Markham Village & Unionville Flood Mitigation Study

General Committee Meeting
October 18, 2021

Agenda

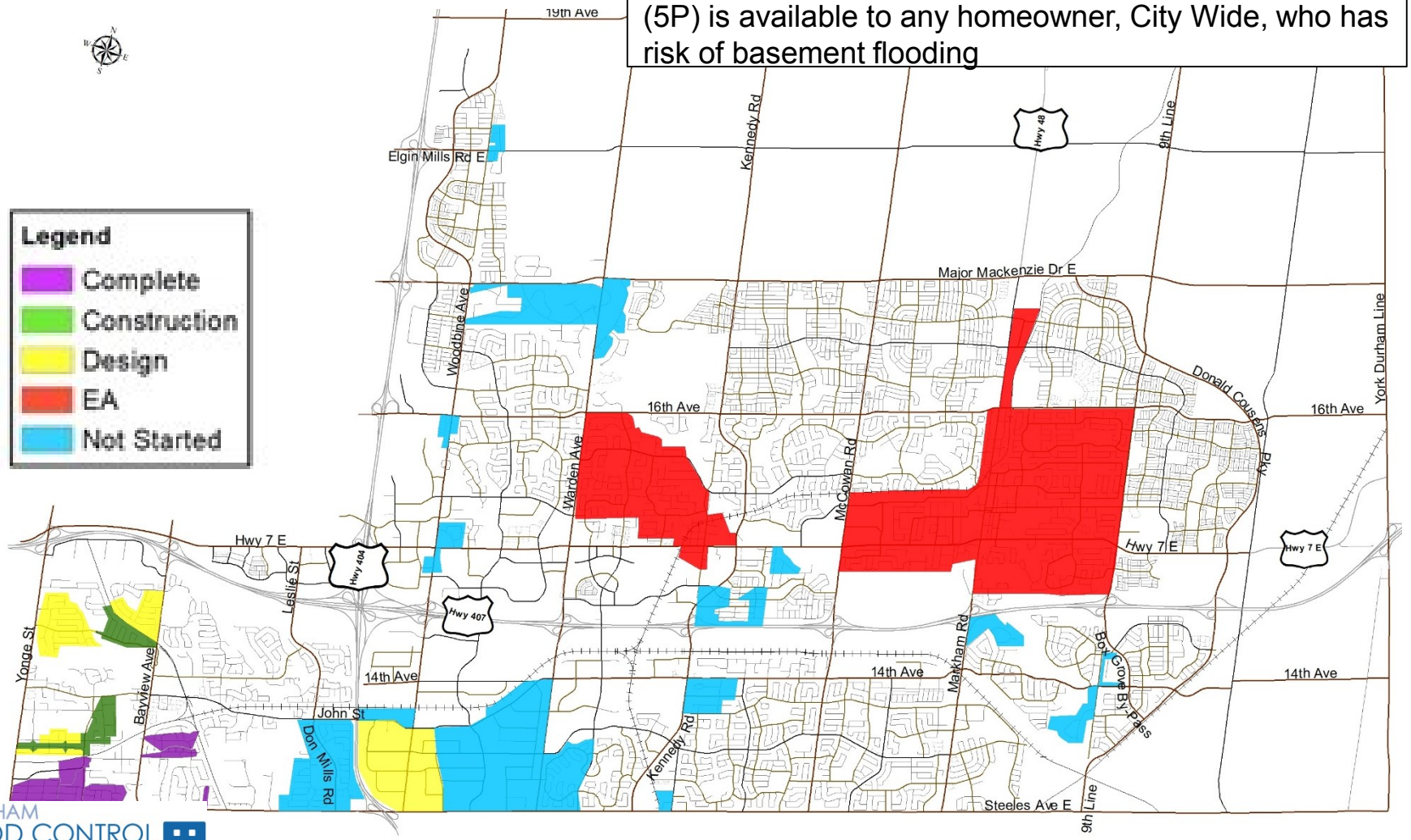
- Background – Flood Control Program
- Markham Village and Unionville Flood Control Study Findings
- Next Steps – Project Implementation
- Questions raised by residents at the Public Meeting #2 on June 24, 2021 (thru zoom)
- Anticipated Activities during Construction
- Questions

