



WE ARE A PLACE WHERE PEOPLE ARE WELCOMED AND WANT TO BE



TOGETHER WE ARE MAKING A DIFFERENCE





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Greenway Preliminary Design

October 28, 2013

Civic Works Committee



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Greenway Team

- John Lucas, P.Eng.
Director – Water and Wastewater
- Geordie Gauld
Division Manager – Wastewater Treatment
- Perry Rose, C.E.T. -- Project Manager
- Richard Todd, P.Eng. -- Approvals & Engineering
- John Haasen, PMP
Senior Vice President, AECOM
- Neil Awde, P.Eng.
Project Manager, AECOM
- Tim Constantine, P.Eng.
Global Technology Leader, Wastewater Treatment, CH2M HILL



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Presentation Outline

Greenway Background

Expansion Need

Design Evolution

Topics of Public Interest

Cost Review – Financing

Design Summary



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Benchmarking

- at the median for odour complaints;
- at the median for treatment cost;
- at the median for energy consumed;
- **above the median** for cost of energy;
- **below the median** for cost of sludge disposal
- **1/3 of median for BOD discharged per capita**

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Greenway WWTP

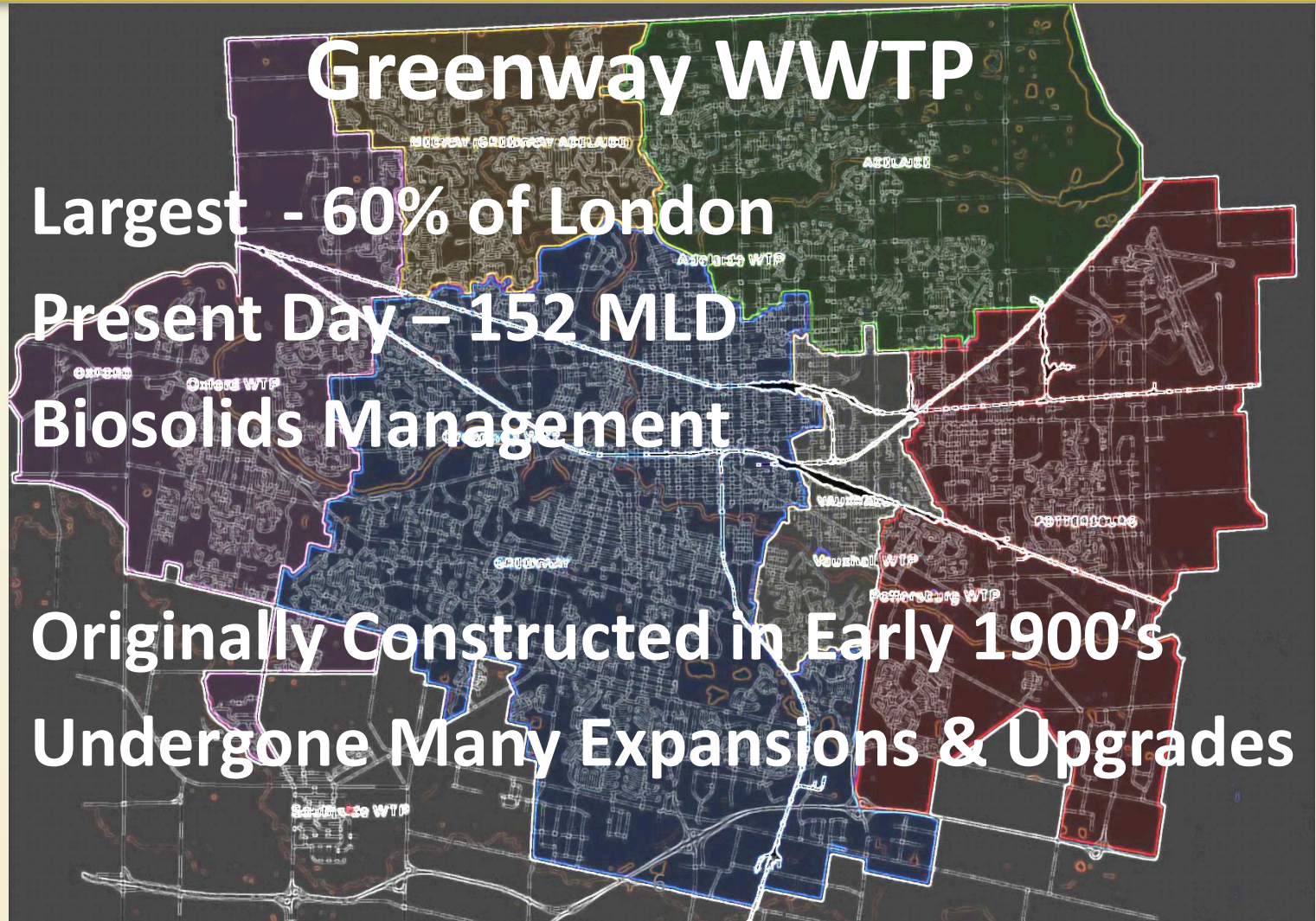
Largest - 60% of London

Present Day – 152 MLD

Biosolids Management

Originally Constructed in Early 1900's

Undergone Many Expansions & Upgrades





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Greenway Expansion Background

Previously reported:

- 2007 -- alternative to high cost of Southside
- Technical Memos on feasibility, affordability, wet weather optimization
- 2008 -- Greenway Technical Workshop
 - conveyance bottlenecks
 - more cost effective than new Southside WWTP
 - but time of the essence
- 2010 -- Class EA completed
- 2011 -- Road Map -- ash, CEPT, assets – a basis for EOI, RFP
- 2012 -- Consultant Appointment
- Now -- Preliminary Design in progress



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The Need

Growth:

- South West Area Plan (SWAP)
- Downtown Intensification
- South of Horton Area Plan (SOHO)
- Industrial Land Development Strategy (ILDS)

Performance:

- Increased wet weather capture and treatment

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CEPT – Loadings Reduction Summary

Parameter	Average Raw Influent Concentration	Estimated Removal Through Conventional Primary Treatment ¹	Expected Reduction Through CEPT ²	Estimated Reduction in Annual Discharges ³
TSS	198 mg/L	35%	> 60%	33,400 kg
BOD ₅	190 mg/L	20%*	> 40%	25,650 kg

¹Based on average Conventional Primary TSS Removal at SOR of 60 m/d, MOP 8, 5th Edition

²Based on typical CEPT removal ranges given by MOP 8, 5th Edition

³Based on average annual secondary bypass volume of 675 ML (2006-2012)

