



Town of Tecumseh Water and Wastewater Master Plan Update

Class EA Report

July 31, 2008



Executive Summary

Background

Municipalities can recognize the benefit of comprehensive long-range planning exercises that examine problems and solutions for an overall system of municipal services. Master Plans are not intended to address specific local problems or to plan for projects on a project-by-project basis. The Class EA defines Master Plans as:

“Long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system(s) or group of related projects in order to outline a framework for planning for subsequent projects and/or developments.”

The Town of Tecumseh completed a Water and Wastewater Master Plan in June of 2002 and a Water Plan amendment in 2005. It is recommended practice to review a Master Plan at least every five years to determine the need for a formal review and update to the Master Plan. Since the Plan was completed in 2002, several changes have occurred which have had significant impacts to the assumptions used in preparing the Plan and, as a result, it has been identified that the Plan needs to be updated. Significant issues impacting the Plan include:

- Updated Provincial Regulations, including the Safe Drinking Water Act, the Sustainable Water and Sewage Systems Act and the Provincial Policy Statement
- Water Agreement among the Windsor Utilities Commission (WUC), City of Windsor and the Town of Tecumseh (November 2004) and Amending Agreement (January 2006)
- Wastewater Agreement between the City of Windsor and the Town of Tecumseh (November 2004)
- The Town of Tecumseh Official Plan Review (ongoing) and Secondary Plans for Manning Road (1996), Maidstone Hamlet (September 2003) and Tecumseh Hamlet (ongoing)
- Class EA for Sanitary Servicing of Lands Annexed from the Town of Tecumseh, City of Windsor (2005)
- Development Charge Background Study, Town of Tecumseh (July 2004)
- Water and Wastewater Rate Study, Town of Tecumseh (October 2007)
- Class EA Study for the Banwell Water Storage Reservoir, Windsor Utilities Commission (deferred in December 2007).

The purpose of Water and Wastewater Plan Update is to use revised best planning population estimates for the Town of Tecumseh within the 2028 planning horizon to provide a technical review of the 2002 and 2005 water and wastewater servicing strategies. The review recommends necessary strategy changes, updates to project phasing and updates to capital cost estimates which in turn will fed into the Development Chagres process. This update is a critical component in the integrated planning process and is intended to consolidate and harmonize the Town’s water and wastewater servicing strategies and capital program for the North and South Service Areas based on updated planning information, new water and wastewater service agreements with the City of Windsor, updated design criteria and updated project information.

Master Planning Process

The Municipal Class Environmental Assessment (EA) process clearly defines approaches for completion of Master Plans within the Class EA context. The Town of Tecumseh has prepared this Master Plan based generally on Approach 2, which involves preparing a Master Plan document at the conclusion of Phases 1 and 2 in order to fulfill the requirements for Schedule B projects. The Town of Tecumseh has identified select Schedule B projects that will follow on with separate studies in order to provide greater detail and finalize property and/or easement requirements.

Study Area

The Town of Tecumseh is situated in the northwest portion of Essex County and covers 9,413 hectares. The Town is bordered by the City of Windsor and the Town of LaSalle to the west, Lake St. Clair to the north, Town of Lakeshore to the east and Towns of Essex and Amherstburg to the south. The study area for the Water and Wastewater Master Plan Update covers the urban settlement areas of Tecumseh, St. Clair Beach and Tecumseh Hamlet in the North service area, Maidstone Hamlet and the Highway Service Centre Area in the Southeast (SE) service area and Oldcastle Hamlet in the Southwest (SW) service area.

Planning Projections

Best Planning Estimates (BPE 2008) for residential growth were prepared in consultation with the Town's Planning, Public Works and Water departments and include intensification of the urban settlement areas of Tecumseh, St. Clair Beach, Tecumseh Hamlet, Maidstone Hamlet and Oldcastle Hamlet. The BPEs are based on the available planning information including local growth analysis in the Town's Official Plans, planning documents and Secondary Plans for Tecumseh Hamlet, Maidstone Hamlet and the Manning Road Development Area.

The distribution of population growth in the urban settlement areas is summarized in Table ES-1.

Table ES- 1 Projected Population Statistics – 2008 through 2028+

SERVICE AREA		2008	2018	2028	URBAN BUILD-OUT (2028+)
North	Tecumseh	13,773	14,029	14,029	14,029
	St. Clair Beach	3,957	4,138	4,138	4,138
	Tecumseh Hamlet	3,838	10,529	15,720	21,085
Southeast	Maidstone Hamlet	449	449	2,000	3,000
	Rural	1,300	1,490	1,680	2,300
Southwest	Oldcastle Hamlet	466	1,066	2,052	2,437
	Rural	531	581	631	767
Total		24,314	32,282	40,250	47,756

Master Plan Objectives

The Master Plan Update objectives and work plan were defined as follows:

- Review and update all planning data and inputs to the servicing analysis based on best planning estimates developed for the Town
- Undertake a comprehensive review and analysis for both water and wastewater servicing requirements
- Ensure infrastructure capacities address operational flexibility
- Utilize updated industry trends and more accurate information from relevant studies and projects to provide better capital cost estimates
- Utilize recently completed and on-going projects to update infrastructure status, capacity and cost estimates
- Consolidate the Town's servicing strategies for the North and South Service Area to make best use of the available capacities provided in the Windsor-Tecumseh Servicing Agreements.

Servicing Requirements

The servicing requirements established for the Town of Tecumseh in the 2002 Master Plan and 2005 Water Servicing Plan Addendum have been updated to reflect the terms and conditions of the 2004 Windsor-Tecumseh Servicing Agreements and the 2006 Amending Agreement.

Water

- The Windsor Utilities Commission (WUC) is responsible for supplying water to the Town on a continuous basis up to a maximum daily flow of 87 MLD
- The Town is responsible for its own distribution system within the boundaries of Tecumseh and any new storage works that may be required to supply its fire flow of water
- Storage for equalization and peak hour flow of water for the Town will be the responsibility of WUC
- WUC will deliver peak hourly flow to the Town
- The Tecumseh Water Treatment Plant (WTP) will be decommissioned and ownership will be transferred to the City of Windsor
- WUC will proceed with a Class EA for the proposed Banwell Road Reservoir and Booster Pumping Station (BPS) and employ its best efforts to complete construction prior to future needs being required.

