SRPRS.18.057
APPENDIX A – TERMS OF REFERENCE
URBAN MASTER EVNIRONMENTAL SERVICING PLAN UPDATE
Class Environmental Assessment Master Plan

This request for quotation is for the supply of consulting services to update the 2014 Urban Master Environmental Servicing Plan in support of the planned growth and intensification within the network of centres and corridors identified in the Town's Official Plan. The performance requirements for the Deliverables are set out in the sample form of contract attached.

BACKGROUND:

In 2010, Richmond Hill Council adopted a new Official Plan ("OP" or "Plan") that sets out the long term vision for growth and development in Richmond Hill. Given that Richmond Hill's settlement area is nearly built out, most of the future growth and development in the Town will occur through intensification. Directing new growth to the centres and corridors as set out in the Plan represents a city-building approach to developing a complete community. The hierarchy of centres and corridors is intended to achieve the Town's intensification target and accommodate growth based on a comprehensive land use planning framework to direct and manage population and employment growth to 2031.

To meet this challenge, the policies of the Official Plan reflect the planning direction of the Province and York Region while balancing the desires of the community for managed growth at a scale that reflects the local context and positively contributes to the Town's character and identity. Growth is directed away from environmental areas that, over time, are to be enhanced as important natural features of a connected Greenway System that includes a linkage with urban open spaces. Much of the Town's future growth will occur in the form of mixed-use development, through intensification that is directed to a network of centres and corridors.

In 2014, the Town completed an Urban Master Environmental Servicing Plan (UMESP). This UMESP was undertaken to provide direction to new Secondary Plans within the Town's centers and corridors, and set out environmental servicing requirements for future development applications. In addition the UMESP identified necessary municipal infrastructure improvements within the study area, including costing to support the Town's development charge bylaws.

The UMESP was also undertaken to establish the methods of municipal servicing for the study area (refer to Section 1.2 of the 2014 UMESP for the study area description and location), including sanitary drainage, storm drainage, water supply and distribution systems, stormwater management, and transportation, along with assessments of energy conservation strategies, district heating and cooling systems, and community energy plans in accordance with the Official Plan. The UMESP also included an assessment of development impacts to the existing natural groundwater and surface water systems and natural heritage features, and appropriate recommended mitigation measures and enhancement or restoration opportunities.

In general, the UMESP was undertaken to identify the infrastructure works needed to support the urban structure framework defined by the Official Plan, with emphasis on the following areas that define the centres and corridors of the Town's urban structure: Richmond Hill Centre, Key Development Areas, Regional Corridors, Local Centres, Local Development Areas, and Local Corridors (refer to Schedules A1 and A2 of the Official Plan, which illustrate the Urban

Structure and Land Use areas of the Town). All of the Town's new Secondary Plans incorporate policies that implement the findings of the UMESP.

Each UMESP study component was undertaken with the broad objectives of characterizing existing conditions, evaluating the impacts, opportunities, and constraints associated with fulfilling the Official Plan projections and policies, and recommending works or additional investigations needed to support and complement future growth. In addition to traditional infrastructure requirements, this MESP is intended to identify and recommend appropriate sustainable development techniques such as green infrastructure, low impact development measures, and energy conservation.

OBJECTIVES/PURPOSE:

The purpose of the study is to update various components of the 2014 Urban Master Environmental Servicing Plan (UMESP) to reflect updated land use and growth forecasts within the study area and to reflect updates to existing conditions and related assumptions based on growth that has occurred within the study area. More specifically, this study will update the Water Resources, Water and Wastewater Services and Energy components of the 2014 UMESP.

Within the UMESP study area, the Town has adopted new Secondary Plans and related background studies for the Downtown Local Centre and Yonge and Bernard Key Development Area in 2017 and is currently preparing a draft Secondary Plan for the Yonge/16th Key Development Area with completion anticipated in 2018. Secondary Plans have yet to be completed for the Richmond Hill Center and Oak Ridges Local Center. The Official Plan also contemplates Tertiary Plan and Infill Study areas where intensification may also occur in the form of low and medium density development. These studies/plans inform the UMESP where there may be interdependencies between these areas and adjacent Centres or Corridors. The Town has also completed Tertiary Plans for the Benson Hunt, Weldrick Road, and Bond Crescent development areas from 2013 to 2017, expanded the Puccini Drive Infill Study area and completed the Harris Beach Infill Study.

