EAGLE HEIGHTS PROPERTY
CITY OF BURLINGTON

FUNCTIONAL SERVICING REPORT

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August, 2018

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1.0 INTRODUCTION

1.1 Background

In 1991 applications were made by the Grindstone Settlement Area Owners group to amend Provincial and City planning documents to permit residential development in the Central Sector of North Aldershot. In response to these applications the public review agencies decided to conduct a review that became known as the North Aldershot Interagency Review (NAIR). The 1994 final report by NAIR was adopted by the City of Burlington (The City) and the Region of Halton (The Region) to form the basis for future planning in North Aldershot. In 1996, as part of the settlement of appeals to the Ontario Municipal Board, OPA 197 was adopted and zoning bylaws and Draft Plans of Subdivision for the Paletta lands and Taylor property were approved. OPA 197 incorporated the results of NAIR.

In 2007 a Functional Servicing and Stormwater Management Report (FS&SWMR) was prepared to support applications to amend the Draft Plans of subdivision, Official Plan and zoning By-Law for the property. These applications sought to increase the number of units on the same land uses. The FS&SWMR showed how the proposed development could be graded and serviced internally and externally, while conforming with the NAIR.

The 2007 FS&SWMR was updated in June 2010 to address comments by CH regarding stormwater management and by the Region regarding water and wastewater servicing. The Region made comments on the 2010 FS&SWMR in a letter to the City dated February 27, 2012 (see Appendix A).

An Addendum, which revised and replaced Section 7 of the updated FSR&SWMR to address comments by the Region regarding water and wastewater servicing, was submitted to the City and Region in 2013. The Region made comments on the 2013 Addendum in a letter to the City dated September 27, 2013 (see Appendix A).

The 2010 FS&SWMR and the 2013 Addendum proposed three alternative routes for the sanitary outlet sewer from Flatt Road to the existing Waterdown Road sewer. This sanitary sewer is funded by development charges and will service all of the North Aldershot drainage area north of Flatt Road. The three alternatives were analyzed and a preferred alternative recommended. This recommendation has been endorsed by the Region (see Appendix A comment #25 of the Region's February 27, 2012 letter).

The selected route included a crossing of a property, known as 1350 Waterdown Road, owned by the Burlington Fellowship Canadian Reform Church (the Church). Since 2010, Penta Properties have been actively pursuing the necessary property rights for the sewer crossing of 1350 Waterdown Road. In 2012, Paletta International (now Penta) made an application for consent to sever a parcel of land (1664 Waterdown Road) from the Eagle Heights lands with the intent of doing a land exchange with the Church. The Church would then construct a place of worship on 1664 Waterdown Rd. The land swap proposal did not prove to be feasible and the Church decided to construct on the 1350 Waterdown Road parcel. Penta continued discussions and reached an agreement with the Church to acquire a servicing easement for the sanitary sewer and, if required, watermain(s). The easement rights would be passed on to the Region at the appropriate time.

In April 2015, the Church proceeded with an application for rezoning to allow an exemption to the RNA1 Zone to permit the construction of a place of worship. The application identified a creek block consisting of valley lands and setback which will be dedicated to the City in conjunction with a subsequent Site Plan application. The majority of the sewer easement is within the Creek Block dedication. A Statutory Public Meeting was held in January 2016 to consider the rezoning application. Penta Properties made a written delegation to request a clear recognition that the dedication of the Creek Block will be subject to the Servicing Easement Agreement. By-law number 2020.375 was enacted by City Council on February 13, 2017, which rezoned the property from the RNA1 Zone to a site-specific RNA1-466 Zone and 02-196 Zone.

In July 2016 a report titled “Eagle Heights and Taylor Property-Review of Sanitary Sewer Outlet Route and Other Related Issues” (SAN Outlet Report) was prepared. This report was prepared for the Region to address comments received by them via email from the City. This letter dated February 27, 2012 has been included in Appendix G. The purpose of this report was to provide justification for the recommended Sanitary Outlet Sewer Route by identifying the alternative routes considered, evaluation of the alternatives and recommending the preferred route. This report was submitted to the Region in July 2016. To date no comments from the Region have been received.

In conjunction with the construction of the Waterdown Rd/403 interchange in the fall of 2009, a first phase of the outlet sanitary sewer was constructed. It was extended along the North Service Rd, north on Waterdown Rd to Craven Ave. This was initially front end financed by Penta. Ultimately the Region reimbursed Penta the full cost from Development Charges in 2010.

1.2 Purpose

This report was originally made in March 2007 by Metropolitan Consulting Inc (MCI) to support applications to amend the Draft Plans of Subdivision, Official Plan and Zoning By-law for 93ha & 9ha parcels of land within the Central Sector of the North Aldershot Area of the City of Burlington. The proposed development known as Eagle Heights (formerly Eagle Heights and the Taylor Property) is owned by Penta Properties Inc. (formerly Paletta International Corporation) and is within the area formerly known as the Grindstone Settlement area, as shown on figure 1-1.This 2007 report was updated, in 2010 (addressing Regional Comments only), and further amended in 2013 (again addressing Regional comments). These reports showed how the proposed development could be serviced internally and externally, incorporate storm water management and graded.

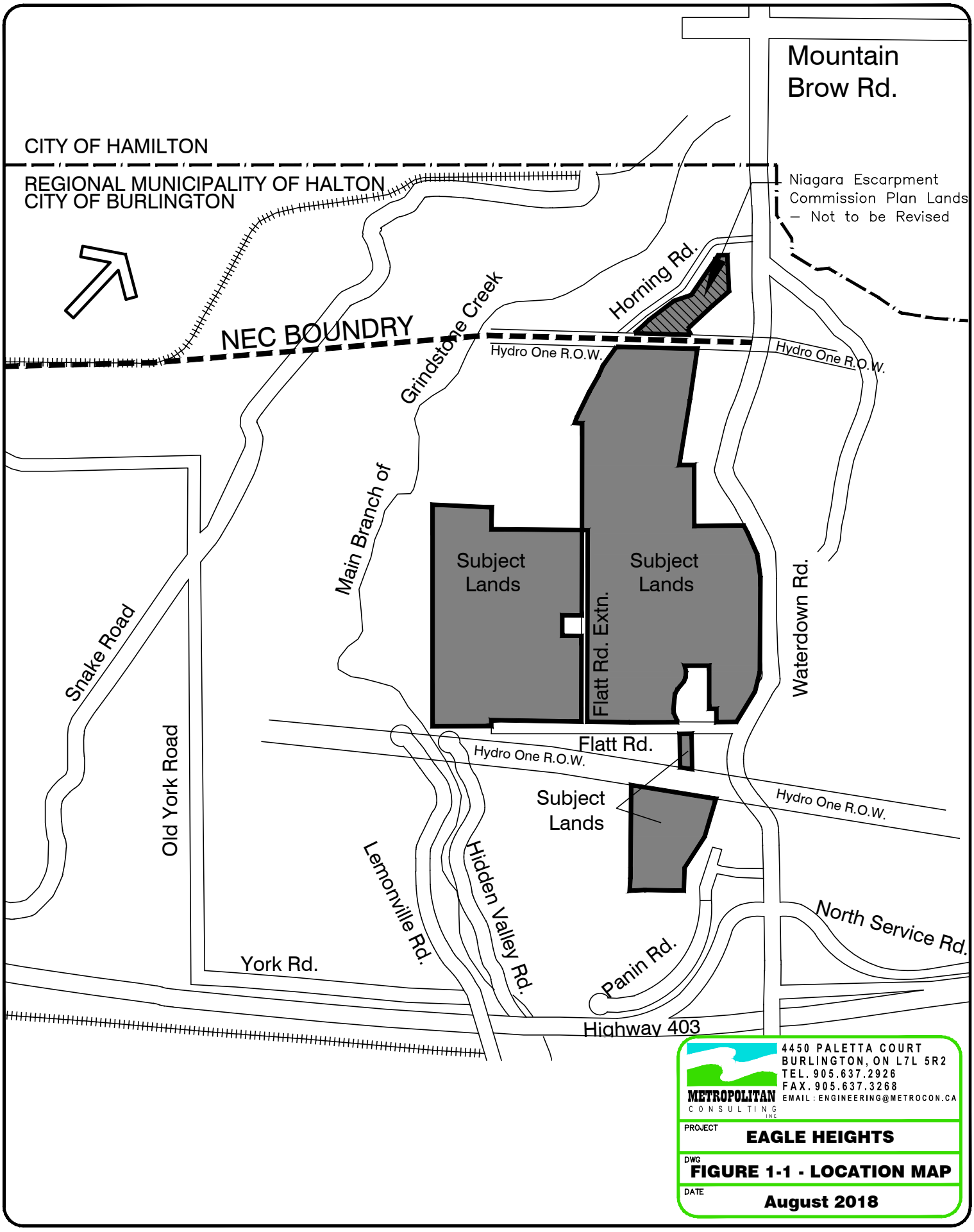
This new 2018 report has been completed to address comments made by the City of Burlington, Conservation Halton (CH), Region of Halton, and Niagara Escarpment Commission (NEC) regarding stormwater management, water and wastewater servicing, and environmental concerns. Specifically these comments were received:

April 2, 2009 (CH);
July 11, 2011 (CH);
September 27, 2013 (CH);
September 27, 2013 (Region);
September 27, 2013 (City); and,
September 27, 2013 (NEC).

These comments may be found in Appendix A. These comments will be referred to in this report to clarify how the various concerns/issues are being addressed.

This 2018 report describes the manner in which grading, water distribution, wastewater collection, and storm drainage systems will be designed and provide for the proposed development. A separate report which includes a comprehensive, continuous hydrological modeling using the GAWSER program and Storm Water Management (SWM) plan has also been prepared for the development.

The purpose of this Functional Servicing Report is to demonstrate the feasibility of servicing the Eagle Heights Property in the City of Burlington, and to inform the proposed Draft Plan, Zoning amendment, and Official Plan amendment.



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FIGURE 1-1 - LOCATION MAP

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Previous Reports & Documents

Many technical reports were prepared by the applicants and review agencies during the processing of the Grindstone Settlement Area applications. Those of particular relevance to servicing which have been utilized in the preparation of this report include:

- Sanitary Drainage and Water Distribution Master Servicing Study: Grindstone Settlement Area, August 1994, Cosburn Patterson Wardman Ltd.;
- Functional Servicing Report Paletta Subdivision, October 1994, Cosburn Patterson Wardman Ltd.;
- North Aldershot Central Sector Water and Wastewater Servicing Study, December 1994, Thornburn Penny Ltd.;
- Grindstone Creek Subwatershed Study, March 1995, Cosburn Patterson Wardman Ltd.;
- Addendum to Grindstone Creek Subwatershed Study, February 1996, Cosburn Patterson Mather Ltd.; and,
- Functional Servicing Report: Taylor Subdivision, October 1994, Cosburn Patterson Mather Ltd.

