

# **Parklands at Mulock Drive and Bathurst Street Update – April 10, 2012**

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Public Presentation

Town of Newmarket

Tuesday, April 10, 2012

# History

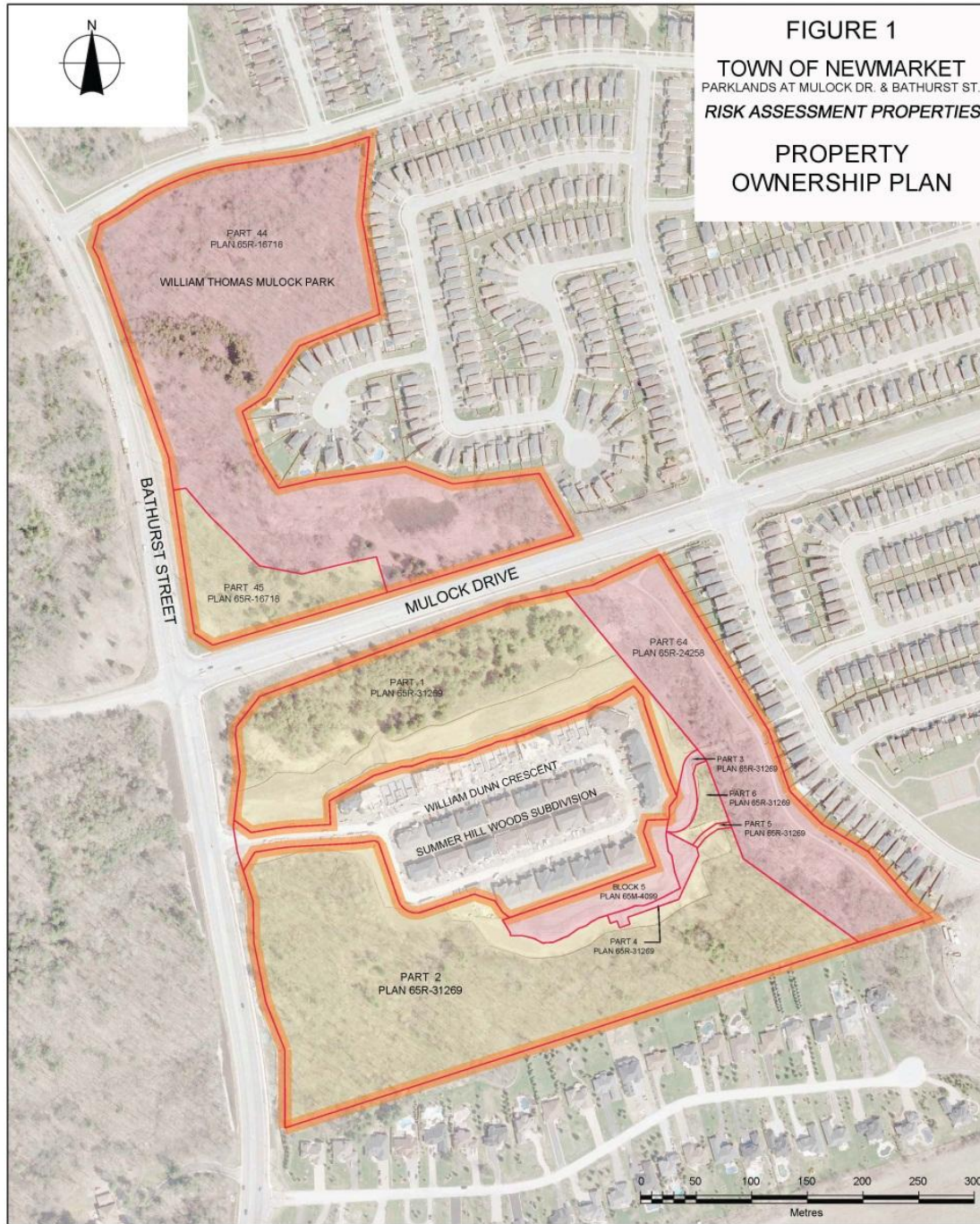
- The former Mulock farm covered a large area, including the lands in the vicinity of Mulock Drive and Bathurst Street
- A portion of William Thomas Mulock Park was acquired by the Town directly from the Mulock's
- Other lands were acquired by developers including Criterion Development Corporation.



