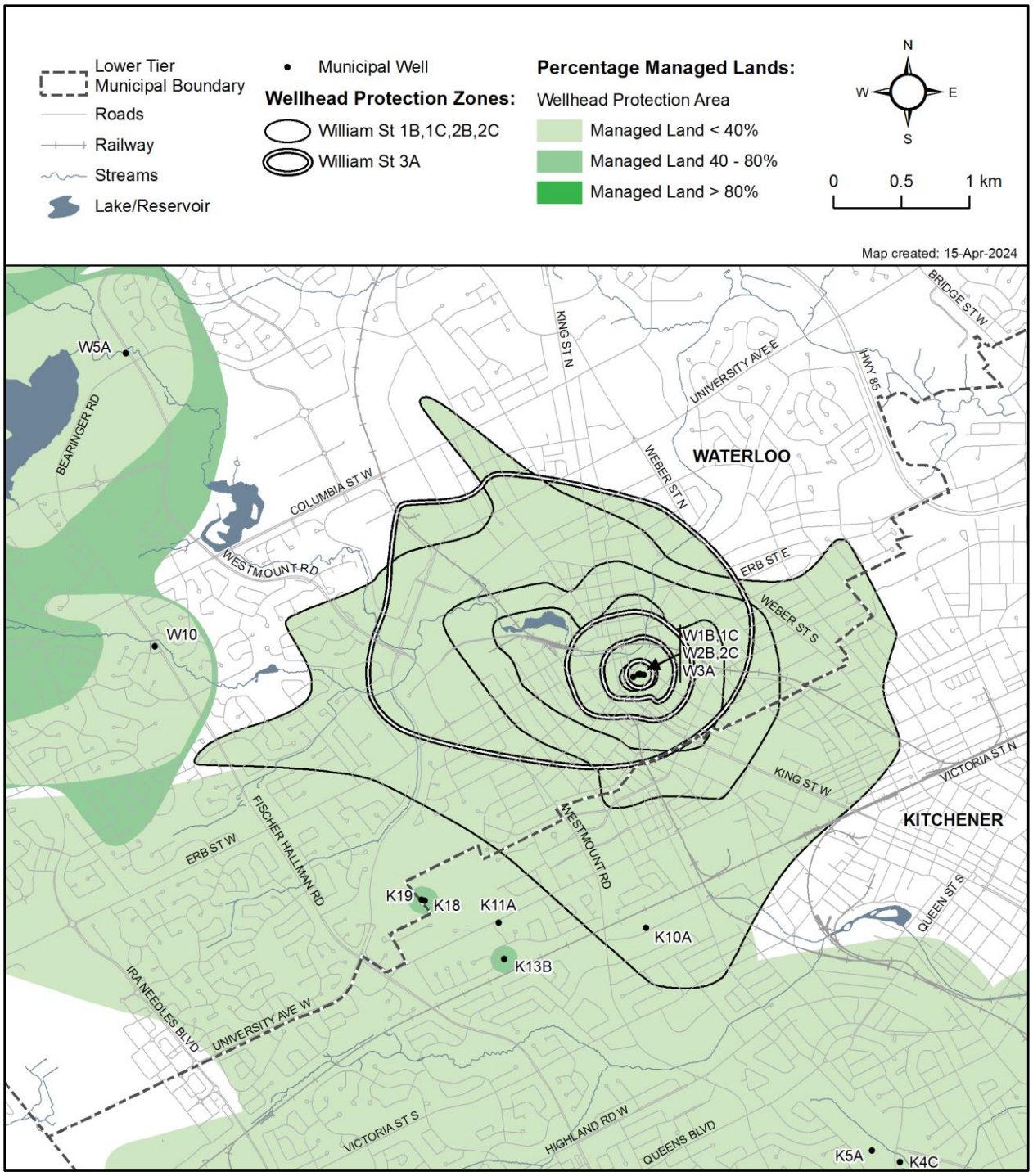
Map 8.2—31: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C, W3A) Well Supply Transport Pathways Area of Influence