In support of the present applications filed in 2002, five further reports were prepared and are referenced in the preparation of this report:

- Eagle Heights and Taylor Lands Environmental Impact Assessment, 2010, Savanta Inc.;
- Geotechnical Investigation Eagle Heights and Taylor Property, June 2003, Peto MacCallum Ltd.;
- Stable Top of Bank Assessment, Eagle Heights and Taylor Properties, July 2006, Peto MacCallum Ltd;
- Planning Justification Report, January 2007, Envision & Scott Burns Planning Consultants; and,
- Eagle Heights Erosion Assessment, May 2010, Parish Geomorphic Ltd.; and,
- Traffic Impact Study, Eagle Heights/Taylor Draft Plans of Subdivision Burlington, July 2007, Read, Voorhees & Associates

In addition, the South Halton Water & Wastewater Master Plan Review, October 2002, and the Master Plan Update dated June 2011, prepared by AECOM, for the Region and the 2017 Capital Budgets & Forecasts for the City and Region were utilized.

This report is being submitted together with:

- Eagle Heights Hydrological Study and Stormwater Management Report, May 2018, Metropolitan Consulting Inc.;
- Eagle Heights and Taylor Lands Environmental Impact Assessment, May 2018, Savanta Inc.;
- Slope Stability Assessment Proposed Residential Development Eagle Heights, May 2018, Soul-Mat Engineers & Consultants Ltd.;
- Planning Justification Report, May 2018, Metropolitan Consulting Inc.;
- Visual Impact Assessment, May 2018, Metropolitan Consulting Inc.;
- Eagle Heights Geomorphic Assessment, May 2018, Matrix Solutions Inc.;

The Hydrogeological Assessment will be submitted at a later date, as field studies are ongoing.

1.3 Proposed Draft Plans

Revised draft plans of subdivision which have been informed by this report as well as the other reports being submitted concurrently have been prepared for the Eagle Heights lands. These Draft Plans which conform to the North Aldershot Inter-Agency Review (NAIR) planning principles, conform with OPA 197, with a few minor exceptions, and integrate innovative forms of development in natural settings. The land base within which development occurs is the same as or less than the approved draft plans from 1996 which incorporate the results of the other studies. This FSR has been prepared to show how new development concepts can be serviced, graded and provided with stormwater management in keeping with these principles.

The Draft Plan for Eagle Heights as revised by the technical reports is shown in the Figure titled Eagle Heights Draft Plan 2018 (In Pocket). The revised Draft Plan includes the following:

Table 1 2018 Land Use Schedule (Eagle Heights area north of Flatt Rd.)

EAGLE HEIGHTS		
DESCRIPTION	UNITS	AREA in ha
Single Detached Freehold Units	**193**	**13.53**
Single Condominium	**21**	**2.13**
Cluster Housing Blocks	**566**	**12.66**
Parks		**1.34**
Valley lands		**33.78**
Creek Block		**1.12**
Buffer Areas		**9.30**
Open Space		**14.22**
Stormwater Management Areas		**0.78**
Road Allowances		**3.92**
Total	780	***93.26***

The development areas are denoted using the same numbering as in OPA197 as Sub-Areas 1, 2, 5, 6, 7 & 8.

The proposed draft Plan for the former Taylor property, identified as Sub-Area 10, is shown in the Figure entitled “Taylor Lands Draft Plan 2017” (In Pocket). The plan includes:

Table 2 2018 Land Use Schedule (Former Taylor Property)

TAYLOR PROPERTY		
DESCRIPTION	UNITS	AREA
Single Detached Lots	32	1.69
Cluster Housing Blocks	102	2.29
Valley lands		2.06
Buffer Areas		1.69
Servicing block		0.04
Wetlands		0.16
Road Allowances		1.02
Total	134	8.95

As with the previously approved 1996 plans, the new plans restrict development on the Eagle Heights and former Taylor properties to the tableland. In the main, tableland, valley boundaries and the buffer zones are the same as those approved during the previous process. Minor changes have resulted from staking of physical environmental features located on site.

With respect to the re-staking; one of the environmental features identified and staked was the Top of Bank (TOB) along tablelands throughout the development. The re-staking was performed on various days in the fall of 2015. The staking was performed by CH staff, with the locations surveyed and provided for review by MCI.

At the same time as the TOB staking, re-staking of the driplines occurred, which was completed by Savanta. The resultant lines from this staking were surveyed and the information was conveyed on November 10, 2015 to Regional staff for review/confirmation. To date no response has been received from the Region.

The locations of all of the resultant environmental constraints, as well as the setbacks can be found on Figures 1-2 and 1-35(In Pocket).

2.0 ROADS

2.1 Traffic Studies

The final report of the Phase 2 of the Waterdown/Aldershot Transportation Master Plan (WATMP) was published in February 2008. This report made recommendations for the transportation infrastructure required to accommodate urban development in the communities of Waterdown and Aldershot including Eagle Heights. One of the recommendations is for geometric improvements and widening of Waterdown Road to 4 lanes from Highway 403 to Mountain Brow Road.

The Waterdown Road Corridor Class EA (Craven Avenue to Dundas Street) was completed in 2012, by the City. The Class EA reviewed alternative designs and concepts for the widening of and reconstruction of Waterdown Rd. as identified in the WATMP. The current proposed works include an ultimate 4 lane roadway, marked as a 3 lane cross section, with multi-use trails. If traffic flows warrant, the markings can be revised to the ultimate 4 lane configuration.

In July of 2009 Read, Voorhees & Associates completed a Traffic Impact Study (TIS) in support of the development. This report conducted an analysis of the development and recommendations were made, with respect to the WATMP. The 2018 Draft Plan of subdivision has been revised with respect to roadway geometry from the previous plans. However, the roadway pattern and intersection locations have remained the same as the approved 1996 plan.

The roadway pattern has also remained consistent with respect to the 2007 report prepared by Scott Burns Planning Consultants (SBPC) and ENVision – The Hough Group (ENVision). This report demonstrates that the current plan is consistent with the recommendations of the NAIR, which, provides several criteria for the development. Specifically *“Do not permit extensive areas of continuous urban development”*, and *“Have regard for the topographical character of the landscape”*. As such, the use of a circuitous road pattern is not recommended, from a policy standpoint. Nor, is it possible given the topography of site.

2.2 Proposed Road Network

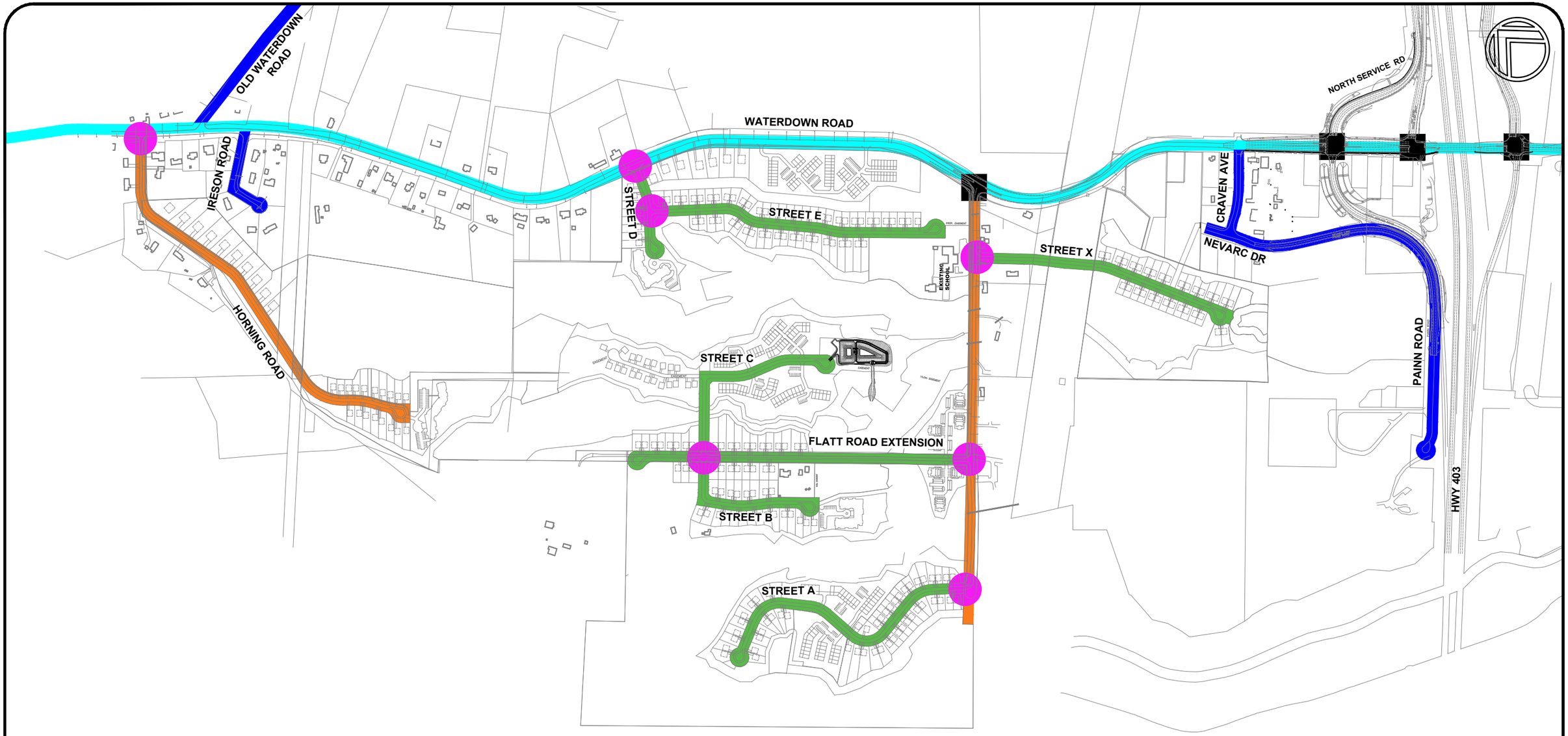
In keeping with the NAIR concepts for the Grindstone Area, OPA 197 and the intent of the proposed plan to utilize passive stormwater management where feasible, the public roads internal to the 2018 plan are proposed to be constructed to rural standards with open ditch drainage. The proposed roadway network will consist of local streets located within 20m Right-of-Ways (ROW). A number of new roadway connections to existing municipal roads are proposed. Four of these are minor in nature see (Figure 2-1).

There are three connections to Waterdown Road from Flatt Road, Street D, and Horning Road. Waterdown Road is classified as an Arterial roadway connecting the City of Burlington to the City of Hamilton (Village of Waterdown).

As recommended in the Waterdown/Aldershot Transportation Master Plan (WATMP), Waterdown Road is to be upgraded to a full Urban Cross-section. The work is to be completed by the city in 2020.

A three lane roadway consisting of a northbound, southbound, and shared center turn-lane is proposed. Ultimately the center turn-lane will be converted into additional north and south bound lanes as demands increase.

In addition to the roadway, a multi-use pathway is being constructed along the western edge of the ROW.



LEGEND

- Ex. LOCAL ROADWAY
- Ex. ARTERIAL ROADWAY
- PROP. LOCAL ROADWAY
- PEDESTRIAN FACILITIES
- SIGNALIZED INTERSECTION
- LOCAL STOP CONDITION INTERSECTION

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ROADWAY NETWORK

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FIGURE 2-1

\\SV-SBS1\Projects\Paletta\P09006-Eagle Heights\dwg\FSR Figures\Figure 2-1 - Roadway Network.dwg

2.3 Traffc Controls

All of the proposed local traffic intersections are to be unsignalized. No traffic signals are recommended within the draft plans of subdivision, as recommended within chapter 5 of the TIS.

