

CITY-WIDE FLOOD MITIGATION STUDY

Edmonton

INTRODUCTION

There are nine preliminary maps that cover four areas of the city. The fifth area is an industrial part of the city and will be studied in the future.

Like many other municipalities, Edmonton is experiencing changing weather and that changing weather is having an impact on our drainage system, a massive network of pipes built over many decades to collect rainwater. Because the system was built over time, older parts of the city were built to different standards of the day. The Edmonton of decades past, remember, had a much smaller population, with less demand on the system, and experienced different, less severe rainstorms.

After severe storms in 2004 and 2012 overwhelmed the drainage system, City officials and staff realized that the best way forward would be to start a proactive study of urban flood mitigation measures. This initiated the City-Wide Flood Assessment which produced the flood maps and future project planning to be brought forward to Council in second quarter 2017.

PRELIMINARY MAPS

The preliminary maps give you a sense of how the pipes act during a storm, and what impact the land and roads have on how water might collect in a neighbourhood. To complete the assessment, a large, four-hour-long rainstorm was modelled over each area shown in each of the nine maps. This type of storm intensity over that large of an area is a worst-case scenario, but it provides the City with important information about how to manage and plan for those types of rainstorms and provide infrastructure solutions that are best suited to each area, if necessary.

WHAT TYPE OF RAIN STORM WAS LOOKED AT TO DO THE ASSESSMENT?

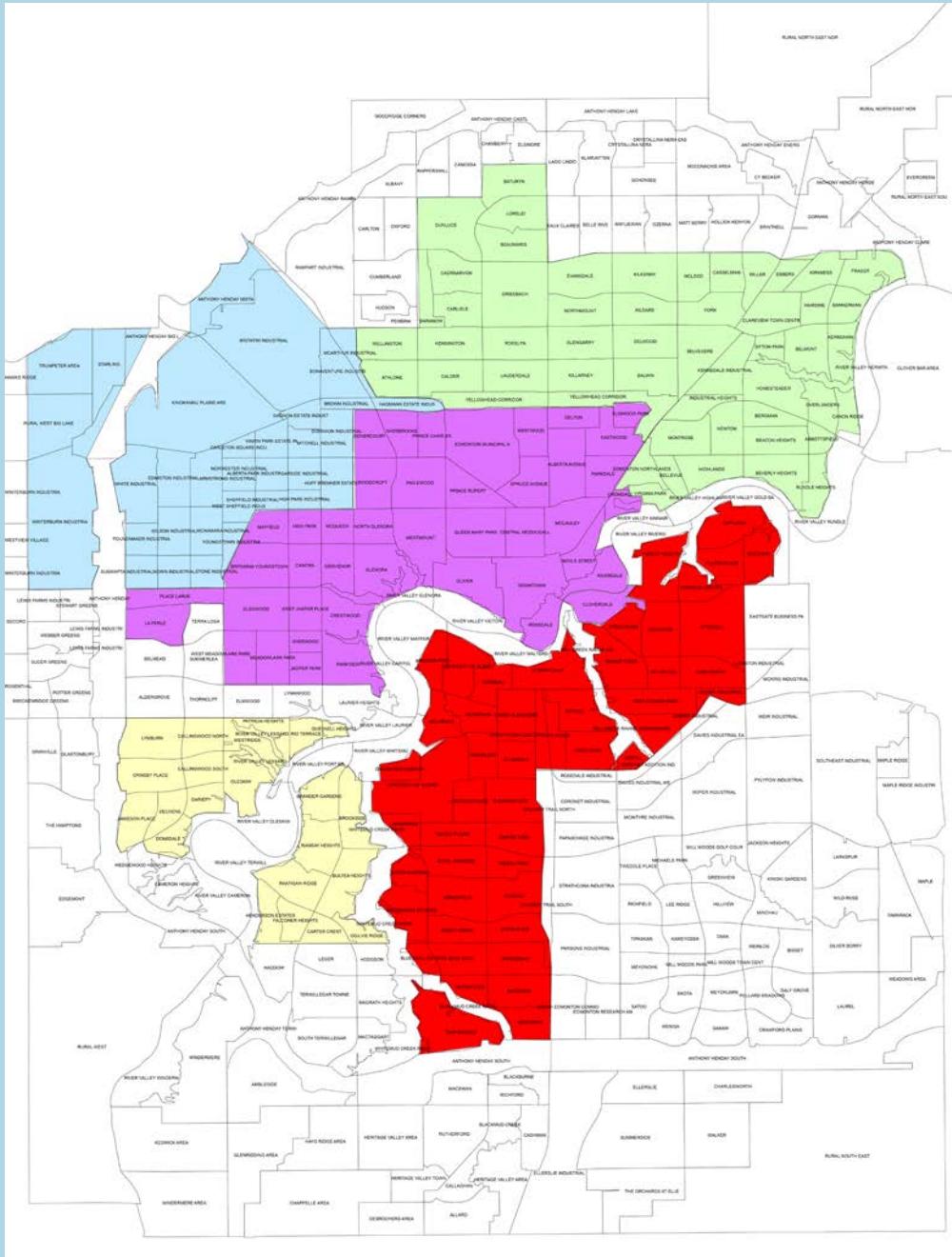
The assessment used a 1-in-100-year rainstorm over a period of four hours. A 1-in-100-year rainstorm means there is a 1 per cent chance of a rainstorm of this intensity happening in any given year.