Background – Flood Control Program

- In February 2013, Council approved a 30 year Flood Control Program, which provides funding to improve the level of service of our drainage systems
- The rate structure was updated in 2019. Current rates are:
  - Residential - $51 per year
  - Non-Residential - $28.50 per $100,000 current value assessment (CVA)
- West Thornhill and Don Mills Channel project implementation is ongoing, with anticipated completion of these projects in 2026 and 2029 respectively
- Markham Village and Unionville are the next areas to be implemented – the study for these areas was accelerated after the significant flooding that occurred in the summer of 2017
  - Study originally planned for 2027 was initiated in 2018

Background - Flood Control Project Status

Note: The Pilot Private Plumbing Protection Program (5P) is available to any homeowner, City Wide, who has risk of basement flooding



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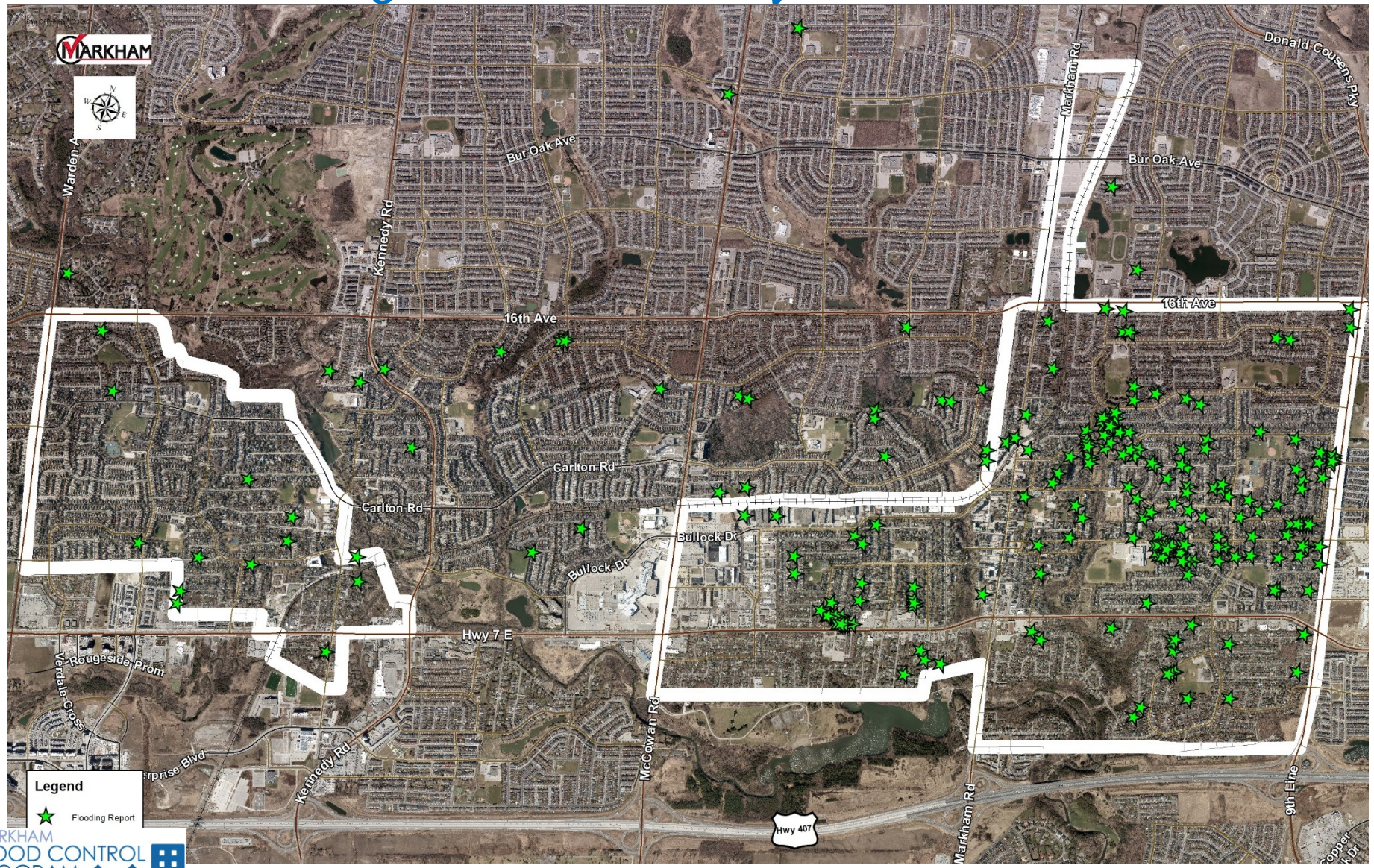
Markham Village/Unionville Study Area & Flood Records