*BOD₅ removal estimate based on typical ratio of TSS to BOD₅ removal

60 tonnes in an average year



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Greenway WWTP

Disinfection

Abandoned
Ash
Lagoons

Biosolids
Handling

Section 1

Head-
works

Section 2

Section 3

Ash Dewatering

Existing Rated Capacity

Section 1 – 25.0 MLD

Section 2 – 34.1 MLD

Section 3 – 93.1 MLD

Total – 152.2 MLD

Class EA Preferred Solution

18 MLD Expansion

3 Sections

2 Phases *

Alternate Location for
9MLD of Expansion

Restore and Expand
Section 3

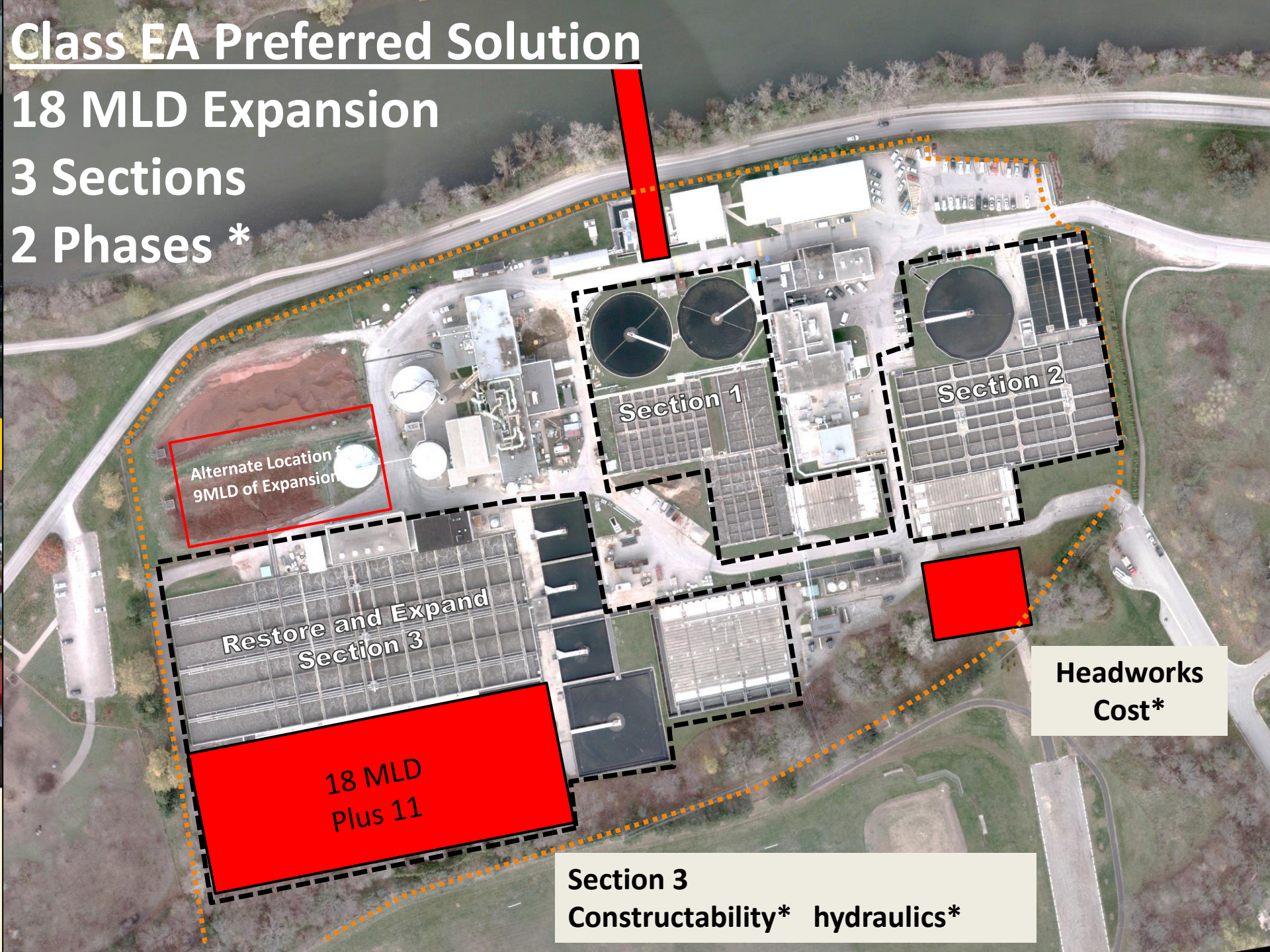
18 MLD
Plus 11


Section 1

Section 2

Headworks
Cost*

Section 3
Constructability* hydraulics*





Alternate Location
9MLD of Expansion

Restore and Expand
Section 3

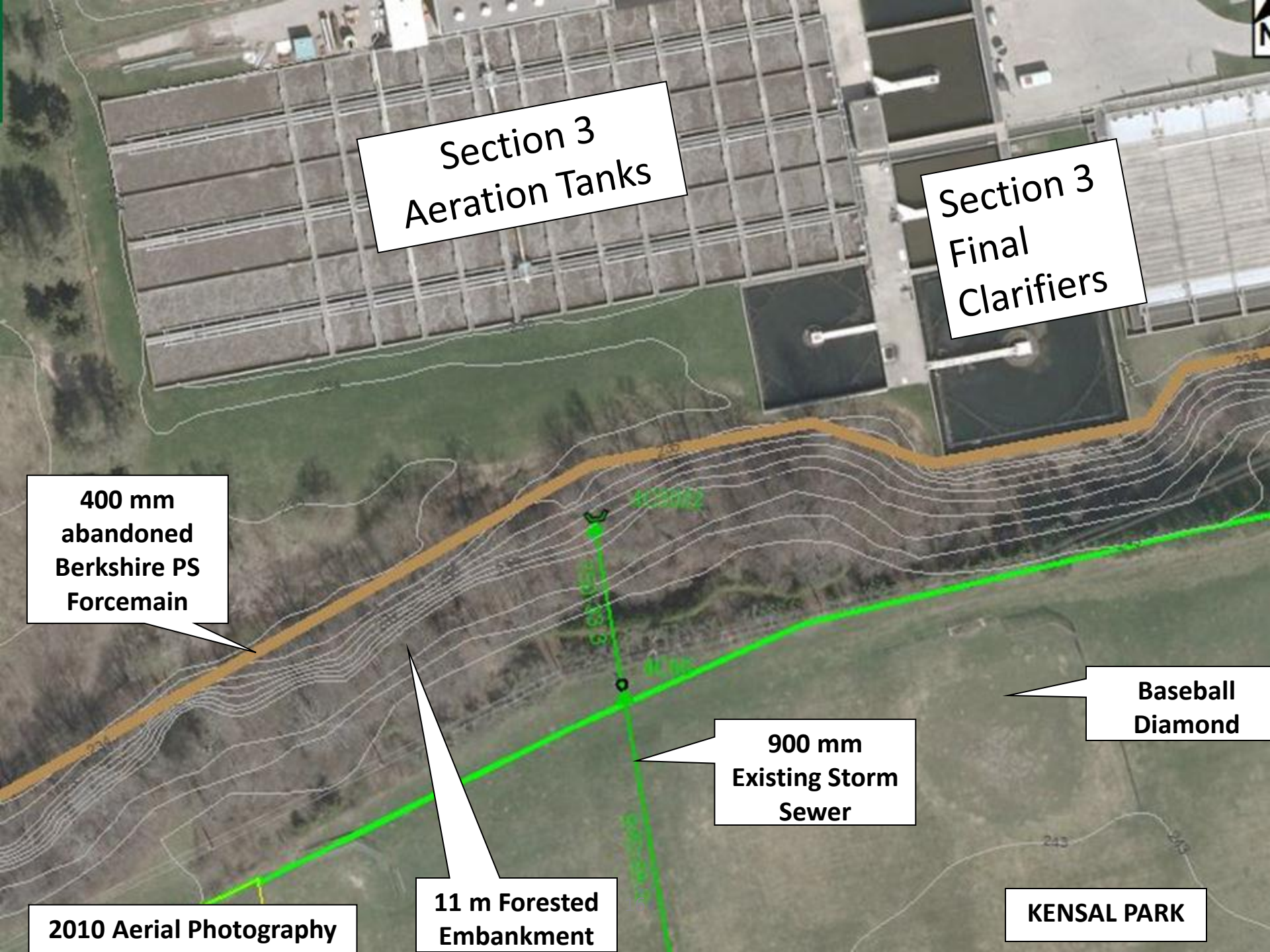
18 MLD

Section 1

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Significant shoring -- re-grading of the steep slope -- underpinning





Section 3
Aeration Tanks

This aerial photograph shows a wastewater treatment facility. At the top, a large grid of rectangular aeration tanks is visible. To the right, several circular clarifiers are situated. A prominent orange line, representing an abandoned forcemain, runs diagonally across the middle of the image. A green line, representing an existing storm sewer, runs horizontally across the lower half. A green line also runs vertically through the center, intersecting the horizontal one. White contour lines are overlaid on the terrain, showing elevation changes. A baseball diamond is located on the right side, and a forested embankment is indicated at the bottom center. The entire image is labeled as a 2010 aerial photograph.