To place this in context, our city doesn't usually experience this type of weather pattern — we generally see isolated downpours. Over the last three extreme rainstorms recorded, the maximum number of neighbourhoods affected by a 1-in-100-year rainstorm was 25 (quite different from more than 160 neighbourhoods).

FIVE STUDY AREAS

- A = Purple
- B = Green
- C = Red
- D = Yellow
- E = Blue

- Area A** is downtown and west Edmonton (north of Whitemud Drive)
- Area B** is north of Yellowhead Trail and east Edmonton (south of Yellowhead Trail and east of Fort Road)
- Area C** is south of the North Saskatchewan River and east of Whitemud Creek
- Area D** is west Edmonton (south of Whitemud Drive and west of Whitemud Creek)
- Area E** is the northwest Edmonton industrial area and is part of a future study



WHAT AREAS ARE IN THE STUDY?

Not every neighbourhood in Edmonton required an assessment, so you may not find your neighbourhood on any of the maps. The City completed a preliminary study that looked at existing infrastructure, historical flooding and other elements to determine neighbourhoods that required additional study. The neighbourhoods that are part of the assessment were built before 1989 and are located within the Anthony Henday ring road. There are over 160 residential neighbourhoods included in the assessment.

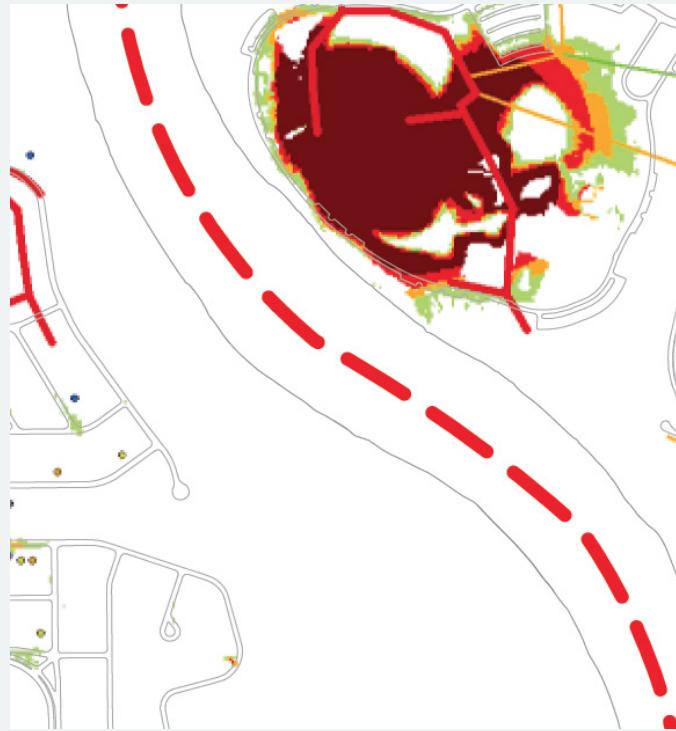
WHAT DO THE MAPS SHOW?

The maps show four main things:

1. Local Area Boundary
2. Flood Records Year
3. Surface Ponding Depths
4. Surcharge Depths

1. LOCAL AREA BOUNDARY

The area that was assessed on each of the maps is within the red dashed line. Areas outside the red dashed line may be covered by another map, or were not included in the assessment.



2. FLOOD RECORDS YEAR

Small coloured dots on the map are used to show houses that reported some kind of basement flooding in previous rain events. Each storm shows as a different colour on the map.

- 2012 - 2013
- 2006
- 2004
- 1987 - 2003
- 1979 - 1986
- 1978
- 1946 - 1977



3. SURFACE PONDING DEPTHS

	<0.35 m
	0.35 m to 0.50 m
	0.50 m to 0.75 m
	>0.75 m

There are four different colours to show the depth of water that might pool on the ground during a large rainstorm. Those colours are green, orange, red and maroon. Green is the least amount of pooling (less than 0.35m) and is acceptable based on City standards. Maroon represents the most significant pooling of water on the ground, at greater than 0.75m. Orange and red are in between.



Maroon indicates water levels greater than the left visual.