The southern connection at Flatt Road and Waterdown Road will eventually require a signalized intersection. During the first phases of development (See Section 7.0 of this report), a stop sign control as is existing will service the development adequately. During the second phase, projected traffic flows will warrant installation the construction of traffic signals at this intersection. A dedicated east-bound left turn lane is proposed at this intersection. These recommendations can be found within section 4.1.1 of the TIS.

At the mid-development intersection of Street D and Waterdown Road, the projected traffic flows are low enough to allow for a stop condition on Street D, with a level of service which is adequate for the proposed development. An east-bound left turn lane on Street D will be provided as per the TIS section 4.2.1.

The Horning Road and Waterdown Road intersection can continue to operate unsignalized even with the higher traffic flows from the development, as per section 4.2.2 of the TIS.

2.4 Road Standards

In keeping with the NAIR concepts for the Grindstone Area, and OPA 197 it is the intent to utilize passive stormwater management where feasible. The public roads internal to the new plans are proposed to be constructed to rural standards with open ditch drainage.

The relatively steep grades of some roads may cause open ditch erosion concerns. Various surface treatments can be utilized to minimize this erosion. For example, the

strategic use of Rip-Rap, or lining of the ditch with specific native vegetation to slow flows, will be beneficial. Consideration may be given, during detail design, in consultation with City staff, to having some roads with modified urban / rural cross-sections that could include “roll over” curbs and shallow roadside swales with underdrains connected to a storm sewer. For the purposes of this report, however, all internal roads will be assumed to have rural cross sections. See Figure 2-2 for the cross-section.

Flatt Road, which will be reconstructed by the City in concert with the Eagle Heights and Taylor developments, is proposed to have a “semi urban’ cross section to best accommodate the existing topography. This specific cross section is elaborated upon in the preceding section of this report.

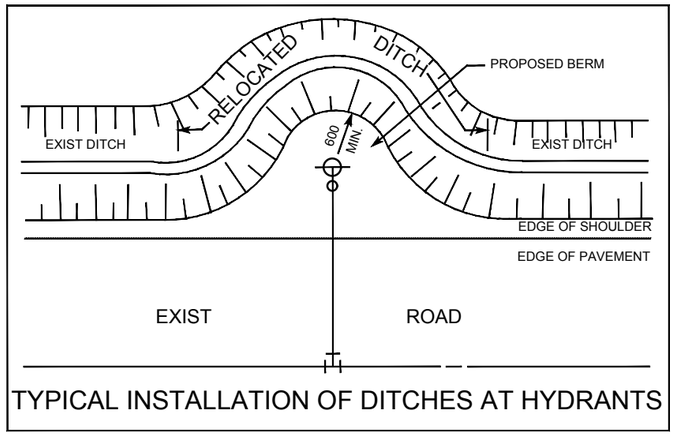
2.5 Pedestrian Facilities

As per OPA 197, cycling and pedestrian links are to be provided between public/open spaces and/or community facilities. As such, some of the rural roadways will have sidewalks to accommodate pedestrian traffic. These links are to provide alternative methods to accessing the multi-use trail on Waterdown Road, and the parks found throughout the North Aldershot area.

Flatt Road, as shown on Figure 2-3, will have a sidewalk in order to connect pedestrians to the multi-use pathway on Waterdown Road. This pathway will be constructed at the time widening works are undertaken by the City which are, scheduled for 2020 according to the 2017 Proposed Capital Budget and Forecast of the City.

Horning Road will also be provided with a sidewalk, as shown on Figure 2-3. This will also allow pedestrians to access the proposed multi-use pathway on Waterdown Road.

Both of these links will allow for potential connection via foot traffic to the existing Transit service provided along Waterdown Road. This route (Route 18) of the Hamilton Street Railway (HSR) connects the Village of Waterdown with the Aldershot GO station.



TYPICAL INSTALLATION OF DITCHES AT HYDRANTS

NOTES:

1) DITCH SLOPES TO BE 3:1 (BACK SLOPES 2:1 MAXIMUM)
2) MINIMUM 80mm OF TOPSOIL AND SEED TO BE USED ON DITCHES AND BOULEVARDS UNLESS OTHERWISE SPECIFIED 3) WHERE ADDITIONAL UTILITIES HAVE BEEN IDENTIFIED OR EXTENSIVE GRADING IS REQUIRED A 26m ROAD ALLOWANCE OR GREATER SHOULD BE CONSIDERED
4) FOR RESIDENTIAL SUBDIVISIONS THE BACKSLOPE IS TO BE 4:1

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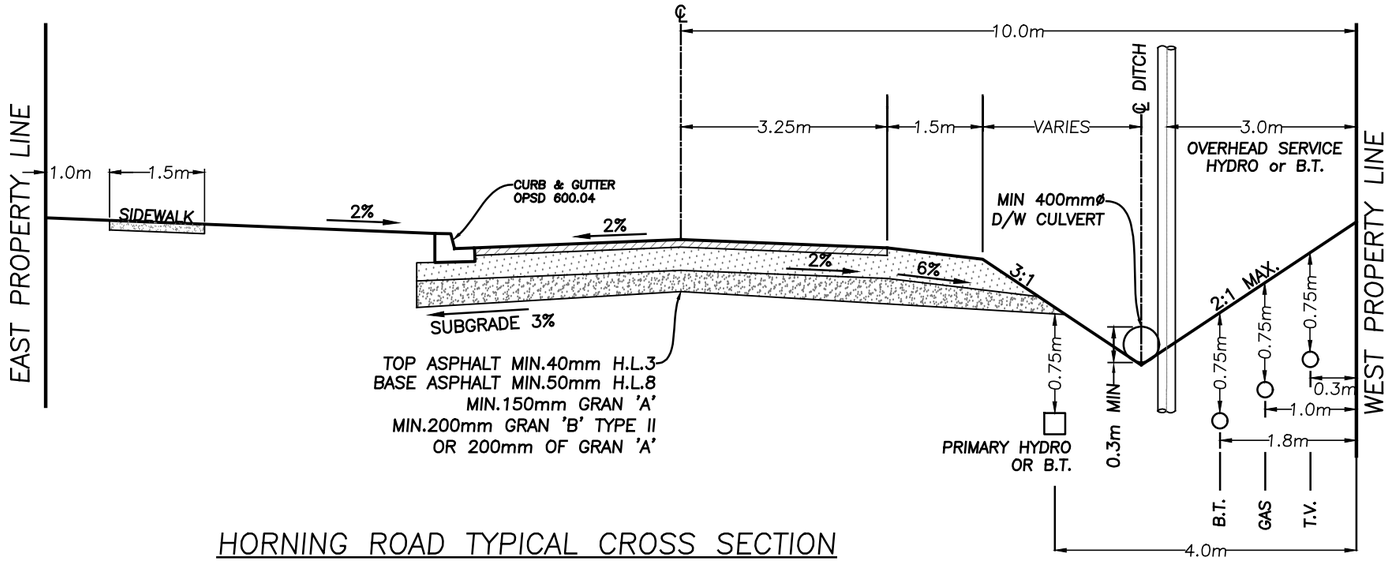
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TYPICAL CROSS SECTION

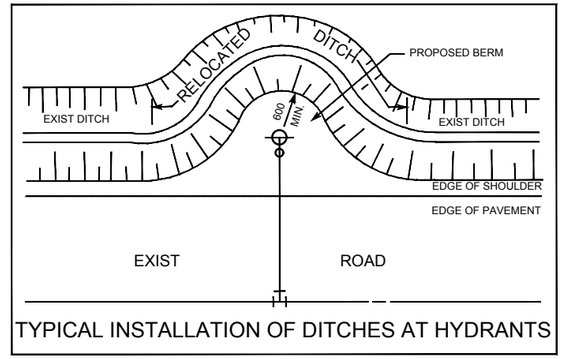
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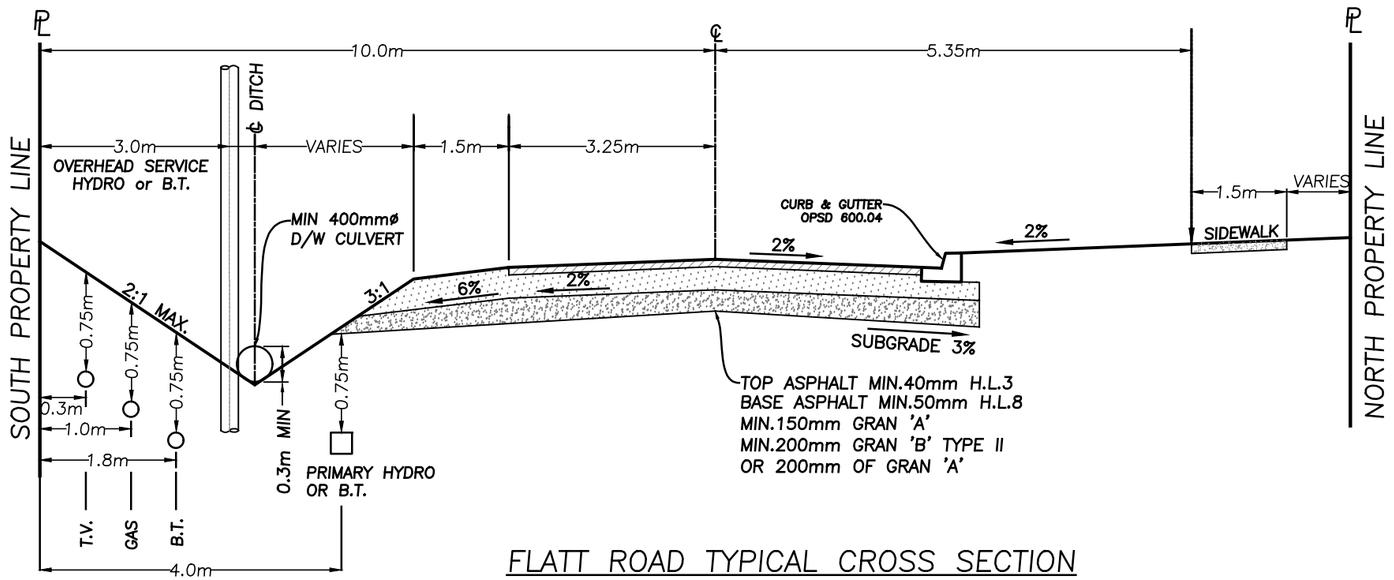
FIGURE 2-2



HORNING ROAD TYPICAL CROSS SECTION



TYPICAL INSTALLATION OF DITCHES AT HYDRANTS



FLATT ROAD TYPICAL CROSS SECTION

NOTES:
1) DITCH SLOPES TO BE 3:1 (BACK SLOPES 2:1 MAXIMUM)
2) MINIMUM 80mm OF TOPSOIL AND SEED TO BE USED ON DITCHES AND BOULEVARDS UNLESS OTHERWISE SPECIFIED 3) WHERE ADDITIONAL UTILITIES HAVE BEEN IDENTIFIED OR EXTENSIVE GRADING IS REQUIRED A 26m ROAD ALLOWANCE OR GREATER SHOULD BE CONSIDERED
4) FOR RESIDENTIAL SUBDIVISIONS THE BACKSLOPE IS TO BE 4:1

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FIGURE 2-3

2.6 Road Profiles

Figures 2-5 to 2-16 (In Pocket) show the existing and proposed grades along the centerline of the roads. The road profiles follow, to the extent possible, the existing terrain, as per NAIR, subject to the need to maintain constant gradient direction for stormwater flow. This has been done to allow the development to be compatible with the natural topography and to minimize grading works, as per NAIR.