Wastewater

- The ultimate servicing of the Tecumseh Urban Areas will be from a combination of capacities at the 64 MLD Little River Pollution Control Plant (PCP) and/or the 159 MLD Lou Romano Water Reclamation Plant (WRP) in Windsor
- Tecumseh will not construct a centralized Wastewater Treatment Plant (WWTP) as identified in the 2002 Master Plan; however, can provide interim treatment plants until conveyance is provided

- The Town has a current treatment capacity allocation of 17 MLD at the Little River PCP and 2.7 MLD capacity at the Lou Romano WRP
- The Town can purchase additional capacity at the Little River PCP for future growth up to a maximum 38.0 MLD
- Maximum discharge rate limitations at Town boundary:
 - 935 L/s at the Cedarwood Outlet to Little River PCP
 - 1,308 L/s at the Banwell Road Outlet to Little River PCP
 - 85 L/s at the North Talbot Road Outlet to Lou Romano WRP

Recommended Servicing Strategies

The general servicing concepts from the 2002 Master plan and 2005 Water Servicing Plan Addendum have been revised to incorporate updated information on servicing requirements, capacity allocations, scheduling, alignments and costing. Wherever possible, the alignments of new trunk facilities have been planned based on the location of existing road allowances and/or servicing corridors in order to ensure that servicing can proceed without undue delays resulting from the need to acquire property. However, the Town has the option to construct trunk facilities through new development lands if it can be shown to be cost effective to do so. In this event, the alignment of the trunk facilities may be altered based on approved Secondary Plans and/or Approved Draft Plans of Subdivision. Should the trunk facilities be implemented through new development lands, additional notification to the Public would be provided through the Planning Act notifications.

The timing of the various projects has been established based on anticipated growth rates in Tecumseh and on a fiscally responsible capital works program. The Town will have the option to advance or defer specific projects depending upon the rate of growth experienced in Tecumseh, or upon the petition by a developer (or group of developers) provided that the financial impacts of advancing certain projects are reviewed and mitigated through collection of Development Charges or through Front-End Financing arrangements.

Water

Based on the recent Notice given by WUC that the proposed Banwell Road Reservoir Class EA has been deferred on the basis that the Windsor Water System has sufficient treatment and storage capacity to meet the projected 10 year demands for the amalgamated system, the time frame to implement full integration of the north and south water systems in Tecumseh has been reviewed to ensure that an adequate level of service can be provided to meet projected demands within the Town.

Significant water servicing strategy updates include:

- Revised alignments, diameters and scheduling of watermains in-line with BPEs and related studies
- Provision of additional trunk watermain capacity in North service area between CR 22 and CR 42 to service new growth to 2018
- Revised routing of trunk watermain between County Road 42 and County Road 46 to avoid a number of watercourse crossings and potential conflicts with the County's plans for widening/improving County Road 19 (Manning Road)
- Provision of Zone 2 pumping capacity for the SE service area to address existing system limitations and to service growth in Maidstone Hamlet

- Provision of additional storage capacity in Zone 2 for pump control in the SE service area and additional fire flow storage
- Provision of additional trunk watermains in the South service area to allow east west transfer from Maidstone Hamlet (Zone 2) to Oldcastle Hamlet due to capacity limitations in the existing Windsor Water System.

The Town of Tecumseh is finalizing negotiations to assume operational control of the South Tecumseh Water System from the Windsor Utilities Commission (WUC) in August 2008. As part of this operational change-over, the Town has recently implemented new bulk water metering facilities at all connection points between the Windsor and Tecumseh Water Systems in the SW service area.

The updated Water Capital Program, Class EA Schedules and Costs are detailed in Table ES-2. The 2008 preferred Water Servicing Strategy is depicted in Figure ES-1.

Table ES- 2 Water Capital Program and EA Schedules

PROJECT NAME	PROJECT ID	LOCATION	CLASS EA SCHEDULE	COST (\$MILION)
West Tecumseh Trunk Watermain from CR 22 to CP Railway	W-1	Tecumseh Hamlet	B ¹	\$1.85
East Tecumseh Hamlet Watermain Connection	W-2A	Tecumseh Hamlet	A+	\$0.31
Trunk Watermain on Manning Road from CR 22 to CP Railway	W-2B	Tecumseh Hamlet	A+	\$1.33
North Talbot Road Trunk Watermain	W-3	Oldcastle Hamlet	A+	\$1.23
West Tecumseh Trunk Watermain from CP Railway to CR 42	W-4	Tecumseh Hamlet	B ¹	\$0.88
Trunk Watermain on Manning Road south of CP Railway	W-5	Tecumseh Hamlet	A+	\$0.66
South Tecumseh Trunk Watermain from CR 42 to Highway 401	W-6	Southeast Tecumseh	A+	\$4.16
South Tecumseh Trunk Watermain from Highway 401 to Maidstone	W-7	Southeast Tecumseh	A+	\$1.53
Maidstone Hamlet Trunk Watermain	W-8	Maidstone Hamlet	A+	\$0.69
Zone 2 Booster Pumping Station	W-9	Southeast Tecumseh	B	\$1.50
Zone 2 Water Storage Facility	W-10	Southeast Tecumseh	B	\$3.70
County Road 46 Trunk Watermain	W-11	Southeast Tecumseh	A+	\$1.83
Southwest Tecumseh Trunk Watermain	W-12	Oldcastle Hamlet	A+	\$3.33
Total Estimated Capital Cost				\$23.0

Note: 1. Project may be Approved (Schedule A) if implemented under a Plan of Subdivision