FIGURE 1

TOWN OF NEWMARKET  
PARKLANDS AT MULOCK DR. & BATHURST ST.  
RISK ASSESSMENT PROPERTIES

PROPERTY  
OWNERSHIP PLAN



# Orchards and Pesticides

- Lands in the vicinity of Mullock Drive and Bathurst Street were used as orchards
- Lead arsenate pesticides were commonly used on orchards
- Over time residual lead and arsenic accumulated in the topsoil.

# Contaminants of Concern

- When developing the lands for residential subdivisions the topsoil was removed
- Testing of the topsoil revealed elevated arsenic and lead above the appropriate MOE generic standards
- Further study was conducted of both developed and undeveloped parcels.

## Study Results

- No concerns were noted in the developed portions of the subdivisions (soil met the criteria in place at the time of development)
- Concentrations of lead and arsenic above MOE generic criteria was noted in undeveloped areas
- The easiest clean-up would be to cut down the trees and remove the topsoil.

# Plan to Protect the Forest

- The Town, developers, and the public did not want to see the natural forest destroyed
- A Risk Assessment was undertaken to determine possible options to protect the forest while being protective of human health and the environment
- Intrinsik was retained to conduct the Risk Assessment.



# **A RISK ASSESSMENT OF THE FORMER MULOCK FARM PROPERTY, NEWMARKET, ONTARIO**

Presentation to the Committee of the Whole, Town of Newmarket

October 31, 2011



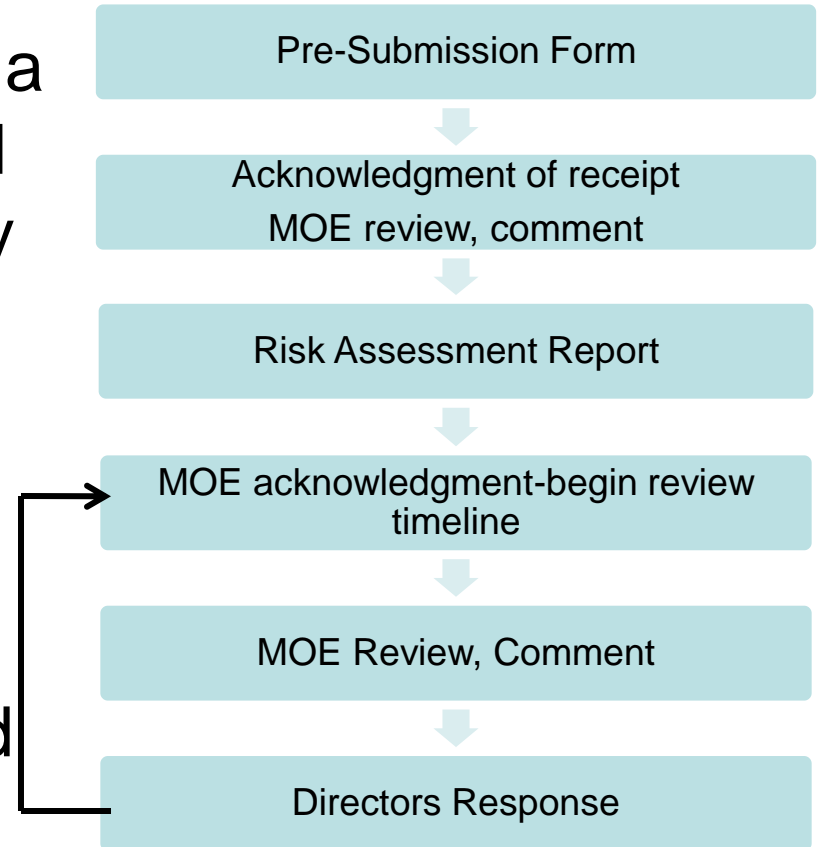
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# Risk Assessment

- The Ministry of Environment Generic Standards are created by following a Risk Assessment process
- The Generic Standards (i.e. 17 ug/g) for arsenic in soil, is based on calculating the risk at any site across the province
- Site Specific Standards are generated following the MOE Risk Assessment process, based on the exact conditions and land use of a specific property
- In this case the Site Specific Standards developed through the Risk Assessment were higher than the Generic Standards (58 ug/g for arsenic).