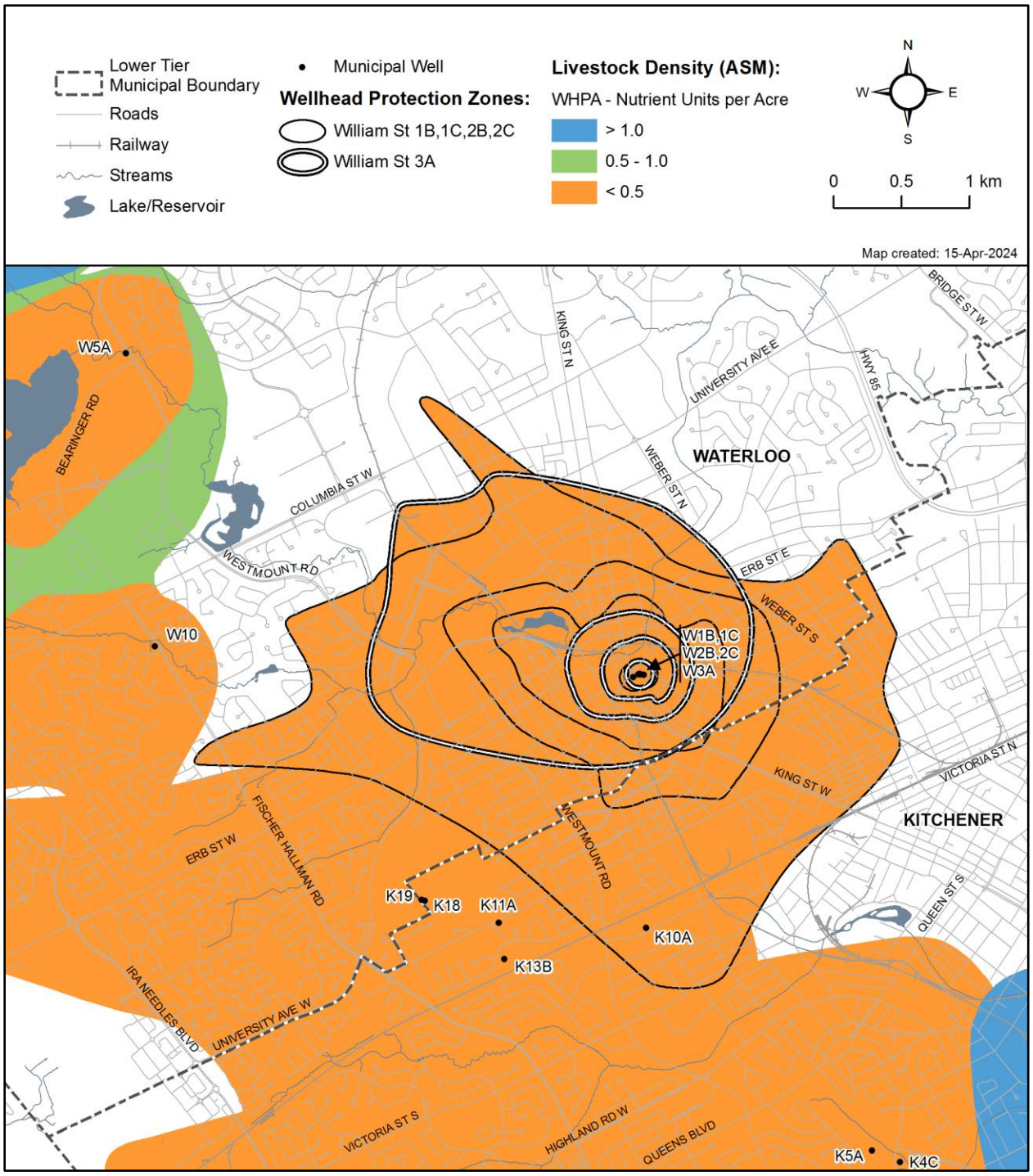
Map 8.2—32: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C, W3A) Well Supply Wellhead Protection Area Final Vulnerability



