

Lily Lake Functional Planning Study

Planning Background Report Lily Lake Planning Area City of Peterborough



October 2012

1.0 Introduction

1.1 Purpose:

The purpose of the Lily Lake Functional Planning Study is to undertake a comprehensive review of the major relevant planning issues for the Lily Lake Planning Area. This report and concept plan provide a preliminary review only and are intended to guide the Secondary Planning process, which will contain detailed policies regarding the development of the Lily Lake Planning Area. It is anticipated that this report will inform the City-initiated Secondary Plan for the Lily Lake Planning Area.

1.2 Study Team

The Study Team that was assembled to undertake the Lily Lake Functional Planning Study included the following consulting firms:

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| Bousfields Inc. | - | Land Use Planning |
| | - | Project Management |
| Cole Engineering Group Ltd. | - | Transportation Study |
| | - | Municipal Servicing Study |
| | - | Storm Water Management |
| Geo-Logic Inc. | - | Hydrogeology and Geotechnical Assessment |
| Niblett Environmental Associates Inc. | - | Natural Heritage Assessment |
| Archaeological Assessments Inc. | - | Archaeological Evaluation |

A variety of technical studies have been completed to help inform the development of a concept plan for the Planning Area. The results of each of these sub-consultant analyses have been submitted to and reviewed by the City of Peterborough. The appropriate adjustments have been included, as appropriate, in the Concept Plan. It is anticipated that additional studies will be conducted prior to the approval of any development applications.

1.3 Study Approach

This Functional Planning Study was undertaken having regard for:

- Discussions and meetings held with staff of the City of Peterborough;
- Discussions and meetings with staff from the Conservation Authority;

- Analyses and Reports by members of the Study Team; and
- Comments from other commenting agencies.

2.0 Background

2.1 Description of Study Area

The Lily Lake Planning Area is located north of Jackson Creek, east of the Peterborough City Limit, south of Lily Lake Road and west of Fairbairn Street and is approximately 198 hectares in size. The Planning Area includes the area to the east, known as the O'Grady Subdivision, which is currently vacant and comprises approximately 100 residential land ownerships (Figure 1 – Location Map). The Planning Area lands were annexed by the City of Peterborough in early 2008. This annexation was carried out in accordance with an agreement between the City and the Township of Smith-Ennismore-Lakefield, and the additional lands were required by the City of Peterborough in order to meet growth projections.

The Lily Lake Planning Area represents an excellent opportunity for the City of Peterborough to plan for a new community within the City limits as well as meet Provincial growth targets.

The Planning Area is dominated by a large drumlin, which is centrally located and allows for natural drainage to both Lily Lake and Jackson Creek. There are mixed deciduous and coniferous woodlots along the south and west boundaries of the Planning Area adjacent to Jackson Creek as well as intermittent hedgerows (Figure 2 – Aerial Photo). While the majority of the lands are currently used for agricultural purposes, there are a number of single detached dwellings located along the Lily Lake Road and Fairbairn Street frontages. The O'Grady Subdivision is located on the eastern portion of the Planning Area, west of Fairbairn Street.

Lily Lake Road forms the City of Peterborough's northern municipal boundary. To the north is the Township of Smith-Ennismore-Lakefield, which is characterized primarily by rural and agricultural land uses. Rural residential uses are located on the north side of Lily Lake Road along Eastwood Road, as well as along Patricia Crescent, immediately east of Fairbairn Street. To the east, across Fairbairn Street, is existing low-density residential and community park uses. To the south are Jackson Creek and its associated valley lands, the Trans-Canada Trail and existing low-density residential uses on either side of Parkhill Road. Further south are additional low-density residential and community commercial uses as well as a developing residential plan of subdivision south of Jackson Creek. To the west is Jackson Creek East and its associated Provincially Significant Wetland, as well as Lily Lake and agricultural uses.

The Lily Lake Planning Area represents an excellent opportunity for the City of Peterborough to plan for a new community within the City limits as well as to accommodate Provincial growth targets for the municipality.

2.2 Land Ownership

The majority of the area is held in a limited number of ownerships, as shown on Figure 3, Land Ownership. However, within the O'Grady subdivision (see Section 2.3), a fragmented land ownership pattern exists, as a result of historical approvals, and many of the parcels of land have no frontage on a public street and no means of access.