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Causes of Flooding

- The area was developed prior to 1978, when the City's design standards were increased from a 5 year level of service to 100 year level of service.
  - When very large storm events occur, there is not enough capacity in the system, and it surcharges into basements

- Private plumbing systems require maintenance, which can cause basement flooding when not performed.

Proposed Solutions

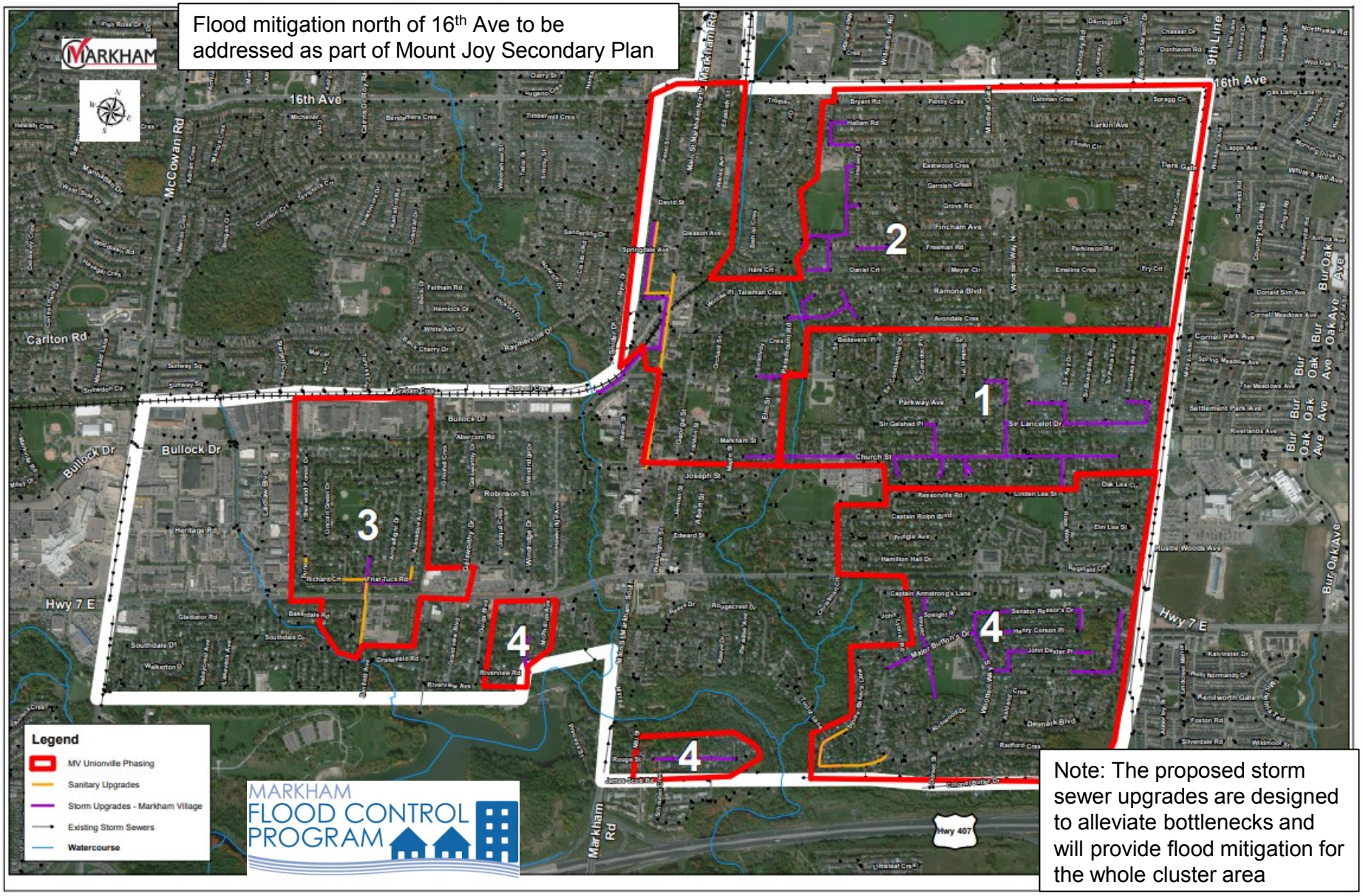
- Options for solutions include:
  - Sewer size upgrades
  - Storage facilities
  - Private Plumbing Protection

