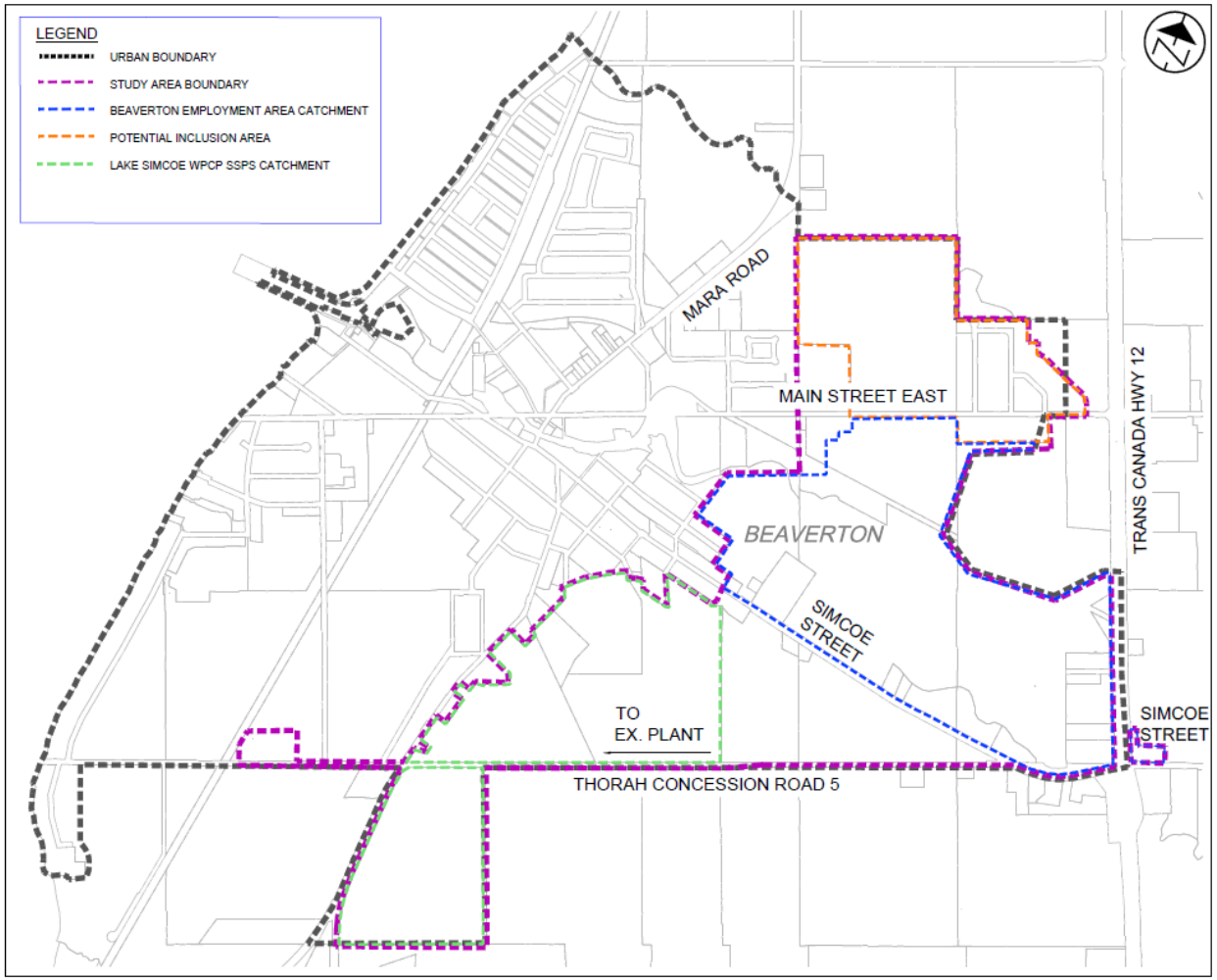
Beaverton Employment Area Sanitary Sewage Pumping Station Environmental Assessment

Class Environmental Assessment Schedule ‘B’

Town of Brock Council Meeting

Study Purpose

- The purpose of the project is to plan for the sanitary servicing of the remaining developable lands within Beaverton Urban Area.
- This study is to facilitate growth within the lands and to provide a means to convey wastewater to the Lake Simcoe Water Pollution Control Plant (WPCP).
- The Employment Area lands located at the northwest quadrant of Simcoe Street and Hwy 12 must be drained to the Lake Simcoe WPCP.
- In order to provide service to the Employment Lands it is anticipated that a new SSPS will be required.
- External lands, outside of the Employment Area Catchment, can drain by gravity to the Lake Simcoe WPCP SSPS.
- The existing SSPS and the Lake Simcoe WPCP does not have sufficient capacity for the proposed development.
- The Class EA will evaluate potential locations for a future SSPS site and select a preferred alternative.
- Additionally, the study will define the expansion requirements for the existing SSPS at the Lake Simcoe WPCP.