The original UMESP study was initiated in 2012 and since that time numerous development applications have been received within the study area. These applications are at various stages in the development approval process. A number of supporting documents including Functional Servicing Reports, Geotechnical Reports and Hydrogeological Reports have been submitted with these development applications in accordance with the UMESP recommendations. Where appropriate, these studies shall be used to inform the UMESP update.

This study will update the direction for new Secondary Plans within the Town's centers and corridors that have yet to be completed, as well as the environmental servicing requirements for future development applications. This study will update requirements for Secondary Plan areas and establish requirements for development applications and necessary municipal infrastructure improvements within the study area, including costing to support the update to the Town's development charge bylaws scheduled for 2019.

Based on the updated land use, growth forecasts, and updated information regarding existing and

development conditions within the study area, this study will update the method of municipal servicing for the study area, including sanitary drainage, storm drainage, water supply and distribution systems, and stormwater management. The study will also update potential approaches to energy conservation, including the feasibility of advancing a district energy system in the Richmond Hill Centre, and the feasibility of a community energy plan to support new climate change policies under the Growth Plan and in accordance with the Regional and Town OPs. This study shall update sustainable community design by identifying best management practices, such as low impact development measures and monitoring programs to assess performance.

This study will also update development impacts to the existing natural groundwater and surface water systems and update recommendations to mitigate the identified impacts and to protect, enhance or restore identified natural systems. The updated mitigation measures shall identify servicing requirements, development standards, and building or servicing constraints or design criteria to be implemented for development applications within the Town, with specific direction for secondary plan areas.

The municipal servicing requirements and development impacts will be based on the land use plans and population densities identified through the Richmond Hill Official Plan, and recently adopted Secondary Plans within the study area. The municipal servicing requirements shall have regard to protecting, enhancing and restoring the existing natural features or systems within and surrounding the study area.

Study Area

The study area will include the network of centres and corridors which include the secondary plan areas for local centres, key development areas, and the Richmond Hill Centre urban growth centre, as well as the other remaining intensification areas identified within the Richmond Hill Official Plan. The study area will be consistent with the 2014 UMESP (refer to Section 1.2 of the 2014 UMESP for the study area description and location). The study area shall include all natural heritage features within 120 meters of the development area limits and surface or subsurface water features within 200 meters of the development area limits. The study area limits may need to be extended beyond these boundaries depending on the results of the development impact assessment.

Servicing Standards and Policies (Local/Regional/Provincial)

The UMESP update is to give due regard to the standards and policies of the Town; The Regional Municipality of York; the Province of Ontario, including Ministry of the Environment and Climate Change, the Ministry of Energy, the Ministry of Municipal Affairs, and the Ministry of Natural Resources and Forestry; and the Toronto and Region Conservation Authority.

DELIVERABLES

BACKGROUND AND EXISTING CONDITIONS REVIEW

A number of documents shall be reviewed as background information to this study including but not limited to:

- 2014 Urban Master Environmental Servicing Plan (including InfoSewer and InfoWater models)
- Town of Richmond Hill Official Plan
- Town of Richmond Hill Sustainability Metrics
- Town of Richmond Hill Environment Strategy (Implementation Plan section)
- Secondary Plans for Downtown Local Center and Bernard Key Development Area
- Draft Secondary Plan for Yonge/16th Key Development Area.
- Tertiary Plans for Benson Hunt, Weldrick Road, and Bond Crescent
- Puccini Drive Infill Study Expansion
- Harris Beach Neighborhood Infill Study
- Harris Beach Infill Area Master Environmental Servicing Plan
- Supporting Municipal Servicing, Geotechnical Studies, Hydrogeological Studies and Natural Heritage Evaluations for the completed Secondary Plans or Tertiary Plans
- York Region Class EA Study for Yonge Street/Highway 7 Regional Center Water and Wastewater Servicing including detailed design plans
- Functional Servicing Reports, Geotechnical Reports, Hydrogeological Reports and submitted in support of development applications within study area (as available from approximately 36 development applications)
- Source Water Protection Plan prepared by CTC Source Protection Region and applicable legislation
- MOECC Draft Community Emissions Reduction Planning: A Guide for Municipalities
- Town of Newmarket Community Energy Plan
- City of Vaughan Municipal Energy Plan
- City of Markham Municipal Energy Plan

