To: Chair and Members
Lambton Area Water Supply System Joint Board of Management

From: Clinton Harper
General Manager

Subject: 2020 Operating and Capital Budget

Recommendation

That the following actions be taken by the Lambton Area Water Supply System Joint Board of Management with regard to the 2020 Budget.

1. The Board **receive** the LAWSS 20 Year Growth Plan as information.
2. The Board **receive** the WTP- Electrical Reliability Study as information.
3. The Board **receive** the WTP- Main Plant HVAC Assessment as information.
4. The Board **receive** the Facility Storage- Condition Assessment for the Indian Road Water Tower and West Lambton Pumping Station Reservoir as information.
5. The Board **approve** the 2020 Budget as presented with 3.0% increase.
6. The Board **receive** the 2020-2025 Capital Forecast as Information.

Proposed 2020 Operating Budget

Water Treatment Operations Contract

The two largest costs for the water supply system are:

1. OCWA Service Fee @ $2,214,969.
2. Electricity @ $1,525,000.

The total 2020 budgeted operating costs, including chemicals, fuel, sludge haulage, Sewage Fees, and insurance are estimated at $4.553 million. The estimate reflects a net 1.43% projected decrease compared to the 2019 budget. Of the $4.553 million, energy comprises approximately 34% of operating expenditures.

Administration and Other Expenses

The Administration and Other Expenses projected for the 2020 budget is approximately $378,000 and represents a $48,000 net increase over the 2019 budgeted amount. This net increase is due to numerous changes to the water supply system, including:

- $30,000 Annual Facility Maintenance
- $3,100 annually catering expenses and venue rentals
- $6,900 Meeting Management Software

Other factors that affect the overall cost accounted for under this section include:

- Overhead and service costs:
  - administration charges for IT, accounting, clerical, procurement and HR support are either new in 2020 or represent marginally increased to reflect current actual costs to the County and the City.
- Management & Administrative Personnel: The new employee being proposed in 2020 will result in minimum increase. The current funding was previously established for two fulltime employees. See Appendix C for job description.

Proposed 2020 Capital Budget

Project specific summaries are provided in Appendix B of this report.

Proposed Master, Financial and Asset Management Plan Rebuild Timeline

The Master, Financial and Asset Management Plan are guidance documents that assist staff in establishing the best direction for capital investment. These three documents continually grow as projects are completed and added. A reviewed and update of each is performed annually. It is necessary to rebuild each document every five years. Due to the effort required it is not recommended to complete a rebuild on more than one plan in one calendar year. It is proposed that the LAWSS Master Plan be rebuilt in 2020.

The Master Plan is being proposed first because it established the main directions with respect to policy. The Master Plan directs how the Financial and Asset Management Plans are applied.

	Current Version	**Proposed Re-build**
Master Water Plan	Jan. 2015	2020
Asset Management Plan	2009	2021
Financial Plan	Dec. 2014	2022

The 20 Year Growth Plan

In 2019 LAWSS completed a 20 Year Growth Plan that identified a number of issues, existing and future, with the LAWSS distribution/transmission network.

Existing Issues Identified:

- East Lambton Booster Station (ELBS) Fill Constraints.
- ELBS to Watford Standpipe Network Capacity.
- ELBS to Forest Standpipe Network Capacity.

The next step is to complete a Municipal Class Environmental Assessment (Class EA) of each of the issues. It is proposed that the Class EA for these issues be included in the 2020 Master Plan rebuild in 2020.

The Class EA process will entail a wholistic approach to identifying appropriate alternative. The 20 Year Growth Plan will be one component in the overall assessment process.

Grid Re-enforcement and Twinning Expansion

In 2012 LAWSS undertook a Class EA to address redundancy and reliability issues in south Sarnia and St. Clair Township. A twinning of the transmission network between LaSalle Line and Courtright Line along Tashmoo Ave. and the grid re-enforcement of the section between Confederation and Lasalle Line along Indian Road and MacGregor, in the City of Sarnia, were identified as the best solution. In June 2021 the Class EA for this project expires.

There have been a number of major changes and additional requirements that have been imposed by the Province since 2012. It is recommended that a complete review of the original Class EA is completed in 2020. The review, also know as an "Addendum" at this point will allow LAWSS to complete the additional requirements and effectively extend the project start window out an additional ten years. An "Addendum" is expected to take approx. 8months and will cost approx. $105,000.

If the work to complete the Twinning and Grid Reinforcement Project does not begin prior to June 2021, and no "Addendum" is undertaken in advance of the deadline, it is expected that the existing Cass EA will be considered invalid by the Province. If a new Class EA needs to be undertaken it is possible that the recommended solution will differ from what was previously recommended. Previously completed detailed engineering for the original solution would no longer be valid.