2.3 O'Grady Subdivision

The O'Grady subdivision is located on the eastern portion of the site and consists of approximately 100 residential lots, most held in separate land ownerships, which were created through a checkerboard plan. The subdivision has access from Fairbairn Street and the internal unassumed public streets are currently owned by the City. Other than those on Fairbairn Street, the lots do not have legal frontage and cannot be issued a building permit.

3.0 Policy and Regulatory Review

3.1 Provincial Policy Statement (2005)

The Provincial Policy Statement (PPS) came into effect on March 1, 2005. It provides policy direction on matters of provincial interest related to land use planning and development. A key to the policy direction is to build strong communities by promoting efficient land use and development patterns.

Policy 1.1.2 recognizes that sufficient land shall be made available through intensification and redevelopment and, if necessary, designated growth areas to accommodate an appropriate range and mix of employment opportunities, housing and other land uses to meet projected needs for a time horizon of up to 20 years. To that end, the PPS contains a number of policies that promote intensification in built up urban areas.

In particular, the PPS supports densities and a mix of land uses which efficiently use land, resources, infrastructure and public service facilities. Section 1.1.3 provides that settlement areas shall be the focus of growth and their vitality and regeneration shall be promoted. Policies 1.1.3.5 and 1.1.3.6 require planning authorities to establish and implement minimum targets for intensification and redevelopment in built up urban areas and phasing policies to ensure those targets are achieved prior to, or concurrent with, the outward expansion of the urban area.

With respect to housing, Policy 1.4.3 requires provision to be made for an appropriate range of housing types and densities to meet projected requirements of current and future residents by, among other matters, facilitating all forms of residential intensification and redevelopment and promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities and support the use of public transit. Policy 1.6.5.4, Transportation Systems, promotes a land use pattern, density and mix of uses that minimizes the length and number of vehicle trips and supports the development of viable choices and plans for public transit and other alternative transportation modes.

Section 1.7 sets of policies designed to secure Long Term Economic Prosperity. These include optimizing the long-term availability of land, resources, infrastructure and public service facilities and maintaining and enhancing the viability and vitality of downtowns and main streets. This section also promotes the provision of an efficient, cost-effective, reliable multi-modal transportation system and opportunities for sustainable tourism development.

Section 1.8 of the PPS sets out provides for Energy and Air Quality policies. This section requires that land use development patterns should support energy efficiency and improved air quality by promoting compact development that includes nodes and corridors, public transit and other alternative transportation modes. This section also provides that major employment and commercial land uses should focus on sites which are well served by

public transit and improve the mix of employment and housing to shorten commute journeys and decrease traffic congestion.

3.2 Growth Plan for the Greater Golden Horseshoe (2006)

The Growth Plan for the Greater Golden Horseshoe (the Growth Plan) came into effect on June 16, 2006. Similar to the PPS, the Growth Plan supports mixed-use intensification within built up urban areas, particularly in proximity to transit.

As noted in Section 2.1 of the Plan:

"...Better use of land and infrastructure can be made by directing growth to existing urban areas. This Plan envisages increasing intensification of the built up urban area, with a focus on urban growth centres, intensification corridors, major transit station areas, brown fields sites and greyfields. Concentrating development in these areas also provides a focus for transit and infrastructure investments to support future growth."

The Growth Plan seeks to accommodate population and employment growth by, among other measures, directing a significant portion of new growth to the built up areas of the community through intensification and reducing dependence on the automobile through the development of mixed use, transit supportive, pedestrian friendly urban environments (Section 2.2.2).

Section 2.2.3 contains policies for general intensification and requires that a minimum of 40% of all residential development within each upper and single tier municipality will be within the built-up-area by the year 2031. Further, Policy 2.2.3.6 requires that all municipalities develop and implement an intensification strategy in order to meet the intensification targets provided in the Growth Plan.