Beaverton Employment Area Catchment

The Employment Area Catchment lands are defined as areas which will drain to the proposed SSPS within the employment area.

In addition to the Employment Area Catchment, the Region requested potential for including lands to the north of the urban boundary within the catchment area.

Land Use	Employment Lands Catchment	Potential Inclusion Area	Total Catchment Area
Residential (ha)	28.58	56.13	84.71
Commercial (ha)	16.65	-	16.65
Industrial (ha)	36.52	-	36.52
Total Flow (L/s)	**122.29**	**51.27**	**173.56**

Assumptions:

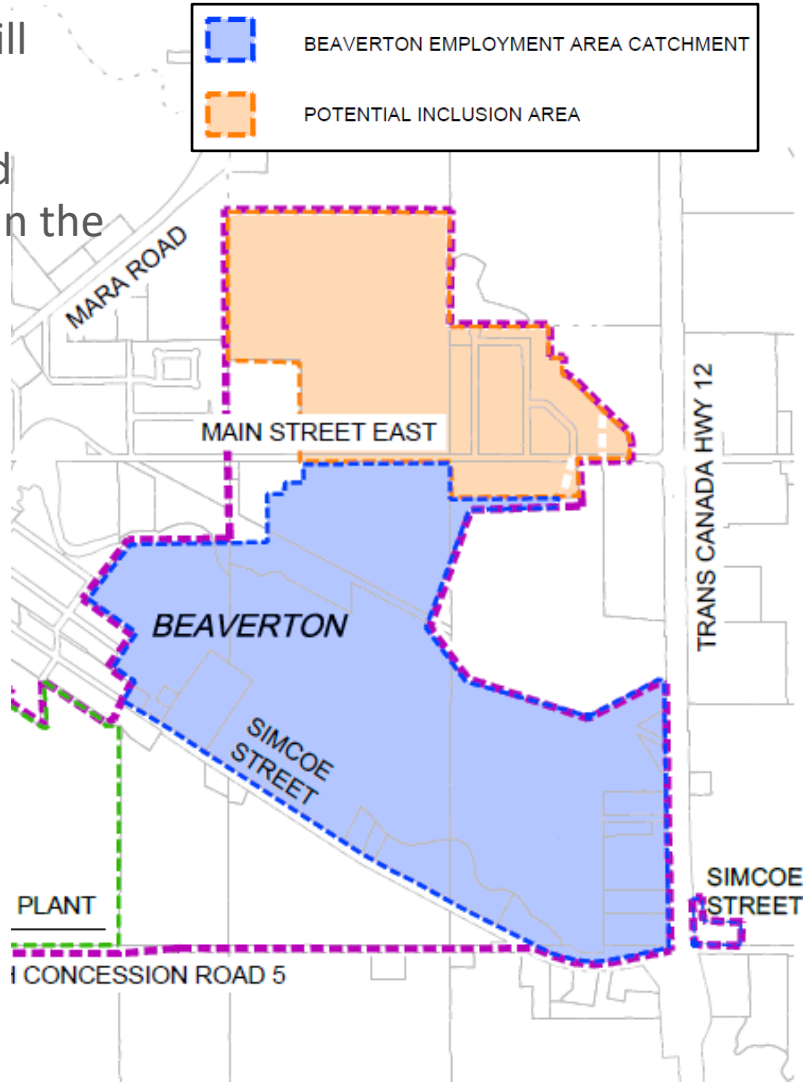
Residential Density - Based on development plan