< 0.35 m*

0.35 m - 0.50 m

0.50 m - 0.75 m

>0.75 m

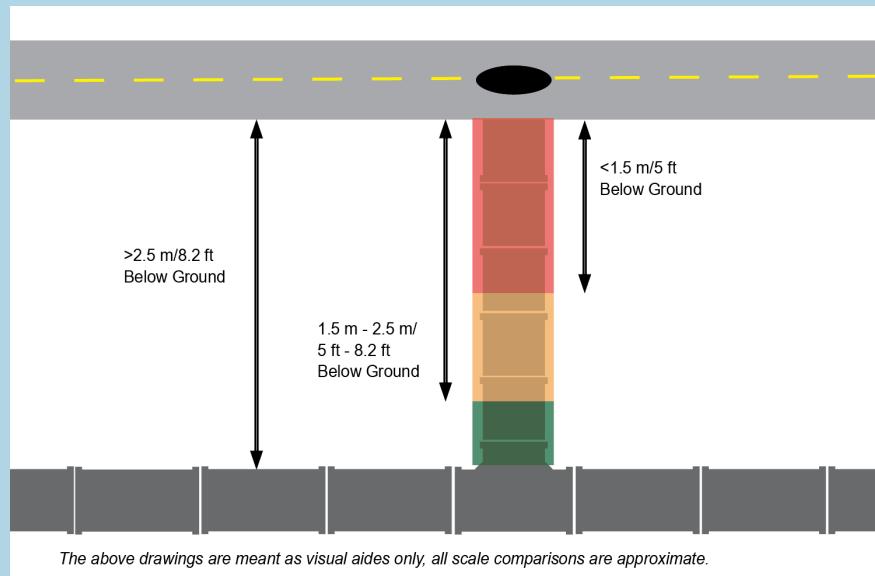
*City of Edmonton acceptable standard

The above drawings are meant as visual aides only, all scale comparisons are approximate.

4. SURCHARGE DEPTHS

There are solid-coloured lines on the maps. These lines signify the pipes in the area. These pipes are represented by three different colours and show how full the pipes get during a significant rain event. If the pipe is red, it means that the pipes are at capacity. As the pipe fills, the water might start moving up to the manhole and may impact basement flooding.

- >2.5 m Below Ground
- 1.5 m to 2.5 m Below Ground
- <1.5 m Below Ground



OTHER IMPACTS

The way our streets drain and water pools during a storm can be impacted by a number of things:

- Whether there are low spots in the neighbourhood where water will run to
- Whether anything is blocking catch basins (examples include people parking over top of them, or leaves or hail creating clogs)
- The amount of water held by pipes in the area
- Major stormwater management facilities in the surrounding area (such as wet ponds and dry ponds)

Anything that influences the way water drains (whether that's the neighbourhood's topography or something temporary, like environmental conditions blocking drains) can change the indicated flooding areas on the maps.

All neighbourhoods are different, and how rainstorms occur is unique. This means flooding in each area is unique and not entirely predictable. These maps indicate one possible scenario for rainfall over the city.

WHAT HAPPENS NEXT?

The City is doing more review and analysis of this information. Using this information and other technical details, City staff will present plans to City Council about how to improve flood risk in neighbourhoods. This work will be brought forward to Utility Committee in the second quarter of 2017.

FAQ

What are the insurance implications?

Insurance policies and coverage vary across companies and across the country. In areas hard hit by flooding and sewer backup events, insurers often restrict or further review insurance coverage for these risks. Property owners are encouraged to be well informed about the various policy coverage for flood protection available, and can contact the Insurance Bureau of Canada for tips when evaluating options for insurance policies.

What are the property assessment implications?

The City's Assessment and Taxation staff continually monitors and analyzes sales data to determine what, if any, impact is noted from changing neighbourhood conditions. If Assessment and Taxation staff note an impact to sales in particular neighbourhoods, adjustments are reflected in property assessment values.

What neighbourhoods are not affected?

This study looked at mature neighbourhood homes that were built before the 1980s. The design standards for homes and underground utilities change through the years. Homes built after 1989 have a lower risk of flooding due to the design standards and flood prevention built into the neighbourhood.

What types of costs are we talking about with the mitigation plan?

Exact costs will depend on how the risk is evaluated and the options that City Council selects when this project goes to them for policy direction in second quarter of 2017.

What can residents do to help protect themselves against flooding?

The City has a number of resources available to residents already and would encourage all interested homeowners to visit edmonton.ca/drainage for more information.