The Lily Lake Planning Area is located within Peterborough's settlement boundary and is identified as a designated Greenfield Area. Policy 2.2.7 requires that new development taking place in designated greenfield areas is to be planned, designated, zoned and designed in a manner that provides a diverse mix of land uses, including residential and employment uses, to support vibrant neighbourhoods. The designated greenfield area of each upper or single-tier municipality will be planned to achieve a minimum density target that is not less than 50 residents and jobs combined per hectare (Section 2.2.7(2)).

The density target is measured over the entire designated Greenfield Area excluding such environmental features as wetlands, woodlands, valley lands and fish habitat. In this regard, in order to apply the density target to the Lily Lake Planning Area the area of Jackson Creek and its associated valley land as well as the tributary that runs south of, and parallel to, Lily Lake have been excluded from the developable area in order to calculate the density.

The Gross Developable Area of the Lily Lake Planning Area, including the O'Grady Subdivision, is 169 hectares (Total Area of 198 hectares excluding the Open Space Area of 29 ha).

In order to meet the Provincial density target of 50 persons/jobs per hectare for a designated greenfield area, the Lily Lake Planning Area is required to provide a total of 8,450 persons and jobs combined (169 hectares x 50 persons/jobs).

To achieve this target, the Lily Lake Planning Area must be designed as a sustainable, compact community that provides for a mix of residential unit types and densities in addition to supporting employment uses, such as small-scale retail, and institutional uses including schools.

The community should have a local street pattern that encourages walking and cycling and promotes transit connections to minimize automobile use. The design should also provide opportunities for a linked park and trail system with a well-defined relationship to adjacent natural features and accessible open space areas, specifically Jackson Creek and its associated valley lands and the Trans-Canada Trail system.

New development and community design should also recognize the uniqueness of the Planning Area in terms of its location and topography. With respect to the latter, the presence of the large drumlin presents both a challenge for development in terms of elevation, slope and grading, but also provides opportunity to create a distinctive community with exceptional views and maximum sun exposure.

3.3 County of Peterborough Official Plan (October 2008)

The County of Peterborough Official Plan (the County Plan) serves as the Official Plan for the County as well the lower tier Official Plan for three Townships in the County, Asphodel-Norwood, North Kawartha and Smith-Ennismore-Lakefield and is responsible for the direction and guidance of these local municipalities in policy and physical planning.

The Lily Lake Planning Area is not subject to the County Official Plan policies, however, the County Official Plan provides policies for development coordination adjacent to the City of Peterborough. Section 5.6 outlines a goal of ensuring that existing and proposed land uses are compatible with and have regard for the relationship of the separated City of Peterborough with the abutting municipalities.

The Objectives as contained in Section 5.6.2 are as follows:

- to have regard for the urban/rural transition area surrounding the City of Peterborough when considering any and all development proposals in the neighbouring municipalities;
- to have regard for the rural way of life as set out in the County Vision.

In this respect, there are various sections in the County Official Plan which Section 4.5 provides policies for the Rural and Cultural Landscape, which provide policies dealing with the minimum distance separation for new land uses, including the creation of lots, adjacent to livestock facilities. A portion of the lands to the north across Lily Lake Road are used for agricultural purposes, however, these lands are designed Urban Fringe Area on Schedule "A1", Land Use Plan – Rural Component Smith and Ennismore Wards.

Section 4.2, Settlement Areas, provides objectives within Policy 4.2.3 which indicates that the County recognizes agreements which have been negotiated between the City of Peterborough and the adjoining municipalities and included in official plans, and that those agreements be taken into consideration if located within the urban fringe control area.

Section 6.2, Local Planning Policies – Rural Component provides policies for Urban Fringe Control Areas. Policy 6.2.17.1 indicates that development should be consistent with the PPS and that the Urban Fringe Control area has been designated to offer a protective mechanism and secondary review of all proposals for development within this area. Permitted uses within the Urban Fringe Control designation include the same uses as those within the Rural or Prime Agricultural designations, however, uses which are likely to hinder future development (livestock facilities, mushroom farms, etc.) will not be permitted. In this respect, the Provincial guidelines dealing with minimum distance separation does not apply to the Lily Lake lands.

The County Plan recognizes that the future development pressures on municipalities surrounding the City of Peterborough are increasing and that careful planning of development will benefit the County, the City, and the municipalities surrounding the City. It is a policy of the County Plan to promote inter-municipal communication and co-ordination with respect to development issues in these areas, and to work with the City of Peterborough to develop a comprehensive approach to the formulation of future land use policies to form part of this and the local Official Plans.

