

Utilities and Servicing

A utilities review was commissioned as part of the Campus Plan. This review contains recommendations for the expansion and maintenance of the University's utilities. The Campus Plan takes the location of utilities, particularly the location of significant utility easements, into account in the location of roadways, open spaces and *development parcels*.

A summary of the utilities review is included here, organized according to system. The full review is detailed in the report entitled Brock University Campus Master Plan Utilities Overview Report (November 2002), prepared by Marshall Macklin Monaghan.

2.9.1 Water Supply

1. Water capacity is not limited, as the campus is well serviced from one municipal and one regional watermain. A *municipal watermain easement* is located on south of *University Road* and a *regional watermain easement* is located on St. David's Road and north of Hydro Road.
2. Future development on Main Campus should be serviced from the existing campus watermains or from a new watermain loop which will provide a strong internal watermain network. The location of this new loop should relate to the proposed street network and be planned in conjunction with the streets and building layouts.
3. Development on *South Campus* should be serviced from Merritville Highway or from other nearby watermains, as appropriate.
4. Development on *North Campus* should be serviced from Lockhart Drive.
5. Development on *East Campus* should be serviced from the regional trunk watermain on St. David's Road.
6. The provision to extend the municipal watermain on the existing easement directly eastward to Glenridge Avenue should be reserved.

2.9.2 Sanitary Drainage

1. There are no apparent sanitary servicing constraints within the infrastructure on Main Campus. There appears to be sufficient capacity in the St. Catharines municipal sewers to accommodate the level of growth provided for in the Campus Plan. This capacity should be confirmed in writing by the City of St. Catharines.

2. Future sanitary drainage should be pumped around, rather than under, existing and future buildings, with upgrades to the Kenmore pumping station as required. The route for this drainage may be either to the west of the Walker Complex or between the Thistle Complex and the Mackenzie Chown Complex.

3. Capacity in the Thorold sanitary sewers must be further investigated before development is undertaken on *South Campus*. In particular, drainage of sanitary flows into the Schmon sanitary sewer should be discussed. In the event that there is insufficient capacity to accommodate new development, Brock University may investigate the potential to pump flows northwards to the City of St. Catharines' sewers.

4. A sanitary drainage study should be prepared in order to provide development guidelines and phasing of pumping station improvements for future campus development. Ideally, this would be prepared as part of a Master Servicing Plan.

2.9.3 Storm Water Drainage

1. There are no capacity issues related to *storm water management* on the campus.

2. Neither the Regional Municipality of Niagara nor the City of St. Catharines currently require storm water quantity or quality control. The City of Thorold typically requires some degree of quality control with new development which could affect development of *South Campus*. In keeping with the strong environmental philosophy of the Campus Plan, a comprehensive storm water management strategy for the runoff from rooftops and parking lot surfaces should be prepared and implemented.

3. Water quality measures should not be implemented on an arbitrary site-by-site basis. A comprehensive Master Drainage Plan should be prepared that provides an overall strategy for dealing with storm water drainage on the entire campus. Ideally, this would be prepared as part of a Master Servicing Plan.

2.9.4 Mechanical Service

1. There is potential within the existing piping distribution systems to supply double the amount of energy that is currently supplied. Support swells analysis and some local upgrades may be required.

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2. One or more new gas boilers, firing on an uninterrupted gas supply, will be required for heating. The University's current gas contract provides a gas supply that may be interrupted. The new boilers should operate parallel to, or independent of, the cogeneration plant/existing electric boilers. This would give the University flexibility in the face of deregulation of the hydro market to continue to use the cogeneration facility.
3. New refrigeration machines will be required for chilled water. One would replace an existing unit and two more would need to be added at a later date to service future campus development and to provide flexibility to service the campus during periods of low demand.
4. New boilers and chillers should be installed in the Central Utility Building, as there is adequate capacity in the major campus infrastructure and enough space within or adjacent to the building for expansion. This strategy is also the most cost-effective and easy to maintain.

2.9.5 Electrical Service

1. There is capacity in the campus power infrastructure for twice the amount of electricity currently required.
2. A strategy is needed to ensure a quick and automatic connection to the Thorold Transformer Substation in the event of a power failure from the Van Sickle Transformer in St. Catharines. This connection is currently dependent on a manual transfer and could take several minutes to achieve during a failure.
3. The connection to the Thorold Transformer Station could be brought in from the west to the existing power infrastructure on the campus.
4. Renovation of the Kenmore switchgear is a priority as it is currently corroded.
5. As the University grows, additional co-generation units and a second step-up transformer are recommended to keep pace with demand and to provide flexibility in the event of a hydro power failure.

2.9.6 Master Servicing Plan

1. A Master Servicing Plan should be prepared in concert with the Campus Plan, identifying:
 - a strategy for the phased extension of campus infrastructure, including future tunnels and/or easements for pipes, cables and roads, balancing cost-efficiency and broader campus planning objectives;
 - a process for evaluating if/when buildings should have stand-alone systems;
 - a comprehensive energy audit strategy to identify the most suitable energy-saving devices;
 - opportunities for the introduction of alternative energy sources, as appropriate;
 - a plan for storm water management that deals with the various aspects of storm water drainage; and,
 - a sanitary drainage scheme that includes a pumping station analysis and confirms the available capacities in the St. Catharines and Thorold systems.