Residential Flow - 364 L/person/day, Peak Flow – Harmon Formula

Commercial Flow - 180 m^3/ha/day

Industrial Flow - 90 m^3/ha/day

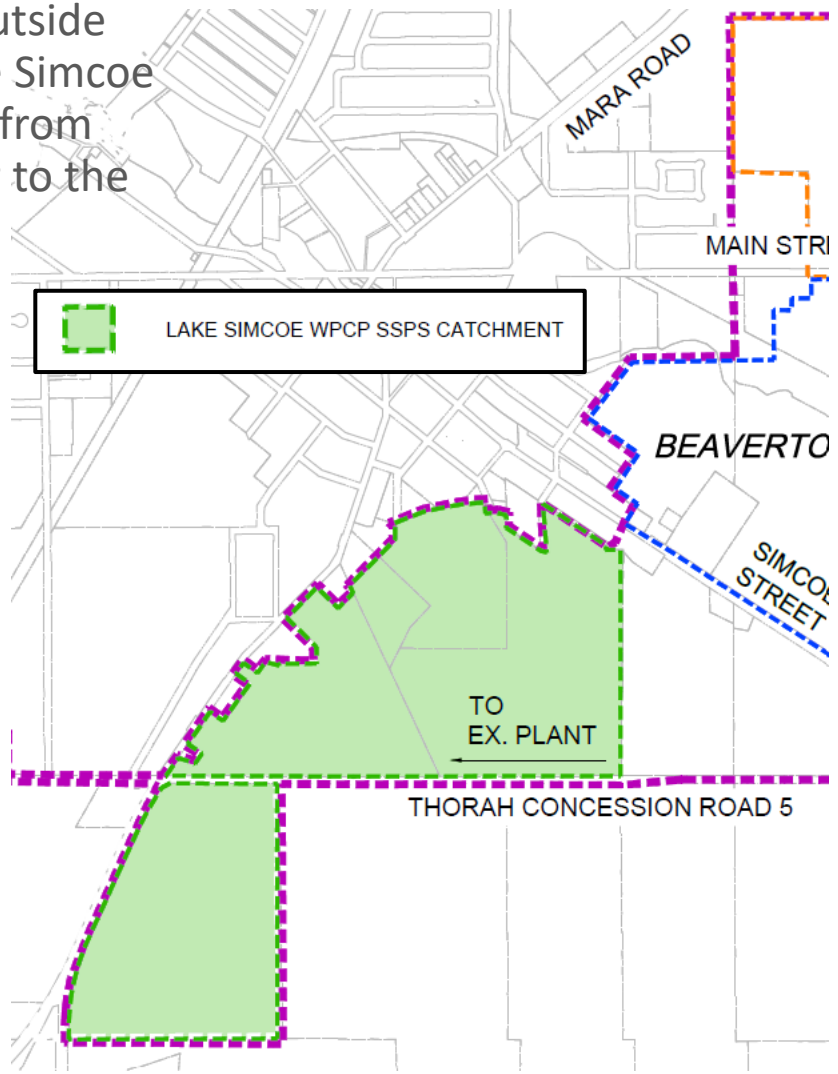
Infiltration Rate - 22.5 m^3/ha/day



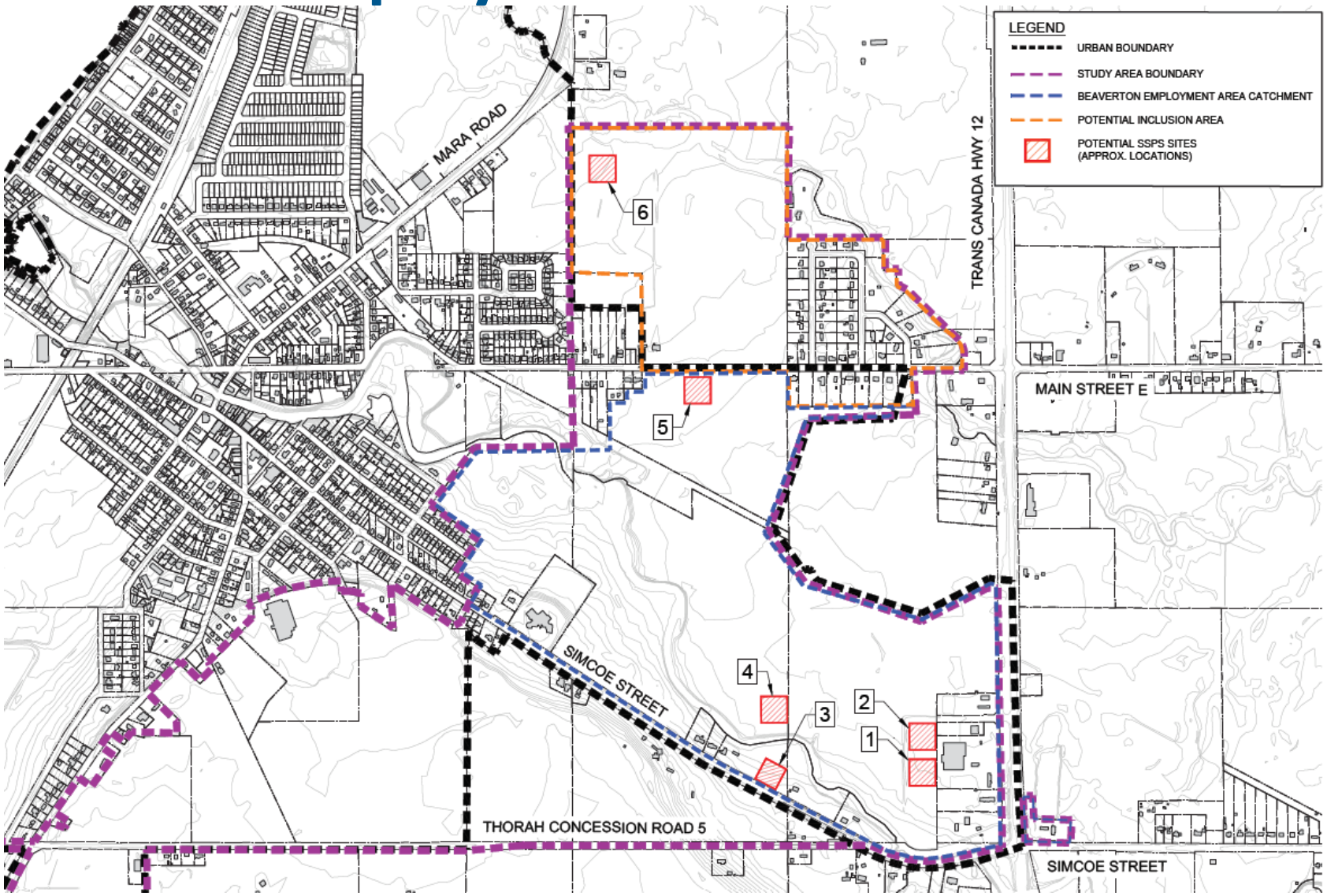
Beaverton External Development Area

The external development areas are defined as lands which are outside of the proposed SSPS catchment but will drain to the existing Lake Simcoe WPCP SSPS. The wastewater flows from the