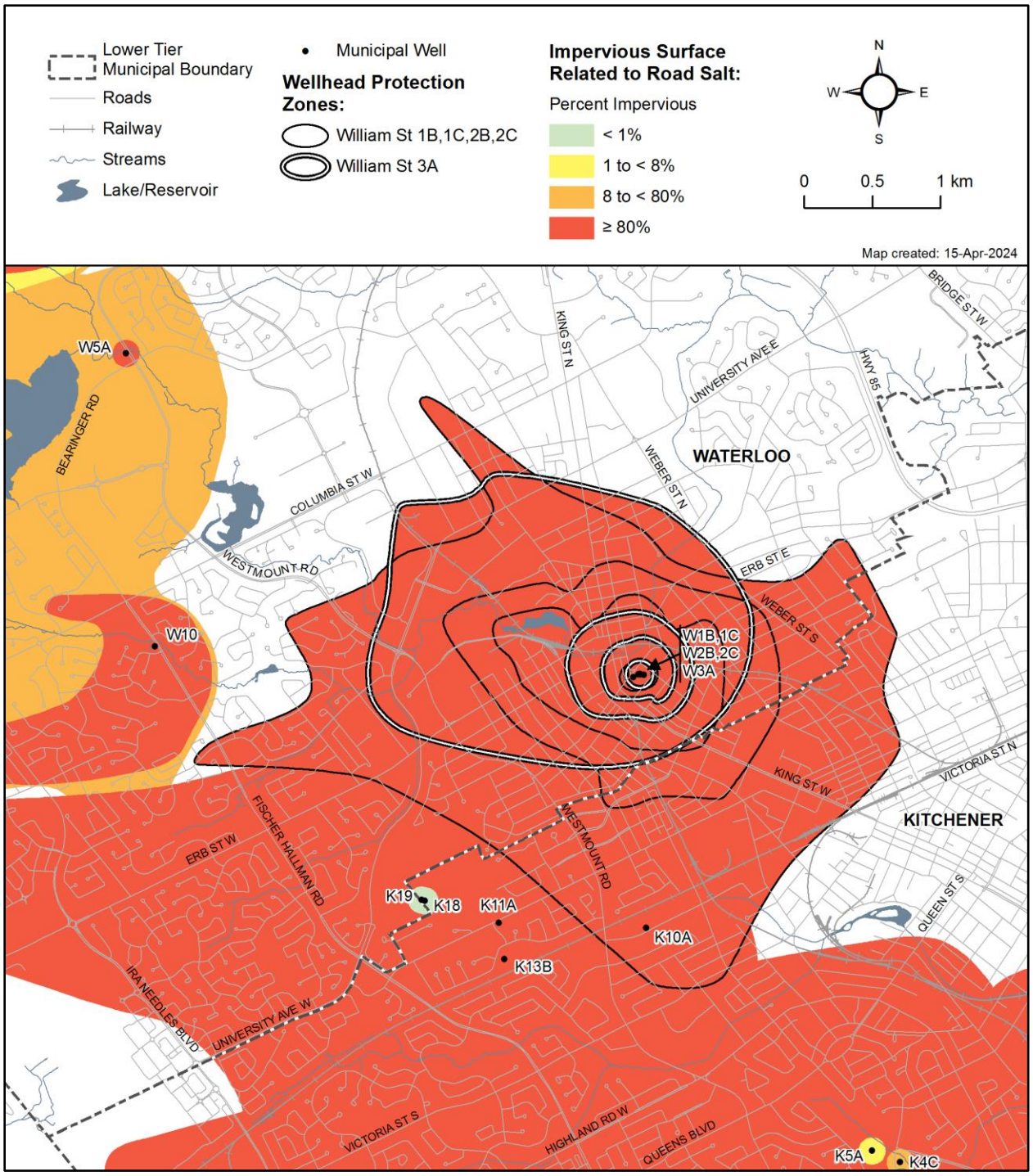
Map 8.2—33: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C, W3A) Well Supply Percent Managed Lands



Map 8.2—34: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C, W3A) Well Supply Livestock Density



Map 8.2—35: Waterloo Area Inset 3: William Street (W1B, W1C, W2B, W2C, W3A) Well Supply Percent Impervious Surface



Identification of Significant, Moderate and Low Drinking Water Threats in the William Street and Waterloo North Wellhead Protection Areas

The identification of a land use activity as a significant, moderate, or low drinking water threat depends on its risk score, determined by considering the circumstances of the activity and the type and vulnerability score of any underlying protection zones, as set out in the Tables of Drinking Water Threats. Information on drinking water threats is also accessible through the Source Water Protection Information Portal. The information above can be used with the vulnerability scores shown in **Map 8.2—19** and **Map 8.2—32** to help the public determine where certain activities are or would be significant, moderate and low drinking water threats.

