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LON-003 ES2453	Applegate Stormwater Management Facility	This project will improve the water quality discharging to the receiver, Dingman Creek; it involves constructing a retrofit design to an existing stormwater management facility in a residential neighbourhood. It will in increase the volume of the pond and improve the flow paths through the facility to decrease areas of stagnant water, and increase treatment capacity. *Change: Increased construction requirements to manage higher than anticipated groundwater levels with the construction of a clay liner.*
LON-004 ES6075	Design and purchase of Organic Rankine Cycle equipment for Power Generation and Waste Heat Recovery Systems & Biosolids Optimization at Greenway Pollution Control Plant	The main focus of this project will involve the pre-purchase of the critical components including an Organic Rankine Cycle engine power unit and heat exchanger, preliminary building modifications and process and electrical designs to generate 450 kW of electricity from waste heat recovered from the Greenway biosolids incinerator. A secondary component is a study to evaluate the potential to use waste heat from the incineration process to replace several natural gas Heating, Ventilation, and Air Conditioning (HVAC) units; the study will also evaluate the plant's end of life hydronic heating piping system and any upgrades needed to handle additional heating loads. Biosolids Optimization Study: Currently 40% of the biosolids generated in the City of London are dewatered to 3-4 % solids at satellite plants then trucked to Greenway for incineration. This study will evaluate the feasibility of dewatering those solids to 25% solids at the satellite plants before transportation to Greenway thereby reducing the number of loads from approximately 7000 per year to 2000. Waste Heat Utilization and Optimization: The Greenway plant currently uses waste heat from the biosolids incinerator to heat most plant buildings and spaces through a hydronic heating system; however, there are several natural gas fired HVAC units onsite that can potentially be converted to utilize the hydronic system. A study will evaluate the feasibility of converting the natural gas units to the hydronic systems as well as any upgrades needed. This system is independent of the proposed Organic Rankine Cycle system. Future projects will be identified. *Change: During the design phase it was discovered that the addition of Rotating Drum Thickener (RDT) is required to accommodate tight space requirements of the Organic Rankine Cycle (ORC) with new access to penthouse required.*
LON-005 ES5403	East London - Sanitary Servicing Study	This project will provide a Master Plan and Servicing Co-ordination Study to evaluate interim and ultimate sanitary servicing strategies, including adjacent external lands that may impact ultimate servicing; it will also examine current and planned sewer separation projects as well as drinking water distribution projects to establish preferred timelines that allow coordination of construction projects. Future projects will be identified. *Change: Scope of work for the successful consultant was reduced due to knowledge gained during previous work done by the same company.*

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LON-006 ES6078	Conduct Facility Improvement Studies at 4 Wastewater Treatment Facilities across the city.	This Wastewater Treatment Plant improvement study will evaluate: Increased Phosphorus Removal; Capacity Optimization; Flood Proofing Measures. This study will evaluate potential technologies that can improve phosphorus removal while potentially adding plant treatment capacity. This project will also evaluate the vulnerability of the Adelaide and Greenway plants to flooding and evaluate the flood proofing measures required. Future projects will be identified. *Change: Preliminary recommendation of the study was to explore an emerging technology to reduce phosphorus in plant effluents. The increase in scope included pilot testing of CoMag and BioMag technology in order to validate the findings and preliminary recommendation of the wastewater treatment plant study.*
LON-007 ES5085	Treatment Plant Energy Reduction With Turbo Blowers - Supply and Install	The main process air blowers at the Greenway Wastewater Treatment Plant are 30-40 years old, are inefficient by current standards and have reached the end of their service life. Upgrading some of these blowers to more efficient Turbo blowers will save 3.38 million ekWh/year worth approximately $600,000. The electrical efficiency at the Pottersburg plant will also be improved with this new technology. A grant of $900k from the Independent Electricity System Operator is included as Other Contributions. *Change: Purchase of fourth blower for Greenway Section 3, as the existing blower failed to function properly in parallel with new blowers. Aeration field valve actuators have also been identified to be failing, without replacing these, the full energy efficiencies will not be realized.*
LON-008 ES3042	Design and Construction of Flood Protection Measures at the Vauxhall Pollution Control Plant	This project will evaluate and construct the flood proofing measures needed to protect the plant against stormwater damage, including berming the perimeter of the plant as well as effluent pumping. It will also relocate a surplus generator to the Vauxhall plant for emergency power protection adding to the plant's climate change resiliency. *Change: During the design phase the addition of sheet piling over earthen berm, additional channels to accommodate future phosphorus upgrades, overland flows are recommended.*
LON-009 ES5019	Treatment plan odour control upgrades	London has several wet chemical (chlorine) scrubbers at the Adelaide, Pottersburg and Greenway treatment plants and the Clarke Road Pumping Station biofilter. Recent upgrades at other facilities have used ozone disinfection and have also incorporated heat recovery to reduce the seasonal energy required to heat the air as well as reducing maintenance costs. This project will replace the remaining wet chemical scrubbers with ozone and heat recovery. *Change: Reduced the scope of the project to replace the scrubbers at Clarke Road biofilter in place of the Gordon Avenue and Wonderland Road biofilters.*