3.4 City of Peterborough Official Plan (July 2003)

The City of Peterborough Official Plan (the City Plan), as amended, was adopted by Council on December 7, 1981 and provides direction for development through land use policy. The Plan contains a number of goals and objectives for the City that relate to the land use and transportation system, preservation of the natural landscapes, energy conservation and the commercial structure. The Plan also recognizes that the City is part of a larger Regional Setting and that consultation, cooperation and coordination with adjacent municipalities and the County of Peterborough and the Provincial and Federal Governments to support a satisfactory living environment beyond City limits is key to ensure that the quality of life in Peterborough is not hindered.

In accordance with the provisions of Section 9.5, Secondary Plans will be prepared for any major development areas. A Secondary Plan for the Lily Lake Planning Area will be

initiated by the City of Peterborough following the completion of a Functional Planning Study. Secondary Plans will address servicing and open space requirement, street layout, transit, location and density of housing, as well as the type and location of other uses including institutional, commercial and industrial.

3.4.1 OPA 142 - Growth Plan Conformity Amendment

OPA 142 was adopted by Council in August 2009. The purpose of the Amendment was to bring the City's Official Plan into conformity with the Growth Plan. It came into effect in September 2009 and there were no modifications or appeals.

The Lily Lake Planning Area is shown as a 'Designated Greenfield Area' within the City Structure Schedule 'A-1' of the OPA (Figure 4 – OPA 142). Section 2.4.7 of the Amendment provides that the development of Greenfield Areas will be planned as compact, transit-supportive areas through Secondary Plans that will provide:

- a) complete communities that include convenient access to jobs, local services, community infrastructure (including schools, parks and healthcare), and a range of housing, including affordable housing, that will be suitable for a broad range of age groups;
- b) urban form and densities that support and encourage the use of transit and safe means of walking and cycling;
- c) a diverse mixture of land uses, including residential, institutional and local employment uses;
- d) high quality urban design of streetscapes and public open spaces that provide convenient linkages and foster the use of transit, walking and cycling as alternatives to the private automobile; and
- e) appropriate phasing of development.

While OPA 142 recognizes that Designated Greenfield Areas will be planned to achieve a minimum density target that is not less than 50 residential and jobs per hectare as measured over the entire Designated Greenfield Area, it indicates that the City of Peterborough intends to review the appropriateness of this overall minimum target with the Province, given its lower than average household size, its older age profile and distance from the GTA, as well as its topographical limitations. The density targets provided in the OPA will be confirmed through discussions between the City and Ministry and finalized in the approved OPA. Although the City intends to review the appropriateness of the density targets with the Province, the minimum targets will still be applicable until any future Official Plan Amendment, which alters the density targets, is approved.

3.4.2 Lily Lake Planning Area – Current Designations

The majority of the Lily Lake Planning Area is designated “Urban Fringe Control Area’ with a small portion at the southwest corner and along the Jackson Creek designated ‘Environmental Constraint’ (Figure 5 – City of Peterborough Official Plan). These were the designations in effect in the Township of Smith-Ennismore-Lakefield at the time the City of Peterborough annexed the Lily Lake Planning Area (January 1, 2008).

The designations are shown on the Official Plan Land Use Schedule as ‘Urban Fringe Control Area (Smith)’ and ‘Environmental Constraint (SEL)’ (Smith-Ennismore-Lakefield), however the text for these designations is contained in the Official Plan for Township of Smith-Ennismore-Lakefield. Until an Official Plan Amendment takes place to redesignate the Lily Lake Planning Area to more appropriate designations, through the creation of a Secondary Plan, these designations apply.

The Urban Fringe Control Area designation, Section 3.14 in the Township Official Plan, was designed to offer a protective mechanism and secondary review of all development proposals within the area. For the Lily Lake Planning Area, development should be consistent with the anticipated growth of the City of Peterborough.