Table 8.2—3 and **Table 8.2—4** provide a summary of the threat levels possible in the William Street and Waterloo North Wellhead Protection Areas, respectively, for Chemicals, Dense Non-Aqueous Phase Liquids (DNAPLs), and Pathogens. “Yes” indicates that the threat classification level is possible for the indicated threat type under the corresponding vulnerable area / vulnerable score; “No” indicates that it is not. The colours shown for each vulnerability score correspond to those shown in **Map 8.2—19** and **Map 8.2—32.**

Table 8.2—3: Identification of Drinking Water Quality Threats in the William Street Wellhead Protection Areas

Threat Type	Vulnerable Area	Vulnerability Score	Significant Threats	Moderate Threats	Low Threats
Chemicals	WHPA-A/B	10	Yes	Yes	Yes
Chemicals	WHPA-B/C	8	Yes	Yes	Yes
Chemicals	WHPA-B/C/D	6	No	Yes	Yes
Chemicals	WHPA-C/D	2 & 4	No	No	No
DNAPLs	WHPA-A/B/C	Any Score	Yes	No	No
DNAPLs	WHPA-D	6	No	Yes	Yes
DNAPLs	WHPA-D	2 & 4	No	No	No
Pathogens	WHPA-A/B	10	Yes	Yes	No
Pathogens	WHPA-B	8	No	Yes	Yes
Pathogens	WHPA-B	6	No	No	Yes

Table 8.2—4: Identification of Drinking Water Threats in the Waterloo North Wellhead Protection Areas

Threat Type	Vulnerable Area	Vulnerability Score	Significant Threats	Moderate Threats	Low Threats
Chemicals	WHPA-A/B	10	Yes	Yes	Yes
Chemicals	WHPA-B/C	8	Yes	Yes	Yes
Chemicals	WHPA-B/C/D	6	No	Yes	Yes
Chemicals	WHPA-C/D	2 & 4	No	No	No
Chemicals	WHPA-E	8.1	Yes	Yes	Yes
DNAPLs	WHPA-A/B/C	Any Score	Yes	No	No
DNAPLs	WHPA-D	6	No	Yes	Yes
DNAPLs	WHPA-D	2 & 4	No	No	No
DNAPLs	WHPA-E	8.1	No	Yes	Yes
Pathogens	WHPA-A/B	10	Yes	Yes	No
Pathogens	WHPA-B	8	No	Yes	Yes
Pathogens	WHPA-B	6	No	No	Yes
Pathogens	WHPA-E	8.1	Yes	Yes	Yes

Threats and Issues Enumeration for the William Street Wells

The protection area for the William Street Wellfield overlaps with the Strange Street and Waterloo North Wellfield areas. However, threat ranking results related to the Strange Street Wellfield are presented in **Section 8.3** – **Kitchener Area Wellfields**.

The newly constructed overburden wells W2B and W2C are considered direct replacements of wells W2 and W2A. Testing of the replacement wells has indicated similar water quality to wells W2 and W2A. Therefore, the Issues analysis for wells W2B and W2C has been supplemented using historical data from wells W2 and W2A. Note, there is no data available for well W2A during the time interval shown in the figures below. The replacement bedrock well W3A has limited geochemical data, however results to date were supplemented with the limited historical data available from well W3. No Issues are identified for bedrock well W3A. Overburden wells W1B, W1C, W2B and W2C are assigned Issues for trichloroethylene, sodium and chloride as discussed below.

Trichloroethylene (TCE) and other volatile organic compounds have been monitored in the raw water from the William Street production wells since at least 1991, however the current analytical method (higher precision analysis) started in 2001, so only the higher precision data have been considered. Since 2001, TCE has been detected in water samples from the overburden production wells at concentrations of non-detect (< 0.5 µg/L) to approximately 8 µg/L, compared to the Ontario Drinking Water Standard of 5 µg/L (**Figure 8.2—1**). There is an overall decreasing trend in TCE concentrations although short-term variations in TCE concentrations at individual production wells are observed and are caused by pumping rate variations from the active supply wells. The decreasing trend in TCE at the production wells is caused, at least in part, by the effects

of a private, intermittently operated remediation system at a former industrial site in Waterloo; by Region of Waterloo operation of a "purge well" ("Seagram Well") located northwest of the wellfield; and by the effects of large-scale construction dewatering at a large redevelopment site upgradient of the wellfield. It is not known how much the TCE levels will rebound once the construction dewatering is completed. Due to the elevated concentrations already present at the production wells, TCE has been identified as an *Issue* for the overburden William Street production wells (W1B, W1C, W2B, and W2C).