Figure ES- 1 2008 Preferred Water Servicing Strategy

LEGEND

- ▬ Town Boundary
- - - - Hamlet Boundary

EXISTING

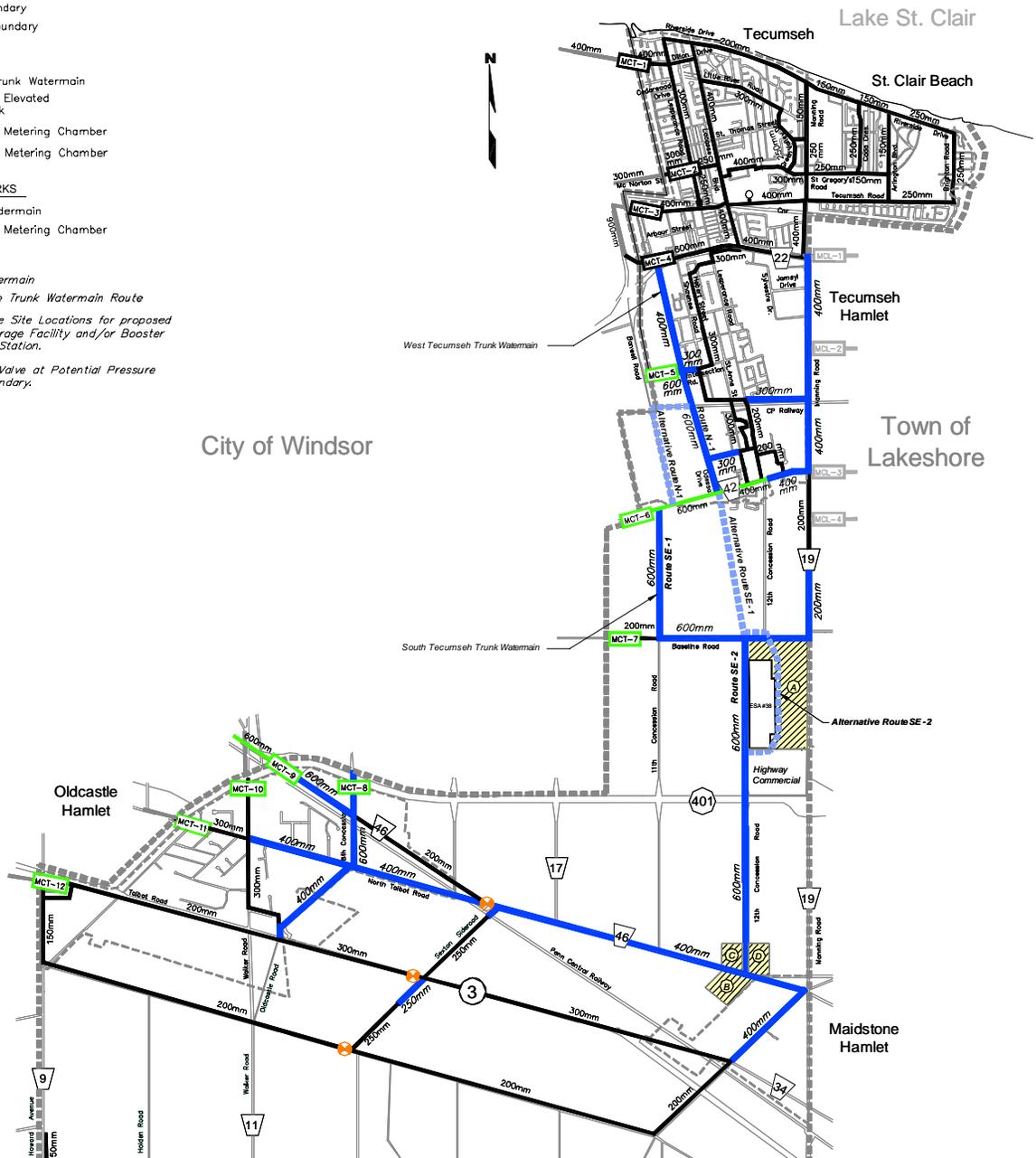
- 300mm Existing Trunk Watermain
- ⊙ Tecumseh Elevated Water Tank
- ⊠ MCT-2 Tecumseh Metering Chamber
- ⊠ MCL-2 Lakeshore Metering Chamber

2007/2008 CAPITAL WORKS

- CR42 Feedermain
- ⊠ MCT-2 Tecumseh Metering Chamber

PROPOSED

- Trunk Watermain
- - - Alternative Trunk Watermain Route
- ⊠ Alternative Site Locations for proposed Water Storage Facility and/or Booster Pumping Station.
- ⊙ Isolation Valve at Potential Pressure Zone Boundary.



Notes:

The routing shown for proposed trunk watermain may be subject to change based on approved development plans.

Property requirements for proposed Water Storage Facility and/or Booster Pumping Station are to be finalized after a site selection process and may be different than shown.

Wastewater

Given that the Town has been able to secure additional treatment capacity at both the Little River PCP and the Lou Romano WRP in Windsor, the basis and assumptions on which the preferred wastewater servicing strategies were developed for the 2002 Master Plan have been reviewed. Specifically, the 2002 Master Plan was based upon the provision of Wastewater Treatment in a new wastewater treatment facility within the Town of Tecumseh. However, in light of the new wastewater service agreement with the City of Windsor, a new servicing strategy has been developed that fully utilizes the available capacities allocated at the existing wastewater treatment plants in Windsor.

Significant wastewater servicing strategy updates include:

- Revised alignments, diameters and scheduling of sewers to direct all wastewater generated in Tecumseh to approved outlets in the City of Windsor in-line with BPEs and related studies
- Provision of new trunk sewers for new growth in North and SE service areas with discharge to the Little River PCP through the new Banwell Road Outlet
 - West Tecumseh trunk sewer between CR 22 and CR 42 with capacity for the lands designated in the Tecumseh Hamlet Secondary Plan & south portion of the Manning Road Secondary Plan, and the SE service area
 - East Tecumseh trunk sewer within the existing utility corridor south of CP Railway for lands on the east side of Tecumseh Hamlet
 - South Tecumseh trunk sewer between CR 42 and Highway 3 with capacity for the lands designated in the Maidstone Hamlet Secondary Plan, Highway Service Centre lands, and existing developments in the SE service area
- Provision of continuous flow monitoring at Town boundary (SCADA)
- Utilization of diversion sewers for east to west diversion in Tecumseh Hamlet to address existing system limitations and meet discharge limit at the existing Cedarwood Outlet
 - Diversion of flow at St. Alphonse Avenue and South Pacific Avenue through diversion sewer south of CP Railway to the west Tecumseh trunk sewer
 - Diversion of flow at St. Alphonse Avenue and CR 42 through diversion sewer on CR 42 to the west Tecumseh trunk sewer and decommission St. Alphonse Avenue PS
- Provision of standby power facilities at the Sylvestre Pumping Station in a new building
- Purchase additional conveyance capacity in the Windsor NE trunk sewer and treatment capacity at the Little River PCP when required for new growth in the SE and SW service areas as provided for in the 2004 Wastewater Agreement
- Provision of new trunk sewers for existing developments and new growth in the SW service area with discharge to the Lou Romano WRP and the Little River PCP
 - North Talbot Road trunk sewer with discharge to the Lou Romano WRP through the existing North Talbot Road Outlet up to 85 L/s
 - SW Tecumseh trunk sewer with interim discharge to the Lou Romano WRP through the North Talbot Road trunk sewer and ultimate discharge to the Little River PCP through the future 8th Concession Road Outlet
- Decommissioning of the Skyway Plaza WWTP in Oldcastle Hamlet and flow diversion from the Skyway Plaza WWTP to the North Talbot Road trunk sewer.

The new servicing strategy incorporates flexibility for the Town to divert all or part of peak wet weather flows from existing trunk sewers south of County Road 22 to the new Northeast Windsor Trunk Sanitary Sewer, which outlets to the Little River PCP. This flexibility will permit Tecumseh to comply with their servicing agreement with Windsor to limit peak flow discharge to the Cedarwood Outlet to the maximum approved rate, while maximizing the potential development areas to be serviced through the Banwell Road Outlet.

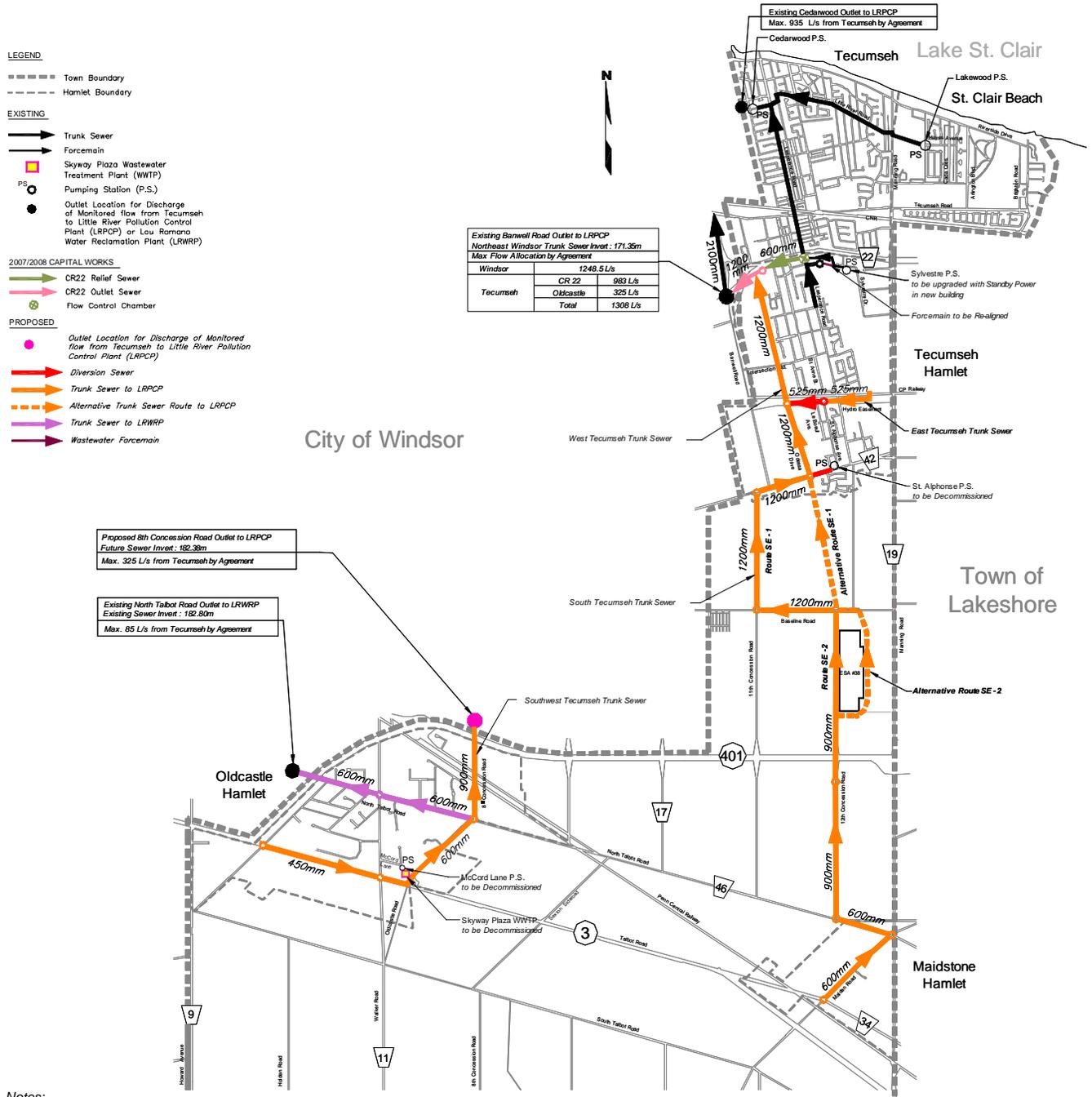
The updated Wastewater Capital Program, Class EA Schedules and Costs are detailed in Table ES-3. The 2008 preferred Wastewater Servicing Strategy is depicted in Figure ES-2.