Permitted uses include those provided for in the ‘Rural’ designation, so long as they do not impede future urban development. New development that is consistent with the anticipated growth of the City may be permitted subject to an Official Plan Amendment. Permitted uses within the ‘Rural’ designation include agricultural, farm-related activities and forestry. Uses that are incompatible with future urban development include intensive animal operation, mushroom farms and farm-related industrial uses.

The Environmental Constraint designation applies to Jackson Creek. Permitted uses are those intended primarily for preservation and conservation of the natural land and/or environment and include agricultural, outdoor recreation, nursery gardening and forestry.

Land use designations in the Lily Lake Planning Area are anticipated to include low, medium and high density residential designations, as well as commercial, parks and open space and natural areas designations, in accordance with the preliminary concept plan included in Section 4.0 of this report.

In this regard, the Official Plan provides the following:

3.4.3 Residential Designations:

Low Density Residential:

Permitted uses in low density residential areas will primarily consist of single detached, semi-detached and duplex dwellings. Multiple unit buildings of a height similar to other low density uses may also be permitted in appropriate locations provided the maximum density is less than 25 units per hectare. Subject to a number of conditions within the Plan (Section 4.2.2.1.3), infill housing may be permitted in low density residential areas.

Medium Density Residential:

Medium density residential areas permit low density residential uses and medium density residential uses such as triplexes, quadruplexes, row dwellings, walk-up apartments, and cluster housing developments. Medium density residential shall generally mean buildings with a maximum height of five storeys above grade and shall have a density range of 25 to less than 75 dwelling units per hectare.

High Density Residential:

Permitted uses in high density residential areas will primarily consist of apartment buildings or medium density residential uses noted above which exceed the density range, also noted above.

3.4.4 Commercial Designations:

The Official Plan provides for a wide range of commercial uses in order to recognize the varied nature of existing commercial areas in Peterborough and provide for the appropriate and orderly development of additional commercial uses.

In March 2009, a Retail Market Analysis was completed by Urban Metrics Inc., which provided justification for the need for additional retail space in Peterborough. The Study indicated that the City should focus on maintaining and expanding the local and neighbourhood retail functions throughout the City with emphasis on the Centre District and the East District. The Lily Lake Planning Area is located on the periphery of the North District. The Study also finds that there is new retail development in the Chemong/Tower Hill Planning Area, which is not located a far distance from the Lily Lake lands. In this case, it is anticipated that the Lily Lake Area will provide for a Local Commercial node to serve the area residents, but will not provide a larger Neighbourhood Commercial centre.

Lands designated Local Commercial will provide a range of convenience goods and services, generally required on a daily basis, to the adjacent residential areas. Permitted local commercial uses include convenience retail stores, personal services, small scale restaurants, small scale food stores, and small scale service commercial uses such as video rental and gasoline sales outlets, small scale office, studio and clinic uses, and residential uses as a secondary use in a local commercial development.

Local commercial facilities will be located on a collector or arterial street, generally at an intersection or integrated with medium or high density residential developments.

3.4.5 Major Open Space Designation:

The Lily Lake Planning Area will provide a number of park and open space areas as well as stormwater management ponds. It is a possibility that the park and stormwater management pond uses will fall into a residential designation, as they are considered complementary to, or serving of, the basic residential use. These uses are also permitted

uses in the residential designation. If this is not the case, however, they would be designated 'Major Open Space'.

Further, the area of the Jackson Creek valley lands that are located within the Lily Lake Planning Area would also be designated 'Major Open Space'

In that respect, the Official Plan provides the following:

Major Open Space:

The City's Open Space System is comprised of lands designated 'Major Open Space' on the Land Use Schedule and the lands shown as 'Natural Areas' on Schedule 'C'. Together they form a comprehensive linked system of open space and public parkland. Smaller parks and schoolyards may also constitute part of this linked system.

Permitted uses in a Major Open Space designation include parks, recreation facilities, forestry and wildlife management practices, flood plains and natural areas on public and private land that are recognized by Council as being of city wide or regional significance.

3.5 Existing Zoning

Zoning requirements for the majority of the lands within the Lily Lake Planning Area have been carried over from the Township of Smith when the lands were annexed as shown on Figure 6. The majority of the lands are zoned Rural A2 (and two properties have special section provisions). The A2 zone provisions permit agricultural uses, one single family dwelling per lot, dwellings existing at the time of the adoption of the By-law (and limited conversions), bed and breakfast establishments and auction barns. The minimum lot frontage is 180 m and the minimum lot area is 20 ha. There are special provisions for certain permitted uses (e.g. auction barns).