In order to meet these objectives, the majority of road gradients will be in the 2%–5% range with some short sections of up to 7%. These gradients are within acceptable standards for local roads such as those proposed. Vertical curves will be incorporated at changes of gradient to ease transitions.

In the steeper sections of road, the velocities in the ditches may exceed the desirable maximum for grass-lined channels. In these sections, lining with turfstone or similar material or modification of the cross-section to incorporate storm sewers, will be considered during detailed design.

2.7 Roads Crossing Creeks

2.7.1 *Safe Conveyance Analysis*

The CH comments require that a safe conveyance system for of the Regulatory storm flows be demonstrated for the existing and proposed road crossings of the creek tributaries. The safe conveyance criteria are as follows:

Maximum Depth = 0.3m

Maximum Velocity = 1.7 m/s

Maximum Depth x Velocity = 0.4 sq m/s

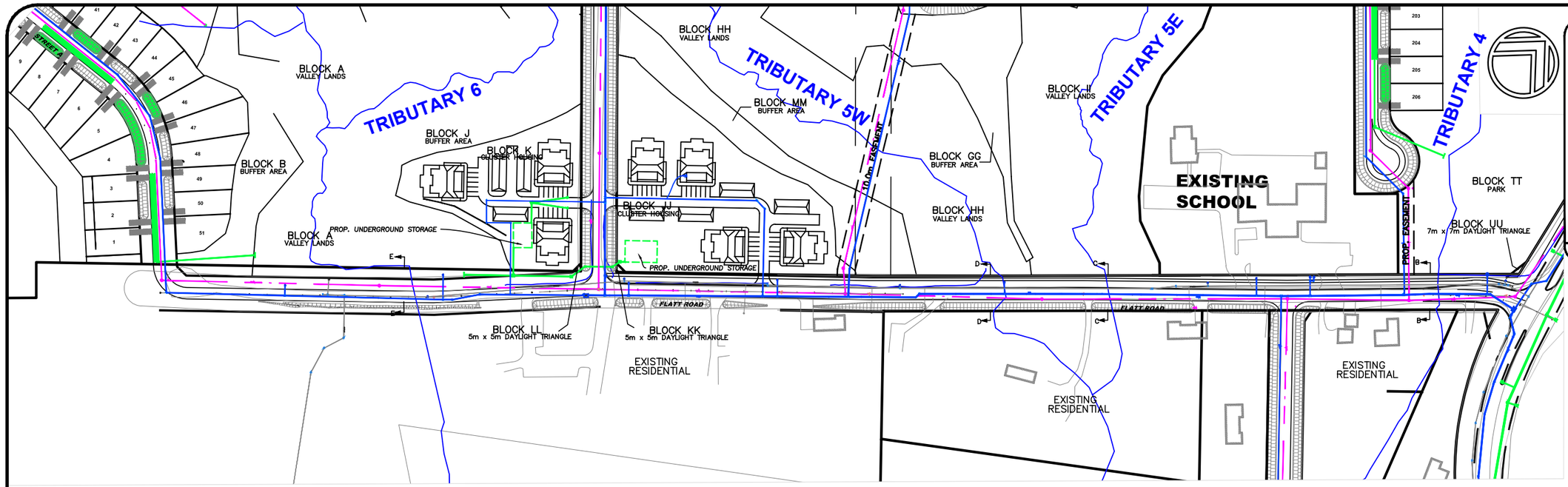
SWMHYMO models were prepared for Tributaries 4, 5 & 6 for the Regional Storm for existing and post development conditions. HEC-RAS models were then prepared for each tributary to establish the floodlines. The SWMHYMO and HEC-RAS files are available within the accompanying SWM report. The results shown in these analyses indicate that the safe conveyance criteria can be met.

2.7.2 *Street C Crossing*

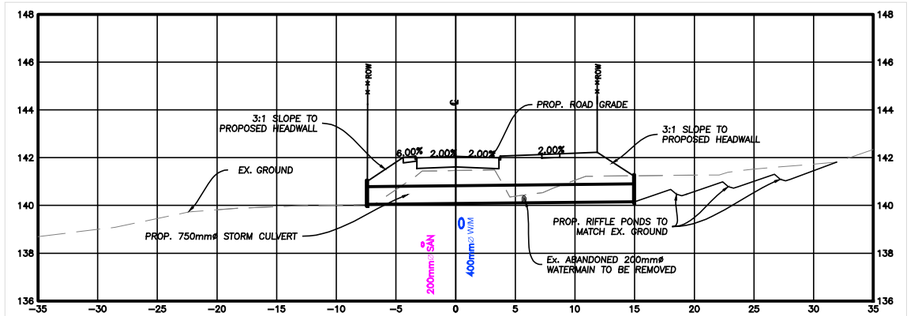
The only proposed new road crossing of a watercourse is the Street C crossing of Tributary 5 West branch. A clear span structure with a preliminary size of 2400mmx 1200mm is proposed. As shown on the HEC-RAS profile, the depth of flow with Regional storm flows is 0.45m. The structure will have an open bottom design, incorporating the Low Flow Channel. These parameters conform with the recommendations of the Matrix Solutions Inc (Matrix) 2018 Geomorphic Assessment.

2.7.3 *Flatt Road Tributary Crossings*

As shown on Figure 2-4, Flatt Road will be raised by 2m at the Tributary 4 crossing to improve the vertical alignment. This will eliminate the overtopping of the road in the Regional Storm. The existing CSP culvert will be replaced by a 750mm concrete pipe. This will ensure that the larger storm events can be passed through the culvert.

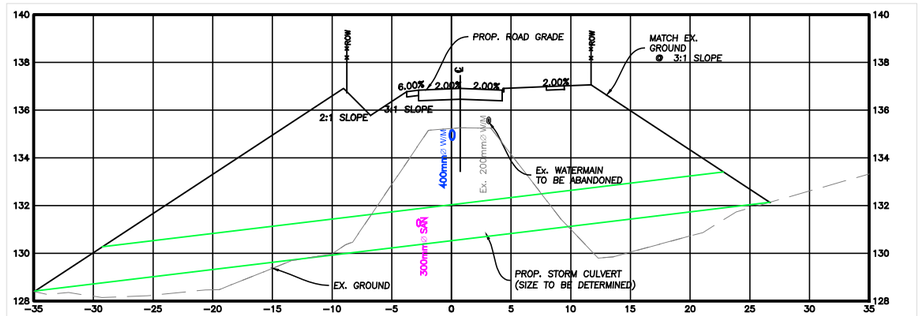


SECTION B-B



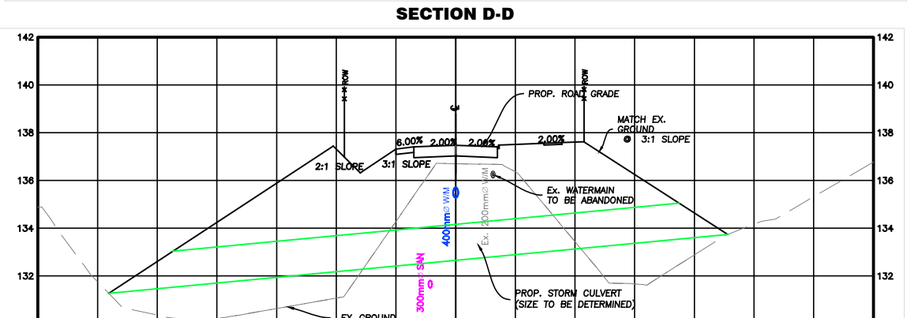
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SECTION C-C



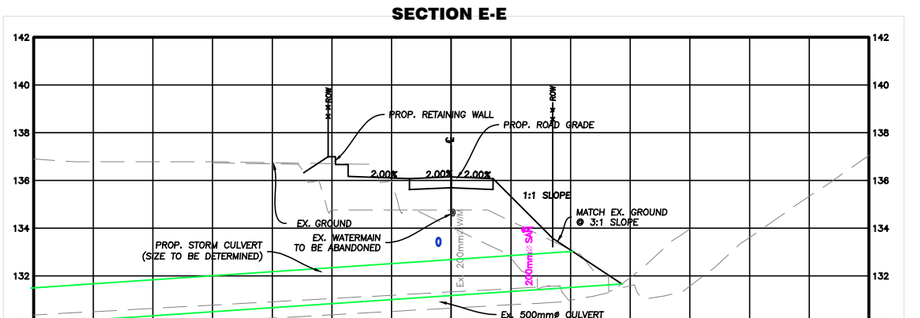
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SECTION D-D



HOR: 1:500
VERT: 1:250

SECTION E-E



HOR: 1:500
VERT: 1:250

LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- INFILTRATION TRENCH
- FILL AREA

CLIENT

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CITY OF BURLINGTON

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PROJECT

EAGLE HEIGHTS FUNCTIONAL SERVICING REPORT

DWG

FLATT ROAD WIDENING

DATE **August 2018** | PROJECT NO. **P09006**

FIGURE 2-4

\\SV-SBS1\Projects\Poletto\P09006-Eagle Heights\dwg\FSR Figures\Figure 2-4 Flatt Road Widening.dwg

As shown in the SWM report, flood levels on the north side of Flatt Road will be confined to the proposed park and will not encroach on the existing school property.

The Flatt Road profile is also proposed to be improved at the Tributary 5 crossings by raising the grade. In order to reduce the flooding risk and the frequent erosion concern expressed by the homeowner on the south side of Flatt Road, it is proposed to convey the west tributary flow in a 900 mm culvert. The east branch will be conveyed via a 1050 mm culvert.

At the Tributary 6 crossing, Flatt Road is be reconstructed and raised to match the height of the existing armour stone wall as shown on Figure 3-7. The flood levels at Flatt Road and upstream will remain the same as under existing conditions.

The increased road height and width will result in an increased grading footprint within the valley lands of the respective tributaries. The grading will be minimized through the use of 3:1 slopes, and inlet headwalls to remove horizontal grading, as shown on Figure 2-4.

2.8 Hydro Lands Crossings

2.8.1 *Provincal Secondary Land Use Program*

Under the Provincial Secondary Land Use Program (PSLUP), the province has instituted a process for application and approval for establishing new land uses for Hydro One Networks Inc (HONI) corridors. As can be seen in Appendix F, the flowchart shows the standard application/approvals process.

There are two proposed road crossings of lands owned/operated by HONI. One crossing on Street X on the Taylor lands approximately 140m south of Flatt Road. In the north, the Horning Road extension is proposed to cross the HONI corridor approximately 190m south of the existing end of Horning Road. Both of these crossings are visible on the respective draft plans of subdivision.

2.8.2 *Previous Applications/Approvals*

Included in Appendix F is correspondence between MCI and HONI regarding previous applications made to obtain a Secondary Land Use permit. An initial application was made for the Taylor crossing in 2010. A second application was made for the Horning Road Crossing in 2011. Both of these locations received preliminary technical approval, on March 14, 2011 and January 25, 2012, respectively.

A plan entitled P09006-HYD1 Hydro Corridor Street Crossings of Horning Road and Street “X” (located in Appendix F) was submitted to HONI on December 5, 2012 to satisfy conditions for technical approval.