Section 3
Final
Clarifiers

400 mm
abandoned
Berkshire PS
Forcemain

Baseball
Diamond

900 mm
Existing Storm
Sewer

11 m Forested
Embankment

2010 Aerial Photography

KENSAL PARK

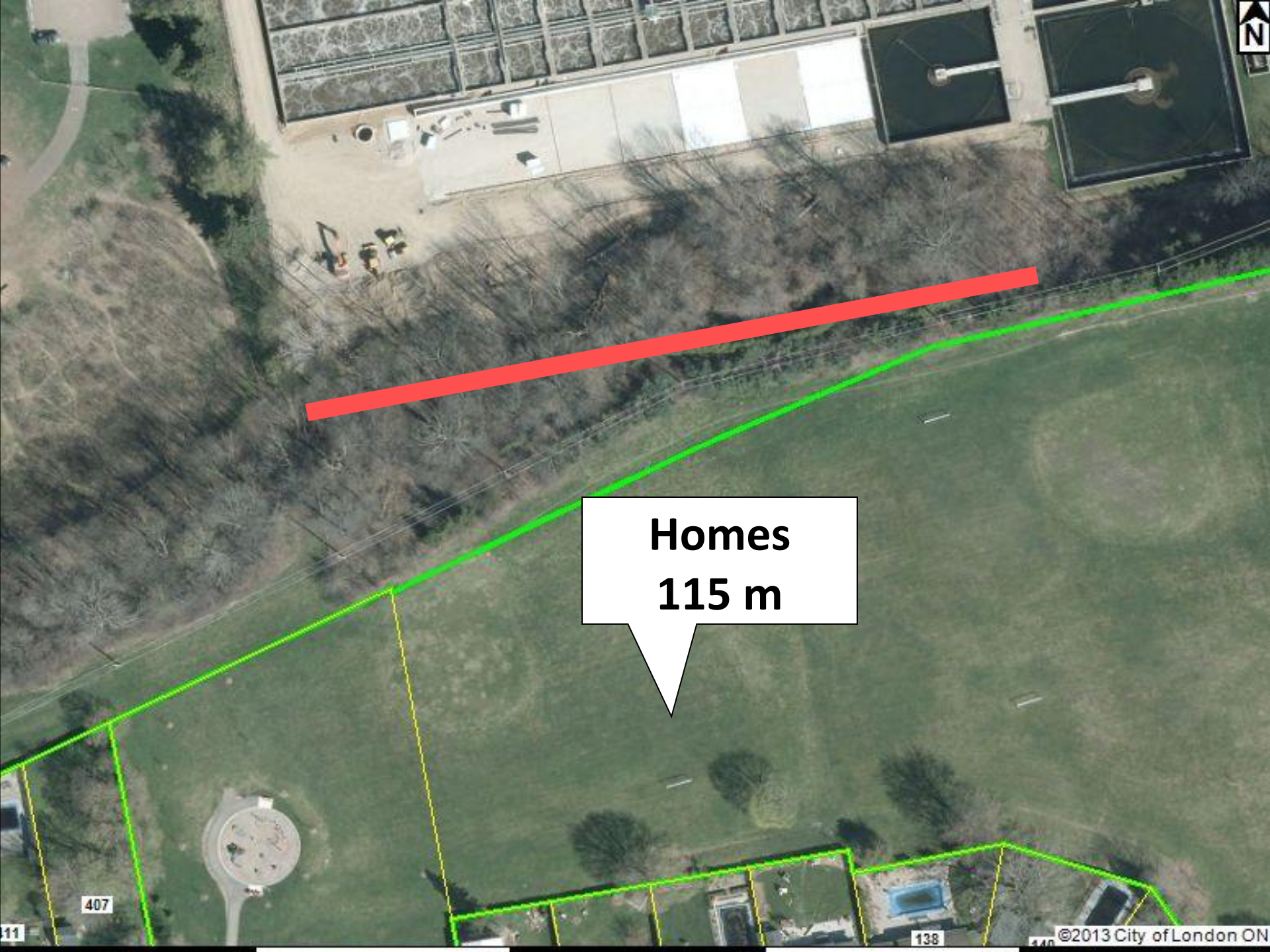


**Treed 11 m
high bank**

Truck Wash

**Ash Disposal
Bags**





Homes
115 m

407

11

138

140

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Post EA

**Decommissioned
Ash Lagoons**

**Existing Ash
Haul Road**

Section 3

**Number 4
Final
Clarifier**