- Four project clusters have been identified
  - The timing and phasing of upgrades are to be prioritized based on **risk** and logistics associated with construction
  - Work is clustered based on combining work on individual drainage systems in the same location, and at similar risk levels
  - The clusters are numbered 1 to 4 based on high to low risk

- The Private Plumbing Protection Program will continue to be available for all homes within the study area

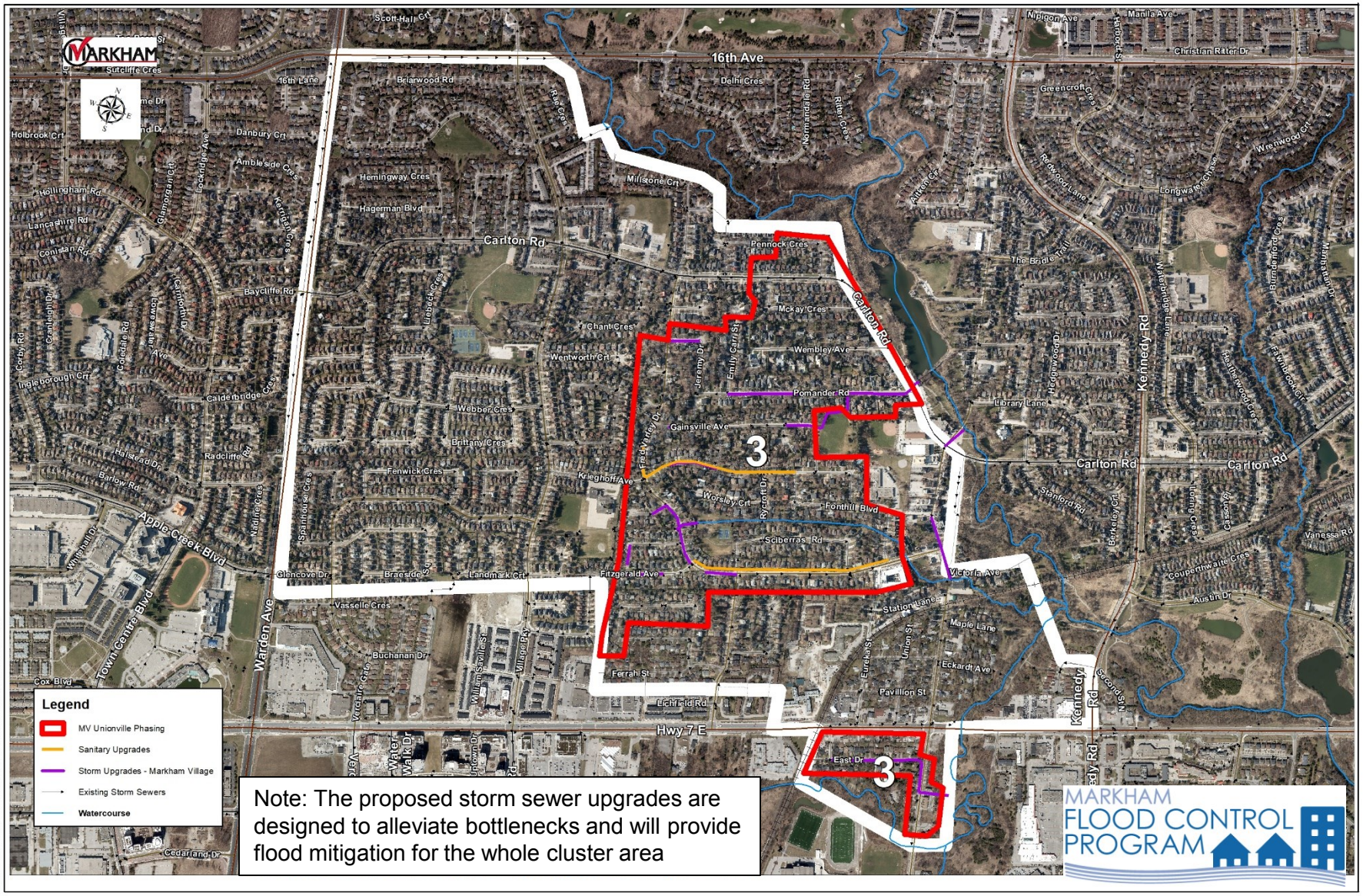
Project Clusters – Markham Village

Flood mitigation north of 16th Ave to be addressed as part of Mount Joy Secondary Plan



Note: The proposed storm sewer upgrades are designed to alleviate bottlenecks and will provide flood mitigation for the whole cluster area