This review and update of the Class EA for Grid Reinforcement and Twinning is strongly recommended included in the 2020 Budget proposal.

WTP Electrical Reliability Study

In 2019 an electrical reliability study of equipment located at the WTP was completed. In 2020 LAWSS will be replacing the Main Plant 4160V Switchgear as part of the Generator Replacement Project. The study revealed that all electrical equipment downstream of this new equipment is beyond its life expectancy and is in need for systematic replacement. The reliability study provides a path forward for equipment replacement. In 2020, while the new 4160V Switchgear is being installed it is proposed that engineering design be completed to replace the 5kV Motor Control Group A & B. Engineering costs for this project are estimated at $90,000. Beyond 2020 an additional

1.7 million dollars will be needed in combined engineering and construction to complete the project. Project schedule is outlined in the attached Capital Plan Forecast (Appendix A).

WTP Main Plant HVAC Assessment

In 2019 an assessment of the Main Plant HVAC system was completed. The assessment revealed that all equipment still utilized for Main Plant HVAC has reached or surpassed life expectancy. The dehumidification air handler, which services the majority of the plant area, has had its refrigeration coils removed in a recent project. The modification means this equipment can no longer provide dehumidification. In 2017 major piping was insulated, and while this work substantially reduced the need for de-humidification, there are still many exposed piping and equipment that generate and are affected by excessive condensation.

Project engineering is proposed for 2020 and is estimated at $111,000. The resulting project is estimated at $738,000 and scheduled for 2021. The project will include the replacement of all major main plant HVAC components and the addition of an air-cooled chiller to replace the once-through cooling water. Project schedule is included in the attached Capital Plan Forecast (Appendix A).

Facility Storage- Condition Assessment

Indian Road Water Tower Assessment Summary

In 2019 as assessment was completed on the Indian Road Water Tower. The assessment revealed that the exterior coating system is providing an adequate level of corrosion protection to the tank structure. The interior lining is also providing an adequate level of corrosion protection to the steel structure. The assessment noted that severe localized corrosion developed at some point in time prior to the last rehabilitation project and resulted in significant pitting throughout the entire storage cell and main inlet riser structure. Due to the severe pitting of the interior steel surfaces and remaining life of the interior and exterior coating systems it is recommended that short-term and long-term rehabilitation upgrades are completed.

It is proposed that in 2021 the tank will be drained, cleaned and thoroughly inspected to assess for any impacts of the severe pitting found during the ROV inspection. The inspection work will include full access to the interior steel surfaces, plate thickness measurements of affected areas and non-destructive testing. The inspection will help establish and refine timing/scope for long-term solution. In addition, the short-term upgrades in 2021 will include items that are required for safe access of the facility as well as any immediate work that could be completed without affecting the interior and exterior coating system.

Short-term Upgrades: (Downtime= 3-4 weeks):

- Thorough inspection of the tank interior to ascertain the extent of steel pitting.
- Touch-up of interior lining system, as required.
- Replacement of existing fall restraint system.
- Removal and replacement of existing D-ring transfer anchors.
- Installation of rescue ports at the main platform and roof of the tank.

Long-term Upgrades: (Downtime= 4-6 months):

- Interior steel repairs.
- Full replacement of the interior lining system.
- Full replacement of the exterior coating system, complete with construction of a temporary scaffolding structure and lead abatement.
- Tank appurtenance, accessory and safety system upgrades.
- Electrical and process upgrades.

Engineering for the short-term upgrade are included in the 2020 budget proposal to facilitate a 2021 project. In 2020 a modified operational plan will be developed to allow for the removal of the Indian Road WT from operation for 3-4 weeks. Engineering of the long-term upgrade is proposed for 2023 to facilitate a 2024 project. The schedule for the long-term upgrade may be impacted by the results from inspections carried out during the short-term upgrade. Project schedule is included in the attached Capital Plan Forecast (Appendix A).

West Lambton Pumping Station Reservoir

In 2019 as assessment was completed on the West Lambton Pumping Station Reservoirs. The assessment revealed that the interior lining system is nearing the end of its useful life and full replacement within the next 1 to 2 years is recommended to prevent further corrosion and escalating steel repair costs. Since the interior condition of the North Reservoir appears better than the South Reservoir, it is recommended to start the rehabilitation process with the South Reservoir.

The assessment also confirmed that the exterior coating system has surpassed its useful life and is no longer providing an adequate level of corrosion protection to both reservoirs. Due to its current condition and its characteristics, installation of an overcoat system on either reservoir is not feasible. Full replacement of the coating system by abrasive blasting is recommended in the immediate future.