area will be excluded from the proposed sanitary drainage area but will share a gravity sewer to the Lake Simcoe WPCP.

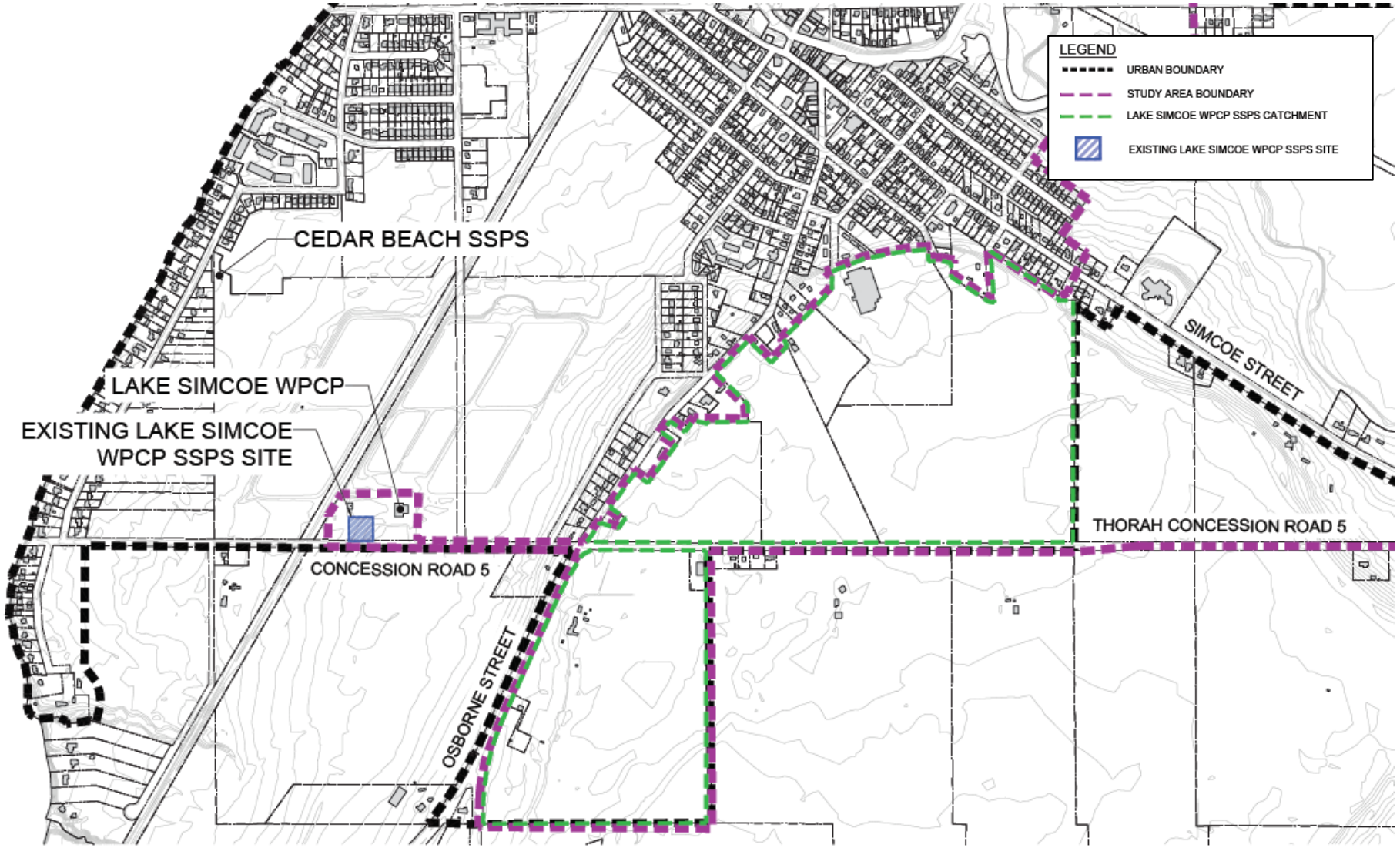
Land Use	Lake Simcoe WPCP SSPS Catchment	Employment Lands Catchment	Total Drainage Area to Lake Simcoe WPCP
Residential (ha)	13.84	84.71	98.55
Commercial (ha)	-	16.65	16.65
Industrial (ha)	81.65	36.52	118.17
Total Flow (L/s)	**122.87**	**173.56**	**296.43**
Residential Density - Based on development plan			