Table ES- 3 Wastewater System Servicing Strategy

PROJECT NAME	PROJECT ID	LOCATION	CLASS EA SCHEDULE	COST (\$MILION)
SCADA system for Cedarwood and Lakewood Pumping Stations	WW-0	Tecumseh, St. Clair Beach	A	\$0.20
West Tecumseh Trunk Sewer from CR 22 to CP Railway	WW-1	Tecumseh Hamlet	B ¹	\$3.78
Diversion Sewer south of CP Railway	WW-2	Tecumseh Hamlet	B ¹	\$0.36
East Tecumseh Trunk Sewer	WW-3	Tecumseh Hamlet	A+	\$0.84
Sylvestre Pumping Station Upgrade	WW-4	Tecumseh Hamlet	B	\$0.90
North Talbot Road Trunk Sewer	WW-5	Oldcastle Hamlet	A+	\$4.38
Northeast Windsor Trunk Sanitary Sewer, Forest Glade to Little River PCP	Windsor-1 ²	Windsor	-	\$ 2.87
West Tecumseh Trunk Sewer from CP Railway to CR 42	WW-6	Tecumseh Hamlet	B ¹	\$1.76
CR 42 Diversion Sewer	WW-7	Tecumseh Hamlet	A+	\$0.55
Purchase additional treatment capacity at Little River PCP	Windsor-2 ²	Windsor	-	\$ 8.00
South Tecumseh Trunk Sewer from CR 42 to Highway 401	WW-8	Southeast Tecumseh	A+	\$10.42
South Tecumseh Trunk Sewer from Highway 401 to Maidstone Hamlet	WW-9	Southeast Tecumseh	A+	\$3.59
Maidstone Hamlet Trunk Sewer	WW-10	Maidstone Hamlet	A+	\$1.38
Northeast Windsor Trunk Sanitary Sewer, Banwell Road to 8 th Concession Road	Windsor-3 ²	Windsor	-	\$ 5.20
Southwest Tecumseh Trunk Sewer	WW-11	Oldcastle Hamlet	A+	\$5.37
Purchase additional treatment capacity at Little River PCP	Windsor-4 ²	Windsor	-	\$ 5.00
Total Estimated Capital Cost				\$54.60

Notes: 1. Project may be Approved (Schedule A) if implemented under a Plan of Subdivision
2. Projects to be implemented by the City of Windsor in accordance with Wastewater Agreement, Nov. 2004

Figure ES- 2 2008 Preferred Wastewater Servicing Strategy



Implementation Plan

Ready and accessible public infrastructure is essential to the viability of existing and growing urban settlement areas in the Town of Tecumseh. Infrastructure planning, land use planning and infrastructure investment require close integration to ensure efficient, safe and economically achievable solutions to providing the required water and wastewater infrastructure.

Based on the projections for water demand or wastewater flow requirements of the service areas developed from the 2008 BPE, the project timing requirements were determined. This process took into consideration a logical extension of growth from the existing development. The evaluation of timing also took into consideration the availability of and need to maximize the use of existing infrastructure (within both the Town of Tecumseh and City of Windsor) and best judgement on reasonable timing of subsequent expansions.

Project timing was also integrated with the results of recent studies, Class Environmental Assessments and reports, and where possible other road upgrade projects being planned by the County of Essex and/or the Ministry of Transportation (MTO), to ensure that underground infrastructure was not scheduled after completion of road improvements. This did result in several projects being accelerated. Some project components have been initiated by the Town based on the updated servicing strategies and have been incorporated into recent budgets. Working within an affordability envelope, the Town has prioritized a list of essential 2009 projects.

The updated Implementation Plans and Capital Costs for the North service area (TN), Southeast service area (TSE) and Southwest service area (TSW) are summarized in Tables ES-4, ES-5 and ES-6, respectively. Table ES-7 summarizes the anticipated timing and preliminary costs for purchasing additional wastewater conveyance and treatment capacity from the City of Windsor in accordance with the terms and conditions established in the Windsor – Tecumseh Wastewater Agreement.

Table ES- 4 North Service Area Implementation Plan

TOWN REFERENCE ID	PROJECT IDs	DESCRIPTION	CLASS EA SCHEDULE	START YEAR OF CONSTRUCTION	COST (\$MILLION)
TN-1	WW-0	SCADA System for Cedarwood and Lakewood Pumping Stations	A	2008	\$0.20
TN-2	W-1, WW-1 & WW-2	West Tecumseh Trunk Facilities – North Section	B	2009	\$5.99
TN-3	W-2A, WW-3	East Tecumseh Trunk Facilities	A+	2010	\$1.15
TN-4	WW-4	Sylvestre Pumping Station Upgrade	B	2010	\$0.90
TN-5	W-2B	Trunk Watermain on Manning Road – North Section	A+	2010	\$1.33
TN-6	W-4 & WW-6	West Tecumseh Trunk Facilities – South Section	B	2013	\$2.64
TN-7	WW-7	Diversion Sewer on CR 42	A+	2014	\$0.55
TN-8	W-5	Trunk Watermain on Manning Road – South Section	A+	2014	\$0.66
Total Estimated Cost for North Service Area					\$13.42

Table ES- 5 SE Service Area Implementation Plan

TOWN REFERENCE ID	PROJECT IDs	DESCRIPTION	CLASS EA SCHEDULE	START YEAR OF CONSTRUCTION	COST (\$MILLION)
TSE-1	W-6 & WW-8	South Tecumseh Trunk Facilities – North Section	A+	2018	\$14.58
TSE-2	W-7 & WW-9	South Tecumseh Trunk Facilities – South Section	A+	2019	\$5.12
TSE-3	W-8 & WW-10	Maidstone Hamlet Trunk Facilities	A+	2020	\$2.07
TSE-4	W-9	Zone 2 Booster Pumping Station	B	2020	\$1.50
TSE-5	W-10	Zone 2 Water Storage Facility	B	2021	\$3.70
TSE-6	W-11	Trunk Watermain on CR 46	A+	2023	\$1.83
Total Estimated Cost for Southeast Service Area					\$28.80

