

#### TATHAM ENGINEERING

### **Public Information Centre**

Lakewood Drive Reconstruction



November 9, 2023

# 17

### AGENDA

- Project Contacts
- Project Location
- Project Communication
- Reconstruction Justification
- Stormwater Study
- Proposed Design
- Resident Impact
- Project Schedule
- Questions and Comments

### **Project Contacts**

### **Project Contacts**





### Michael Campbell, C.E.T.

Senior Infrastructure Capital

**Project Coordinator** 

519-599-3131 x275

cc@thebluemountains.ca

Mark Figueroa, P.Eng.

**Project Manager** 

705-444-2565 x2142

mfigueroa@tathameng.com

### **Project Location**

Tatham Engineering 6

### **Project Location**



### **Project Communication**



### **Resident Engagement: Engineering Phase**

- Preliminary project notification letter from Town (February 2022)
- Town project webpage published March 2022 with regular updates (Ongoing) <u>www.thebluemountains.ca/LakewoodDriveReconstruction</u>
- Email updates for residents on mailing list (Ongoing)
- Public Information Centre (November 2023)

### **Resident Engagement: Construction Phase**

- Printed pre-construction newsletter will be circulated detailing:
  - Site access
  - Safety
  - Garbage, recycling and compost collection
  - Mail delivery
  - Construction schedule
- Tatham Engineering Construction Inspector on-site with the Contractor at all times during construction
  - Liaison between Residents, Contractor, Town and Tatham Engineering Project Manager/Contract Administrator
- Town Senior Infrastructure Capital Project Coordinator on-site multiple times per week
- Regular updates on Town project webpage
- Printed notices will be delivered on an as-needed basis for water service interruptions

### **Reconstruction Justification**

### Water Servicing

- Existing watermain is 75 mm or 3" diameter
- Town standard is 150 mm or 6" minimum diameter

#### Watermain replacement will:

- 1. Facilitate fire protection with increased water supply and installation of fire hydrants at spacing in accordance with Town standards
- 2. Improve overall system reliability
- 3. Decrease system maintenance

### **Sanitary Sewer Servicing**

• Existing sanitary sewer is failing in several areas as identified in closed circuit television video



Sagging Pipe





Damaged Pipe

**Displaced Joint** 

Lakewood Drive identified as having elevated inflow and infiltration volumes in a 2014 study

Wastewater servicing improvements will:

- 1. Decrease likelihood of sewer backups
- 2. Reduce inflow and infiltration into the sanitary sewer
- 3. Decrease system maintenance

### **Service** Issues

- Adjacent properties may have shared water and sanitary services in the road allowance before splitting into individual services at the edge of the road allowance
- The Town standard is one dedicated water and sanitary service per lot, which would be implemented in the reconstruction



 Work may be required on private property to rectify these issues, which would be the responsibility of the property owner

### **Service Issues**

- Legal lot fabric has changed since the original plan was registered in the 1970s (lots have been severed and combined in some cases)
- Some services may no longer be along the property frontage and there may be more services than properties



- Reconstruction will ensure one water and one sanitary service per lot along the lot frontage
- Work may be required on private property to rectify these issues, which would be the responsibility of the property owner

### **Stormwater Study**

## **Study Purpose**

- Stormwater Study led by the Town at the request of the Shore Acres Property Owners Association (SAPOA)
- Stormwater Study was completed by Tatham Engineering
- Report issued to Public in August 2023
- Study intended to identify existing drainage deficiencies along Lakewood Drive and adjacent private properties, and provide solutions to address deficiencies

### Background

- Lakewood Drive constructed in the 1970s
- Appears to be various minor outlets for drainage to Georgian Bay but there are no records of property dedications (easements) for these outlets
- Flooding of properties is a concern where surface runoff from the road allowance flows across private property to Georgian Bay

## Methodology

Field Investigations



Topographic Survey

Delineate Drainage Catchments



Hydrologic Model (Quantify Runoff)



Hydraulic Analysis of Existing Infrastructure (Identify Deficiencies) Develop Alternative Solutions



Evaluate Solutions and Make Recommendations



Present Recommendations to Public

# Definitions

#### **Return Period**

- The average time between occurrences of a certain storm intensity
- For example, a 25-year storm occurs once every 25 years on *average*, meaning the storm could occur multiple times over a 25-year period, or never occur in a 25-year period

#### Minor System

Pipes, local ditches and outlets intended to safely convey the 5-year storm

#### Major System

- Overland flow routes, ditches and channels which safely convey the 100-year storm
- Not economical to design pipes to convey major flows

### **Hydraulic Criteria**

- Driveway Culverts: 5-year storm
- Local Roads (Lakewood Drive): 25-year storm
- Arterial Road (Highway 26): 100-year storm
- Combination of major and minor drainage systems: 100-year storm



### **Study Limits**

11



22 Tatham Engineering

### Area A

11



### Area A – Deficiencies





#### **Option A1**

- Redirect runoff to Area C instead of Area B
- Regrade Highway 26 ditch
- Install new culvert at Highway 26 & Lakewood Drive
- Regrade ditch in south boulevard to flow to Area C
- Remove road crossing culvert



#### **Option A2**

Construct ditch in north boulevard to direct flow to Area C

Area B

11



Tatham Engineering 27

### Area B – Deficiencies



Ponding between #182 and #184 and at rear of #184

Legal survey records show ditch and culvert draining to Georgian Bay

Drainage flowing across and ponding at the end of cul-desac driveways



#### **Option B1**

- #182 to #187 property owners grade defined, unobstructed side yard swales draining towards Georgian Bay
- #182 and #184 grade swales in rear yards to direct drainage to Georgian Bay