# What is the Risk Assessment Process in Ontario?

- A Risk Assessment follows a standard approach dictated by O. Reg. 153/04 (recently amended)
- All risk assessments are reviewed by the MOE Standards Development Branch
- The process is iterative and always requires several rounds of edits.



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# Scenarios and Pathways

- A long-term outdoor maintenance worker
- A construction worker
- An on-site resident (although land is parkland)
- An off-site resident
- A parkland visitor
  - Adults and children using the trail
  - Children spending time off the trail in the wooded area.

# Final Property-Specific Standards for Chemicals in Groundwater (µg/L)

<b>COC</b>	<b>Maximum Groundwater Concentration</b>	<b>Table 1 Site Condition Standard</b>	<b>Property-Specific Standard</b>	<b>Basis of Property-Specific Standard</b>	<b>Risk Management Requirement<sup>a</sup></b>
Barium	96	NV	1,000	2009 Table 8 Site Condition Standard	No
Lead	1.21	1	10	2009 Table 8 Site Condition Standard	No
Chloride	300,000	NV	790,000	2009 Table 8 Site Condition Standard	No
Sodium	37,000	NV	41,000	Maximum Concentration + 10% (protective of direct contact for on-site aquatic VECs)	No

# Final Property-Specific Standards for Chemicals in Soil (µg/g)

	<i>Maximum Soil Concentration</i>	<i>Table 1 Site Condition Standard</i>	<i>Property-Specific Standard</i>	<i>Basis of Property-Specific Standard</i>	<i>Risk Management Requirement</i>
Arsenic	143	17	58	Lowest PSS protective of direct soil contact for parkland visitor	No (targeted soil remediation required prior to filling of RSC)
Boron	0.77	NV	1.5	2009 Table 2 Site Condition Standard	No
Lead	422	120	460	Maximum concentration + 10% (protective of plants, soil invertebrates and birds)	No
DDD	0.024	NV	0.026	Maximum concentration + 10% (protective of birds)	No
DDE	0.44	NV	0.48	Maximum concentration + 10% (protective of plants and soil invertebrates)	No

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# Current Status

- Risk Assessment took longer than expected, as the MOE issued O.Reg. 511/09 as an amendment to O.Reg. 153/04, part way through the process
- On October 13, 2011, MOE approved the Risk Assessment of the Former Mulock Farm Property
- MOE currently drafting a Certificate of Property Use (CPU)
- Targeted remediation (soil removal) is required for those areas exceeding the Site Specific Standards
- Once remediation is complete, a Record of Site Condition (RSC) will be filed.

# Certificate of Property Use (CPU)

- CPU is registered on title
- Restricts the use of a property
- A draft is posted on the Environmental Bill of Rights (EBR) website for 45 days (March 15 to April 29) to solicit public input.

# CPU Components

- CPU is broken down into sections:
  - Part 1: Interpretation
  - Part 2: Legal Authority
  - Part 3: Background
  - Part 4: Director Requirements
  - Part 5: General
  - Part 6: Hearing before the Environmental Review Tribunal.



## **Part 4: Director Requirements**

- Risk management measures include:
  - a. Maintain current parkland configuration
  - b. Develop a Soil Management Plan
  - c. Develop a Site Specific Health & Safety Plan
  - d. Prepare a Site Plan after remediation
  - e. Implement an Inspection and Maintenance Program
  - f. Maintain records.