2.8.3 *Current Application/Approvals*

The final application/approvals process for these crossings will be completed under the PSLUP process. This application process is not expected to be lengthy or complex, given that the previous application received preliminary technical approval from HONI. The current plan has remained unchanged at the crossing locations with respect to land

use and servicing. As such, it is expected that a revised application will be processed in a similar manner and timing.

2.9 City of Burlington Capital Budget and Forecast

At the time of writing of this report the reconstruction of Flatt Road is included in the 2017 City Capital works Forecast with 50% of the cost being paid by developers and the remainder from Development Charges and the City's current budget. Improvements to the Flatt Road / Waterdown Road intersection are also in the City forecast funded from Development Charges and current budget.

The realignment and reconstruction of Horning Road is included in the 2017 City Forecast with 50% developer funding. In addition to the proposed Sub-Area 1 development, this road will serve some existing homes and the ten proposed lots within the NEC area that are not subject to the revised Eagle Heights draft plan of subdivision. Currently Horning Rd has an approximate width of ~4-5m, with minimal ditches present for road drainage. The proposed roadway will be constructed to match Figure 2-3.

An excerpt of the 2017 city capital budget showing financing can be found in Appendix B. City staff have indicated that the timing of these projects can be adjusted to suit the development timetable.

3.0 STORMWATER MANAGEMENT

Given the environmentally sensitive nature of the site, as well as the surrounding lands, the methods of dealing with stormwater is important. The purpose of this chapter is to highlight the existing hydrology within the subject land and the proposed Stormwater Management (SWM) for the proposed development.

Detailed design parameters and calculations covering the extended detention, quality controls, and erosion controls are provided in the Hydrological Study & Stormwater Management Report (SWM Report) prepared by MCI dated xxx, which is being submitted concurrently with this FSR.

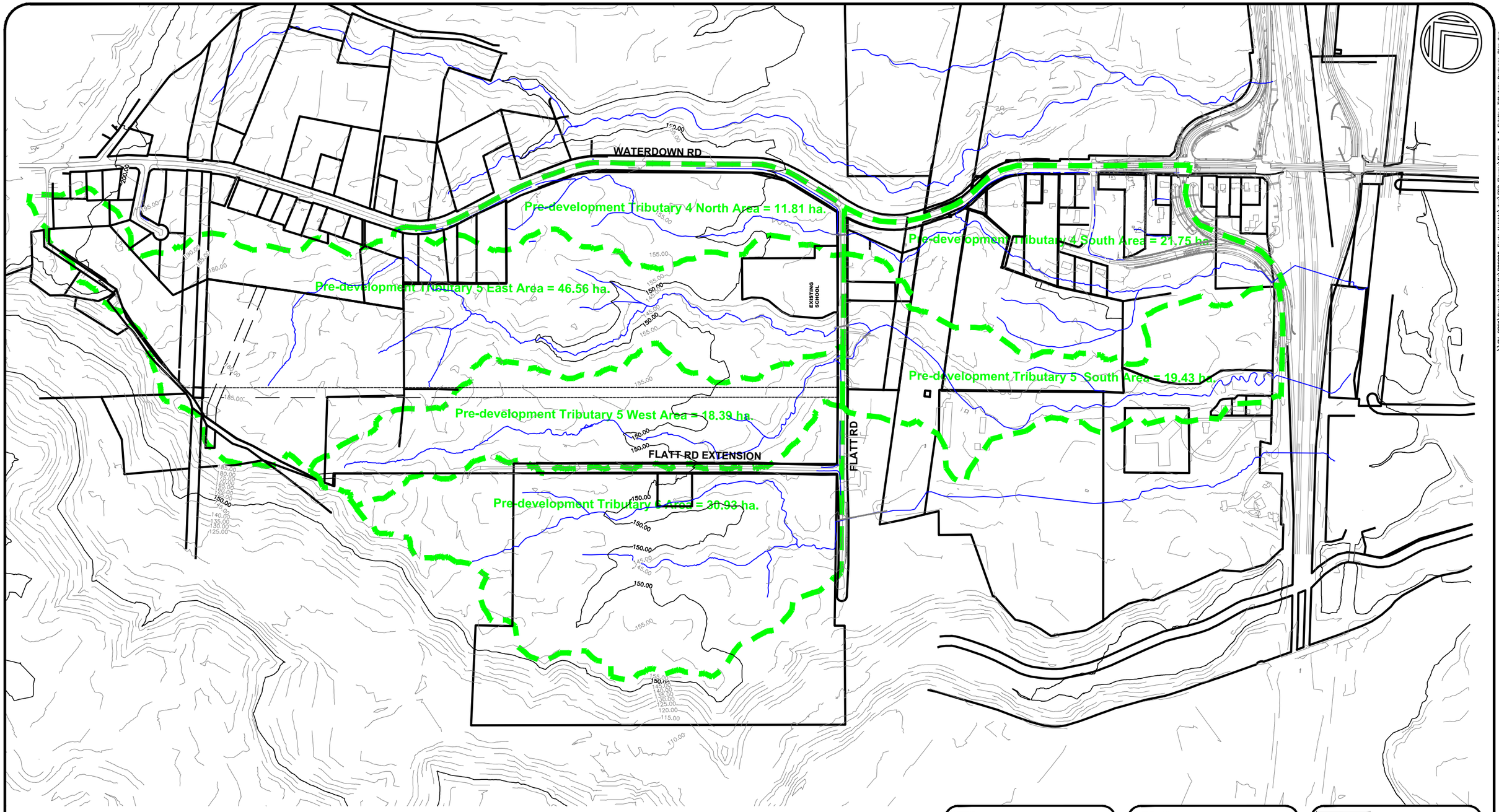
3.1 Existing Drainage

The Eagle Heights development lies entirely within the Grindstone Creek Watershed. The main valley of the Grindstone Creek abuts the Eagle Heights property to the west and northwest. Only a narrow strip of tableland, varying in width from zero to 70m, drains directly to the main creek at present. As shown on Figure 3-1, the remaining tableland drains to three tributaries of the Grindstone Creek and, these have been designated as Tributaries 4, 5, and 6 in the Grindstone Creek Subwatershed Study.

Tributary 4, the most easterly, drains most of the tableland which comprises of Sub-Area 2 and the former Taylor property. Upstream of Flatt Road, it flows in a shallow valley with little vegetation. Downstream of Flatt Road, the valley becomes gradually more defined and vegetated.

Tributary 5 splits into two distinct watercourses north of Flatt Road. A small portion of Sub-Area 2, all of Sub-Area 6, portions of Sub-Areas 5 and 8 east of Flatt Road extension, and all of Sub-Area 1 drain to Tributary 5. The two valleys are well defined and heavily treed except in their upper reaches.

Sub-Area 7 and portions of Sub-Areas 5 and 8 west of Flatt Road Extension drain to Tributary 6. The main Tributary 6 valley is well defined and treed. A smaller branch approximately 150 m west of Flatt Road Extension, is a shallow valley with little vegetation.



LEGEND

– PRE DEVELOPMENT DRAINAGE BOUNDARY

CLIENT

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PROJECT

EAGLE HEIGHTS
FUNCTIONAL SERVICING REPORT

DWG

EXISTING TRIBUTARY
DRAINAGE PLAN

DATE

August 2018

PROJECT NO.

P09006

FIGURE 3-1

\\SH-SBS1\Projects\Paletta\P09006-Eagle Heights\dwg\FSR Figures\Figure 3-1 Existing Tributary Drainage Plan.dwg

3.2 Proposed SWM Facilities

The three existing tributaries drain a total of seven independent Sub-Areas of development. As such, the SWM for each of these Sub-Areas must be examined both individually and, within the overall drainage system, cumulatively. Each Sub-Area will require a SWM facility. The location of the proposed facilities can be seen on Figure 3-2.

Design targets for these facilities have been established by MCI with updated GAWSER modeling. These targets are similar to ones established in the 1995 Grindstone Creek Subwatershed Study (GCSS).

The 1995 (GCSS) and the February 1996 Addendum made the following recommendations regarding stormwater management:

> Quality treatment and erosion control can be accomplished by a combination of passive measures, such as grass swales, infiltration trenches, roadside ditches, and by extended detention wet ponds;

The GCSS recommended the use of the valley lands for additional quantity control in the form of in-line SWM facilities. These types of facility are not permissible for this development any longer, and as such are not proposed on the 2018 plan.

CH comments in their letter of April 2, 2009 on the March 2007 Functional Servicing Report require several revisions to the GCSS recommendations:

> "Post to pre development quantity control is required for the full range of design storms from the 1:2yr to the 1:100yr at each stormwater outfall;
> A geomorphologist is required to revise the erosion analysis in the GCSS and to provide new recommendations on required erosion prevention measures;
> Erosion control is required for all development areas and all stormwater outfalls;

Enhanced level (Level 1) quality control is to be achieved at each point of stormwater outflow (the GCSS required only Level 2 control);

Road run-off should be directed to stormwater management facilities wherever possible;"

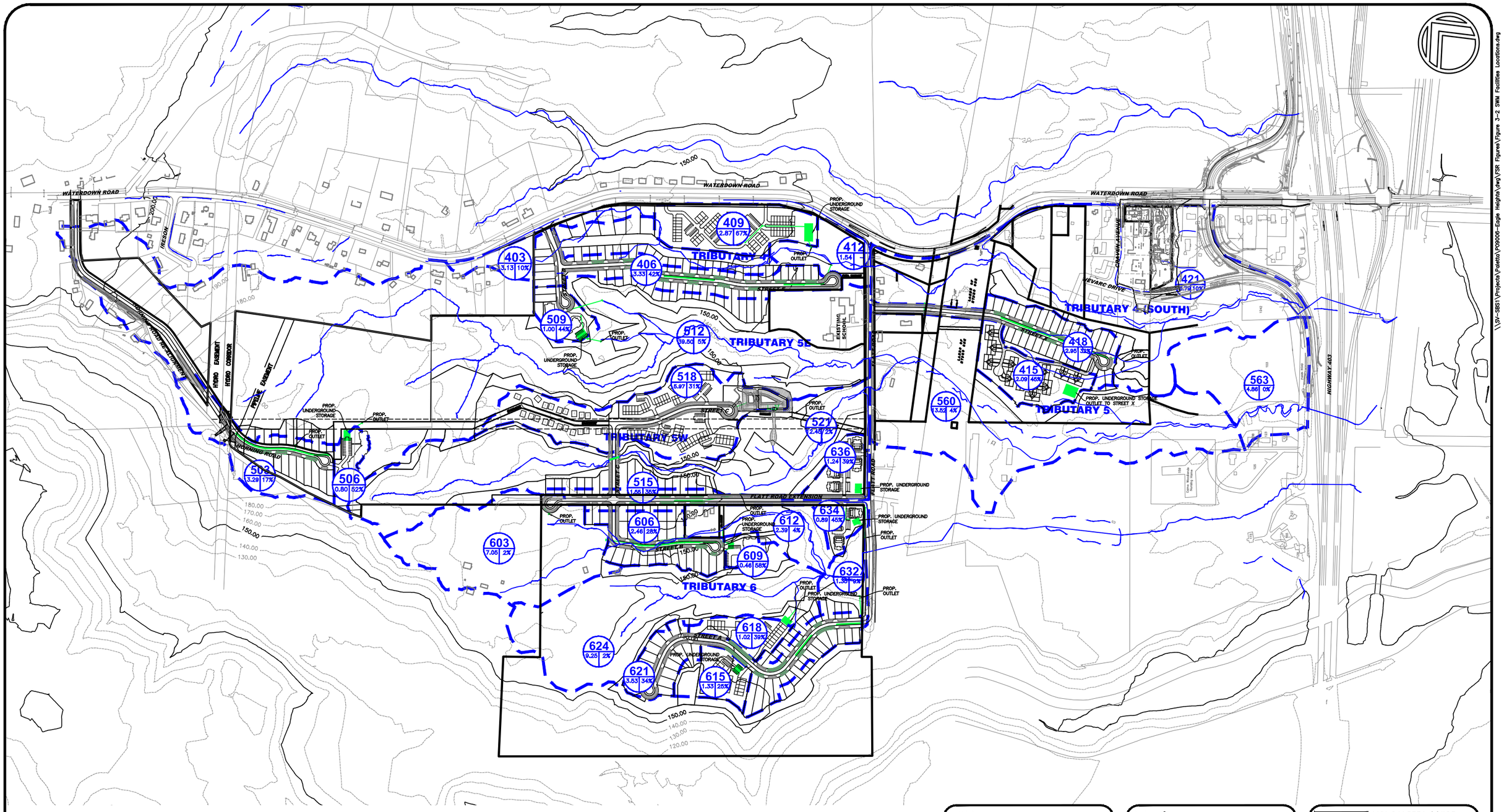
To meet the recommendations of the GCSS, as modified by CH comments, lot level and conveyance controls and "end of pipe" facilities were considered.