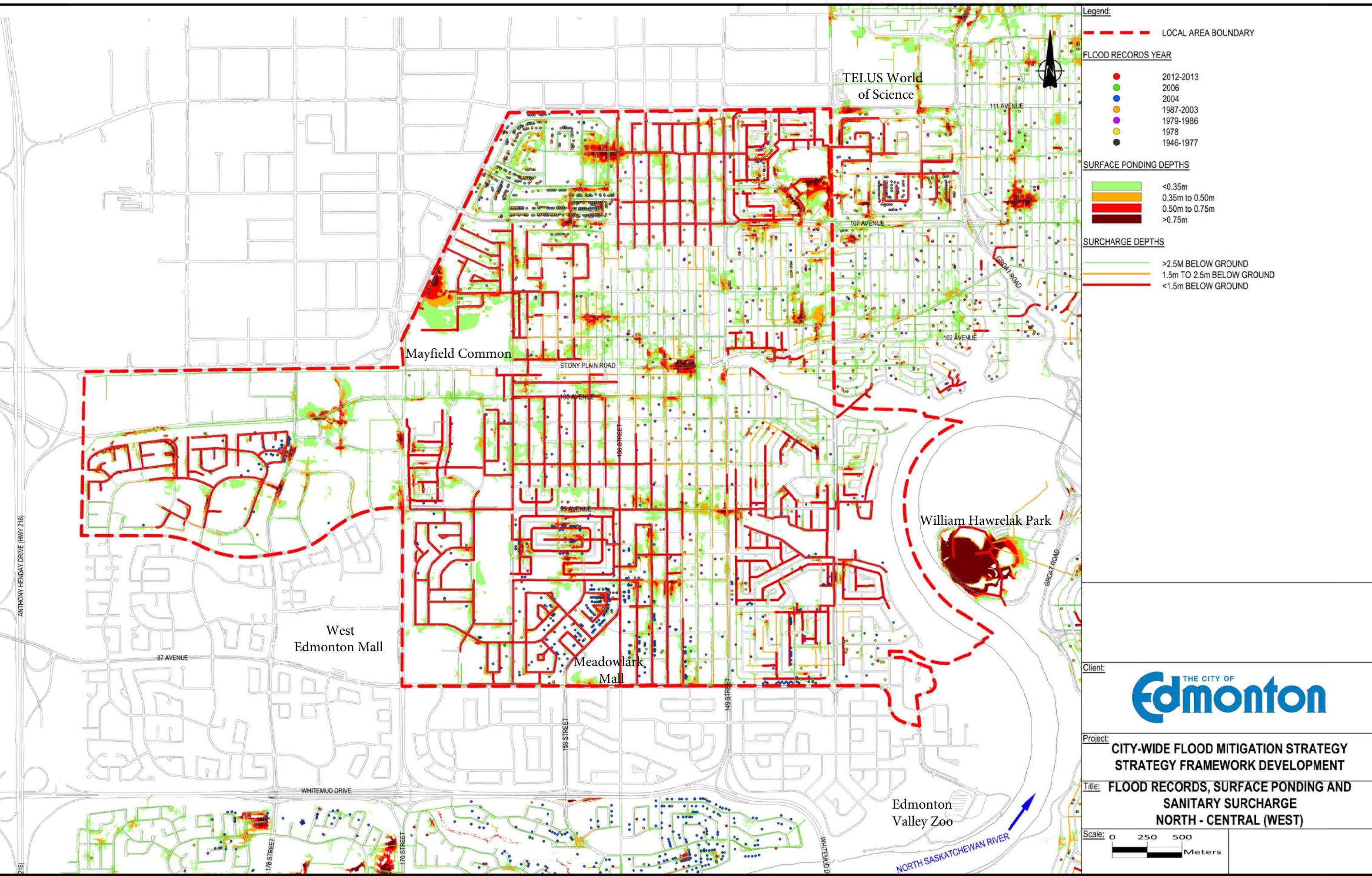
- The City offers financial aid to install backflow valves, which can help prevent sewer backups into basements.
- Additional programs such as the complimentary Flood Prevention Home Check Up can provide further information on how residents can protect their home against overland flooding.
- The Rain Garden in a Box pilot project can also be applied to homes to collect and control the runoff from downspouts.
- Residents can also assist the City-Wide Flood Mitigation Study by reporting flooding to 311 when it occurs. The flood risk model relies heavily on historic data, rainfall and reported flooding. If your home has flooded in the past and you know which date it flooded, please provide this information to the City.