**Ash Disposal
Area**

Truck wash

2013 Aerial Photography

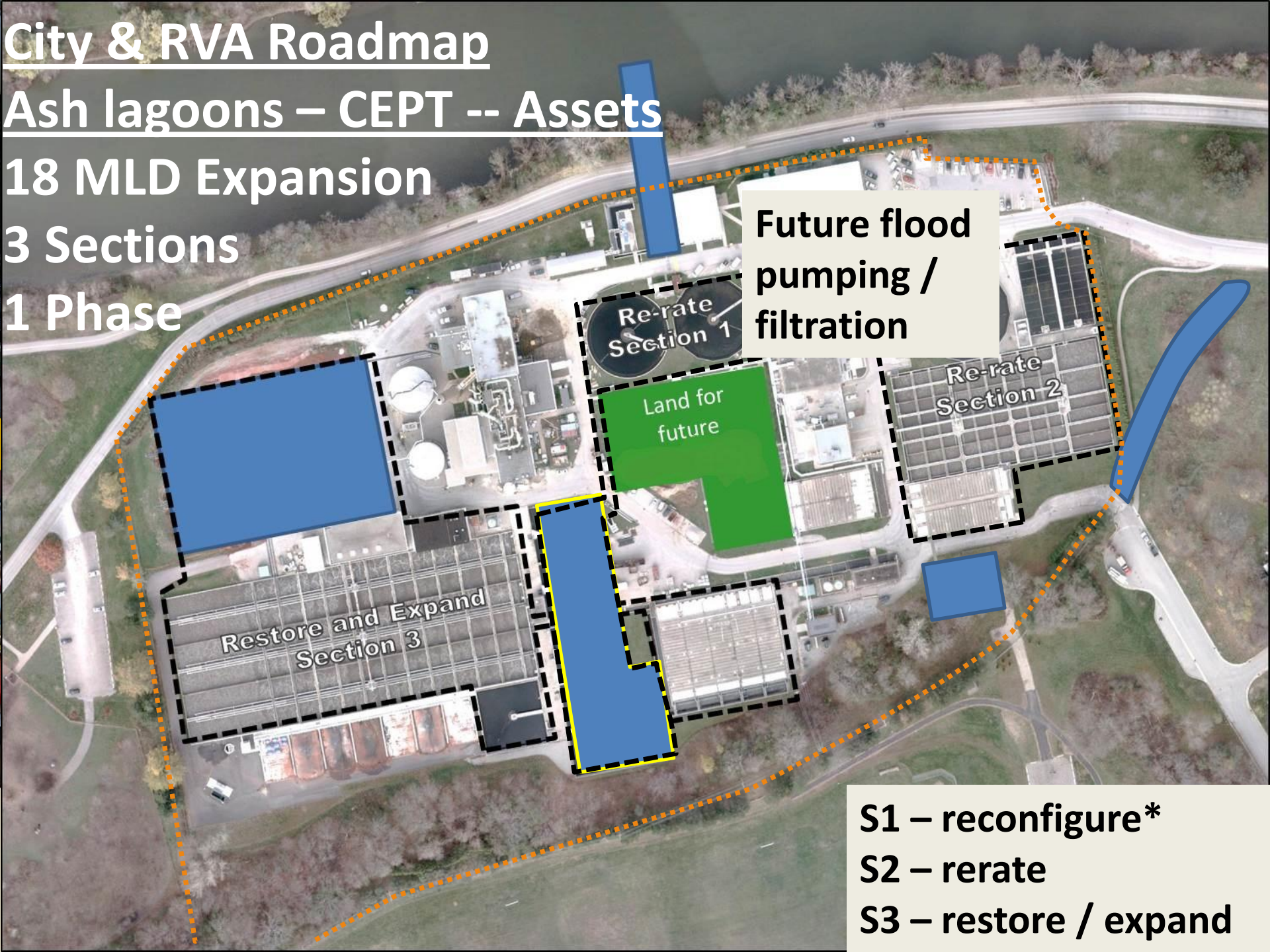
City & RVA Roadmap

Ash lagoons – CEPT -- Assets

18 MLD Expansion

3 Sections

1 Phase



S1 – reconfigure*

S2 – rerate

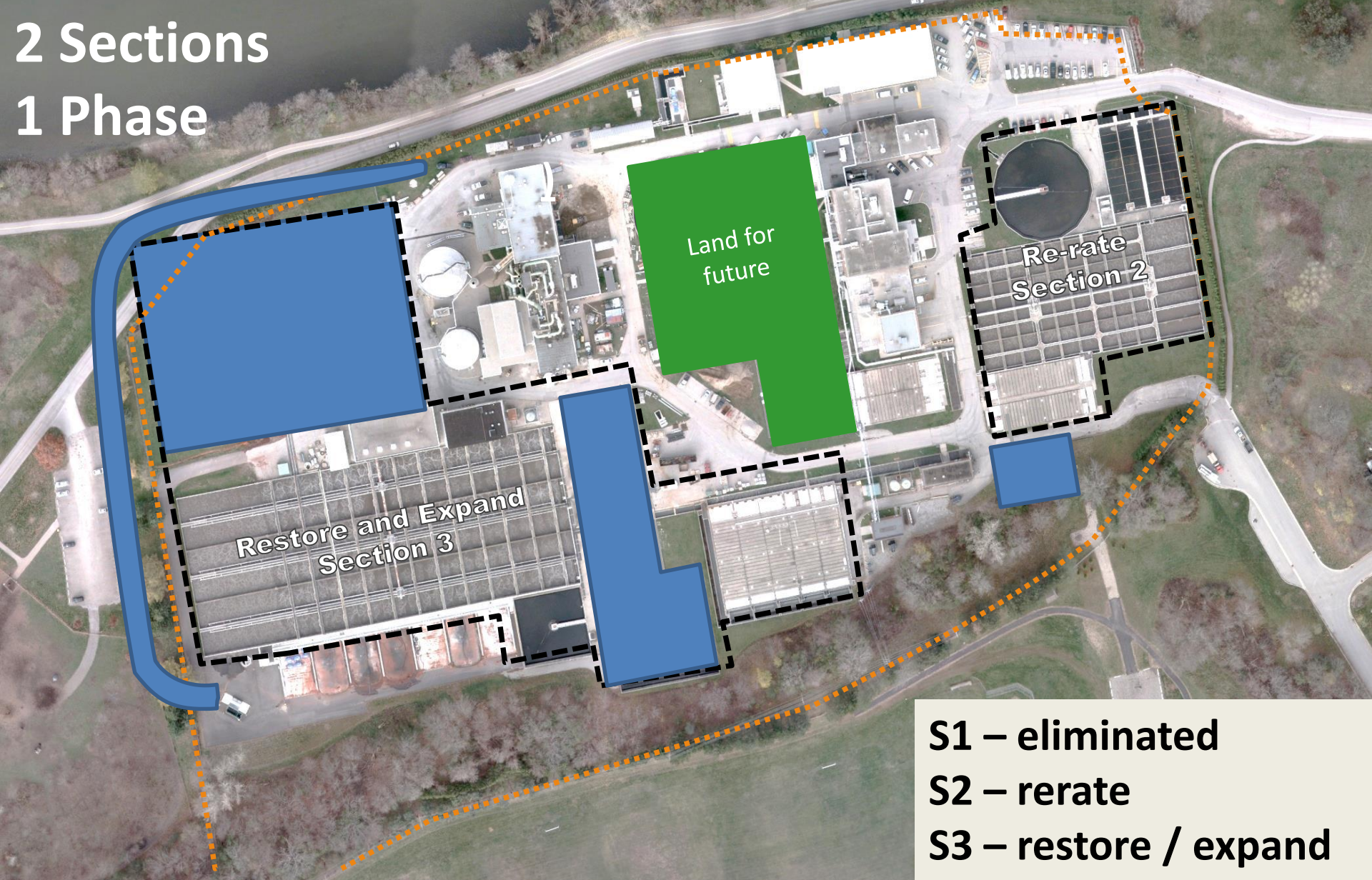
S3 – restore / expand

Conceptual Design (CH2M HILL & AECOM)

18 MLD Expansion

2 Sections

1 Phase



Land for
future

Restore and Expand
Section 3

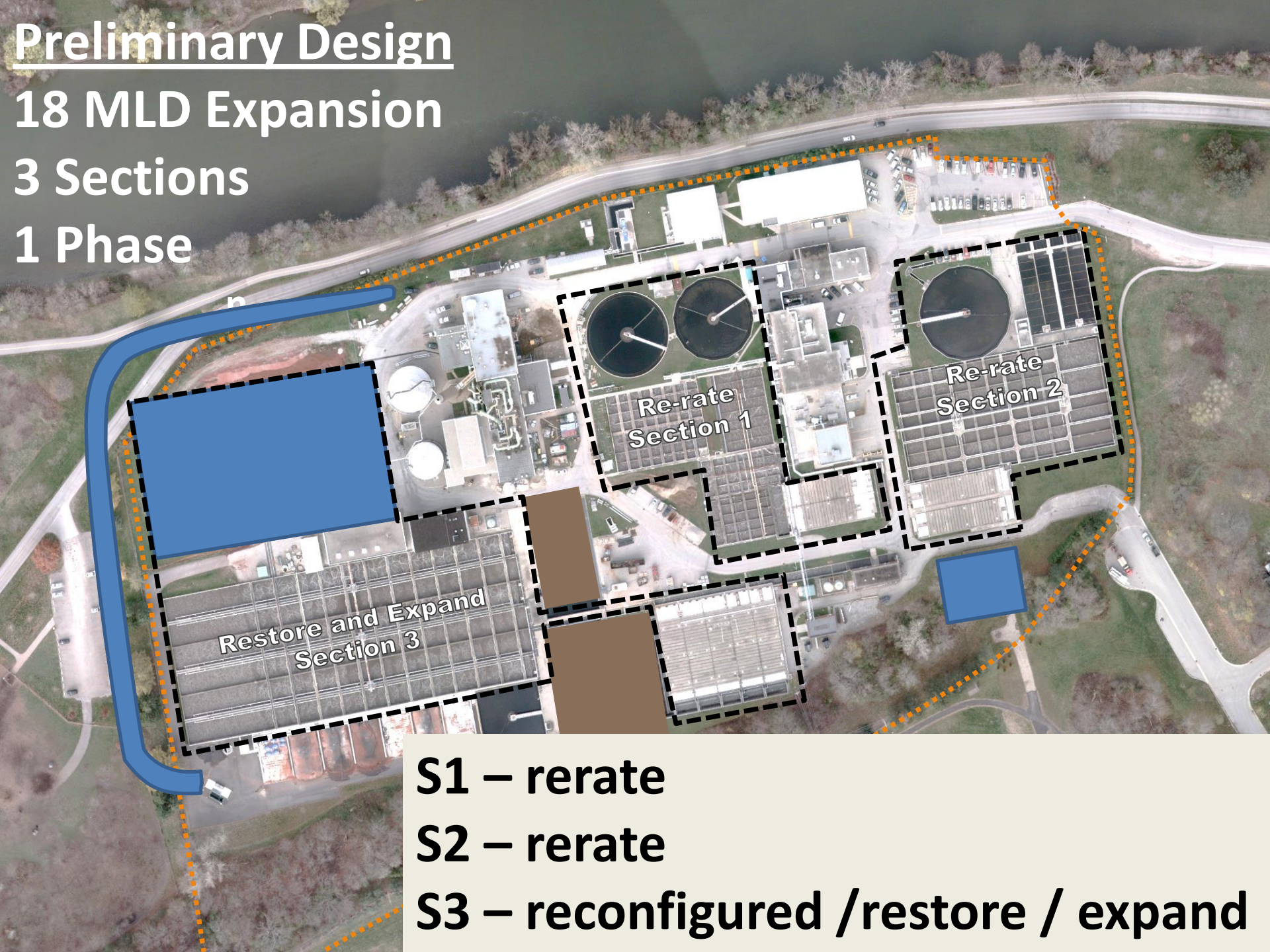
Re-rate
Section 2

S1 – eliminated

S2 – rerate

S3 – restore / expand

Preliminary Design
18 MLD Expansion
3 Sections
1 Phase



S1 – rerate

S2 – rerate

S3 – reconfigured / restore / expand



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Design Variations (3 technical teams - increasing detail)

Number of operating sections – 2, 3..... 3 for now plus opportunity to reduce

Stages for construction – 2, 1 1 technically controlled

Location of S3 infrastructure – south side, north side north for homes, environment, hydraulics