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LON-010 ES5432	Design and Construction of Technology Upgrades (Supervisory Control and Data Acquisition (SCADA) and Security) at 30 Wastewater and 14 Water locations across the City	This project will modernize London's sewage treatment plants and drinking water facilities in three ways: 1. Security improvements with new operated gates, access control and camera systems to better secure 5 Wastewater and 1 Water facility. 2. Replace aging Programmable Logic Controllers (PLC) and update Supervisory Control and Data Acquisition (SCADA) software to improve operating reliability at 30 Wastewater and 14 Water sites. 3. Design a city wide surface water quality monitoring program. Future projects will be identified. *Change: Scope of work reduced to accommodate increased scope in Vauxhall project (LON008). Eliminated several lower priority satellite locations.The satellite locations that are to be eliminated completely from work are Pottersburg, Vauxhall, Adelaide and Oxford. We would also reduce the amount of work to be done at the Springbank Reservoir and Station.*
LON-011 ES6076	Purchase and Install of Variable Frequency Drives at 4 Sanitary Pump Stations	Replace aging Variable Frequency Drives at 4 Pumping Stations. Complete Electrical upgrade including Master Control Centre, automatic transfer switch and generator at Trafalgar Pumping Station. *Change: Existing equipment was re-used on site as much as possible to reduce overall installed cost.*
LON-013 ES3043	Mornington Area Storm Drainage Servicing - Environmental Assessment	Identifying an outlet and strategy for storm drainage for this area of the City will allow the separation of existing combined sewers. It will also help allow an existing storm/relief sewer which currently conveys some of these storm flows to be rededicated as a sanitary relief sewer. Future projects will be identified. *Change: Scope of work for the successful consultant was reduced due to knowledge gained during previous work done by the same company.*
LON-014 ES2331	Sewer Separation Program Acceleration -Design and Construction	Design and construction to install separated sewers where combined and replace watermain where required. - Frances Street -425m, 52 customers (replacing 100mm watermain & 200mm concrete Sanitary; new storm sewers to separate combined flows) - Margaret Street -330m, 38 customers (replacing 200mm watermain & 200mm Sanitary; new storm sewers to separate combined flows) - Ethel Street -100m, 0 customers (remove old watermain, replace 300mm sanitary, new sewers to separate combined flows) - Elworthy Avenue -440m, 35 customers (replacing 200mm watermain; 200mm & 250mm sanitary;200mm & 375mm storm which is undersized) - Franklin Avenue -275m, 30 customers (replacing 150mm watermain;20mm sanitary; 250mm storm which are undersized and do not cover entire street) - Grosvenor Street -490m, 63 customers (replacing many sizes of watermain & 200mm and 250mm sanitary; new sewers to separate combined flows) *Change: Expanded scope on Frances Street (additional 120m) including a trenchless railway crossing to replace sanitary sewer which was required to accommodate proper sewer gradient not originally anticipated prior to completion of detailed design of project. Ethel Street retained existing watermain and did not require sanitary sewer. Storm sewer was installed as planned.*

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LON-015 ES2334	Sewer Separation and Infrastructure Renewal - Planning and design for future projects and construction of one high priority project	This project will accelerate the design phase of projects for the replacement of combined sewers with separated and replace watermains where required – Wistow St, Waterloo St., Talbot Ave. By completing the design project now, including public engagement as most of these are in the downtown core area, the City will be able to separate these combined sewers and reduce overflows to the Thames River much earlier than planned. These projects will support the phosphorous reduction strategies for Lake Erie by reducing bypasses and overflows to the Thames River watershed. *Change: Expanded scope to construct Wistow Street; design work only included in the original application. Wistow Street has been identified as a high priority need for immediate construction. This project along with a few future projects will allow the decommissioning the Paardeberg Sanitary Pumping Station. Elimination of this pump station will result in a reduction of sanitary overflows as well as energy savings.*
LON-017 EW3506	Arva Water Pumping Station Optimization and Energy Efficiency - Planning Study	We will hire a consultant to complete a study that will identify and develop options to improve energy efficiency at the pumping station. Future capital projects and needs will be identified. *Change; Scope of work for the successful consultant was reduced due to knowledge gained during previous work done by the same company.*
LON-018 EW2410	Trunk Watermains Syphons and Pipeline - Inspections and Condition Rating	We will complete a condition assessment of critical feedermains in our water distribution system that have been recommended to be inspected based on their risk of failure. We will also inspect critical wastewater syphons. Future projects will be identified. *Change: A different less intrusive method of inspection has been selected based on availability of City support forces and the different pipe materials being inspected.*
LON-020 EW3548	Watermain Cleaning and Relining - Design and Construction	We will complete structural relining of 400 mm and 450 mm Cast Iron and Ductile Iron Watermain to extend its useful life by 60 years along a total length of 2100 metres. (Wortley Road from Beaconsfield to Devonshire – 1750 m of 450mm diameter watermain. Wortley Road from Base Line to Commissioners – 350 m of 450mm diameter watermain.) The project will reduce disruptive water main breaks and improve water quality for roughly 250 properties directly fed by the Wortley Road watermain. This includes mostly multi-family and single family residential properties, several small businesses including restaurants, retail, offices etc. all along Wortley Road. *Change: Scope of work reduced to accommodate increased scope in Sewer Separation Planning (LON0015). Reduced overall length of Watermain being cleaned and relined.340 metres on Wortely road will be lined from Base Line to Commissioners road and 810 metres on Colonel Talbot will be lined from Southdale to CherryGrove.*
LON-023 EW3539	Springbank Reservoirs No. 1 & 3 Protective Membrane Condition Assessment	The project will assess the condition of the protective membranes on two reservoirs (Springbank Reservoirs No. 1 & 3) and identify needs for repairs or replacement. Future projects will be identified. *Change; Scope of work for the successful consultant was reduced due to knowledge gained during previous work done at this facility by the same company.*