FUNCTIONAL SERVICING REPORT
PROPOSED RESIDENTIAL SUBDIVISION
55 AND 75 CITYVIEW DRIVE, GUELPH, ONTARIO

FUNCTIONAL SERVICING REPORT
NOVEMBER 2011
### DOCUMENT CONTROL

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**DRAWINGS (INCLUDED IN BACK)**

Draft Plan
Preliminary Grading Plan
 Proposed Sanitary Servicing Plan
 Proposed Watermain Servicing Plan
 Proposed Storm Servicing Plans
1. INTRODUCTION

IBI Group was retained by Debrob Investments Limited to prepare this Functional Servicing Report in support of two planning applications – an application to amend the City of Guelph Zoning By-Law, and an application for approval of a Draft Plan of Subdivision. These applications are intended to facilitate a municipally serviced subdivision containing 281 residential units in the form of single detached, semi-detached, street townhouse, cluster townhouse and multiple dwellings.

1.1 Site Location and Description

These applications involve two separate properties that have a total area of 15.21 hectares under the ownership of Debrob Investments Limited – 55 Cityview Drive and 75 Cityview Drive.

- **55 Cityview Drive**, 14.977 ha in size, is legally described as Part of Lots 25, 31, and 32, Registered Plan 53 and Part of Lot 4, Concession 3, ‘Division C’ City of Guelph, Former Township of Guelph; and

- **75 Cityview Drive**, 0.233 ha in size, is legally described as Part of Lots 25, 31, and 32, Registered. Plan 53, and Part of Lot 4, Concession 3, Division C, City of Guelph, Former Township of Guelph.

The subject lands are located on the east side of Cityview Drive, north of the Railway and across from Cedarvale Avenue within the City of Guelph. The Tivoli (UP0601) subdivision is located to the north, the proposed Cityview & Watson subdivision to the south, and the Valleyhaven subdivision and existing residential development is located to the east.

55 Cityview is currently vacant and it is our understanding that it has been for a considerable amount of time. There are no buildings or structures existing on the property. The lands were formerly used for agricultural purposes but have been left fallow for some time. A Provincially Significant Wetland is located in the southeast area of the property. 75 Cityview is currently a residential property with an existing single detached dwelling.

The property is covered with scattered trees and weed growth. Approximately 10% of the site is topographically lower and heavily treed. The existing site grades are relatively level in the western half, with gentle slopes, and then steep slopes drop quickly to a treed area at the eastern limit of the site.

1.2 Proposed Development

The proposed development is a mixed residential subdivision. The Draft Plan of Subdivision has been designed to ensure existing natural features are protected from development to the greatest extent possible and to provide a greater housing mix in the Eastview Community in an effort to meet required density targets. As such, the Draft Plan of Subdivision is reflective of the cumulative planning, engineering, and environmental work completed for this property, as well as adjoining existing and proposed subdivisions.

As well as the residential lots and blocks, the subdivision contains park blocks, an open space block, future development blocks, and roads. Table 1 provides a summary of the land uses and number of residential units and a copy of the Draft Plan is included in the back of this report.

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Table 1: Land Use Summary

<table>
<thead>
<tr>
<th>Lots/Blocks</th>
<th>Proposed Land Use</th>
<th>Area (ha)</th>
<th>Units</th>
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<tr>
<td>1-49, 89-141</td>
<td>Single Detached Dwellings</td>
<td>4.154</td>
<td>101</td>
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<tr>
<td>69-88, 142-151</td>
<td>Semi-Detached Dwellings</td>
<td>0.820</td>
<td>30</td>
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<tr>
<td>50-68</td>
<td>Street Townhouse Dwellings</td>
<td>0.450</td>
<td>19</td>
</tr>
<tr>
<td>152-154</td>
<td>Multiple Dwellings – Apartment and Cluster Townhouse</td>
<td>2.781</td>
<td>119</td>
</tr>
<tr>
<td>155-156</td>
<td>Parkland</td>
<td>1.170</td>
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<tr>
<td>157</td>
<td>Open Space</td>
<td>2.667</td>
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<td>158-161</td>
<td>Future Residential Development</td>
<td>0.335</td>
<td>12</td>
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<tr>
<td></td>
<td>Road and Reserves</td>
<td>2.833</td>
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<td><strong>Total</strong></td>
<td></td>
<td><strong>15.210 ha</strong></td>
<td><strong>281</strong></td>
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2. FUNCTIONAL SERVICING DESIGN