Access road – east side, west side west side matches preliminary plant design

Hydraulic design challenges – reduction process



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Greenway Background

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Topics of Public Interest

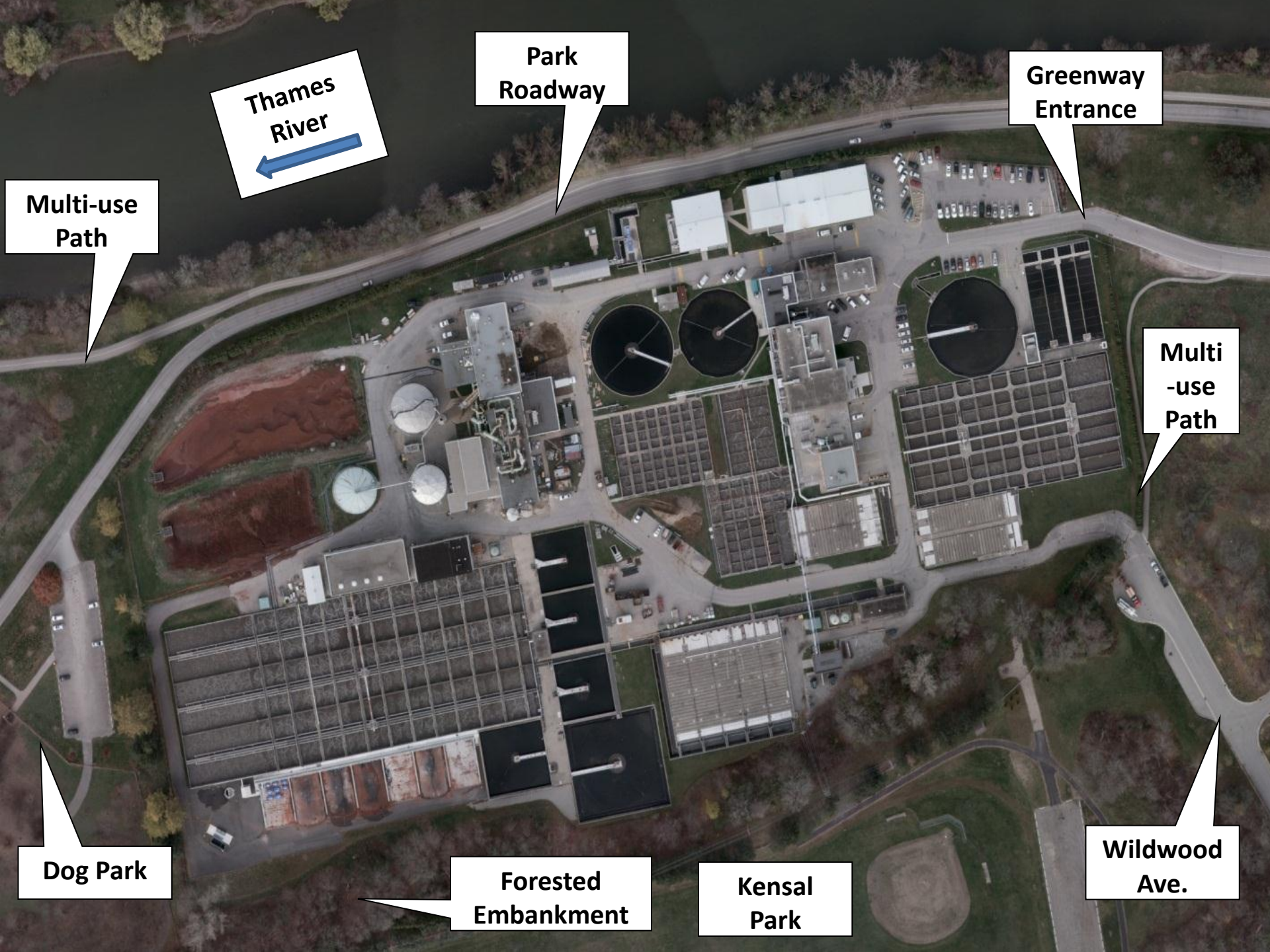
Operating Space: Separation, Fence lines, Access