Potential SSPS Site Alternative Locations for Beaverton Employment Area



Existing Lake Simcoe WPCP SSPS Site



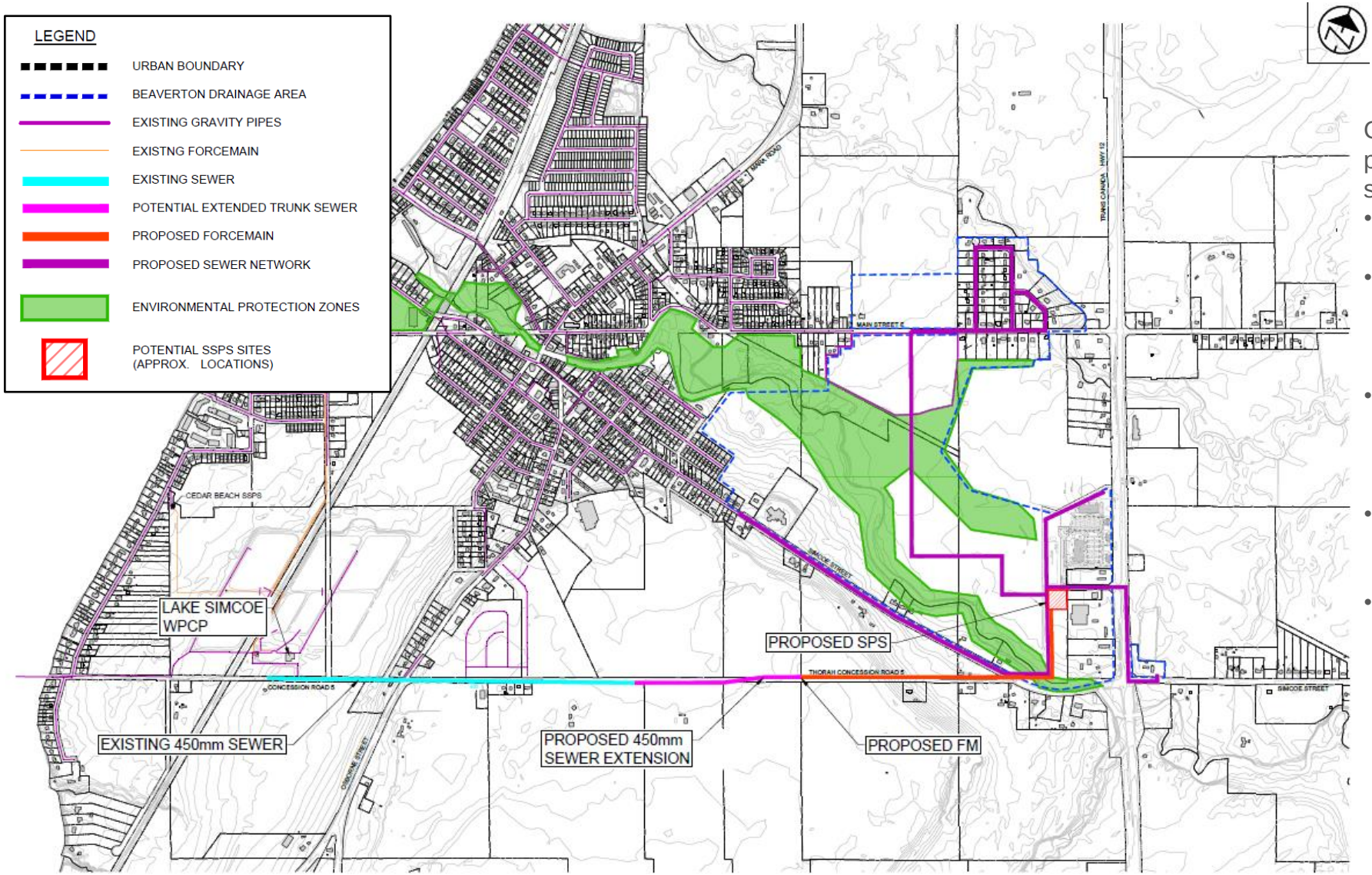
EVALUATION CRITERIA	ALT 1	ALT 2	ALT 4	DESCRIPTION OF IMPACT
Technical Environment				
Geotechnical Suitability	◔	◔	◔	Based on geotechnical background study, all sites are within similar geotechnical environments. Very soft to soft silty clay soils are encountered in the vicinity of Site 1, 2 and 4. Deep foundations or ground improvement techniques would need to be considered for all sites.
Suitability of Elevation and Topography	●	●	◕	The catchment area is relatively flat, however all sites are at relatively low elevations with respect to the overall area providing reasonable potential for gravity drainage.
Hydrogeological Suitability	◑	◑	◑	High groundwater table (~2-3m depth) identified at all sites through background review.
Hydraulics	●	●	●	All locations provide opportunity for a forcemain path that rises gradually to the discharge location, providing ideal hydraulic conditions for pumping.
Utilities	◕	◕	◕	Utilities are generally available at all sites.
Natural Environment				
Proximity to Key Natural Heritage Feature or Regulated Area	●	●	◑	Site 4 has some affinity for wet species.
Terrestrial Vegetation/Wildlife (Including SAR)	●	●	◑	No SAR identified on Site 1 and 2. Site 4 may contain SAR.
Surface Water and Fisheries	◑	◕	◕	Site 1 has one surface water crossing and applies to one source protection area. Site 2 has one surface water crossing and is in closer proximity to a wetland. Site 4 applies to one source protection area.
Groundwater	◑	●	◔	Site 4 is in closest proximity to watercourse, followed by Site 1 and Site 2. Site 1 and 4 are in closer proximity to water well than Site 2.