Each individual Sub-Area was reviewed as to the individual SWM approach, and its function from the standpoint of servicing. For detailed analysis and calculations, see the SWM Report.

As presented in the current MCI SWM report, Table 3 summarizes the target flow rates for different return period events for development located in different tributaries.

Table 3 Existing Conditions Unit Area Flow for Different Return Period Chicago Storms (24 Hour)

Point of Interest	Area (ha)	25 mm ($m^3/s/ha$)	1:2 Year ($m^3/s/ha$)	1:5 Year ($m^3/s/ha$)	1:10 Year ($m^3/s/ha$)	1:25 Year ($m^3/s/ha$)	1:50 Year ($m^3/s/ha$)	1:100 Year ($m^3/s/ha$)
Trib 4 North at Flatt Road	11.81	0.008	0.018	0.027	0.033	0.040	0.046	0.052
Trib 4 at Panin Road	33.54	0.007	0.016	0.024	0.029	0.035	0.040	0.045
Trib 5 East Flatt Rd	46.55	0.004	0.011	0.017	0.021	0.026	0.030	0.034
Trib 5 W at Flatt Rd	18.39	0.005	0.014	0.020	0.025	0.031	0.036	0.041
Trib 5 Panin Road	84.36	0.004	0.010	0.016	0.020	0.025	0.029	0.033
Trib 6 at Flatt Road	30.91	0.005	0.014	0.022	0.027	0.033	0.038	0.043
Average		**0.006**	**0.014**	**0.021**	**0.026**	**0.032**	**0.036**	**0.041**



LEGEND

- POST DEVELOPMENT DRAINAGE BOUNDARY
- STORM SUPERPIPE
- INFILTRATION TRENCH
- STORM PIPE
- PROPOSED CULVERT

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PROJECT
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DWG
SWM FACILITIES LOCATIONS

DATE
August 2018

PROJECT NO.
P09006

FIGURE 3-2

\\SH-SBS1\Projects\Paletta\P09006-Eagle Heights\dwg\SR Figures\Figure 3-2 SWM Facilities Locations.dwg

3.2.1 *Low Impact Development (LID) Strategies*

Traditional stormwater management practice is to treat water solely at the end-of-pipe. However, Low Impact Development (LID) is fundamentally different because it is intended to treat stormwater runoff at the source. This can be achieved in various ways. Passive measures such as grass swales, infiltration trenches, roadside ditches, rain gardens, soakaway pits, rain barrels, rooftop gardens, porous pavement, pervious pipe systems, buffer strips, and by extended detention wet ponds. Current philosophies indicate that a treatment train approach has many advantages. Integration of LID techniques with an end of pipe approach can achieve greater results in terms of:

- Maintaining and enhancing shallow groundwater levels and interflow patterns;
- Maintaining predevelopment drainage divides and catchment discharge points;
- Moderating run off velocities and discharge rates;
- Improving water quality;
- Enhancing evapotranspiration;
- Maintaining surface and groundwater supplies to support existing wetland, riparian and aquatic habitats.

As discussed in the SWM Report bioretention cells are proposed to be built in roadside ditches throughout the development as the main LID measures. Where site conditions are favourable, these bioretention cells will enhance water quality and also reduce the total runoff volume from the proposed development, as they will help to infiltrate runoff to groundwater. Even in areas where geological conditions are not ideal, for example in area with Halton Till, these bioretention cells enhance water quality of runoff and also slowdown travel time which will reduce peak flows.

The design of these bioretention cells is discussed in detail in the current MCI SWM Report at section 5.

A wide range of lot level and conveyance control measures were reviewed, as some measures only function efficiently under specific conditions, and do not lend themselves to the proposed development.

Lot level and conveyance control measures that were considered include:

Reduced grading to allow ponding and natural infiltration gardens;
Sump pumping foundation drains to rear yard ponding areas;
Directing roof leaders to rear yard ponding areas, soakaway pits, or to cisterns or rain barrels;
Rainwater and roof top gardens;
Infiltration trenches;
Porous pavement;
Grassed swales;
Pervious pipe and catchbasin systems;
Stream and valley corridor buffer strips; and,
Vegetated filter strips.
Increasing the overall depth of Topsoil

Reduced grading to allow ponding and natural infiltration is not considered to be feasible for single detached lots because of concerns with West Nile Virus and residents reluctance to accept water ponding for any length of time. The same concerns rule out directing roof leaders (downspouts) or sump pumps to rear yard ponding areas.

However, directing roof leaders to rain barrels and soakaway pits is considered feasible. Soakaway pits are feasible in two areas having sandy soils. In Sub-Area 1, the single detached houses can be provided with soakaway pits for the rear and front yards. The MOE Stormwater Management Planning and Design Manual March 2003 (SWMPD) recommends that the maximum storage volume for soakaway pits should be based on 20mm of run-off over the roof area, since 90% of all daily storms are less than this amount. A typical size would be 3m long x 1m wide x 0.5m deep. Until recently,

soakaway pits were only considered practical for rear yards as shown in the following Figure 3-3 from the SWMPD. New products, such as Raintech, are designed to be used under traffic areas and can be located under driveways, if necessary. Therefore, it is possible to consider infiltration from the entire roof area with systems in both front and rear yards.

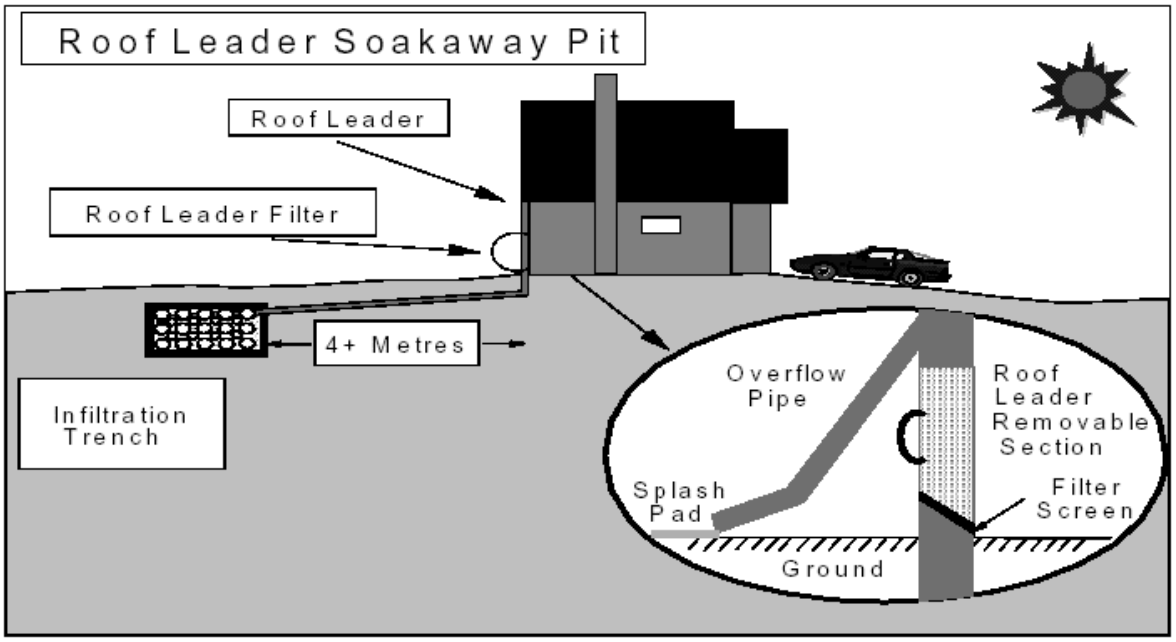


Figure 3-3 Soakaway Pits for Roof Leaders

Soakaway pits for roof leaders should be considered for the single detached lots in Sub-Area 1 and the single detached and cluster homes in Sub-Area 7.

Rain barrels filled from roof leaders are an increasingly popular method of irrigating lawns and gardens as watering restrictions are commonly in place every summer. They are economical and effective in infiltrating stormwater run-off. It is recommended that rain barrels be included in the builder package for all single detached homes in Eagle Heights.

Rainwater gardens are a refinement and enhancement of reduced grading to allow ponding. The following Figure 3-4 illustrates a typical rainwater garden.