# CPU Requirements

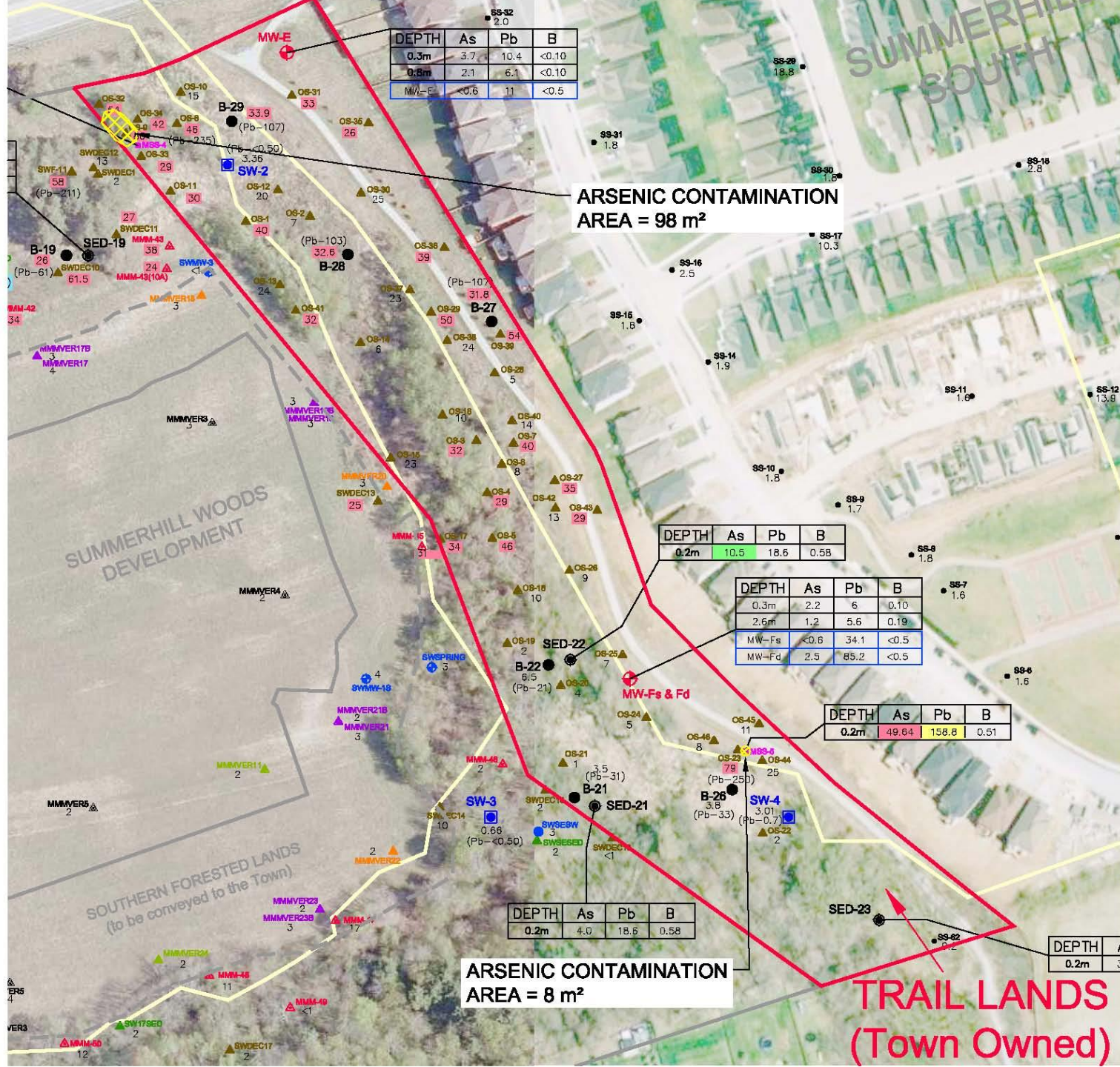
- Risk Management measures to be maintained indefinitely until the Director alters or revokes the CPU
- Property must be maintained as parkland
- The Soil Management Plan outlines the handling of soil during any maintenance activities
- The Site Specific Health & Safety Plan outlines the protocols to be followed during any activity involving the site soil.

# Contaminants of Concern (COC)

- The only COC with concentrations at some locations exceeding the Property Specific Standard is arsenic in soil
- Property Specific Standard developed by the Risk Assessment for arsenic is 58 ug/g.

# **Exceedances of the Property Specific Standard**

- Southern Forested Lands – none
- Trail Lands – two small locations
- Northern Forest Lands – two areas
- William Thomas Mulock Park – two areas.