Table ES- 6 SW Service Area Implementation Plan

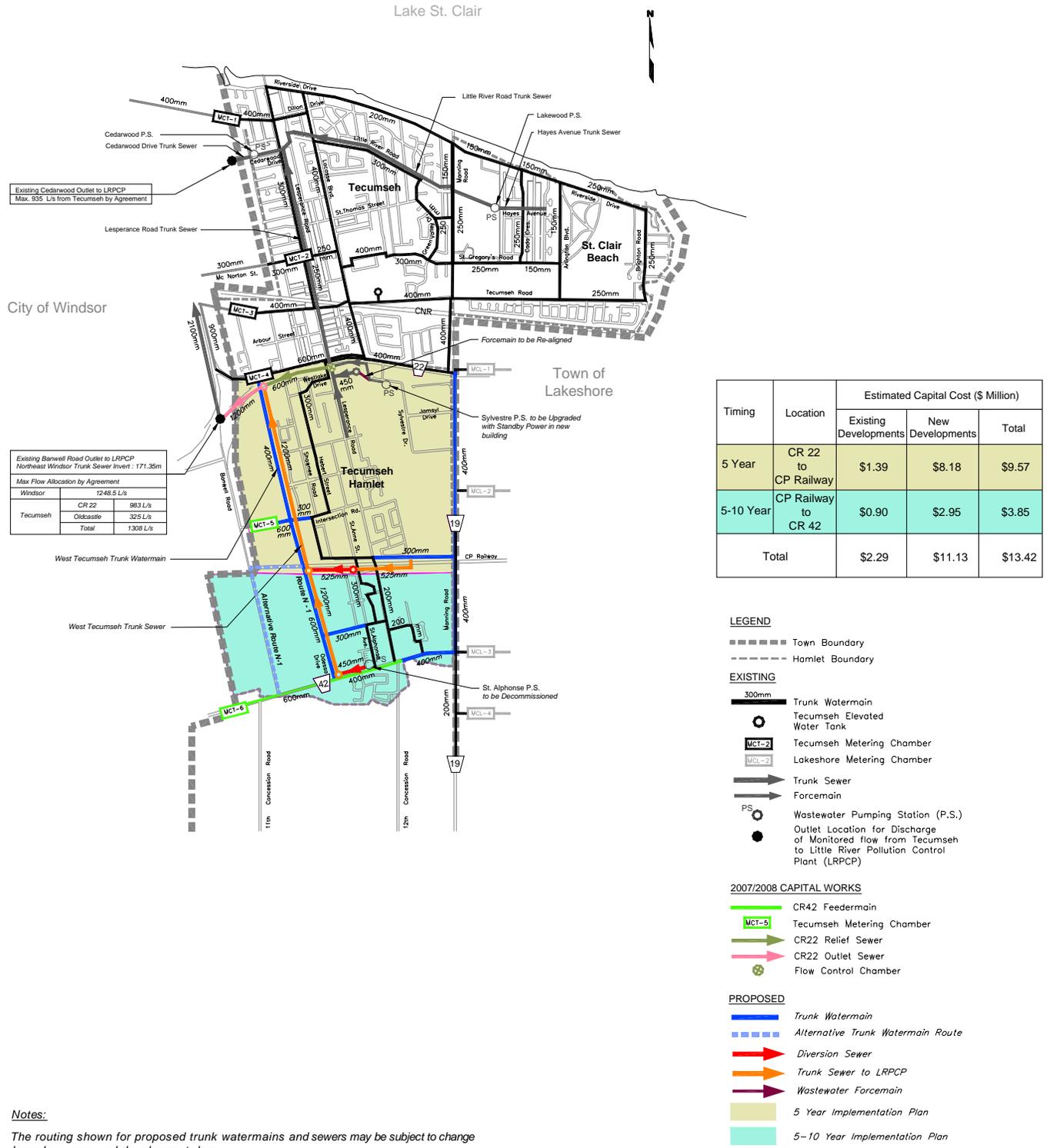
TOWN REFERENCE ID	PROJECT IDs	DESCRIPTION	CLASS EA SCHEDULE	START YEAR OF CONSTRUCTION	COST (\$MILLION)
TSW-1	W-3 & WW-5	North Talbot Road Trunk Facilities	A+	2009	\$5.61
TSW-2	W-12 & WW-11	Southwest Tecumseh Trunk Facilities	A+	2024	\$8.70
Total Estimated Cost for Southwest Service Area					\$14.31

Table ES- 7 Timing and Costs for Purchasing Additional Wastewater Capacity from Windsor

PROJECT ID	DESCRIPTION	ANTICIPATED TIMING	COST (\$MILLION)
Windsor -1	Purchase additional capacity in Northeast Windsor Trunk Sanitary Sewer, Forest Glade to Little River PCP	2011-2012	\$2.87
Windsor-2	Purchase additional treatment capacity at Little River PCP	2016-2017	\$8.00
Windsor-3	Purchase additional capacity in Northeast Windsor Trunk Sanitary Sewer, Banwell Road to 8 th Concession Road	2023-2024	\$5.20
Windsor-4	Purchase additional treatment capacity at Little River PCP	2025-2026	\$5.00
Total Estimated Cost for Purchasing Additional Capacity from Windsor			\$21.07

The preferred Water and Wastewater Servicing Strategies for the North, Southeast and Southwest service areas are depicted in Figures ES-3, ES-4 and ES-5, respectively.

Figure ES- 3 North Service Area Implementation Strategy



Notes:

The routing shown for proposed trunk watermains and sewers may be subject to change based on approved development plans.