EVALUATION CRITERIA	ALT 1	ALT 2	ALT 4	DESCRIPTION OF IMPACT
Cultural and Social Environment				
Archaeological Resources	●	●	◑	Site 1 and 2 cleared, no archeological resources identified. Site 4 identified for archeological potential, pedestrian survey required.
Cultural Heritage Resources	●	●	●	There are no cultural heritage resources identified on any site.
Aesthetics (noise, odour, visibility)	◑	◕	◕	Site 4 is in closest proximity to the nearest point of reception of noise and odour, followed by Site 1. Site 2 has the longest separation distance, which will have the least noise and odour impact. Site 1 and 4 are located within lands for industrial use in future development, with Site 1 adjacent to lands for commercial use in future development. Site 4 will have minor aesthetic impacts in comparison to Site 1. Site 2 is located within lands for commercial use in future development, which will have the more aesthetic impacts.
Impacts to Property Owners	◕	◕	◕	Site 1 and 2 are located on land owned by developer. Site 4 is located on Region owned land. The assumed tunnelling open cut location for Site 1 is on land owned by the Township of Brock. Site 2 assumed open cut location is on land owned by private owner. Site 4 assumed open cut location is on land owned by developer.
Climate Change/Air Quality	◔	◑	◕	Site 1 requires higher concrete volumes for overall construction with deeper wet well and longer length of pipes greater than 8m depth required than Site 4 and 2. Long term energy use for all sites are similar.
Impacts to Adjacent Business/Commercial Properties	◕	◕	●	Site 1 and 4 are located within lands for industrial use in future development, with Site 1 adjacent to lands for commercial use in future development. Site 2 is located within lands for commercial use in future development.