DEPTH	As	Pb	B
0.3m	3.7	10.4	<0.10
0.6m	2.1	6.1	<0.10
MW-E	<0.6	11	<0.5

**ARSENIC CONTAMINATION AREA = 98 m<sup>2</sup>**

DEPTH	As	Pb	B
0.2m	10.5	18.6	0.58

DEPTH	As	Pb	B
0.3m	2.2	6	0.10
2.6m	1.2	5.6	0.19
MW-Fs	<0.6	34.1	<0.5
MW-Fd	2.5	85.2	<0.5

DEPTH	As	Pb	B
0.2m	49.64	158.8	0.51

DEPTH	As	Pb	B
0.2m	4.0	18.6	0.58

**ARSENIC CONTAMINATION AREA = 8 m<sup>2</sup>**

DEPTH	A
0.2m	3

**TRAIL LANDS (Town Owned)**



**TOWN OWNED LAND  
WILLIAM THOMAS MULLOCK PARK  
ENVIRONMENTAL PROTECTION AREA**

**ARSENIC CONTAMINATION  
AREA = 915 m<sup>2</sup>**

**ARSENIC CONTAMINATION  
AREA = 1,311 m<sup>2</sup>**

DEPTH	As	Pb	B
0.2m	3.6	22.5	0.4

DEPTH	As	Pb	B
0.2m	12.3	56.3	0.45

DEPTH	As	Pb	DDD	DDE	DDT	B
0.2m	72.2	268	0.024	0.44	0.12	0.44
0.55m	39.3	145	<0.005	0.12	0.059	0.26

DEPTH	As	Pb	DDE	DDT	B
0-0.1m	23.72	70.64	0.026	0.021	0.77

As	Pb	B
4.0	27.9	0.58

As	Pb	B
39	110	0.16

H	As	Pb	B
m	1.3	4.0	<0.10
γ	1.6	5.9	0.16
A	1.74	74.1	<0.5

H	As	Pb	B
m	15.2	56.2	0.15

DEPTH	As	Pb	B
0.2m	9.0	33.7	0.25

DEPTH	As	Pb	B
0.2m	6.6	21.7	0.25

DEPTH	ARSENIC	LEAD	DDE	DDT	B
0.2m	25.6	67.9	0.024	0.018	0.29
0.55m	-	-	0.047	0.02	-

DEPTH	As	Pb	DDD	DDE	B
0-0.2m	22.6	44.6	0.013	0.11	0.27
0.65m	6.1	37.4	<0.005	0.039	0.36