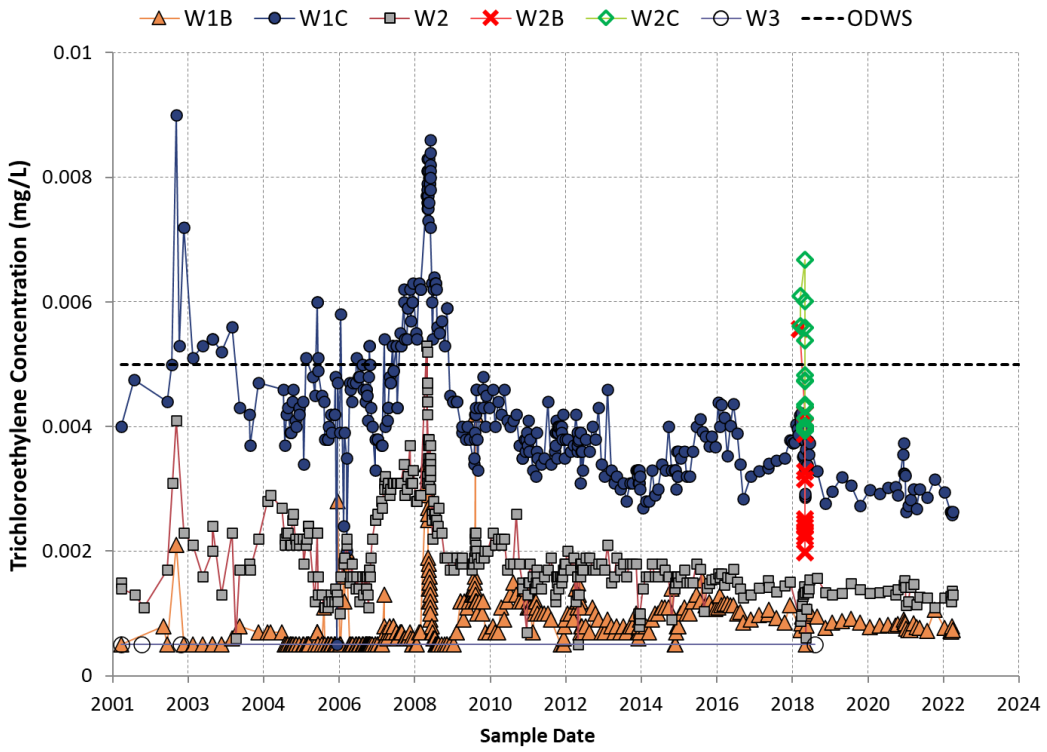


Figure 8.2—1: Trichloroethylene Trends in Raw Water at the William Street Wellfield, Waterloo

The William Street wells have shown increasing chloride and sodium concentrations in raw water samples since at least 1973 when Region monitoring began. Recent chloride concentrations in raw water have risen to between approximately 250 and 450 mg/L, compared to the ODW-AO of 250 mg/L (**Figure 8.2—2**). Due to the current elevated concentrations of chloride and the increasing trends, chloride has been identified as an *Issue* at the William Street overburden wells. The William Street production wells also exhibit increasing sodium concentrations with recent concentrations at approximately 100 to 240 mg/L, compared to the ODW-AO of 200 mg/L (**Figure 8.2—3**). Sodium has been identified as an *Issue* for the overburden production wells. The primary source of chloride and sodium to the wellfield groundwater is consistent with historical application of de-icing salt to roads and parking lots (WESA, 2013).

The *Issue Contributing Area* for the TCE, sodium and chloride Issues is delineated as the 25-year time-of-travel (WHPA-D) of the overburden wells and is shown in **Map 8.2—36.**

The WHPA-D was selected as the appropriate *Issue Contributing Area* because: all three parameters (TCE, sodium, and chloride) are not expected to significantly degrade or break down with time within the municipal aquifer; and any additional source of TCE, sodium or chloride within the wellfield capture zone has the potential to further increase the concentrations observed at the wellfield. Note, there are five significant TCE Condition sites located within the William Street WHPA-B through to the WHPA-D (described below).