The existing conditions review shall include any updates to municipal, regional, conservation authority or provincial information, standards, policies or regulations as they relate to the various components of this UMSEP update. Possible sources of updated information would include but are not limited to, the Town, York Region, the Toronto and Region Conservation Authority (TRCA), the Ministry of Natural Resources and Fisheries (MNRF) and other provincial or federal agencies which may have updated base data, including floodplain mapping, natural heritage strategies, watershed plans, topographical mapping, aerial photography, groundwater systems mapping, rainfall data, water well records, soils and geologic mapping, etc.

Growth Forecast

The Growth Plan for the Greater Golden Horseshoe allocates population and jobs to York Region to 2041. 1,790,000 residents and 900,000 jobs are forecasted to be accommodated within York Region. Presently, York Region is undertaking a Municipal Comprehensive Region (MCR) to, among other matters, allocate this forecast to its Lower Tier municipalities, including the Town of Richmond Hill. Following the conclusion of the Region's MCR, the Town will initiate a similar exercise. However, for the purpose of this UMESP update, population and job forecasts provided by the Town will be estimates based on current Official Plan policy permissions and growth assumptions that have been vetted through York Region staff but not yet approved by York Region Council. These forecasts are for the purpose of understanding the Town's capacity to accommodate growth and to assist with updating the UMESP based on best available information. These forecasts are subject to change pending the conclusion of the Region and Town's MCR.

Class Environmental Assessment Master Plan

The UMESP update study and documentation shall be structured to satisfy the requirements of a Class Environmental Assessment Master Plan. The work shall include all necessary documentation, notifications and public information centers to satisfy Phase 1 and Phase 2 of the Municipal Class EA process. The work shall include all necessary display materials and documentation for two public information center meetings to be held at the Town. The work shall include preparing individual project sheets for each improvement project and filing of the final EA study report with the Ministry.

MUNICIPAL SERVICING REQUIREMENTS FOR STUDY AREA AND ENVIRONMENTAL IMPACT ASSESSMENT

Based on the updated land use plans, growth forecasts, and understanding of existing conditions for the study area, the required infrastructure improvements to provide adequate municipal servicing shall be updated for the study area with specific recommended improvements/requirements for each secondary plan area based on the Town's land use and design policies for each secondary plan area. The work shall include updating the assessment of development impacts to the existing natural groundwater and surface water systems and natural heritage features and provide updated recommendations to mitigate the identified impacts and to protect, enhance or restore identified natural systems or features.

WATER AND WASTEWATER SERVICES

Sanitary Drainage System

The required improvements to the sanitary drainage system shall be updated based on the following analysis and shall be included in the final study report. The Town will provide the InfoSewer models for existing conditions and for the various development or growth scenarios used in the 2014 UMESP. The analysis shall include, but is not limited to:

- Assemble available sanitary flow monitoring information from the Region and from development activity applicable to the study area.
- Review available sanitary flow monitoring information to assess performance of existing sanitary system and available capacity.
- Update the existing conditions model to reflect 2016 system conditions (2016 population and employment data will be provided by the Town).
- Assess performance of existing system under 2016 existing conditions and identify any system constraints.
- Research use of alternative design standards (including persons per unit, peaking factors and inflow/infiltration) for calculation of peak sanitary flow rates for high density development based on similar studies or development approvals from other municipalities.
- Undertake a risk assessment with respect to the use of alternative design standards for high density development with respect to adequate capacity within the sanitary system including options to mitigate risk such as sanitary flow monitoring and use of calibrated system models.
- Provide recommendations on the use of alternative design standards and recommendations for mitigation of associated risk to system capacity.
- Update future conditions model to reflect up to four growth scenarios based on population and employment data (population and employment data for growth scenarios will be provided by the Town).
- In reference to the 2014 future conditions models, review ability to undertake a more discretized assignment of growth units within catchment areas to ensure assignment is not overly conservative and to ensure optimal use of residual capacity in existing system.
- Identify sanitary system improvement options to accommodate the peak flows from the various growth scenarios.
- Using the future conditions model, undertake a sensitivity analysis to compare system improvements required based on use of conventional Town design standards and use of alternative design standards for generation of peak flow rates.
- Finalize future conditions models and options for required system improvement based on design standards confirmed by the Town (note that sizing of system improvements will be based on Ultimate growth scenario).
- Evaluate options for system improvement based on the following criteria:
    - overall capital costs
    - ability to Phase implementation
    - conflicts with other existing services or utilities and potential relocation
    - disruption to residents and private properties due to construction or road closures