The O'Grady subdivision is zoned Rural A1 which permits restricted agricultural uses, bed and breakfast establishments, dwellings existing at the time of the adoption of the By-law (and limited conversions) and single detached dwellings on one lot, and uses, buildings and structures accessory thereto. The minimum lot frontage is 180 m, and the minimum lot area is 20 hectares. Other than those on Fairbairn Street, the lots do not have legal frontage and cannot be issued a building permit. The City will have to determine how to move forward with the development of these lots during the Secondary Planning process.

4.0 O'Grady Subdivision

The development of the O'Grady subdivision will be required to conform to the City of Peterborough Official Plan, specifically OPA 142 the City's Growth Plan conformity Official Plan Amendment. In order to meet the province's intensification policies, the Secondary Plan policies and/or designations for the O'Grady Subdivision should provide for a land use

designation (and an implementing zoning by-law) which encourages residential uses with reduced lot areas and frontages.

In moving forward with the development of the Lily Lake Planning Area, new standards should be put in place for the O-Grady subdivision which allows for its redevelopment in a manner which complements the Lily Lake Planning Area to the west, however, there are a number of challenges that will need to be addressed.

Clearly the greatest challenge is the fragmentation of the land ownership. With approximately 100 lots and numerous owners, the City will have to determine the best way to move forward with the support of as many of the land owners as possible. This may require the acquisition of some properties through expropriation.

Another challenge lies with the determination of the top of bank and setback requirements which will affect the lots along Jackson Creek. Provincial policies and Conservation Authority requirements will severely constrain the development of these lots.

The preliminary Concept Plan included in Appendix A, locates the community park at the southeast quadrant of the O'Grady lands. This park could be relocated to the City-owned land in the northwest quadrant of the O'Grady lands, which, we understand is intended to serve the O'Grady Subdivision lands.

At the time the O'Grady subdivision was approved, there were no requirements for stormwater management ponds to be located within subdivisions. Under current urban development policy, a pond would be required to serve the O'Grady lots and approval of development on these lands would not proceed without demonstrating that the excess water can be contained. The location of the pond shown on the Concept is preliminary, however, a pond would have to be located within or adjacent to the Subdivision.

These issues will have to be noted in the Secondary Planning process and explored in further detail at the development application stage.

5.0 Land Use Considerations

The technical reviews have resulted in a number of land use considerations. A summary is provided below, although reference should be made to each of the individual technical studies for more detail.

5.1 Archaeological Significance (Archaeological Services Inc.)

The Stage 1 background research for the archaeological assessment of the Study Area revealed that two pre-contact archaeological sites have previously been registered within the study area with no additional sites registered within a two kilometre radius. The review of the report for these two sites has yet to be completed by the Minister of Culture. The Stage 1 field review resulted in the documentation of the archaeological potential within four

farm complexes: Jackson Creek and its floodplains and banks along the southern boundary, an extensive woodlot on the eastern side of the study area and numerous residences along the northeast boundary of the study area.

A Stage 2 Archaeological Assessment must be carried out on all lands within the Lily Lake which are deemed to have archaeological potential. A Stage 2 Archaeological Assessment must be conducted in accordance with the *2009 Standards and Guidelines for Consultant Archaeologists* by means of a pedestrian survey or test pit survey within those portions of the study area which were identified by the field crew to have archaeological potential.

5.2 Traffic Impact Study (Cole Engineering)

- At peak periods, all signalized and unsignalized intersections serving the Study Area currently operate at satisfactory levels of service;
- Access to the Study Area will be provided from Lily Lake Road (3 accesses are proposed) and Fairbairn Street. Improvements to the Parkhill Road/Fairburn Street and Fairburn/Lily Lake Road intersections are proposed to accommodate future (2020) traffic.
- The signalization of the Fairburn Street access from the Study Area is recommended. The balance of the site accesses is expected to operate at satisfactory levels of service under street stop controls.
- All proposed accesses to the development should have one inbound and separate left and right outbound lanes;
- Exclusive left turn lanes should be provided on Lily Lake Road on approach to all site accesses.