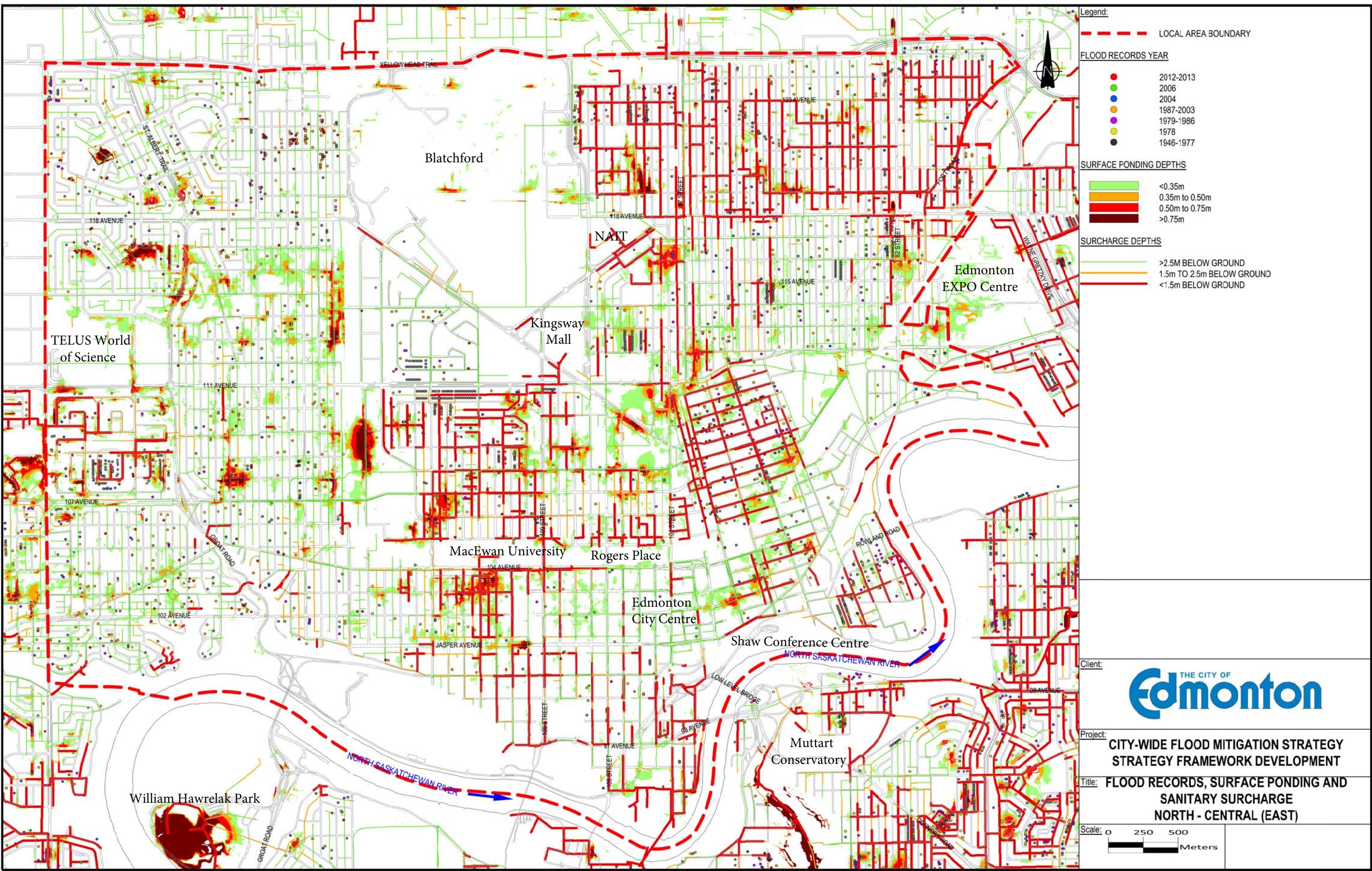
What are some of the next steps?

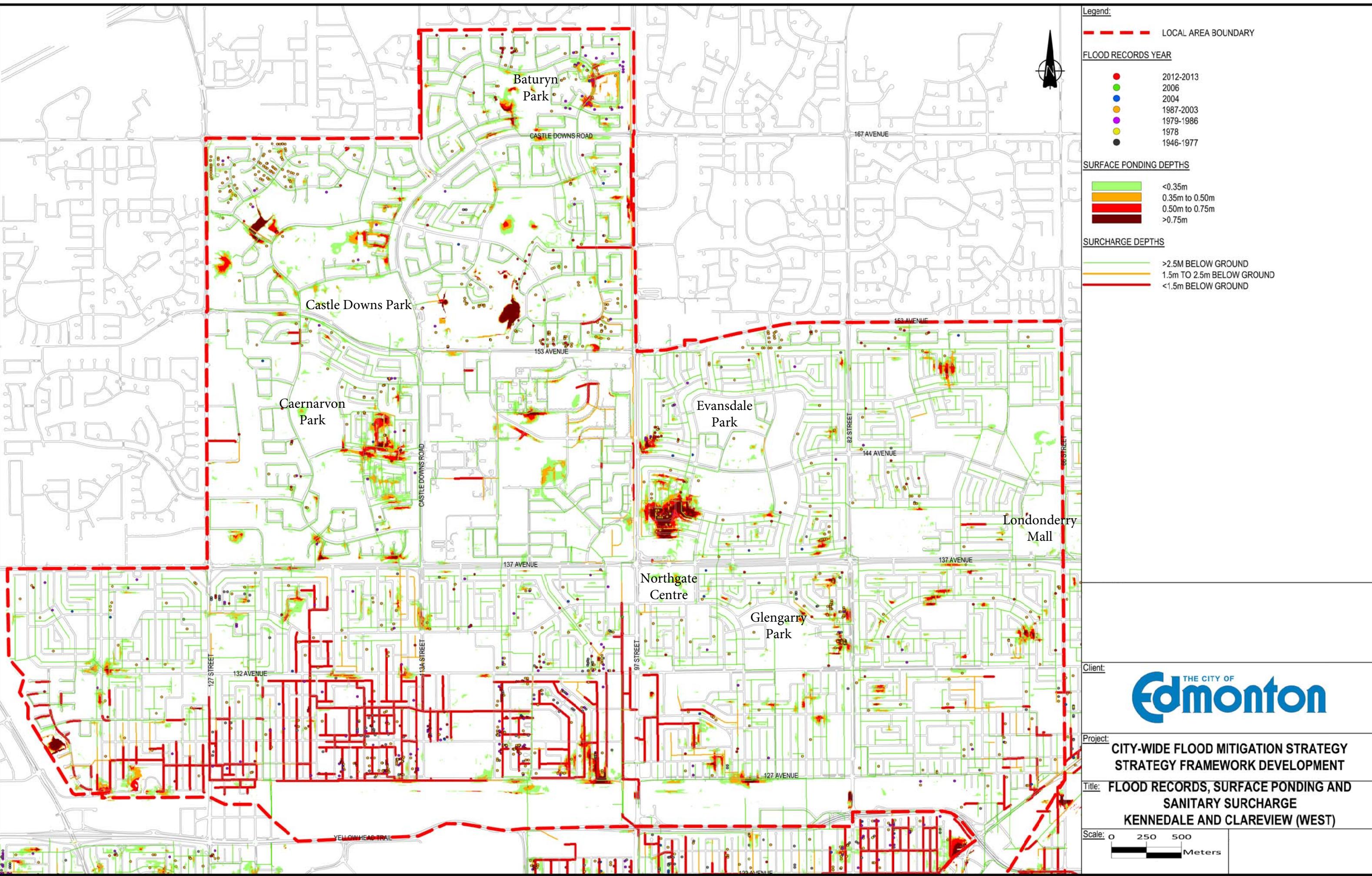
Key next steps include continued review and analysis to develop a number of alternatives to present to Council in the second quarter of 2017. Further work will continue after Q2 2017, when City Council will provide Administration with direction for how to proceed.