  - watermain depth and location relative to expected buildings
  - land ownership for proposed new sewer locations
- Identify the preferred system improvements and estimate the timing for improvements in consultation with the Town.
- Compare sanitary system improvements to location and timing of transportation system improvements identified in the 2018 Transportation Master Plan and identify potential efficiencies in combining system improvements under one project.
- Prepare cost estimates for system improvements of sufficient detail to support the preparation of the 2019 update to the Town's development charges bylaws;
- Prepare individual project sheets for each improvement project in accordance with Class EA requirements.
- Identify the potential benefit and cost associated with an inflow and infiltration assessment of the existing sanitary system at each improvement project location and a potential strategy for implementation.
- Based on consultation with the Region, confirm available capacity in the Regional sanitary system and improvements required to the Regional sanitary system including associated timing to accommodate growth within the study area.

Water Distribution System

The required improvements to the water distribution system shall be updated based on the following analysis and shall be included in the final study report. The Town will provide the InfoWater models for existing conditions and for the various development or growth scenarios used in the 2014 UMESP. The analysis shall include, but is not limited to:

- Review existing and future system model assumptions with respect to boundary conditions based on consultation with Town and Region. Ensure model assumptions accurately reflect existing conditions and future improvements to Regional water system.
- Obtain most recent water system pressure and flow tests available from Town to be used to assess model accuracy.
- Research fire flow requirements for high density development based on similar studies or design standards from other municipalities.
- Provide recommendations on the use of a fire flow design standard for high density development for the Town.
- Update the existing conditions model to reflect 2016 system conditions (2016 population and employment data will be provided by the Town).
- Assess performance of existing system under 2016 existing conditions and identify system constraints to provide adequate supply and residual pressures for all demand conditions.
- Update future conditions model to reflect up to four growth scenarios based on population and employment data (population and employment data for growth scenarios will be provided by the Town).
- Identify water distribution system improvement options to provide adequate water system supply and residual pressures for all demand conditions for the various growth scenarios (note that sizing of system improvements will be based on Ultimate growth scenario).

- Evaluate options for water system improvements based on the following criteria:
  - overall capital costs
  - ability to Phase implementation
  - conflicts with other existing services or utilities and potential relocation
  - disruption to residents and private properties due to construction or road closures
  - sewer depth and location relative to expected buildings
  - land ownership for proposed new watermain locations
- Identify the preferred water system improvements and estimate the timing for improvements in consultation with the Town.
- Compare water system improvements to location and timing of transportation system improvements identified in the 2018 Transportation Master Plan and identify potential efficiencies in combining system improvements under one project.
- Prepare cost estimates for water system improvements of sufficient detail to support the preparation of the 2019 update to the Town's development charges bylaws;
- Prepare individual project sheets for each improvement project in accordance with Class EA requirements.
- Based on consultation with the Region, confirm available capacity in the Regional water distribution system and improvements required to the Regional system including associated timing to accommodate growth within the study area.
- Review methodologies to promote water conservation for high density developments including implementation strategies and methods to confirm if water conservation is effective in reducing water system demands and sanitary flow rates.

WATER RESOURCES

Surface Water – Storm Drainage Systems and Stormwater Management

Based on the background information review and more specifically any updated municipal, regional, conservation authority or provincial information, standards, policies or regulations related to storm drainage or stormwater management (including volume control, quality control, quantity control and LID measures), update assumptions, impact assessment and recommendations from the 2014 UMESP.