Full Rehabilitation of the North and South Reservoir (Downtime: 5-7months/reservoir)

- Complete replacement of the interior lining system by abrasive blasting.
- Inspection of interior steel sections and repairs as required.
- Inspection of the magnesium anodes and repairs as required.
- Complete replacement of the exterior coating system including repairs to the galvanized tank components such as stairways, platforms and appurtenances.

- Safety system upgrades.
- Electrical and process upgrades.

Engineering for both the north and south reservoir is included in the 2020 Budget proposal. During the engineering process OCWA will be requested to assist in developing and proving a modified operational plan that will allow for 1/2 reservoirs offline for duration of the expected 5-7 months rehabilitation timeline. Rehabilitation of the south reservoir is proposed for 2021. Rehabilitation of the north reservoir is proposed for 2022. Project schedule is included in the attached Capital Plan (Appendix A).

2020 Capital Plan

Brief project summaries are provided in Appendix B.

Lifecycle Projects (Maintain Level of Service (LOS))

Proposed projects in the 2020 Capital Budget aimed at maintaining current LOS.

- 5kV Motor Control Group A & B (Engineering Component) @ WTP.
- Main Plant HVAC Rehabilitation (Engineering Component) @ WTP.
- Reservoir Rehabilitation (Engineering Component) @ WLPS.
- Indian Road Water Tower Rehabilitation (Engineering Component).
- Field Gate 4G Network Upgrade.
- Condition Assessment - Port Lambton SP & Watford SP.

In addition to the above-noted capital projects, the 2020 Capital Budget includes approved Major Maintenance Projects. Major Maintenance projects are defined by the service agreement as maintenance projects estimated to not exceed $50,000. These projects are undertaken by the contacted operating authority, OCWA, on behalf of the Board. All Major Maintenance projects are listed in Appendix A.

Service Improvement Projects (Enhanced Level of Service, Regulatory Changes, Efficiency)

Proposed projects in the 2019 Capital Budget geared towards enhancing LOS.

- Master Water Plan
- PLC Conversion/upgrade & Construction
- Loop Study & Corrosion Control Member Municipality Impact Study.

Capital Forecast

A number of capital projects are projected beyond the 2020 Capital Budget year, which will have an impact on the financial forecast and future water rates for the water system. LAWSS Master Water Plan is in need of a rebuilt and is included in the 2020

Capital Budget proposal. Future updates to the Asset Management Plan and Financial Plan are anticipated to be initiated in 2021 and 2022.

Flow and Financial Analysis

To fund the work forecasted in the Capital Plan a 3% sustained increase is needed over the next three years to the overall LAWSS Budget.

2018 Demand Actuals (Flow) are used to determine cost allocation between Member Municipalities in the current years budget proposal. Demand Actuals collected between January 2019 and August 2019 were used to determine anticipated total 2020 demand. A 5-year trending analysis was used to estimate total demand beyond 2020.

Actual 2018 Total Demand	17,986,680m^3
Anticipated 2019 Total Demand (Estimate based on Jan-Aug 2019 Actuals)	18,167,000m^3
Anticipated 2020 Total Demand (Estimate based on 2014-2018 Trending)	18,412,000m^3

Financial forecast in Table #1 expresses cash flow at 3.0% increase if maintained for the next 3 years. Note that the total expenses in 2022 exceed the starting balance for that year. This means that, while that year's total revenue is expected to cover total expenses, LAWSS may need to carry up to 9.1 million in debt within the year to cover the cost to operate the system.

Table #1	**Budget 2019**	**Prop. 2020**	**2021**	**2022**	**2023**	**2024**
Annual Demand (Ml)	17.44	17.81	18.17	18.41	18.66	18.91
Water Rate (/m^3)	$0.545	0.554	0.559	0.569	0.57	0.57
Budget % Incr	0.0%	3.0%	3.0%	3.0%	0.0%	0.0%
Starting Balance (x1000)	$6,828	$4,299	$7,286	$4,424	$1,628	$5,936
Total Revenue (x1000)	$9,877	$10,040	$10,337	$10,643	$10,794	10,939
Total Expenses (x1000)	$12,407	$7052	$13,199	$13,440	$6,486	9,346
Ending Balance (x1000)	**$4,299**	**$7,286**	**$4,424**	**$1,628**	**$5,936**	**$7,529**

This report was prepared by Clinton Harper, LAWSS General Manager.