Figure ES- 4 SE Service Area Implementation Strategy

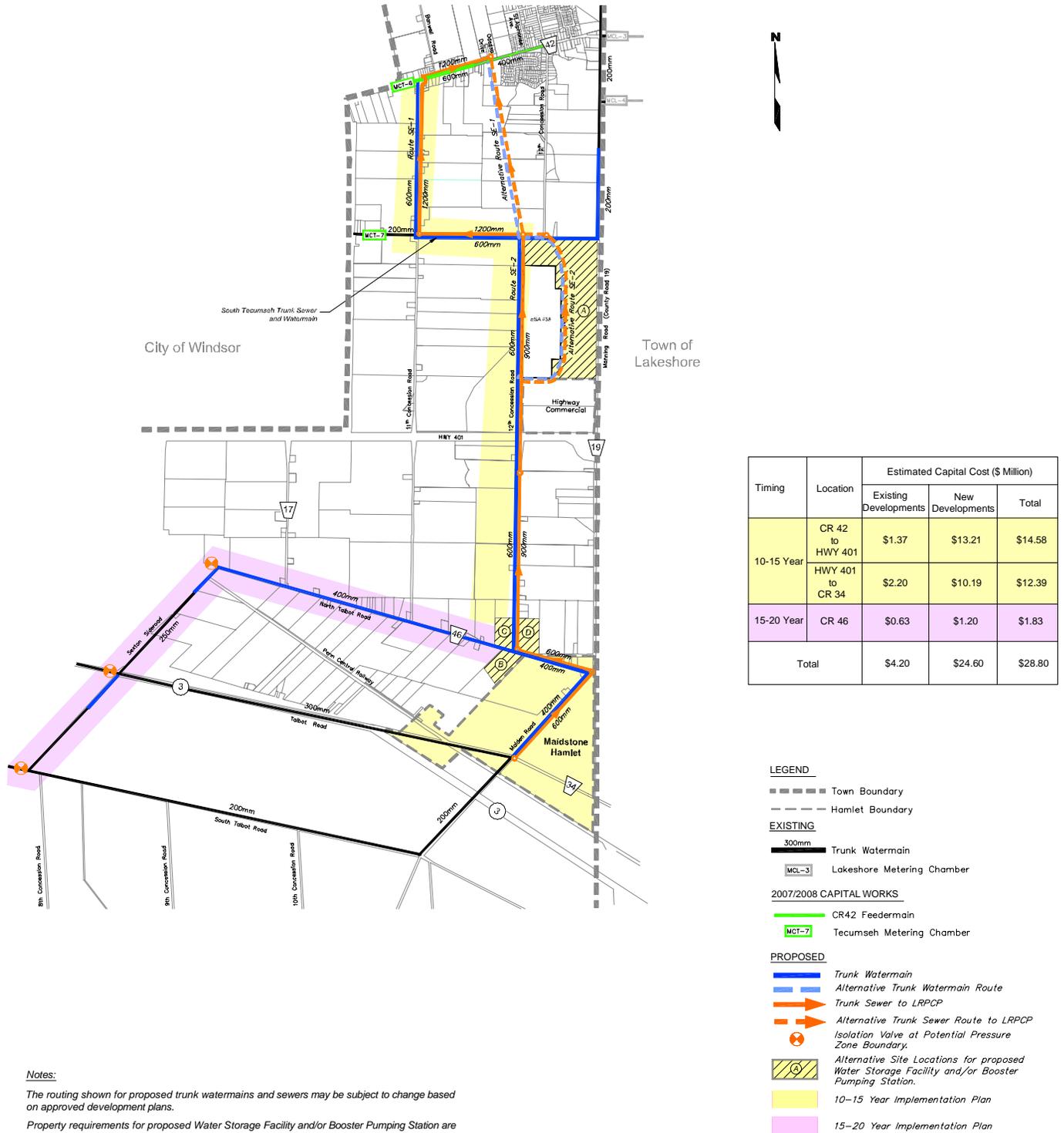
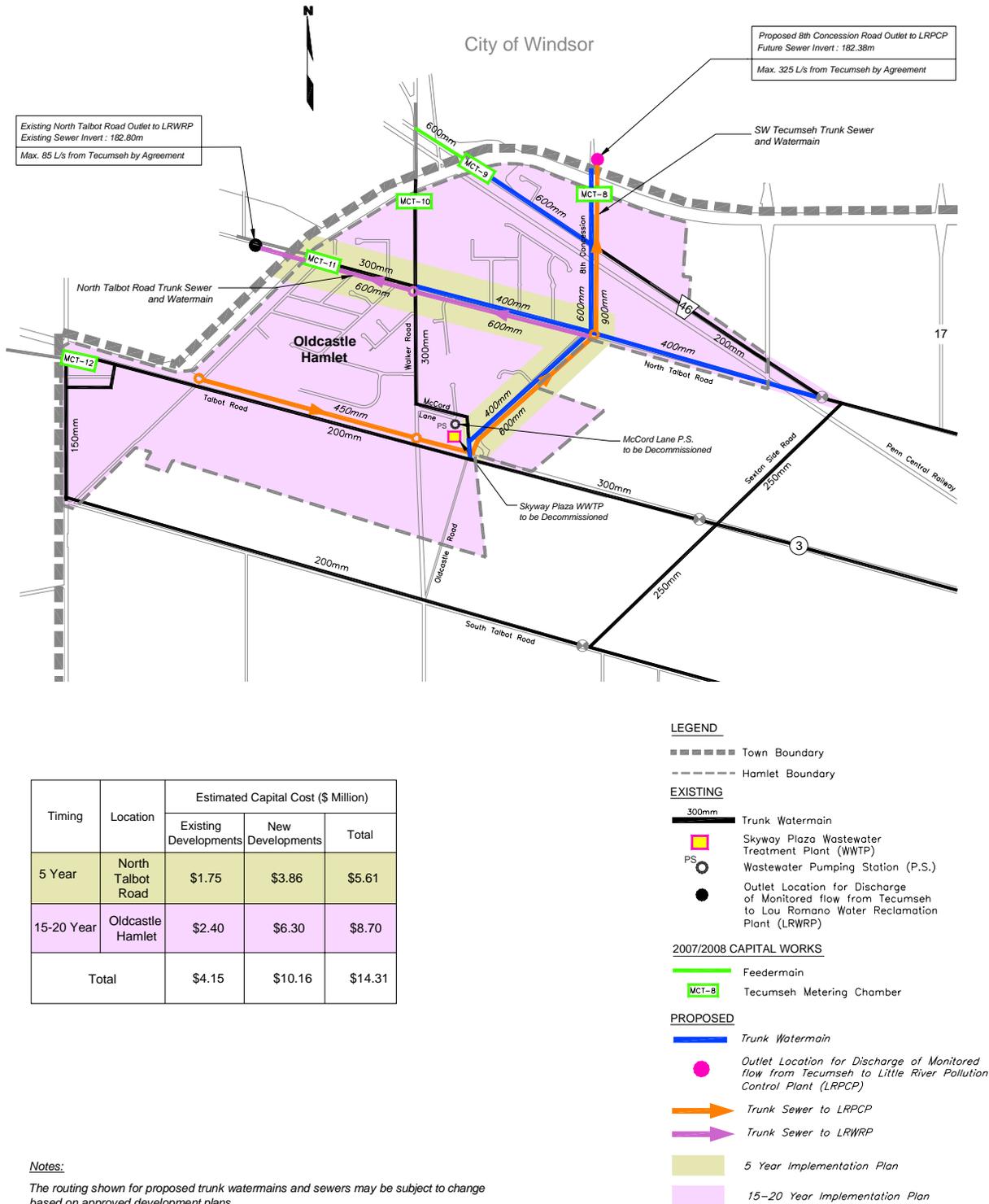