Groundwater System – Hydrogeology and Water Balance

Based on the background information review and more specifically any updated municipal, regional, conservation authority or provincial information, standards, policies or regulations related to water balance and hydrogeology, update any assumptions, impact assessment and recommendations from the 2014 UMESP (storm drainage system modeling will not be required as part of the UMESP update). Background information shall include the geotechnical and hydrogeological reports submitted in support of development applications within the study area. The background review shall update the following components of the 2014 UMESP:

- Understanding of existing geology and hydrogeology including geologic sections.
- Understanding of groundwater conditions.
- Water balance calculations and impact assessment related to growth.
- Construction constraints associated with underground parking structures and constraint mapping for the study area.
- Recommendations for geotechnical, hydrogeological and water balance studies to be submitted in support of site specific development applications.

ENERGY

Based on the background review and research, update the feasibility of district energy within the study area including potential costs/benefits, implementation strategy and policy recommendations from the 2014 UMESP. This study shall update the feasibility of advancing district energy in the Richmond Hill Centre through various owner/operator options (e.g. Town-owned, agreement with Markham District Energy, or through another partnership) and provide an estimated cost per capita of developing district-energy readiness in the study area. This study shall also update the feasibility of implementing a Town-wide community energy plan (or community energy and emissions plan) with emphasis on the study area including updating the potential benefits and implementation strategy from the 2014 UMESP. Consideration shall be given to Provincial guidelines for municipal community energy/emission plans, York Region's work to develop a Region-wide Community Energy Plan, and more recent community energy plans and processes from comparator municipalities such as Newmarket, Vaughan and Markham. This study shall also update the opportunities for use of renewable energy sources and energy efficient building design.

SCHEDULE OF TIMELINES

Contract for consulting services shall begin on April 2, 2018. The background review and updating of existing conditions shall be completed by June 1, 2018. A draft assessment of required water and wastewater improvements including associated costing shall be completed by October 1, 2018. The final assessment and recommendations for water and wastewater system improvements including associated costing shall be completed no later than December 31, 2018. The deadlines associated with water and wastewater improvements are required to support Town Development Charge Update studies to be completed in 2019.

A draft study report shall be completed no later than March 1, 2019. The deadline for completion of the UMESP Update study and final reports shall be May 1, 2019.

REPORTING, MEETINGS AND DOCUMENTATION REQUIREMENTS

Consistent with the 2014 UMESP, the recommendations for each study component of this UMESP update shall address the infrastructure improvements, requirements, and recommendations necessary at three different scales:

- At the study area wide scale, the recommendations are associated with the overall study area.
- At the Secondary Plan scale, the recommendations provide input and guidance with respect to the infrastructure needs for those areas within the MESP study area requiring Secondary Plans.
- At the site plan scale, the recommendations provide requirements and guidelines for infrastructure works, criteria, and analyses that must accompany individual site-specific development applications.

The Secondary Plan scale recommendations for each study component shall include guidance with respect to policy development or requirements for existing and future secondary plans. The study shall also provide guidance for updating the Town Sustainability Metrics documentation to reflect the study recommendations.

Appropriate members of the consulting team will be required to attend bi-weekly meetings with Town staff, bi-monthly Steering Committee Meetings, two Public Information Center meetings and four Stakeholder Consultation Meetings. All meetings will be held at the Town offices.

The consultant will be required to provide eight (8) hard and digital copies of all draft reports or documentation and eight (8) hard and digital copies of the final report for the UMESP update study.

MATERIAL DISCLOSURES

The following documents are available for review:

- Urban Master Environmental Servicing Plan dated May, 2014 (including InfoSewer and InfoWater models)
- Town of Richmond Hill Official Plan dated July, 2010
- Town of Richmond Hill Sustainability Metrics
- Town of Richmond Hill Environment Strategy
- Secondary Plans for Downtown Local Center and Bernard Key Development Area
- Draft Secondary Plan for Yonge/16th Key Development Area.
- Tertiary Plans for Benson Hunt, Weldrick Road, and Bond Crescent
- Puccini Drive and Harris Beach Neighborhood Infill Studies
- Harris Beach Infill Area Master Environmental Servicing Plan