EVALUATION CRITERIA	ALT 1	ALT 2	ALT 4	DESCRIPTION OF IMPACT
Economic Environment				
Operating and Maintenance Costs				All sites have similar pumping distance requiring similar operating expenditure for the pumping of wastewater to the WPCP.
Capital Costs				Site 1 and 2 require deeper wet well than Site 4 which will increase the overall capital costs for both SSPS construction and the sewer network. The total length of pipe required for all sites are comparable. Site 1 requires longer length of pipes greater than 8m depth increasing the overall capital costs, followed by Site 2 and 4. Site 4 requires a longer forcemain increasing the overall capital costs, followed by Site 2 and 1.
Land Acquisition Costs				Site 1 and 2 are located on land owned by the same developer. Site 4 is located on Region owned land. All lands are currently used for agricultural purposed. The assumed tunnelling open cut location for Site 1 is on land owned by the Township of Brock. Site 2 assumed open cut location is on land owned by private owner. Site 4 assumed open cut location is on land owned by developer.
Overall Score				**Preferred Option is Alternative 2**

Based on the overall evaluation of the potential alternatives, construction of a new sanitary sewage pumping station on Site 2 is recommended. It is recommended that the SSPS forcemain cross the Beaver River using trenchless technology along the closed road allowance owned by the Township of Brock and travel up Thorah Concession Road 5. The recommended forcemain would discharge into a gravity sewer on Thorah Concession Road 5, which will be extended as for eastward as existing grades allow. All wastewater conveyed by gravity from the Thorah Concession Road 5 trunk sewer will drain to the Lake Simcoe WPCP SSPS and be pumped to the existing headworks facilities.