5.3 Stormwater Management (Cole Engineering)

- Minor system storm drainage will be conveyed by sewers towards one of four proposed stormwater management facilities;
- Major system storm drainage will be conveyed overland via proposed rights-of-way or approved overland flow easements towards the proposed SWM facilities;
- Preliminary grading has been designed to achieve a road gradient of between 0.7% and 3%, however steeper grades will be necessary in certain areas due to the site topography.

5.4 Servicing (Cole Engineering) Sanitary Sewer System

- The full build out the Secondary Plan Area will generate an average total sewage flow rate of approximately 97L/s. Two new internal pumping stations and corresponding forcemains are recommended in the northwest and southeast corners, due to the extreme vertical grade difference found within the Lily Lake Functional Planning Area. Internal conveyance of sewage will be via a network of sanitary sewers directing flows to an approved outlet.
- The recommended sanitary flow outlet is located at the southwest corner of the study area connecting to the existing Parkhill Road pumping station. The outlet sewer will require a crossing of Jackson Creek prior to connecting to the pumping station;
- The Parkhill pumping station does not have the wet well depth or capacity to accept flows from the Lily Lake Functional Planning Area, however, the City has considered an expansion program. As part of this expansion it is recommended that the wet well be deepened to allow for a gravity connection from the study area to the Parkhill Road pumping station.
- Pre-development system conditions show the existing sanitary trunk sewer leading from the Parkhill Road pumping station to the Peterborough Wastewater Treatment Plant has sufficient capacity to convey flows without surcharging in the sanitary system.
- Post-development system conditions show that the additional flow contributed by the Lily Lake Functional Planning Area leads to sections of localized surcharging in the existing sanitary trunk sewer system and may lead to basement flooding;
- The City's Wastewater Treatment Plan has sufficient capacity to treat the additional flows from the Lily Lake Functional Planning Area.

5.5 Water Supply System

- There are two feasible alternatives to supply water from Towerhill reservoir to the Lily Lake Functional Planning Area. The entire Lily Lake Functional Planning Area meets the City's pressure requirements (e.g. between 274 and 700 kPa);
- Alternative 1 (Lily Lake Functional Planning Area integrated into the Zone 3W system) is preferred. The Lily Lake Functional Planning Area will operate at a relatively high pressure range. Fewer valve chambers (e.g. PRV) are required and there is relatively less risk involved in providing water to the Planning Area;
- A detailed hydraulic analysis of the water supply system should be performed to investigate the existing and future system demand, system storage, pump operational

ranges and the pumping capacity requirements for the Lily Lake Functional Planning Area prior to development occurring.

5.6 Geotechnical and Hydrogeological Considerations (Geo-Logic Inc.)

- The Planning Area is characterized by topsoil generally underlain by till. Seeps were observed in the southeast corner of the study area and surface water features were noted including ponded water in the central and northwest areas and a small creek flowing to the west into Lily Lake.
- The shallow water table was measured to range from 0.5 to 2.9 metres below top of pipe within the temporary piezometers installed at the Site. Deeper monitoring wells encountered water bearing units (i.e. sand) at approximately 13 to 17 metres below existing grade (water levels measured ranged from 1.85 to 18.57 metres below top of casing in these wells). The shallow groundwater flow appears to be divided along the central drumlin, moving to the north and south from this feature. Based on the MOE records and site observations, there are no dug wells tapping into the shallow aquifer in the vicinity of the Study Area.
- The infiltration within the Lily Lake Planning Area is expected to recharge the water table aquifer without significant impact to the deeper aquifer complexes. There is not expected to be any significant impact to the shallow water table aquifer from a quantity or quality perspective based upon the proposed development;
- There is good groundwater quality with elevated turbidity, hardness, iron and colour;
- An increase in runoff and a decrease in infiltration could result from the development of the Study Area. Mitigation techniques should be established at the time of draft plan approval to maintain the infiltration capacity to pre-development levels. Infiltration should be achieved through measures such as directing runoff from walkways and impervious surfaces to soak away pits or the use of infiltration trenches within on-site swales or ditches. Specific details will be required at the time of development approvals to confirm that the mitigation techniques will be sufficient to reduce run off and increase infiltration to values similar with predevelopment conditions.
- There is expected to be little impact on the local shallow groundwater and surface water regimes and their interactions as a result of the development of the Study Area. The Area is a minor contributor to the overall baseflow of the adjacent creeks to the north and south and, as there are no dug wells, its development should not impact any shallow drinking water wells.
- Any existing wells should be abandoned prior to the development of the Secondary Plan area in accordance with Regulation 903;
- All design and grading proposals for foundations should be reviewed prior to