A functional servicing design is required in support of the planning applications. The objective of this FSR is to determine a functional servicing design for the proposed subdivision. The recommended servicing outlined in this report will provide the basis for detailed engineering design. This section provides the analysis and the accompanying preliminary drawings present a functional design to show how municipal services can be provided for the proposed subdivision.

The proposed development is defined as being in Phase I and Phase IIa of the Eastview Secondary Plan within the City of Guelph Official Plan. The Eastview Secondary Plan outlines phasing policies in which to stage development with respect to servicing. The following engineering review is based on the sequence outlined within the phasing of development guidelines within the Eastview Secondary Plan.

The following methodology was used:

- Obtained and reviewed relevant background information that was available;
- Consulted with City of Guelph engineering staff;
- Consulted with other engineering consultants working on adjacent developments;
- Prepared a functional servicing design for the subdivision; and
- Made conclusions and recommendations for detailed design.
2.1 Background Information

Available background information was reviewed and the relevant information was used in preparing the functional servicing design for the proposed subdivision. The following is a summary of the information that was reviewed:

**Geotechnical Investigation, Proposed Residential Subdivision, Cityview Drive**
Chung & Vander Doelen Engineering Ltd. was retained to undertake a geotechnical investigation of 55 Cityview Drive in July 2006, in support of the previously proposed subdivision. Ten (10) boreholes were drilled and sampled in mid-July. Through the investigation, the following was determined with respect to the existing conditions of the site:

- The site is covered by a relatively thin topsoil veneer which is underlain by a silt till deposit, with silt to sandy silt found at the lower eastern limit of the site;
- Surficial topsoil has a measured thickness varying between 300mm and 900mm at borehole locations, however the thickness of the topsoil layer could vary drastically across the site from those reported at borehole locations;
- Topsoil was underlain by a major deposit of glacial sandy silt till which extended to the maximum depths of borehole exploration, with some boreholes exhibiting silt till underlain by grey, saturated silt or sandy silt;
- The sandy silt till contains a trace of embedded gravel and a trace of clay;
- Within the sandy silt till, natural moisture contents were measured at a range of 5% to 18%, indicative of typically damp to moist condition; and
- Boreholes located in the higher areas of the site remained dry and open throughout the sampling operation, and groundwater was observed at depths between 2.1m and 4.5m below existing grades in boreholes located at the edge of the heavily treed eastern limit of the site.

With respect to site grading, the report recommended that site grading should be undertaken during the drier summer months as sandy silt soils will be difficult to handle when they are wet, and fill materials should be suitably compacted in order to support future roadways, buildings and houses.

With respect to underground services, it was anticipated that the trench excavation will intersect native and/or re-compacted sandy silt till throughout the site, and wet soils and groundwater conditions would be encountered in the lower eastern part of the site unless grades are raised. As a result of the field work the following was recommended with respect to installing underground services:

- Trenching can be carried out using conventional open cut procedures;
- Minor groundwater seepage should be adequately controlled during excavation and backfilling – although no major problems due to groundwater were expected within the excavations;
- Generally, no bearing problems are anticipated for flexible and rigid pipes;
- It is expected that some loss of moisture will take place during the process of excavation and backfilling, facilitating backfilling and compaction – with overly wet materials being mixed with drier materials excavated from the upper portion of the trenches to achieve a more compactable soil mixture; and
- Backfilling operations should follow closely after excavation so only a minimum length of trench slope is exposed at any one time to minimize potential problems.
With respect to building foundations, the investigation concluded that the sandy silt till is competent to support building foundations which can be founded on these soils or well-compacted engineered fill. Footing subgrade inspections were recommended to verify the bearing capacity of the soil prior to placement of the forms and concrete for the building foundations.