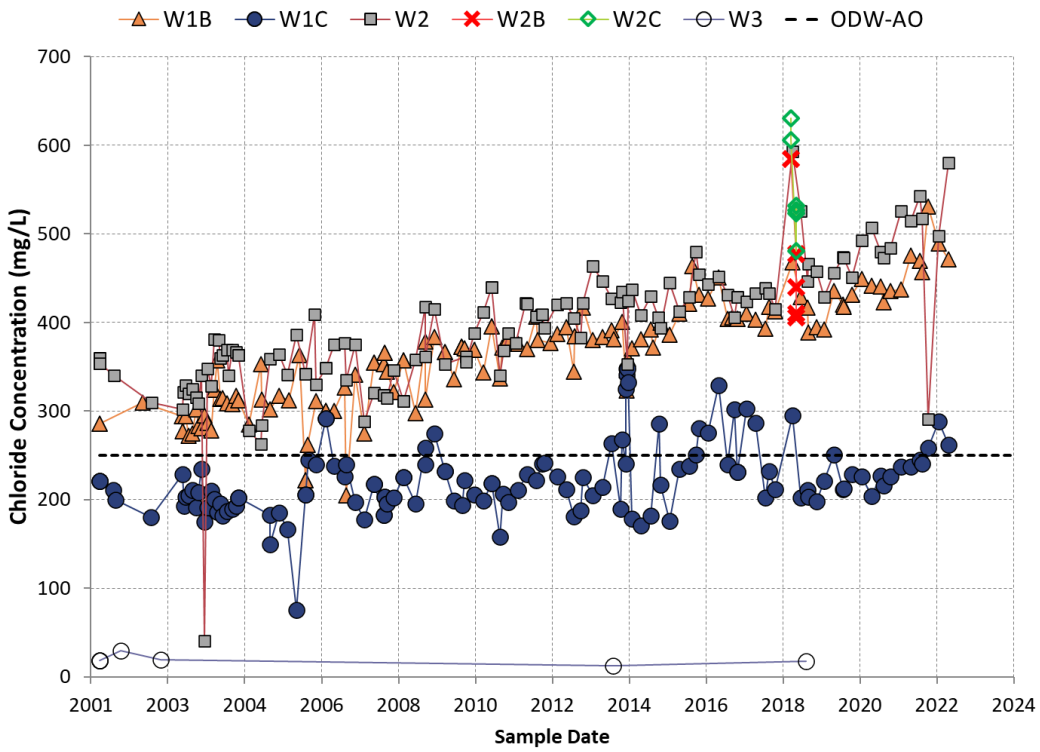


Figure 8.2—2: Chloride Trends in the Raw Water at the William Street Supply Wells, Waterloo

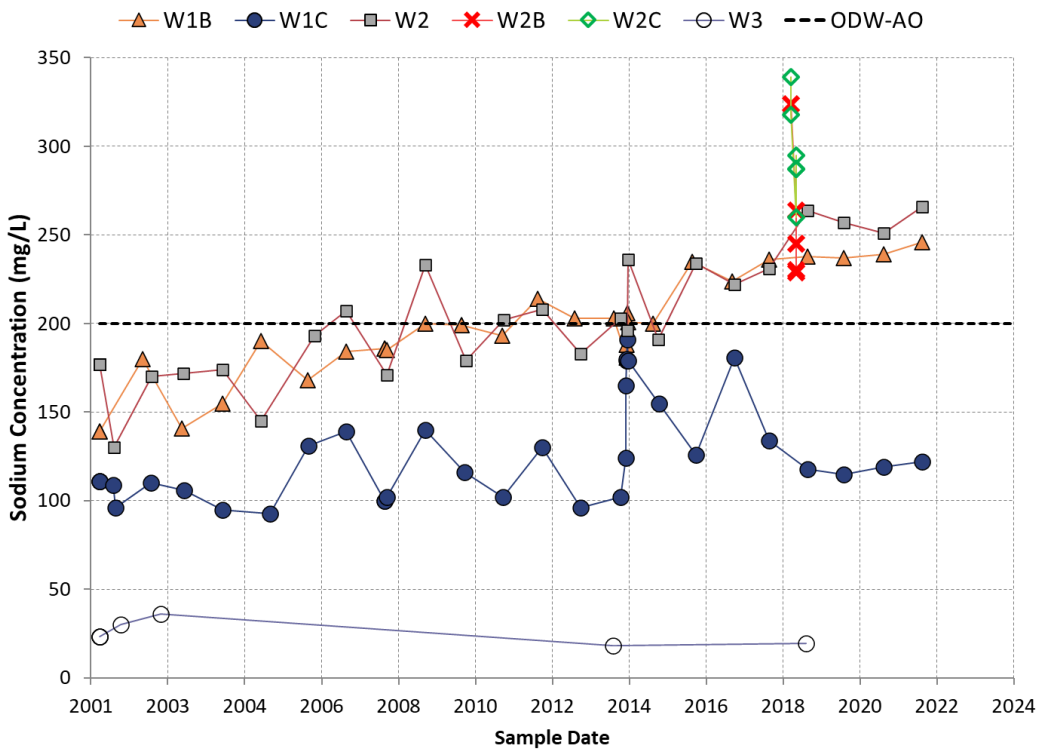


Figure 8.2—3: Sodium Trends in the Raw Water at the William Street Supply Wells, Waterloo

The total number of identified significant drinking water threats in this wellfield is 884. The number of properties in this wellfield with identified significant drinking water threats is 619. Details surrounding the types of threats and circumstances found in the William Street WHPAs are outlined in **Table 8.2—5**.