#### **Option B2**

Regrade cul-de-sac to direct overland flows to outlet adjacent to #185



#### **Option B3**

Install crossing culvert to direct flows to outlet adjacent to #185



#### **Option B5**

Remove existing culvert and construct new outlet channel for 100-year storm (easements are required for Town to maintain the drainage infrastructure on private property)

### Area C

11



Tatham Engineering 33

### Area C – Deficiencies



Crossing culvert undersized for 100-year storm

Lack of outlet channel to Georgian Bay from crossing culvert causing ponding



#### **Option C5**

- Remove crossing culvert and install two 600 mm culverts
- Regrade ditch in south boulevard
- Construct outlet channel along East limit of SAPOA beach property (easements are required for Town to maintain the drainage infrastructure on private property)



#### **Option C6**

Regrade ditch in south boulevard to flow west to outlet

### Area D



### **Area D – Deficiencies**



Outlet culvert deteriorated, undersized for 5-year storm and has obstructed outlet

> Flooding risk for properties #129 and #131



#### **Option D2**

 Remove outlet culvert and construct new 3 m wide outlet channel (easements are required for Town to maintain the drainage infrastructure on private property)



#### **Option D6**

 Regrade ditch in south boulevard to alleviate ponding

#### Deficiency

Many driveway culverts have blocked,

obstructed or buried inlets and/or outlets

#### Solution

Replace driveway culverts





#### Deficiency

Trees are growing in ditches and

restricting flow

#### Solution

Remove trees from ditches





# 11

#### Deficiency

Sections of roadside ditch have

local ponding issues

#### Solution

Clean out and regrade ditches





# 11

#### Deficiency

Several side yard swales have not been maintained and/or have been blocked with landscaping and trees which obstructs drainage



#### Solution

Reinstate defined, unobstructed side yard swales



Note: These improvements are on private property

### **Proposed Design**

### **Design Process**

- Topographic Survey
  - Capture existing features and elevations to serve as the basis for the design model
- Arborist Investigation
  - Assess the condition of existing trees and provide recommendation for their removal or protection during construction
- Geotechnical Investigation
  - Review subsurface conditions (rock depth, soil types, groundwater elevation, etc.) to ensure road and servicing design is appropriate and to develop a construction contract with minimal risks to the Town
- Stormwater Study
  - Identify drainage patterns, outlets and deficiencies and recommend upgrades to address deficiencies
- Road Design
- Watermain Design
- Sanitary Sewer Design
- Stormwater Drainage Design

### **Road Design**

- Remove and replace entire roadway, including asphalt and underlying gravel layers
- Two 3.5 metre travel lanes
- Gravel shoulders
- Ditches cleaned out to remove sediment and overgrowth of trees

### Watermain Design

- Install new 150 mm or 6" diameter watermain in the road allowance
- Replace 25 mm or 1" services to property line/edge of road allowance
- Add fire hydrants at maximum 100 m spacing
- Maintain 2.5 m minimum spacing from sanitary sewer required by MECP
- Provision for water servicing during construction while new watermain is being installed
  - Temporary above-ground watermain with individual services to each property OR
  - Maintain existing watermain and install new watermain along a new alignment

### **Sanitary Sewer Design**

- Install new sanitary sewer (size to be confirmed) and maintenance holes
  - Required pipe diameter to be confirmed with design calculations
- Replace 125 mm or 5" services to property line/edge of road allowance
- Temporary by-passes will be installed during construction and residents can use the sewer as they usually do
- Existing sewage pumping station and outlet forcemain do not need to be replaced
  - Originally installed in 2011
  - Standby power installed in 2021

### **Stormwater Drainage Design**

- Implement recommended solutions from the Stormwater Study if the residents choose to proceed with the local improvements, which include works within the road allowance and on private property
- What is a **local improvement**?
  - Infrastructure improvements (stormwater drainage in the case of Lakewood Drive) which benefit properties in a municipality
  - Costs are borne by the property owners (in a lump sum or yearly payments)
  - Property owners can petition to proceed with the works
  - Town staff will provide a deadline for residents to submit a petition (allows improvements to be incorporated in overall design before the design advances)
- The construction cost of the local drainage improvements would be in the order of \$850,000
  - Excludes engineering, materials testing and construction administration costs
  - Cost is in 2023 figures and will increase with inflation

### **Stormwater Drainage Design**

- If residents do not choose to proceed with the local improvements, the Town will implement the following in the road allowance during the reconstruction design:
  - Removal of trees grown into ditches
  - Roadside ditch reshaping
  - Replacement of driveway culverts
  - Upsizing culverts crossing the road

### **Resident Impact**

### **Construction Impact on Residents**

#### **Site Access**

- Road closed allowing local traffic only
- Emergency vehicle access will be maintained at all times
- Driveways may be blocked during construction for up to 24 hours
- Small excavations may be left open overnight and will be appropriately fenced and barricaded
- Excavations will be backfilled and access to all driveways will be restored for weekends and holidays

#### **General Disturbance**

- The nature of construction activity produces some unavoidable general disturbances
- Residents can expect elevated levels of noise, vibration and dust from construction activity
- A pre-condition survey of each property will be completed prior to construction

### **Construction Impact on Residents**

#### Garbage, Recycling and Compost Collection

- Same pick up day
- Residents can use the garbage enclosure system during construction as they normally would

#### **Mail Delivery**

- Canada Post will be notified before construction and access will be reviewed with them onsite
- Residents may need to pick up mail at the post office during construction

### **Project Schedule**

# **Project Timeline**

### 2022



### **Next Steps**

- Advance design to 90% complete in 2024
- Project removed from Town's 5-year capital plan and thus construction won't occur until 2028 or later

### **Questions and Comments**

### Written Comments

Residents can provide written comments to the presentation through the Town's website

Enhancing our communities