The full report has been submitted in support of the proposed plan of subdivision.

Slope Stability Assessment for Proposed Subdivision, Cityview Drive
Chung & Vander Doelen Engineering Ltd. was retained to review the condition of the site specifically related to the relatively steep slope comprising the east half of the property in 2007. Based on the Assessment and the anticipation that the site grades would be moderated by the use of cut and fill, careful planning in carrying out the site grading was advised as the native sand silt till soil is susceptible to erosion caused by surface runoff during rainfall events. It was recommended that the on-site sandy silt till cut from the higher part of the site could be used to construct engineered fill over the existing slope compacted to at least 95% along the future roadway and 98% under future houses, with all reconstructed slope surfaces topsoiled and seeded/sodded to prevent surface erosion.

2.2 Preliminary Grading

The existing topography of the site is fairly steep with a drainage divide splitting the site into a north and south drainage area. Flatter grades are located in the southwest portion of the site, with steep grades located in the northeast portion of the site sloping down into the wetland area.

In order to provide adequate grades for the roads and lots/blocks in the subdivision, significant cut and fill will be required after the stripping of topsoil. The roadways will need to be cut or filled to design subgrade elevations. Lots will be cut or filled to a sufficient subgrade level, with engineered fill placed where required to support building foundations. It is recommended that an area grading operation be completed prior to servicing construction. Also it is recommended that a sufficient amount of the stripped topsoil be stockpiled on site for landscaping purposes on the residential lots/blocks, in the park, and on the roadway boulevards. The Geotechnical Investigation completed by Chung & Vander Doelen Engineering Ltd. has a section on site grading which should be reviewed prior to final grading design and any grading operations.

A preliminary grading plan for the proposed subdivision is included in the back of the report. Preliminary road grades vary from 0.5% to 6.1%, which are suitable for this type of development. The preliminary grading has been designed to match in with the adjacent roads and lots. Street ‘A’ is a local road that has been identified as a desired connection between Cityview Drive and Starwood Drive in existing municipal land use policy. Street ‘A’ is located along the top of slope of the wetland. Due to the existing topography a retaining wall will be required along the east/south side of Street ‘A’ adjacent to the wetland to provide for this connection.

It is recommended that a cut and fill analysis be completed as part of the detailed grading design with the goal of achieving a cut and fill balance for the site.

2.3 Proposed Sanitary Sewer Servicing

The proposed site is contained within the City of Guelph sanitary servicing boundary. Sanitary sewers exist on Starwood Drive, Keating Street and Silurian Drive. The eastern portion of the subdivision will drain to the east, outletting in the existing sanitary sewer on Starwood Drive. Refer to the preliminary sanitary servicing plan included in the back of this report.

The western portion of the site will be serviced by the extension of a sanitary sewer from the existing 200 millimetre sanitary stub located adjacent to the CPR. The sanitary sewer will be
extended northerly to Cityview Drive and then westerly along Cityview Drive to the intersection of Cityview Drive and Street A. Discussions have taken place with the engineering consultant for the lands adjacent to the CPR and the lands to the south of the Debrob subdivision. From those discussions it is our understanding that the sanitary sewer will be extended along Cityview Drive in order to service the lands south of the Debrob subdivision, so the sanitary sewer will have to be extended the additional distance to Street A. It is assumed that as the existing 200 millimetre sanitary sewer stub at the CPR was intended to service the subject lands that this outlet has sufficient capacity.

Gravity sewers will be extended along the proposed subdivision’s internal roads. The proposed sanitary will be sized to accommodate flows from the development using the City of Guelph urban design standards (200 millimetre diameter sewers is the minimum).

As the proposed sanitary sewer on Cityview Drive will service multiple properties, cost sharing of the external sanitary works should be explored, and cost sharing agreements implemented.