Figure ES- 5 SW Service Area Implementation Strategy



Timing	Location	Estimated Capital Cost (\$ Million)		
		Existing Developments	New Developments	Total
5 Year	North Talbot Road	\$1.75	\$3.86	\$5.61
15-20 Year	Oldcastle Hamlet	\$2.40	\$6.30	\$8.70
Total		\$4.15	\$10.16	\$14.31

Notes:

The routing shown for proposed trunk watermains and sewers may be subject to change based on approved development plans.

Property Requirements

Schedule B Projects that will require property acquisition by the Town are summarized in Table ES-8. Property requirements for routing alternatives are summarized in Table ES-9 and will be reviewed during the design phase for each respective project.

Table ES- 8 Property Requirements

PROJECT ID	PROJECT NAME	PROPERTY REQUIREMENTS	COMMENTS
WW-1, W-1, WW-6 & W-4	West Tecumseh Trunk Sewer and Watermain	Route N-1: min. 20.0 m wide easement between CR 22 and CR42 in Tecumseh Hamlet.	Alignment of trunk sewer and watermain along Route N-1 to be coordinated through Secondary Plan / Plan of Subdivision approvals. Town will secure/purchase permanent easement(s) prior to commencing detail design.
WW-4	Sylvestre Pumping Station Upgrade	A min. 25m wide by 30 m deep (.075 ha) parcel of land is required for the building site on or adjacent to Sylvestre Drive in Tecumseh Hamlet.	An evaluation of alternatives sites for the proposed building in close proximity to the existing pumping station will be undertaken prior to commencing detail design. The Town will purchase any required property prior to construction.
W-9	Zone 2 Booster Pumping Station	A min. 50m wide by 50 m deep (0.25 ha) parcel of land is required for the booster pumping station site between Baseline Road and Maidstone Hamlet.	Four alternative sites (A, B, C and D) have been selected for the proposed booster pumping station. A detailed evaluation of the alternative sites will be undertaken to identify the preferred site prior to commencing detail design. The Town will purchase any required property prior to construction.
W-10	Zone 2 Water Storage Facility	A 5.0 ha parcel of land is required for the water storage facility site between Baseline Road and Maidstone Hamlet.	Four alternative sites (A, B, C and D) have been selected for the proposed water storage facility. A detailed evaluation of the alternative sites will be undertaken to identify the preferred site prior to commencing detail design. The Town will purchase any required property prior to construction.

Table ES- 9 Potential Property Requirements for Routing Alternatives

PROJECT ID	PROJECT NAME	POTENTIAL PROPERTY REQUIREMENTS	COMMENTS
WW-8 & W-6	South Tecumseh Trunk Sewer and Watermain	Alternative Route SE-1: min. 20.0 m wide easement through vacant agricultural lands between CR 42 and Baseline Road. Alternative Route SE-2: min. 20.0 m wide easement around ESPA #38 through vacant lands between Baseline Road and Hwy 401.	Alternative routing of trunk sewer and/or trunk watermain to be evaluated prior to commencing detail design. If alternative routing is selected as the preferred solution, Town will secure/purchase permanent easement(s).

Summary

The preferred water and wastewater servicing strategies will support the short and long-term servicing needs of the approved growth areas and provide flexibility for servicing potential growth areas in the future. The strategies will also support meeting operational requirements, water quality and level of service objectives.

Upon completion of the Master Plan Update or Phase 2 of the EA process, Schedule A, A+ and B projects may proceed to Phase 5, Implementation, subject to finalization of the 30-day review period and assuming no Part II Orders are received. However, during implementation of some of these projects, additional study and analysis may be undertaken such as during the area servicing stages of development. While this work may address refinement to alignments, siting and minimizing environmental impacts, these projects will not require further planning under the Class EA process. The preferred water and wastewater strategies do not include any Schedule C projects requiring further planning under the Class EA process.

The following implementation requirements will be addressed during the subsequent steps (primarily during detailed design) of the projects:

- Finalization of property requirements
- Final refinement of infrastructure alignment and facility siting to ensure infrastructure is located outside regulated areas except for instances when it is unavoidable (watercourse crossings)
- Final refinement of construction methodologies including determination of crossing approaches including open-cut, tunnelling and structural supporting requirements
- Completion of additional supporting investigations including but not limited to:
 - Geotechnical investigations to support determination of construction requirements for the infrastructure
 - Hydrogeological investigations to evaluate potential impacts, to support mitigative requirements during construction and determine any dewatering requirements
- Mitigation of potential construction related impacts including but not limited to:
 - Traffic control
 - Noise, vibration and dust
 - Air pollution
 - Service interruption
 - Environmental and water disturbance or contamination
 - Siltation and erosion control
- Approval Requirements as required but not limited to:
 - Certificates of Approval from Ministry of Environment
 - Encroachment Permit from the Ministry of Transportation
 - Approvals from the County of Essex
 - Permit approvals from the Essex Region Conservation Authority (ERCA)
 - Associated Planning Act Approvals
 - Temporary Permit to Take Water for construction dewatering from the Ontario Ministry of the Environment.