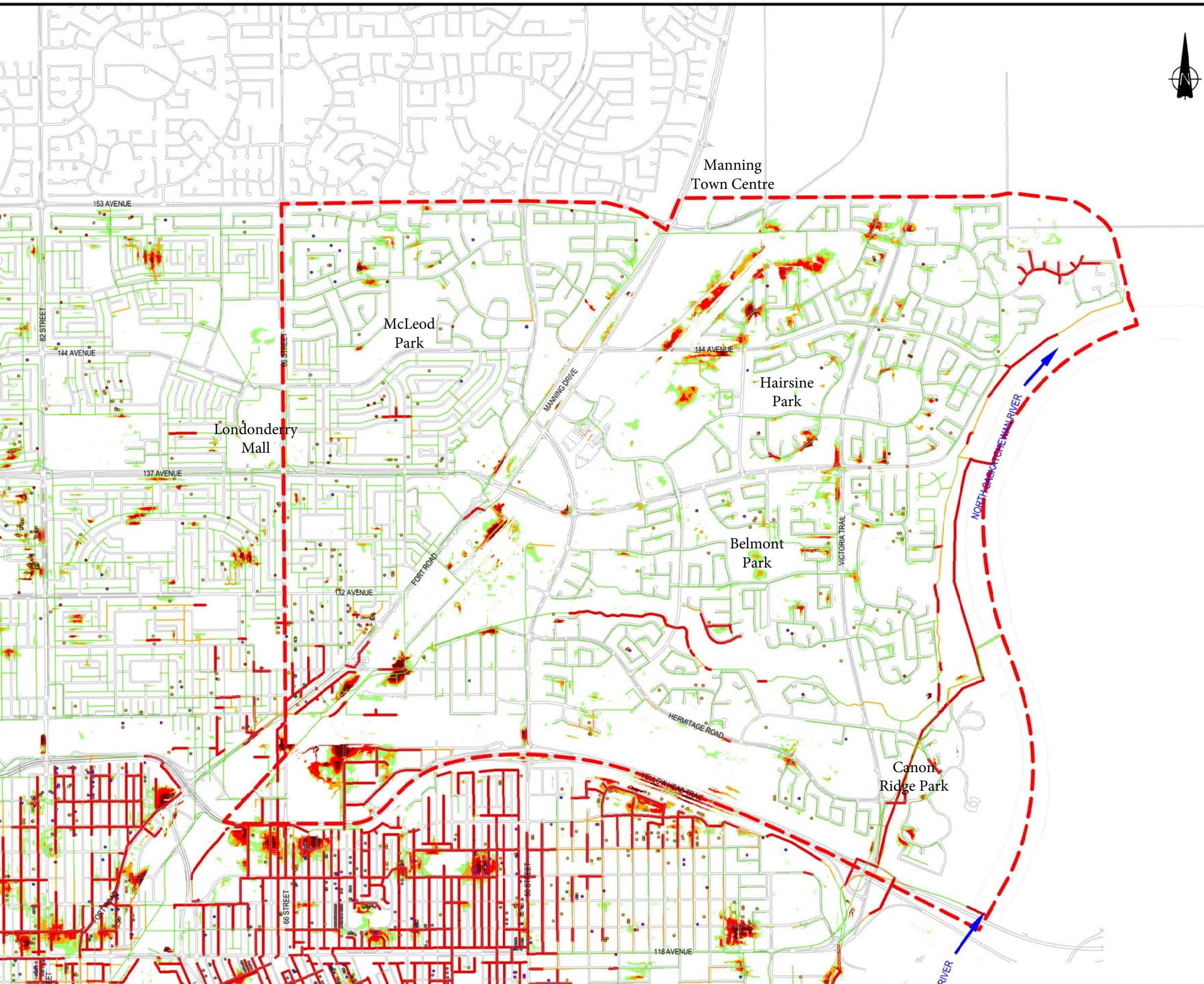
FOR MORE INFORMATION

Visit edmonton.ca/floodmitigation









Legend:

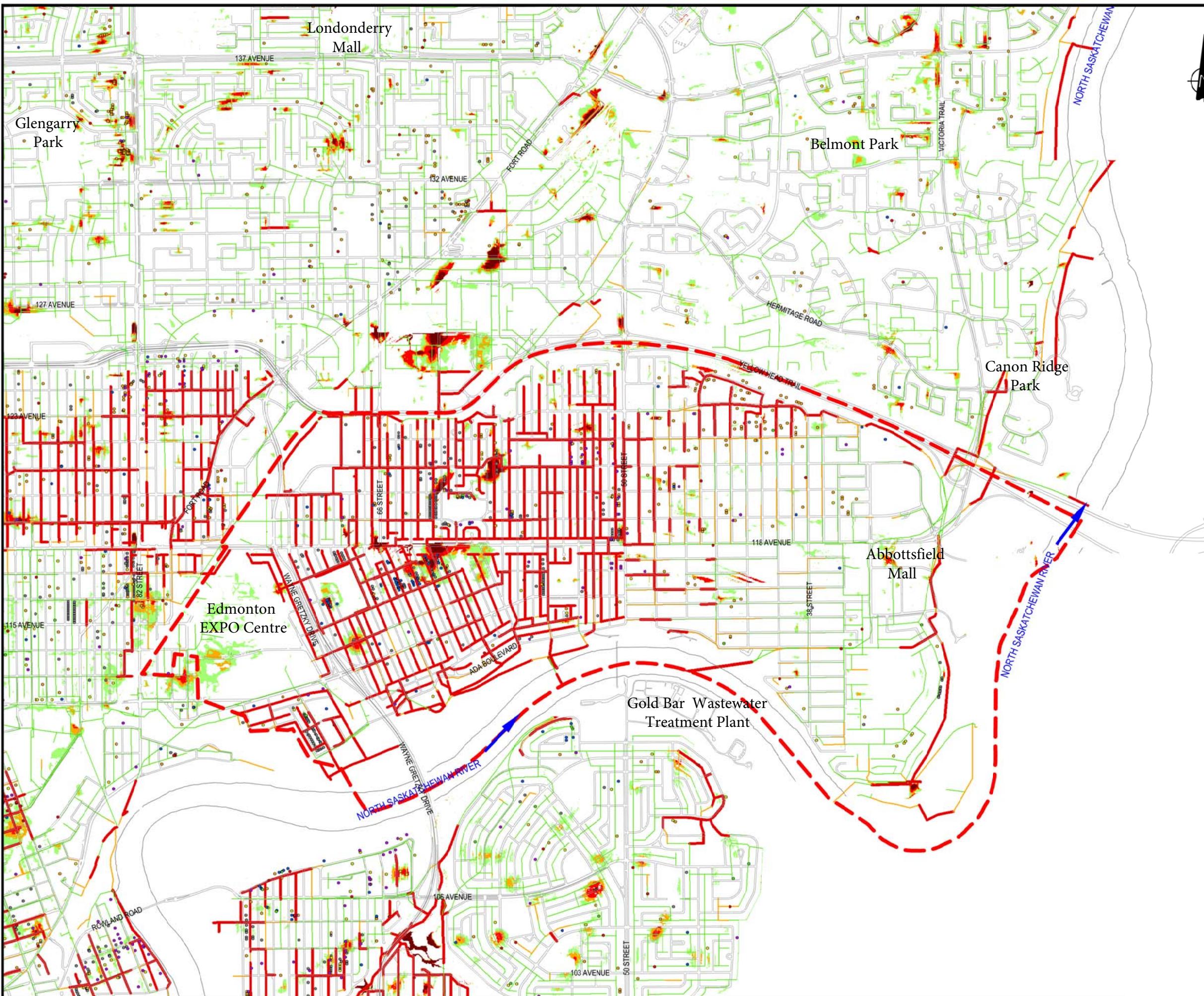
- LOCAL AREA BOUNDARY**: Dashed red line.
- FLOOD RECORDS YEAR** (dots):
 - 2012-2013 (red)
 - 2006 (green)
 - 2004 (blue)
 - 1987-2003 (orange)
 - 1979-1986 (purple)
 - 1978 (yellow)
 - 1946-1977 (black)
- SURFACE PONDING DEPTHS** (shaded areas):
 - <0.35m (light green)
 - 0.35m to 0.50m (yellow)
 - 0.50m to 0.75m (orange)
 - >0.75m (dark red)
- SURCHARGE DEPTHS** (lines):
 - >2.5M BELOW GROUND (light green)
 - 1.5m TO 2.5m BELOW GROUND (yellow)
 - <1.5m BELOW GROUND (orange)