DEPTH	As	Pb	B
0.3m	6.5	22.4	0.31

DEPTH	As	Pb	DDD	DDE	DDT	B
0-0.2m	5.3	15.4	<0.005	0.024	<0.005	0.26

DEPTH	As	Pb	B
0.2m	98.9	247	0.25
0.55m	29.3	82.3	<0.10

DEPTH	As	Pb	B
0.3m	85.64	261.16	0.54

DEPTH	As	Pb	DDD	DDE	DDT	B
0.25m	14.1	38.5	<0.005	0.055	0.007	<0.10
2.6m	0.8	2	<0.005	<0.005	<0.005	<0.10

MW-B	As	Pb	B
	0.76	18.9	0.98

DEPTH	As	Pb	DDE	DDT	B
0-0.2m	28.18	66.96	0.005	<0.005	0.12

DEPTH	As	Pb	B
0-0.2m	31.7	76.6	0.22
0.55m	11.2	66.4	0.25

DEPTH	As	Pb
0.3m	3.7	10.4
0.6m	2.1	6.3

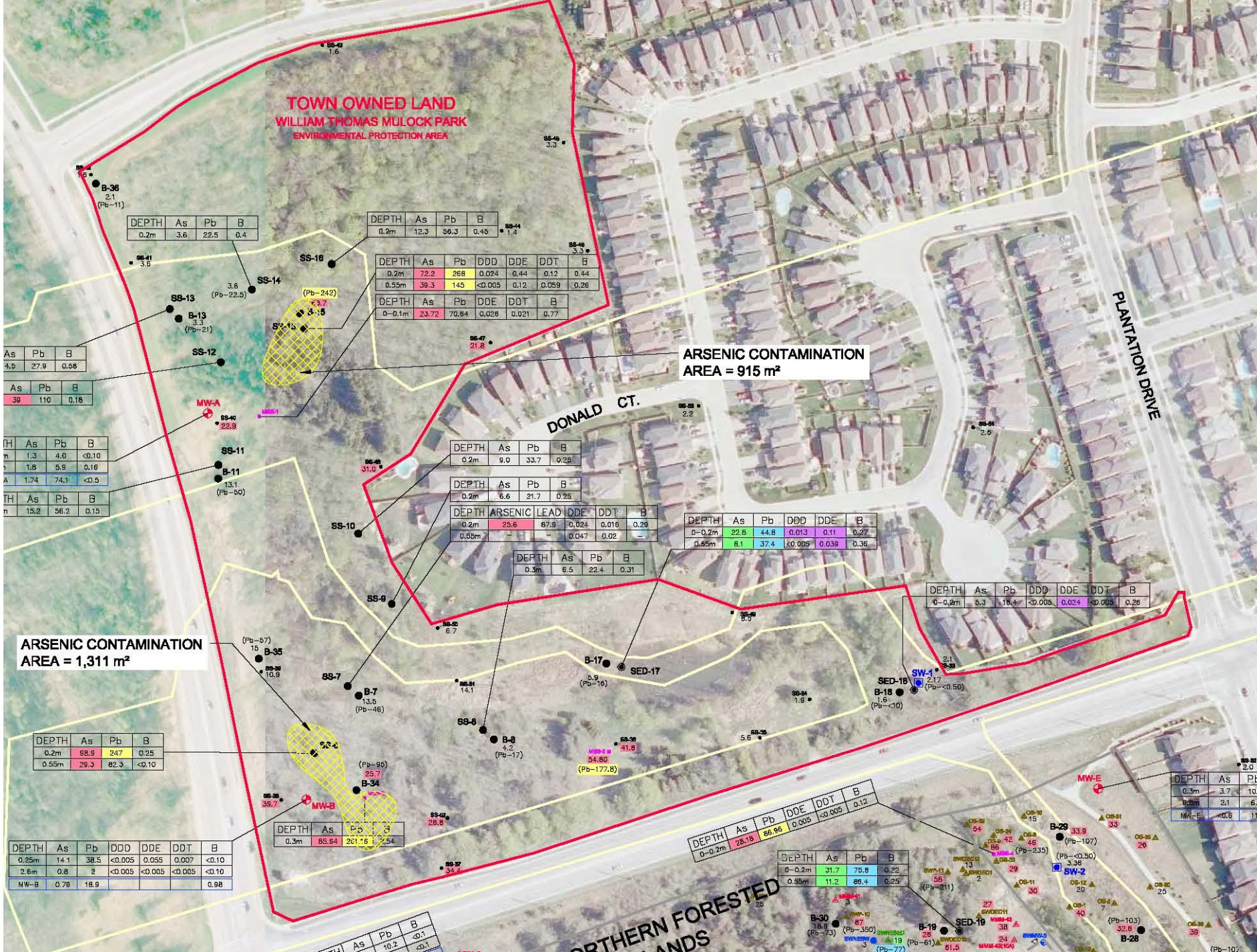
  

MW-E	As	Pb	B
	<0.6	11	

**NORTHERN FORESTED  
LANDS**

**PLANTATION DRIVE**

**DONALD CT.**



# Remediation

- Arsenic is in the topsoil
- Topsoil ranges from 0.2 m to 0.3 m thick
- Most practical method is selective removal and replacement.



## Next Steps

- Await the final CPU from the MOE following the 45 day EBR posting
- Prepare the Soil Management Plan and Site Specific Health & Safety Plan as required
- Remediate the identified areas
- Maintain lands as per the requirements of the CPU.



FIGURE 2

TOWN OF NEWMARKET  
PARKLANDS AT MULOCK DR. & BATHURST ST.  
RISK ASSESSMENT PROPERTIES

REMEDATION PLAN