Project Clusters - Unionville



Project Costs

Project Cluster #1 (Markham Village) – Church St. /Parkway Ave Area Drainage Improvements

- Diversion of Flow from Parkway Ave, Sir Lancelot Dr, Jack Crt, Jill Court, Rose Way to Church Street, and upgrade of Church Street System

Project Cluster #2 (Markham Village) - Ramona Blvd., Daniel Court/ Fincham Improvements

- Sewer Upgrades

Project Cluster #3 (Markham Village/ Unionville) - Main St., East Drive, Pomander Road, Gainsville, Fred Varley, Friar Tuck

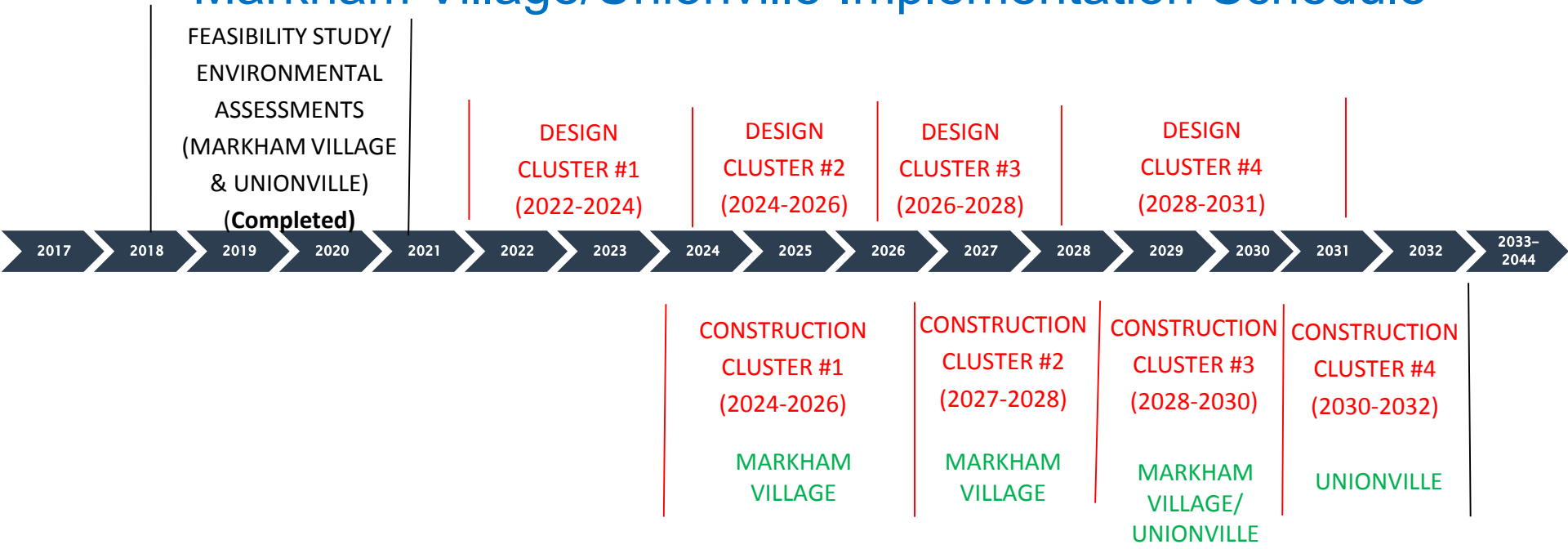
- Diversion of Emily Carr and Gainsville Ave to Pomander Street System, and upgrade of Pomander Street Sewer
- Optimization of Wembley Ave System
- Upgrade of Fred Varley System at Tuscay Court/ Markhaven Road, East Drive, Main Street