Table 8.2—5: Significant Drinking Water Quality Threats in the William Street Wellhead Protection Areas (current to November 2023)

PDWT[1] #	Threat Subcategory[2]	Number of Activities	Vulnerable Area
1	Storage of PCB waste at any location (generating or accepting)	1	WHPA-A
2	Sewage system or sewage works - sanitary sewers and related wastewater collection systems	2	WHPA-B
	Sewage system or sewage works - storm water management facility (including storm sewers)	22	WHPA-A WHPA-B ICA
12	Application of road salt	725	WHPA-A WHPA-B ICA
13	Storage of road salt	126	WHPA-A

PDWT[1] #	Threat Subcategory[2]	Number of Activities	Vulnerable Area
			WHPA-B ICA
14	Storage of snow	1	WHPA-B ICA
15	Storage and handling of fuel	2	WHPA-A WHPA-B
16	Storage and handling of a dense non aqueous phase liquid (DNAPL)	5	WHPA-B WHPA-C ICA
Total Number of Significant Threat Activities		**884**	
Total Number of Properties with Significant Threats		**619**	
Total Number of Significant Conditions		**6**	

[1] Prescribed Drinking Water Quality Threat Number refers to the prescribed drinking water threat listed in O. Reg. 287/07 s.1.1 (1)

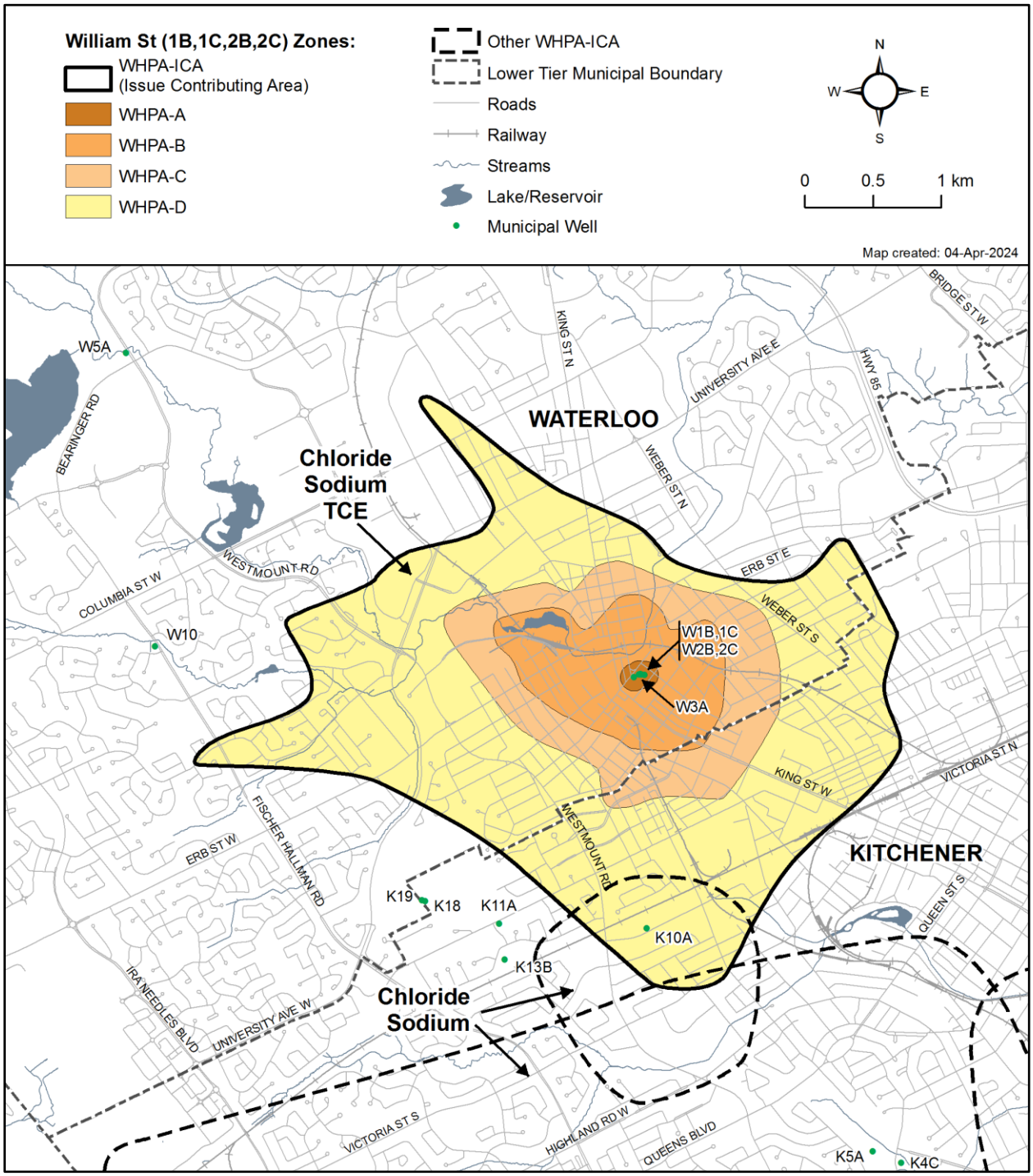
[2] Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.