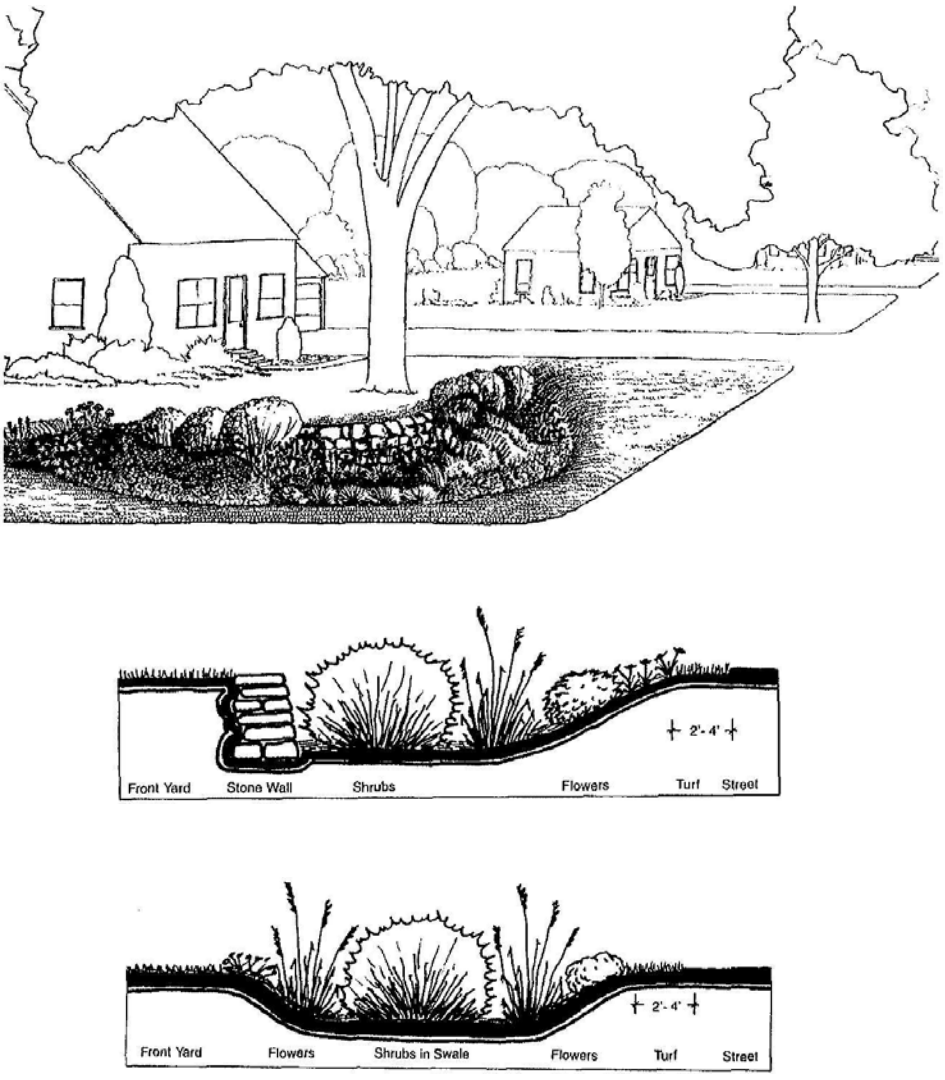


Figure 3-4 Typical Rainwater Garden

Rainwater gardens require permeable soils to function efficiently and should, therefore, be considered for incorporation in the site plans for the cluster housing block developments in Sub-Areas 1 and 7.

Rooftop gardens are used extensively in Europe but are a recent innovation in stormwater management in Canada. They may consist simply of a sodded roof or can be fully landscaped with small trees, shrubs and flower gardens. They could be considered for incorporation into the design of the 4 storey cluster housing blocks if these have flat roofs.

Infiltration trenches have a subsurface storage component to contain runoff before allowing infiltration over an extended period (24 to 48 hours). The following Figure 3-5 shows an infiltration trench utilized on a recent project in the City of Hamilton. Alternatively, the aforementioned bioretention cells could be additionally installed at lot level in place of Infiltration trenches.

LID choices can be made at the detailed design stage of development.

The proposed lot level SWM control measures, including soakaway pits, infiltration trenches, bioretention cells, grassed swales and rainwater gardens, should have no impact on Regional services. Any measures considered necessary to prevent increased risk of infiltration to sanitary sewers or laterals can be incorporated at the detail design.

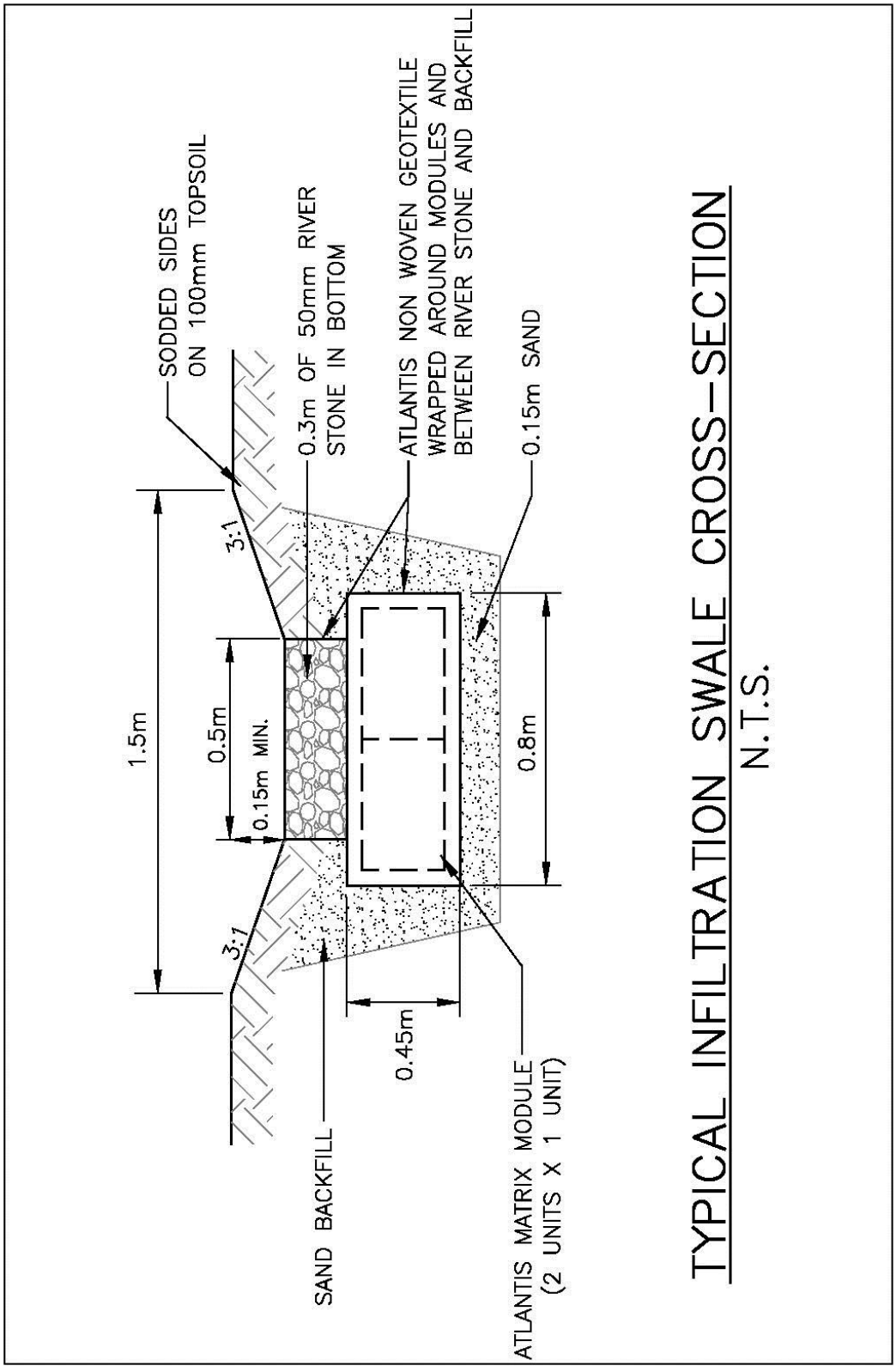


Figure 3-5 Typical Infiltration Swale

Because storage is provided, infiltration trenches/bioretention cells can be utilized where soils are less permeable and infiltration will occur over an extended period of time. Infiltration trenches should be considered for the rear yards of the single detached lots that do not abut buffer strips.

Porous pavement is unsuitable for the proposed municipal roads, and driveways due to the potential for frost damage, groundwater contamination and durability concerns. However, secondary and emergency accesses, and visitor and overflow parking areas for the cluster blocks can utilize a porous pavement such as Turfstone. This consists of precast concrete pavers with intercises that are filled with topsoil and then seeded. The resulting surface has the general appearance of grass but has the wearing characteristics of light duty pavement.

Grass-lined ditches have been traditionally used for stormwater conveyance in rural areas. The design gradient for these ditches has generally been two percent or steeper to prevent nuisance ponding and silting. Even at these gradients, some quality treatment of runoff is achieved. Grass swales can be designed to provide significant quality treatment benefits. To provide this treatment, grass swales should be trapezoidal shaped, relatively flat (max 1% grade) and broad (0.75m bottom width) with the grass being allowed to grow higher than 75mm. Periodic maintenance is required to move sediment and to add mulch to maintain the ability to infiltrate. The performance of grass swales draining larger areas can be enhanced by constructing wooden check dams 100-300mm high at intervals along the swale. In areas with soils of relatively low permeability, a subdrain should be installed under the enhanced grass swale to ensure that ponded water drains over a 24 hr period.

One of the fundamentals of the proposed development concept is the preservation of the valleys, and buffer strips between the valleys and the tableland development. While these buffer strips provide only limited benefits in terms of stormwater management,

they are an integral part of the overall environmentally sensitive approach to the development.

Vegetated filter strips perform best adjacent to buffer strips where sheet drainage occurs. Generally the filter strips consist of a level spreader and planted vegetation as shown on the following Figure 3-6.

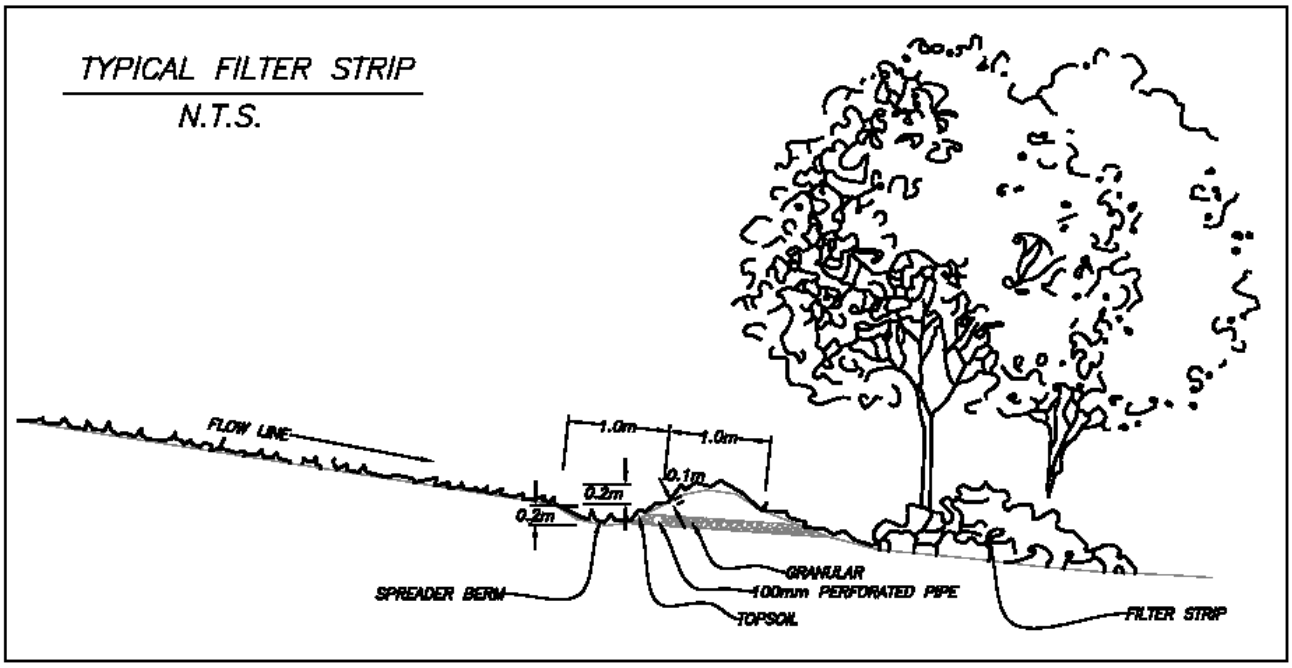


Figure 3-6 Typical Filter Strip

Vegetated filter strips will be considered for the larger cluster housing blocks adjacent to buffer areas. The vegetated strip should be 10-20m wide and relatively flat to be effective thus making it unsuitable for single detached lots and smaller cluster housing blocks.