Project Cluster #4 (Markham Village) - Milne Lane, Rouge Street, Major Buttons/ Squire Bakers Lane System Improvements

- Upgrades of three systems

Total Estimated Storm upgrades Program Cost - $106.1M

Markham Village/Unionville Implementation Schedule



Note: Construction Sub-Phases within Clusters to be determined during Detailed Design (To be initiated in 2022)

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Outcome from the Public Meeting #2 - June 24, 2021 – thru Zoom

Questions raised at the PIC #2 on June 24, 2021

- Q1: Will recommended larger pipes discharge quicker causing flooding downstream?

  A1: Downstream watercourse capacity was modelled and adequate capacity is available. Also opportunities for storage will be evaluated at the detailed design stage.

- Q2: As York Downs has been developed, water goes into Unionville. As that development will be completed before this project work is done work, is there sufficient capacity south of the former golf course?

  A2: Development runoff is controlled with SWM ponds to prevent increases to flows to downstream areas.

- Q3: Will buildings developed in the Secondary Plan for Mount Joy absorb their runoff on-site to prevent flowing into creeks?

  A3: Developments are not permitted to increase flows to downstream sites and have to construct storage ponds to control runoff.

- Q4: Unionville and Markham Village have infill lots resulting in more pavement and less soft landscaping – will that impact runoff?

  A4: More hard surfaces increase flow, however proposed larger capacity pipes would reduce impacts.

Questions raised at the PIC #2 on June 24, 2021

- Q5: Storing water to prevent flooding in mature areas where there are no ponds, can water be stored in a pipe?

  A5: Areas like Unionville where ponds cannot be constructed, increased pipe capacity is required and can store and convey stormwater.

- Q6: A Homeowner's basement was flooded in 2017 and water came from an infill built above grade with compacting ground.
  - *Runoff drains straight into their basement and so resident built a swale so water flows away from house and to the road, at considerable expense.*
  - *Has there been extreme rain similar to 2017, and how frequently does it occur?*

  A6: July 2017 storm was a rare storm approaching a 100-year event, and that this represents the statistical probability of the event
  - *Does not mean it occurs once in 100 years. For example, in July 2018 a very large storm also occurred, but with limited flooding reported.*

Questions raised at the PIC #2 on June 24, 2021

- Q7: The Fonthill Creek culvert is 6 feet high and flows full with flooding going into gardens – why is this not in the flood improvement area? Is putting more water into pipes into creek a good idea?

  A7: Fonthill Creek is a challenging system. Proposed works will not increase flow as this are is recognized as a sensitive creek.
  - *Local sewers are already shallow so there are limited upgrades that can be considered*
  - *Increasing sewer size will result in shallower pipes not having sufficient depth for frost protection.*

- Q8: Is Fonthill Creek regularly checked, given the residents throw leaves and branches on the side of creek that can block the creek?