### 2.4 Proposed Watermain Servicing

The proposed site is contained within the City of Guelph water servicing boundary. Watermains exist along the existing roadways surrounding the subject lands except Cityview Drive and the future Stockford Road. Connections will be made to these existing watermains. Where there are no existing watermains to connect into, stubs will be left for future connections to eliminate dead ends in the system. Refer to the preliminary watermain servicing plan included in the back of this report.

The proposed size of the internal watermains is 150 and 200 millimetre diameter and the watermain system will be designed as per the City of Guelph design standards.

### 2.5 Proposed Storm Sewer Servicing and Stormwater Management

A Preliminary Stormwater Management Report has been prepared by IBI Group for the proposed Draft Plan of Subdivision and thus the details regarding necessary Stormwater Management for the proposed development will not be repeated here. The Preliminary Stormwater Management Report has been submitted under its own cover. In general terms, stormwater up to the minor storm (i.e., 5 year local storm event) will be conveyed via an underground storm system designed to City of Guelph design standards. Major storm events would be conveyed overland within road right-of-ways. Refer to the preliminary storm servicing plans included in the back of the report.

While the eastern portions of the site will outlet to the existing storm sewer at Starwood Drive, the western portion of the site will outlet to a proposed storm sewer to be extended from the CPR stormwater management pond located west of Cityview Drive.

As the proposed storm sewer on Cityview Drive will service multiple properties, cost sharing of the external storm sewer works should be explored, and cost sharing agreements implemented.

The Preliminary Stormwater Management Report was completed to establish the preliminary design for stormwater management, and to satisfy the criteria of the agencies. The proposed development is subject to the criteria set out by the City of Guelph, the Grand River Conservation Authority, and the Ontario Ministry of the Environment Stormwater Management Planning and Design Manual (MOE 2003).

Existing stormwater management facilities have been constructed to the southeast and southwest of the proposed development. These facilities have been sized to provide both quantity and quality control of the stormwater runoff generated by the proposed development.
The conclusions from the Preliminary Stormwater Management Report are as follows:

- It has been confirmed that both water quantity and quality control will be provided in existing off-site SWM facilities for both the east and west draining portions of the proposed development;

- Runoff from the east-draining portion of the development will be routed to the existing storm sewer system on Starwood Drive;

- Runoff from the west-draining portion of the development will be routed to an upgraded storm drainage system on Cityview Drive, and then to the Valleyhaven Subdivision SWM pond through an easement (or block) adjacent to the Railway lands;

- Water balance calculations for existing and proposed conditions have been prepared for the wetland area;

- Treated road runoff will continue to provide surface water flow toward the wetland on the property;

- Based on preliminary information provided by the GRCA, the Clythe Creek floodline does not encroach onto the subject lands; and

- Preliminary erosion and sediment control features have been identified and will be finalized at the detailed design stage.

Based on these conclusions, it was recommended that the Preliminary Stormwater Management Plan be accepted by all review agencies in support of the Draft Plan of Subdivision with appropriate conditions.

3. CONCLUSIONS

This Functional Servicing Report has outlined a servicing strategy that provides adequate municipal services for the subdivision as well as protecting the environmental features on the site. The following can be concluded:

- An existing sanitary sewer located on Starwood Drive will provide a sanitary sewer connection for the eastern portion of the subdivision, and for the western portion of the subdivision a sanitary sewer has to be extended up Cityview Drive to the subdivision;

- Existing water mains are located adjacent to the proposed subdivision that will provide the domestic water and fire fighting requirements for the subdivision; and

- Existing stormwater management facilities to the southeast and southwest of the proposed subdivision have been sized to provide both quantity and quality control for the stormwater runoff generated by the proposed subdivision, and internal and external storm systems will be constructed to convey the stormwater to these existing facilities.
Based on these conclusions, it is recommended that this Functional Servicing Report be accepted by all review agencies in support of the Draft Plan of Subdivision with appropriate conditions. Furthermore this report, and the preliminary drawings included in it, should be used as the basis for detailed design once the Draft Plan is approved.

Respectfully Submitted,

Scott M. MacDonald, P.Eng.