Attachment(s): 2020 LAWSS Operating, Maintenance, and Capital Budget DRAFT

Appendix A: 2020 Capital Plan with Forecast for 2020 to 2025

Appendix B: 2020 Capital Project Summary

Appendix C: LAWSS Compliance Coordinator- Job Description

Appendix B: 2020 Capital Project Summary

Lifecycle Projects (Maintain LOS)

4	5kV Motor Control Group A & B (Engineering)- as per Electrical Reliability Study prepared by EXP and presented within 2020 Budget Report.
13	Main Plant HVAC Rehabilitation (Engineering)- as per Main Plant HVAC Assessment Report prepared by Building Innovation and presented within the 2020 Budget Report.
31, 32	Indian Road WT and West Lambton Pumping Station South Reservoir Rehabilitation- as per Assessment reports prepared by CIMA and presented within the 2020 Budget Report

Service Improvement Projects (Enhance LOS, Growth, Regulatory Changes, Efficiency)

17	PLC Conversion/upgrade & Construction– Relocation and upgrade of PLC equipment located in Filter Gallery.
45	Field Gate 4G Network Upgrade- System flow meters, located in the transmission network, and used by LAWSS to capture the billable flow information use proprietary software on a 3G wireless to communicate with the WTP. This project will complete a required upgrade of all meters onto their 4G platform.
48, 70	Loop Study & Corrosion Control Member Municipality Impact Study- The City of Sarnia is undertaking a three-year program to get a better understanding of the quantity of lead service connections within its limits. If it is determined that lead service connections are extensive then corrosion control will be needed at the LAWSS WTP. Approx. 2 years of research and analysis is needed prior to implementing corrosion control at LAWSS. The Loop Study and Corrosion Control Member Municipality Impact Study is recommended to begin in 2020.
62	Master Plan– A Master Plan for the Lambton Area Water Supply System was completed in 2015. The purpose of the Master Plan Update is to identify capital works and operational changes that to address future water supply needs.
77	Condition Assessment - Port Lambton SP & Watford SP

Appendix C: LAWSS Compliance Coordinator

Title: Compliance Coordinator

Summary or Duties:

Reports to LAWSS General Manager. Acts under the direction of the LAWSS General Manager to review, monitor and audit the operation of the Lambton Area Water Supply System for compliance with regulatory and legal requirements, water quality control and assurance, compliance of the contract operator with the Service Agreement, and compliance with the system's Environmental Management System and ISO14001 standard. Assists and coordinates public information on the performance of the Lambton Area Water Supply System.

Work Performed:

Monitors and conducts reviews of the operation of the Lambton Area Water Supply water treatment and transmission systems for compliance and conformance to best management practices, policy/procedure, contractual operational requirements, regulatory and legal requirements, develop Environmental Management Systems, and water quality management systems.

Coordinates and conducts periodic (internal) audits of the Lambton Area Water Supply System for compliance and conformance to best management practices, policy/procedure, contractual operational requirements, regulatory and legal requirements, Environmental Management Systems (ISO14001), and water quality management systems.

Participates or assists in the development and implementation of Environmental Management System programs and other management system programs.

Prepares reports and supporting documentation for water supply Joint Boards of Management and recommends to General Manager for approval.

Schedules, arranges, attends and chair meetings with members of LAWSS technical leads, contractors, individuals, utilities, and other external agencies and authorities to plan, coordinate and discuss projects, including public meetings and forums.

Investigates complaints and inquiries and provides information and/or makes recommendations on resolving problems.

On-site investigation, providing technical expertise and resolution of water quality, operational and regulatory issues.

Carries out field liaison with contractors, stakeholders, City forces, businesses and other municipalities as a Lambton Area Water Supply System representative.

Prepares "Requests for Proposals" for Consulting Engineers and professional consultants/contractors. Reviews and recommends submitted proposals for approval.

Prepares in-house contract documents and provides resident site inspection as “City” Inspector.

Administers capital works projects. Monitors the project for compliance with policy/procedure, and Safety Act and Regulations and takes action appropriate to correct contraventions. Audits for conformance to policies and procedures.

Reviews, assesses for compliance and recommends acceptance of various technical studies, computer analyses, designs, drawings, applications and proposals submitted by consultants, contractors and others for approval by General Manager

Maintain and manage of the LAWSS Geographical Information System.

Assists in the creation, maintenance, modifications and dissemination of public information through the water supply website, media release, brochures, and documentation.

Performs related duties as assigned.

Qualifications:

Three-year Community College Environmental Technology Diploma, or equivalent education and directly related work experience.

Experience:

Four years related experience.

Specialized Training and Licenses:

Skills and abilities in the following areas are necessary:

Valid Driver's Licence - Class G

Demonstrated proficiency in word processing, spreadsheets, databases, and various software.

Working knowledge of Management Systems and standards.

Working knowledge of the Ontario Health and Safety Regulations for construction and inspection projects, and industrial establishments.

Working knowledge of provincial and federal water and related environmental regulations and standards

Working knowledge of the Ontario *Safe Drinking Water Act* and regulations.