A total of 6 significant Conditions were identified in the William Street wellfield. Assessment of these Condition sites as per the 2017 Technical Rules is presented in **Table 8.2—6**.

Table 8.2—6: Conditions Evaluation for Sites Classified as Significant Drinking Water Quality Threats

Site	Parameter	Technical Rule 126 Condition	Vulnerable Area(s)	Maximum Vulnerability Score	Hazard Rating	Risk Score	Meets Technical Rule 140	Meets Technical Rule 141	Significant Drinking Water Quality Threat
1	TCE	(3)	WHPA-B	10	10	100	Yes	Yes	Yes
2	TCE	(3)	WHPA-B	8	10	80	Yes	Yes	Yes
3	TCE	(3)	WHPA-B	10	10	100	Yes	Yes	Yes
4	TCE	(3)	WHPA-C and WHPA-D	8	10	80	Yes	Yes	Yes
5	TCE	(3)	WHPA-B and WHPA-C	10	10	100	Yes	Yes	Yes
6	PHCs/ BTEX	(3)	WHPA-B	8	10	80	Yes	No	Yes

Map 8.2—36: Waterloo Area Inset 3: William Street TCE, Sodium and Chloride Issue Contributing Area



Threats and Issues Enumeration for the Waterloo North Wellfields

The protection area for the Waterloo North Wellfield overlaps with the Strange Street and William Street Wellfield areas. However, threat ranking results related to the Strange Street Wellfield are presented in **Section 8.3** – **Kitchener Area Wellfields**. Threat ranking results related to the William Street Wellfield are presented in **Section 8.2 – Waterloo Area Wellfields.**

The total number of identified significant drinking water threats in this Wellfield is 17. The number of properties in this Wellfield with identified significant drinking water threats is 14. Details surrounding the types of threats and circumstances found in the Waterloo North wellhead protection areas are outlined in **Table 8.2—7**.

No Significant Conditions were identified in this wellfield as per Technical Rule 126.

No drinking water Issues have been identified at the Waterloo North Wellfield as per Technical Rule 114.

Table 8.2—7: Significant Drinking Water Quality Threats in the Waterloo North Wellhead Protection Areas (current to February 2019)

PDWT[1] #	Threat Subcategory[2]	Number of Activities	Vulnerable Area
2	Sewage system or sewage works - onsite sewage systems	1	WHPA-A
	Sewage system or sewage works - sanitary sewers and related wastewater collection systems	1	WHPA-B
	Sewage system or sewage works - storm water management facility (including storm sewers)	6	WHPA-A WHPA-B WHPA-E
12	Application of road salt	8	WHPA-A WHPA-B
15	Storage and handling of fuel	1	WHPA-A
Total Number of Significant Threat Activities		**17**	
Total Number of Properties with Significant Threats		**14**	

[1] Prescribed Drinking Water Quality Threat Number refers to the prescribed drinking water threat listed in O. Reg. 287/07 s.1.1 (1)

[2] Where applicable, waste, sewage, and livestock threat numbers are reported by sub-threat; fuel and DNAPL by Prescribed Drinking Water Threat category.