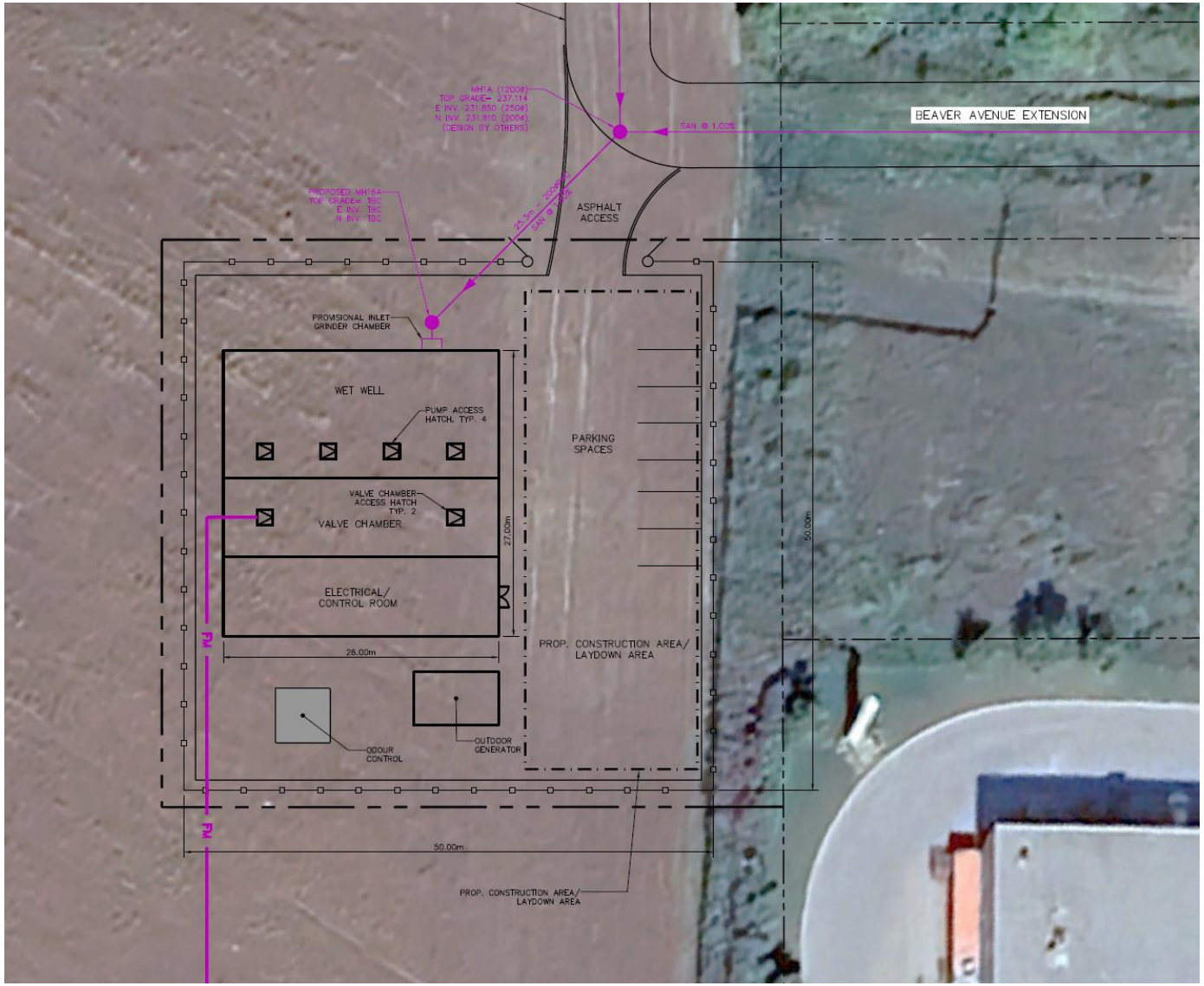
Preliminary Recommended Solution



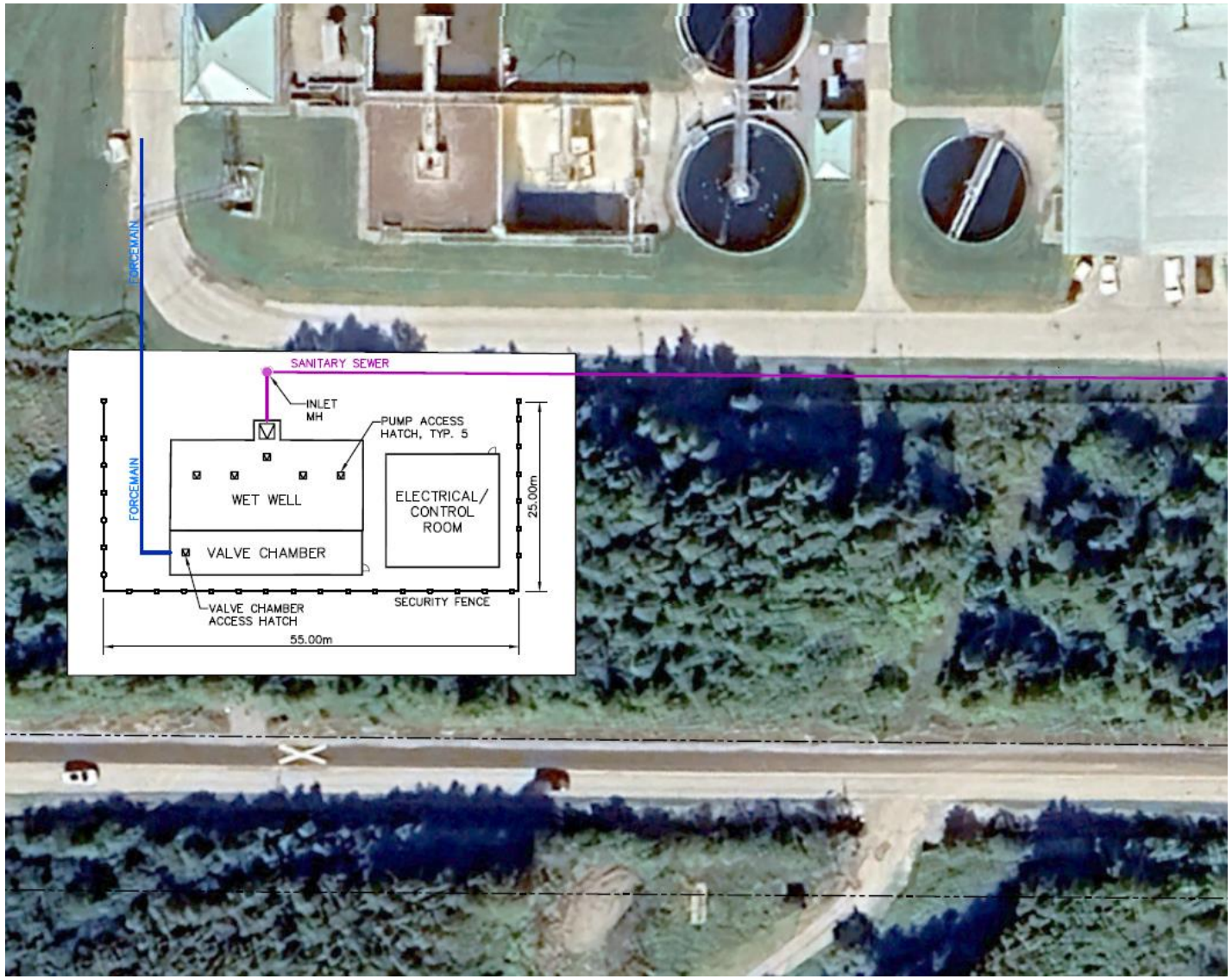
Catchment area plan for the preliminary recommended solution:

- Construction of a new SSPS on Site 2
- Forcemain crossing Beaver Creek and discharging to gravity sewer along Thorah Concession Road 5
- Gravity sewer draining Simcoe Street across Beaver Creek to the proposed SSPS
- Gravity sewer extension along Thorah Concession Road 5
- Upgraded SSPS at Lake Simcoe WPCP to accommodate future development

Preliminary Site Plan – Beaverton Employment Lands



Preliminary Site Plan – Lake Simcoe WPCP SSPS



Next Steps and Proposed Schedule