construction.

- An Erosion Hazard Limit Study should be performed prior to finalizing development plans. Preliminary geotechnical calculations have been completed and the results of this work will impact where structures can be built in the vicinity of the slope at the southern extent of the development. Depending on the results of these calculations, the conceptual plan along the south slope may need to be adjusted.

5.7 Environment (Niblett Environmental Associates Inc.)

- A detailed environmental study was undertaken by Niblett Environmental Associates Inc. The environmental constraints (including required buffer areas, and restricted areas for infrastructure including storm water management ponds have been identified on the Concept Plan;
- Supporting environmental review (buffer assessment and tree management review) should be undertaken in support of any draft plans of subdivision to ensure that environmental management objectives are implemented;
- Areas which require further study include a rare plant study, a turtle habitat study, hydrologic patterns and connectivity in the southeast corner of the Study Area and more detailed hydrogeological investigation. These studies may identify additional constrained lands within the Lily Lake Functional Planning Area.

6.0 Lily Lake Planning Area – Preliminary Concept Plan

The preliminary concept for the Lily Lake Planning Area is included as Appendix A to this report. The Planning Area has been designed as a comprehensive, compact community that provides a mix of land uses, including residential commercial, institutional, recreational and open space. The specific land use, locations of roads and overall configuration of the Concept Plan have been determined based on a review of policies provided at the Provincial and City levels and is preliminary only. The Concept Plan is intended to guide development and provide a background for the City-initiated Secondary Plan. The exact configuration of the land uses within the Lily Lake Planning Area will be determined through the Secondary Planning process.

The City and ORCA have provided comments which indicate concern with locating higher density uses, such as medium and high density residential as well as commercial uses adjacent to the Provincially Significant Wetland (PSW) as well as development setbacks from the top of slope. These issues will be addressed through the comprehensive Secondary Plan and appropriate measures will be taken to ensure that the natural features on the site, including the PSW, are not adversely affected by proposed development. Through the Secondary Planning process, policies could be developed include the potential

of providing window streets adjacent to the top of bank slope as well as locating the proposed trail and parkette system adjacent to the top of bank, with residential uses located adjacent to the trails and/or parkettes, rather than abutting the top of bank. Similarly, policies could be included which address access to the proposed pumping station and outlets.

A range of residential unit types and densities is proposed, with the majority of medium and high density units located adjacent to Lily Lake Road and low density residential units located in the interior of the Planning Area and along the Jackson Creek valley land. A number of community parks are dispersed throughout the Planning Area, linked through a trail system with connections to the open space along Lily Lake Road, Jackson Creek and the Trans-Canada Trail. This integrated trail system will promote walking and cycling in the community and beyond and provide opportunities for recreation.

To serve the future Planning Area residents, two larger school and park blocks are provided, located internally on relatively flat land. The Kawartha Pine Ridge District School Board and the Peterborough Victoria Northumberland and Clarington Catholic District School Board have both confirmed that they would like lands in the Lily Lake Planning Area to be reserved for potential future school sites. While the school blocks have been located on relatively flat land, the exact location of these sites and their potential for consolidation and their relationships to adjacent recreational facilities (sports fields, etc.), will be determined at the detailed Secondary Planning stage.

A local commercial block is located with frontage on Lily Lake Road.

The street pattern is designed to encourage walkability and provide exceptional views as well as respond to the topography of the existing drumlin, which is located in the centre of the Planning Area. Access to the community will be via three north-south streets from Lily Lake Road as well as one east-west connection through the O'Grady subdivision to Fairbairn Street.