  A8: Staff will expand the current watercourse inspection maintenance program to include priority watercourses for debris identification/ blockage removal from 2022

Questions raised at the PIC #2 on June 24, 2021

- Q9: A homeowner with a creek in his backyard, noted that nobody comes down to "clean the creek" at any time. Downstream areas can dam up.
  - Will the 1800 mm sewer pipe on Church Street discharge into Exhibition Creek?
  - An immediate neighbor has in the last 10 years had 3 to 4 major floods overflowing creek and flooding into the basement.
  - Trees are across the stream and logs can dam up the new Tuclor Lane culverts – nobody complains because water makes it through or over the culverts.

  A9: Yes, 1800 mm pipe discharges into Exhibition Creek
  - *Staff will expand the current watercourse inspection maintenance program to include priority watercourses for debris identification/ blockage removal from 2022*

- Q10: Areas that are being redeveloped have sump pumps running constantly

  A10: Sump pumps are picking up groundwater from weeping tiles due to deeper basements

Questions raised at the PIC #2 on June 24, 2021

- Q11: Is the scope of work in West Thornhill greater than this project? Will we be 'tearing up' whole streets similar to pictures in West Thornhill showing major pipes?

  A11: Areas like Church Street (1800 mm dia.) sewer upgrade will result in major disruption and road closures. In other areas with smaller 900 to 1200 mm dia. pipes the road will be closed but with less disruption.
  - *Based on West Thornhill construction, residents can expect 'unsightly' signage, typical construction safety cones, and fencing around trees*
  - *One side of street will be open always for emergency services*
  - *Sometimes excavation in front of driveway will inconvenience residents who will have to park in other areas temporarily*
  - *Materials may be piled locally and large construction equipment remains parked on-site*

- Q12: Is there feedback from residents based on the experience in West Thornhill?

  A12: Work is well received, with eight (8) projects have been completed to date. Two (2) are in progress
  - *Roads are partially closed for a year; however, people are supportive of the work*
  - *During storms in areas after upgrades, no flooding has been experienced.*

Questions raised at the PIC #2 on June 24, 2021

- Q13: Will there be inspections of properties to document conditions prior to construction?

  A13: Pre-construction inspections will be offered to homeowner free of cost
  - *Carried out in advance by the contractor to record existing conditions including inside the homes, where access is granted.*
  - *Vibration monitors will be in place 24-hours a day to monitor construction vibration so that vibration levels are within code limits*

- Q14: Can timelines of 2028 to 2030 for Unionville be moved forward?

  A14: Given the size of projects and need to maintain traffic flow, construction cannot be carried out everywhere at the same time
  - *Work is prioritized in the highest risk area first*
  - *Original 12-years construction period has been compressed to a 9-years period with some concurrent work to advance the schedule.*

- Q15: What actions are expected from residents?

  A15: Apart from participation in the private plumbing protection program, residents' patience is requested throughout the construction stage

- Q16: What kind of feedback is expected from residents?

  A16: Staff encourages resident to call the City to report if they had flooding in the past so that model results can be verified and to address operational issues (e.g., blockages)

Anticipated Activities during Construction

Typical Storm Sewer Installation

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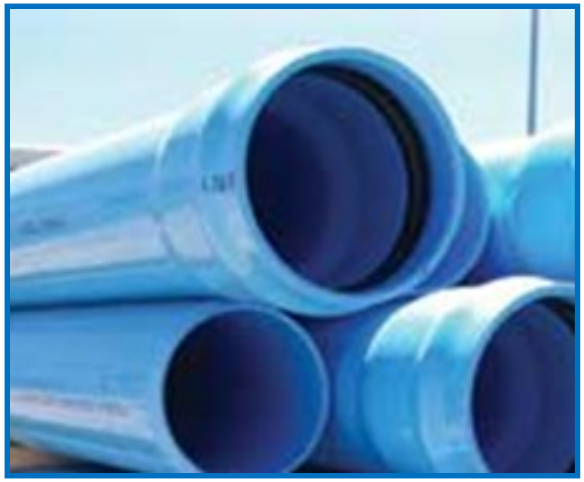
Cast Iron Watermain and Sanitary Sewer Replacement

- City identified need to replace :
  - Several Cast iron watermains, and
  - Some Sanitary Sewer segments

  in conjunction with storm sewer replacements.