Operations: Noise, Odours, Traffic

Environmental Impacts: Parks, Trees, Slope

Dog Park

Public Information



Thames
River



Park
Roadway

Greenway
Entrance

Multi-use
Path

Multi
-use
Path

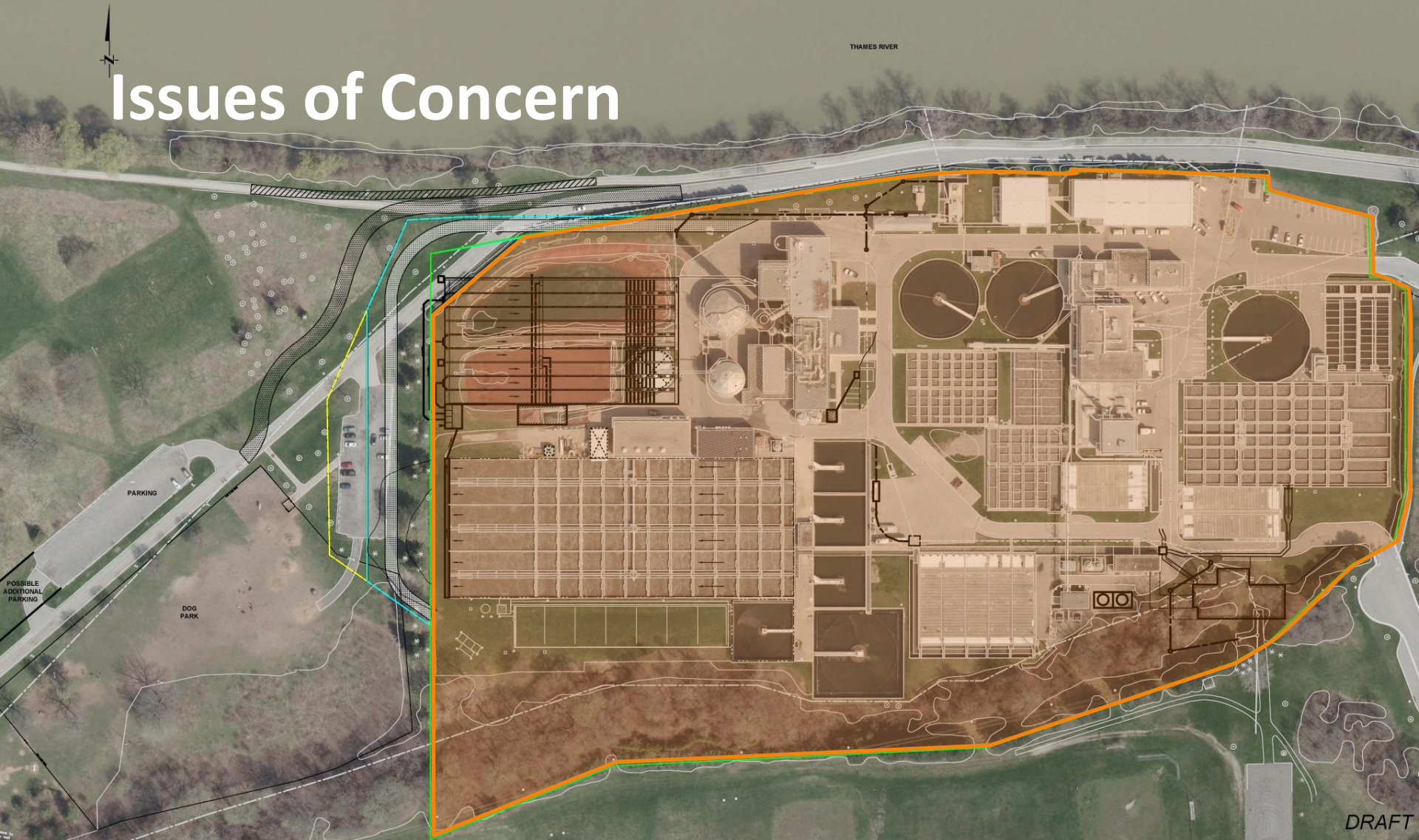
Dog Park

Forested
Embankment

Kensal
Park

Wildwood
Ave.

Issues of Concern



Existing Fenced Area



Existing Fenced Area



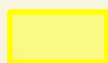
Squaring off Area



London
CANADA



Existing Fenced Area



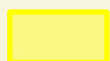
Minimum Area Required for
Operations and Safety



Squaring off Area



Existing Fenced Area



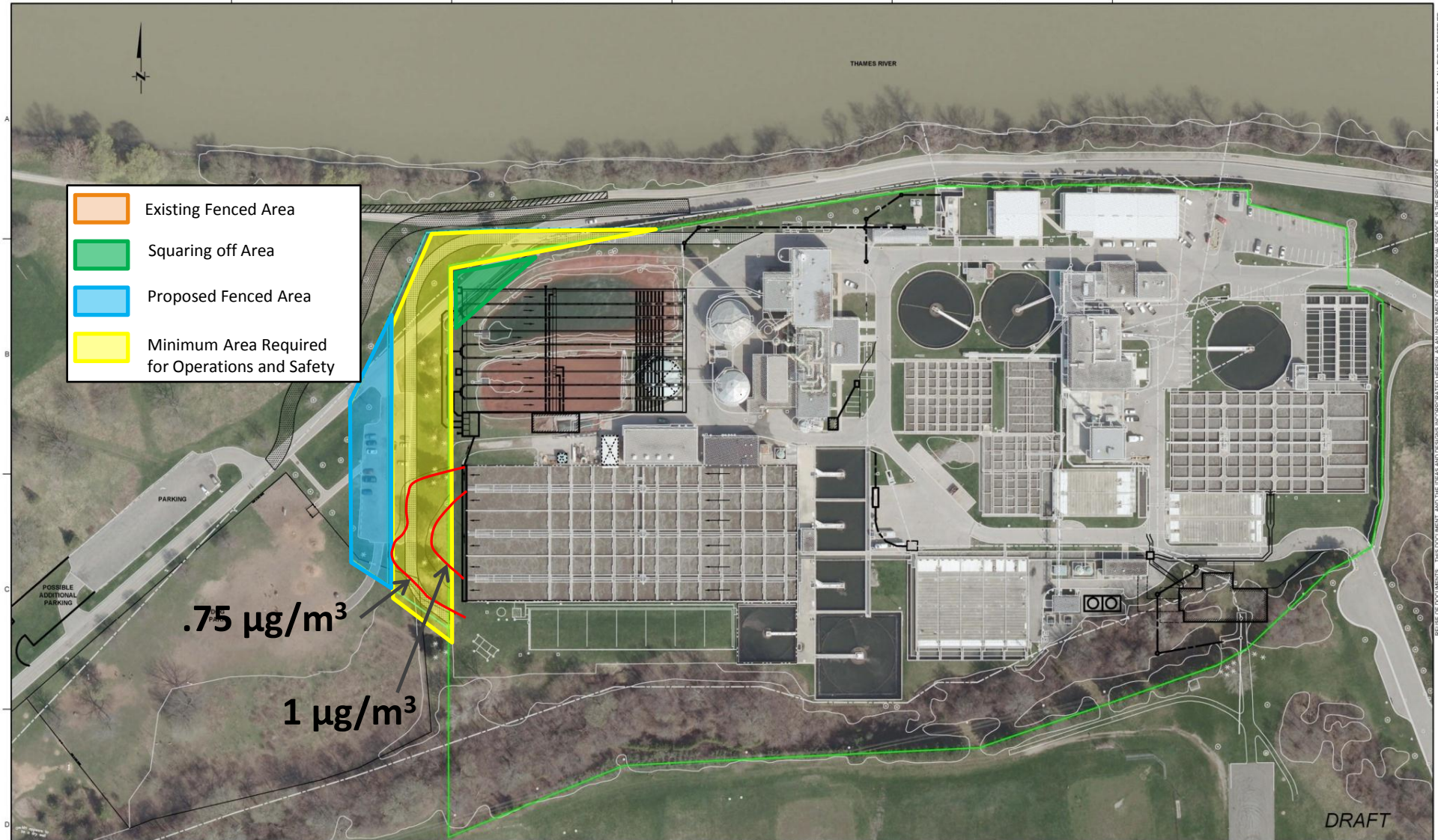
Minimum Area Required for
Operations and Safety



Proposed Fenced Area



Squaring off Area



NO.	DATE	DR	REVISION	CHK	APVD	BY	APVD

CONSULTANTS
TEAM GREENWAY
CH2MHILL AECOM ERAMOSA

PROFESSIONAL STAMP

London CANADA
DATE Sept 2013

SCALE 1 : 750
CITY OF LONDON Greenway Wastewater Treatment Plant CIVIL
NTRE
PROJECT NO.
DWG
SHEET