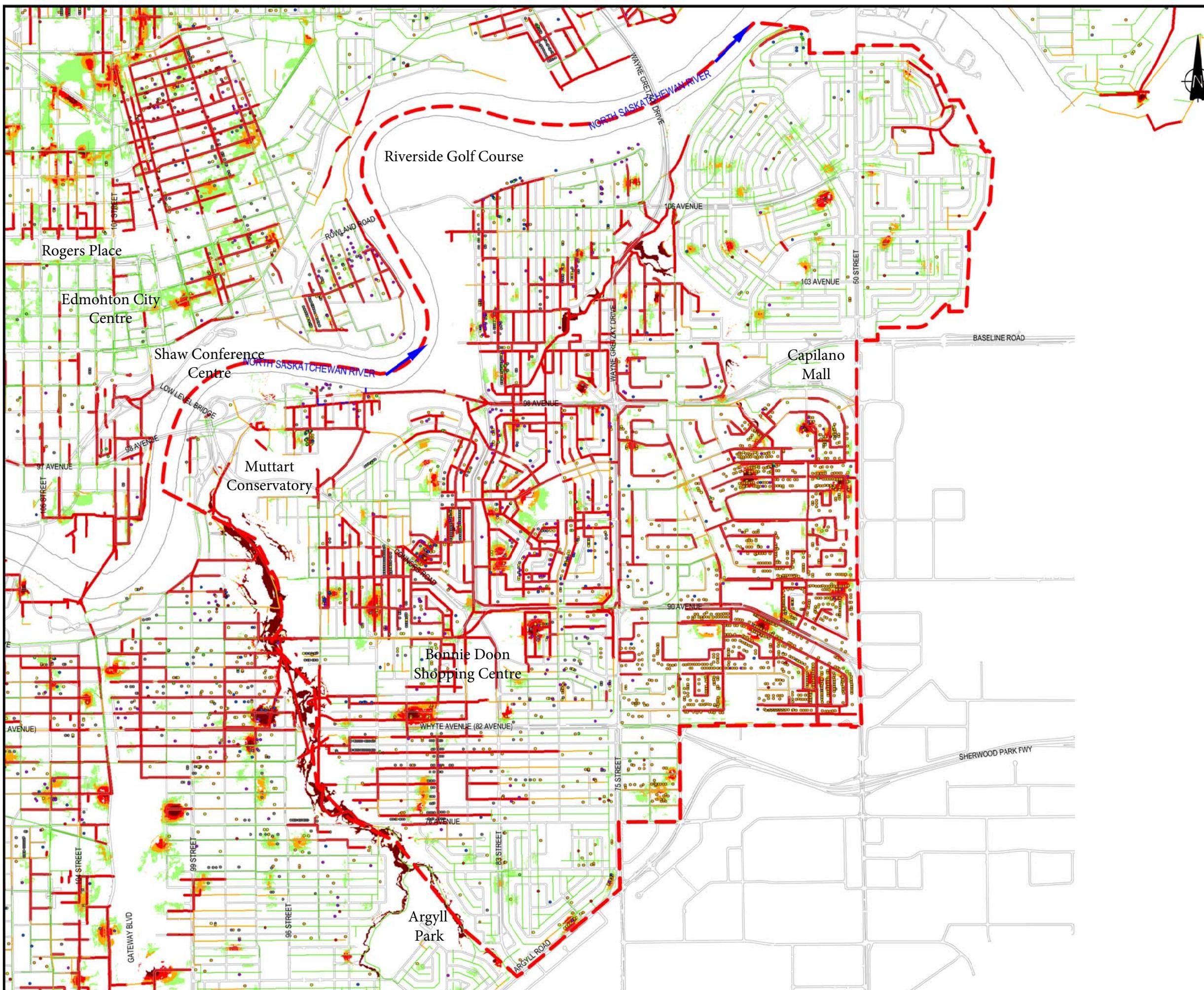
Client: THE CITY OF **edmonton**

Project: CITY-WIDE FLOOD MITIGATION STRATEGY
STRATEGY FRAMEWORK DEVELOPMENT

Title: FLOOD RECORDS, SURFACE PONDING AND
SANITARY SURCHARGE
KENNEDALE AND CLAREVIEW (NORTHEAST)

Scale: 0 250 500 Meters





Client: THE CITY OF **edmonton**

Project: CITY-WIDE FLOOD MITIGATION STRATEGY
STRATEGY FRAMEWORK DEVELOPMENT

Title: FLOOD RECORDS, SURFACE PONDING AND
SANITARY SURCHARGE
SOUTH - CENTRAL (NORTHEAST)

Scale: 0 250 500 Meters