Watermain Replacement

- Replace existing cast iron watermain with a new PVC watermain
- All services to property line shall be replaced
- Replacement will generally be in a new alignment
- Final service switchover will generally take 3-4 hours, minimizing disruption to residents

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Temporary Water Shut-offs

- Water shut-offs may be required during construction to transfer water supply to relocated watermains.
- Shut-offs will typically be 3-4 hours in duration.
- Affected residents will be given 48 hours notice.

Managing Traffic During Construction

- Roads will closed for through traffic, and only local traffic will be allowed
  - Residents will be able to access their driveways at all times although there may be delays during working hours
  - Access for emergency vehicles will be maintained
  - Provisions will be made for collection of solid waste and recycling materials

Driveway Access During Construction

- Some temporary disruption to driveway access should be expected during working hours, in the active construction area.
- Roadway will be restored at the end of each working day to restore driveway access.
- Street parking restrictions will be waived to allow temporary street parking if required (e.g., during construction of new concrete curbs).

Controlling Noise, Dust, Mud and Sediment

- **To mitigate impacts of noise, dust, mud and sediment washoff, the contractor is required to:**
  - Adhere to Markham's noise by-law (work hours, sound levels);
  - Limit dust by applying water and dust suppressants;
  - Limit mud by street sweeping;
  - Adhere to the sediment and erosion control plan in the construction contract.

Maintaining Public Services

- Fire and Emergency services will be notified of road closures - One side of street will be open always for emergency services
- Solid waste collection will be co-ordinated with the Contractor.
- School bus service will be maintained during construction but will be re-routed if required.

Pre-Construction Home Inspection

- Pre-construction home inspection survey will be offered free of charge to homeowners adjacent to construction to provide a record of conditions prior to construction

- Covid-19 H&S protocols will be followed

Protecting Trees / Tree Pruning

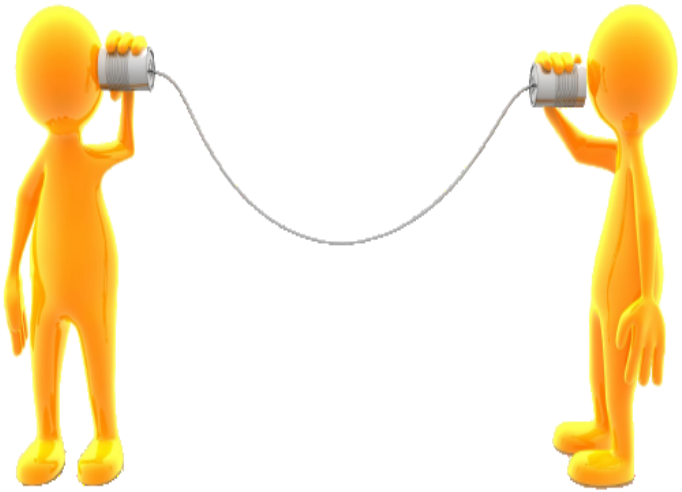
- Trees along the construction area will be protected from damage by construction equipment with fencing, according to City standards.
- Tree removal along the sewer alignment will be avoided to the extent possible.
- Tree pruning along work areas is required to facilitate construction. Pruning will be supervised by a certified arborist and will be done in accordance with the City's requirements.

Traffic Impact

- Roads will be closed for through traffic and only local traffic will be allowed

Communication Plan

- Regular communication from the City to residents/businesses in the area (city website)
- Issue escalations to the local Ward Councillor
- Construction notices
- Advanced notification of access closure and disruption of services to residents
- Designated contact person
- 24-hour emergency service



Questions