PROJECT NO.
DWG
SHEET

Figure 1 – Proposed Fence Modifications
Greenway WWTP Expansion

Relocated Trail

Ash Disposal & Construction Access Road

Relocated Park Roadway

Extended Dog Park Parking

Fence

Contractor Laydown Area

New 3 Section Final Clarifiers



Trail

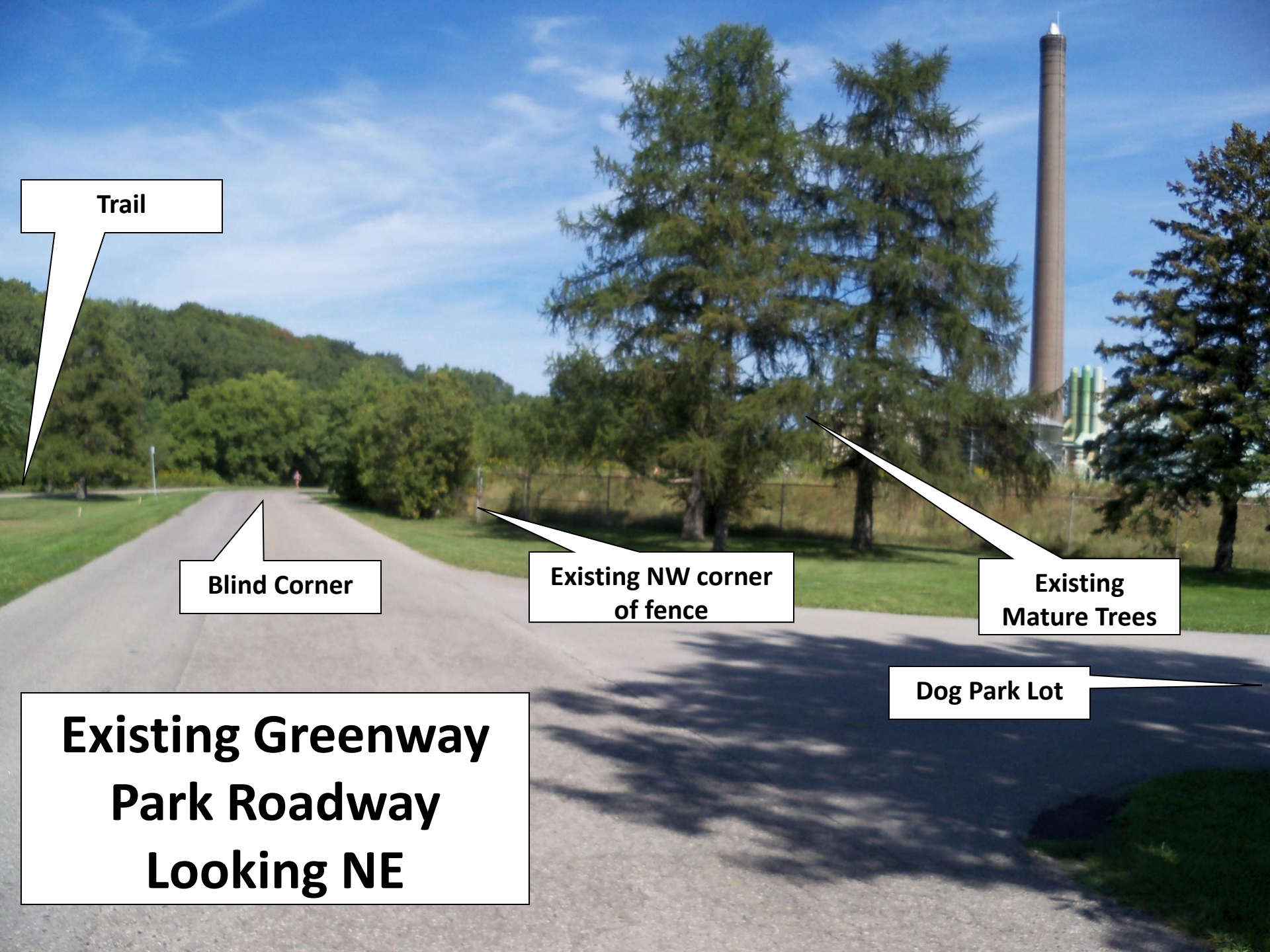
Blind Corner

**Existing NW corner
of fence**

**Existing
Mature Trees**

Dog Park Lot

**Existing Greenway
Park Roadway
Looking NE**





Design opportunity to explore with the public:

- visual screening
- public safety
- park road, trees
- Dog Park interface

Looking East at Greenway WWTP
(September 2013)



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Noise

- Recent noise complaints due to biosolids construction and noisy roof equipment
- Current biosolids upgrades are complete



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Odours

- Recent complaints were from biosolids upgrades
- Sludge odours are now contained within the system
- Odour complaints are expected to drop off
- Before – at the median for complaints



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Daily Tanker Traffic Impacts

- Tankers from other plants
- Other plant expansions being deferred
- no increases in tanker traffic due to expansion at Greenway



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2010 EA

Detail - low

\$26.7M

2010 \$ (+22%)

(\$6.7M) Headworks

9 MLD

2014 \$40.7M

Now

Detail - higher

\$46.1M

2014 \$

18 MLD

2014 \$46.1M

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	Original Plan (\$000's)	Revised Plan (\$000's)	Increase/ Decrease (\$000's)
Total Estimated Project Cost - Greenway:	26,680	46,143	19,463
Transfer from Prior Years Capital:			
Vauxhall WWTP Expansion			(3,000)
Hauled Liquid Waste Receiving			(2,400)
Adelaide WWTP CSO			(2,800)
Adelaide WWTP Expansion Ph 2			<u>(1,900)</u>
TOTAL			(10,100)
Net Additional Cost:			9,363
Funding per 2014 Capital Plan:			
Rate Supported Share	9,391	16,243	1,431
Non Rate Supported Share	<u>17,289</u>	<u>29,900</u>	<u>7,932</u>
Total Financing - Greenway:	26,680	46,143	9,363

65.3% growth
assumed



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- **Vauxhall expansion**
 - transferring flows to Greenway
 - industrial better handled at a larger plant
- **Hauled liquid waste / septage from at W12A**
 - pretreatment plant and septage receiving station
 - pretreatment plant cost too high
 - PS and FM built for W12A to reduce trucking
 - flows to Greenway from Dingman PS



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- **Adelaide CSO**
 - scope includes CSO
 - remaining funds for CSO only at Adelaide
- **Adelaide expansion**
 - improvements done
 - Medway PS our swing to optimize capacity usage



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Summary of Preliminary Design

- minimizes public and environmental impacts
- addresses new regulatory requirements & public safety
- meets regulatory req'ts for wet weather flow treatment
- recognizes arising deficiencies and opportunities
- meets capacity needs with a technically viable solution
- compatible with flood protection and other future improvements
- opportunity for mitigation measures to help to resolve existing park issues

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Tentative Schedule

Task	Projected Timeline																	
Year	2013			2014												2015	2016	2017
Month	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D			
Preliminary Design																		
Approvals																		
Detailed Design (7 mos.)																		
Tendering and Award (4.5 mos.)																		
Construction (2.5 - 3 yrs)																		



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Recommendations

- Approve funding re-allocations within proposed 2014 Wastewater Budget
- Refer project to the budget
- Hold Public Information Centre to inform neighbours and other stakeholders of design



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Questions?