All of the proposed lot level conveyance methods can be enhanced with the inclusion of an increased depth of topsoil. The increased depth can aid in the infiltration measures.

A summary of the lot level and conveyance controls that will form part of the stormwater management plan are shown in Table 4.

Table 4 Lot-Level & Conveyance SWM Control Matrix

Control Measure	Sub-Area												
	1		2		5		6		7		8	10	
	SF	ClS	SF	ClS	SF	ClS	SF	ClS	SF	ClS	ClS	SF	ClS
Reduced Grading													
Rear Ponding Areas													
Roof Leaders to Soakaway Pits	■								■	□			
Rain Barrels	■		■		■		■		■			■	
Rainwater Gardens		□								□			
Rooftop Gardens		□		□		□							
Infiltration Trenches		■	■		■					□			
Porous Pavement		□		□		□		□		□	□		□
Grassed swales					□		□						
Valley Buffer Strips	■	■	■	■	■	■	■	■	■	■	■	■	■
Vegetated Filter Strips		□				□N■S				□			■
Extra Depth Topsoil	■	■	■	■	■	■	■	■	■	■	■	■	■

■ Measures to be implemented

□ Measures to be considered depending on soils, site plan configuration etc.

SF-Single Family

ClS-Cluster Housing

N-Cluster Housing Multi-Residential Type

S-Cluster Housing Single Family Type

3.2.2 *Sub-Area 1*

Sub-Area 1 is located at the north end of the proposed development situated on Horning Road. It will be comprised of 26 single detached homes, and a cluster housing development with a maximum of 70 units. The cluster housing is located at the southern end of Horning Road.

This Sub-Area will be serviced with a Superpipe, bioretention cells and a private SWM facility. The total storage volume provided by bioretention will be 128 m^3 and by the Superpipe 887m^3, releasing at a rate of 0.072m^3/s.

The Superpipe will collect and manage flows from the units fronting on Horning Road located south of the HONI Corridor. This facility will drain to the east through Block O, to discharge to Sub-catchment 512 of Tributary 5 East.

A private SWM facility will be located in Block P. This on-site underground storage will limit the release flow rate to 0.019m^3/s, and provide 360m^3 of storage for a 24 hour 100-year return period storm event. This facility will also discharge flows to Sub-Catchment 512 of Tributary 5 East.

Figure 3-7 shows the location of the Superpipe, bioretention cells, private SWM Facility, and drainage boundaries of the Sub-Area. Figure 2-6 shows the arrangement of the Superpipe with respect to the other services in this area. The depth of the sanitary wastewater main has been set to avoid conflicts between the storm and wastewater mains.

Area in Niagara Escarpment
Plan Draft approved.
Not being revised.

49.0m

HYDRO CORRIDOR EASEMENT

HORNING ROAD RE-ALIGNMENT

PIPELINE EASEMENT

BLOCK Q
OPEN SPACE

PROP. HEADWALL

BLOCK R
TRAIL/SERVICING CORRIDOR

PROP. UNDERGROUND STORAGE

506
6.80 52%

BLOCK P
CLUSTER HOUSING

HORNING ROAD

BLOCK M
OPEN SPACE/PARK

BLOCK N
BUFFER AREA

503
3.29 17%

LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

CLIENT
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PROJECT
EAGLE HEIGHTS
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DWG
SUB-AREA 1 SWM FACILITIES

DATE
August 2018

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P09006

FIGURE 3-7

P:\Plotdcs\P09006-Eagle Heights\dwg\SWM Figures\Figure 3-7 Sub-Area 1 SWM Facilities.dwg

3.2.3 *Sub-Area 2b*

Sub-Area 2 drains to both Tributaries 4 and 5. The proposed development in Tributary 4 is located adjacent and west of Waterdown Road. This area contains 70 single detached homes, and a maximum of 149 cluster housing units. At the southern end of tributary 4 lies is located a proposed 1.34 ha public park.

The stormwater from single detached homes fronting onto proposed Streets D and E will be captured and treated via a Superpipe system and bioretention cells located on Street E. Conveyance will be through an interconnected ditch and bioretention cells system collected via Ditch Inlet Catch Basins (DICB) connected directly to two separate Superpipes. All the post development runoff generated from the area first flow through the bioretention cells LID measures and then to superpipes. This will help to enhance the water quality of the post development runoffs before discharged to receiving waterbody, the Tributary 4. These facilities will discharge to a ditch which will direct treated flows back into the existing creek Sub-Catchment 412. The total storage volume provided by bioretention cells will be 320 m^3, the Superpipes will be 587 m^3, with a release rate of 0.167 m^3/s.

The year yards for the 7 single detached homes fronting onto Waterdown Road will drain to the proposed Creek Block RR. The front portion of the lots will be directed towards Waterdown Road and will be collected in the roadway storm sewers and treated in the SWM facility constructed at 1390 Waterdown Road.

A private SWM facility will be located within Block SS, and will function as a SWM facility for this area. The maximum number of units for this block is 123. The on-site underground storage will limit the flow rate to 0.105m^3/s and provide 1120m^3 of storage for a 24 hour 100-year return period storm event. This facility will discharge flows to Sub-Catchment 412 of tributary 4.

The lands which drain to Tributary 5 East are located at the end of proposed Street D. This area is comprised of 26 units of cluster housing, and two single detached homes. They will drain to a private SWM facility to be located within Block OO. The on-

site underground storage will limit the flow to 0.019m^3/s and provide 480m^3 of storage for a 24 hour 100-year return period storm event. This facility will discharge flows to Sub-Catchment 518 of Tributary 5 East.

Figure 3-8 shows the location of the Superpipes and drainage boundary of the Sub-Area. Figures 2-7 and 2-8 show in profile the arrangement of the Superpipes with respect to the other services in this area.

WATERDOWN ROAD

403
3.13 | 10%

509
1.00 | 44%

406
3.33 | 42%

409
2.87 | 67%

412
1.54 | –

512
39.50 | 5%

BLOCK SS
CLUSTER HOUSING

BLOCK RR
CREEK BLOCK

BLOCK QQ
CLUSTER HOUSING

BLOCK PP
BUFFER AREA

BLOCK II
VALLEY LANDS

BLOCK TT
PARK

STREET E

STREET D

1800x2400mmø STM

250mmø STM

PROP. HEADWALL

PROP. UNDERGROUND STORAGE

PROP. EASEMENT

EXISTING SCHOOL

FLATT ROAD

DECANT

170.00
160.00
155.00
150.00
145.00

LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

503
3.29 | 17%

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SUB-AREA 2B SWM FACILITIES

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FIGURE 3-8

P:\Paletta\P09006-Eagle Heights\dwg\FSR Figures\Figure 3-8 Sub-Area 2b SWM Facilities.dwg

3.2.4 *Sub-Area 5*

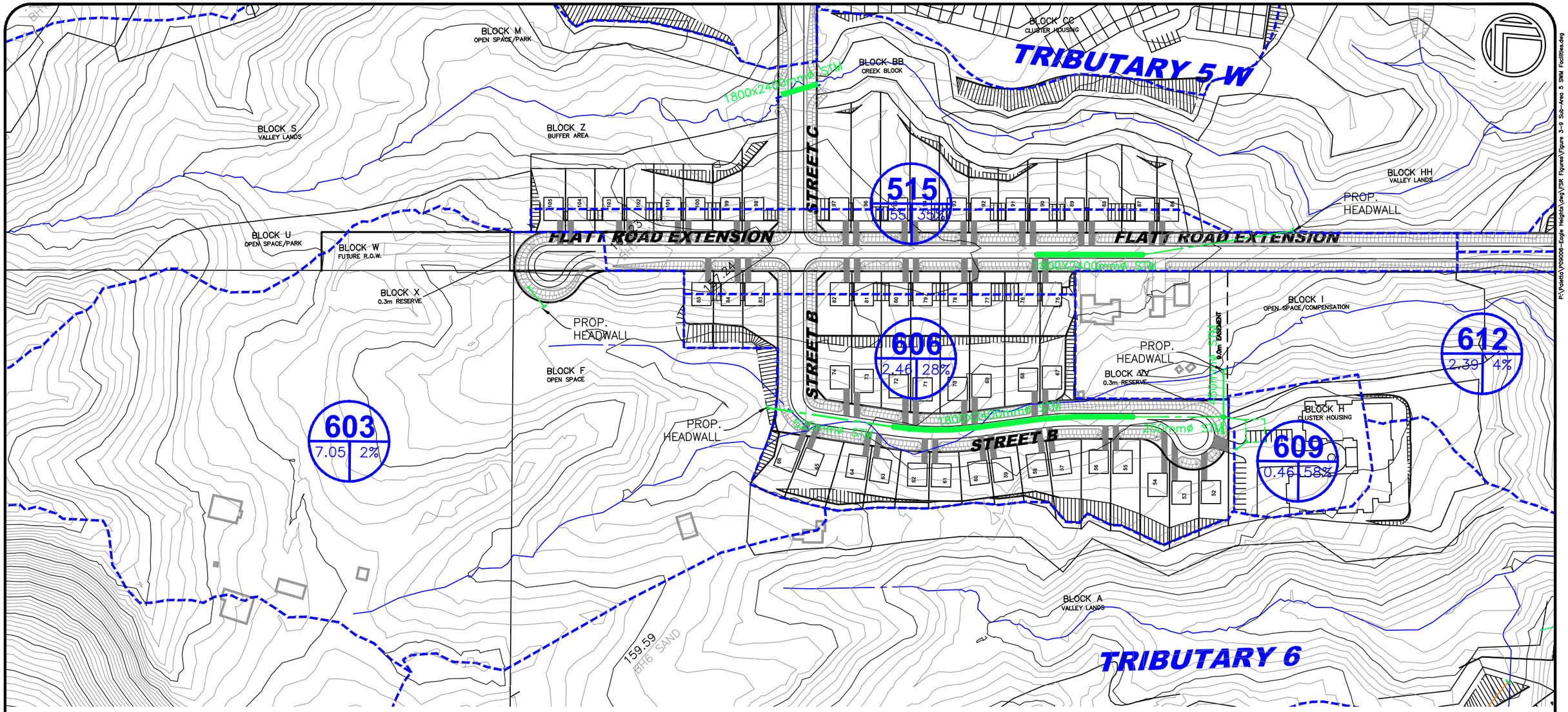
Sub-Area 5 is comprised of sub-catchments which drain to Tributary 6 and a small area east of Flatt Road Extension which drains to Tributary 5 West. No proposed development is proposed for subcatchment 603 and as such, has minimal run-off. Any flows generated by this catchment will be collected and treated with Sub-catchment 606.

The rear yard portion of the eleven proposed single detached lots fronting onto the west side Flatt Road Extension, as well as the twenty-three lots fronting onto Street B, will drain through ditches and a series of DICB's, and directed to a Superpipe located in the roadway of Street B. Flows from Sub-catchment 603 will be intercepted as well by way of a DICB. The Superpipe will discharge flows into Tributary 6 within Sub-catchment 612. Total storage provided by this facility will be 616$m^{3,}$ and have a release rate of 0.082m^3/s.

Runoff from thirty-one single detached homes fronting onto Flatt Road Extension (the front yard portions), will be captured and treated with bioretention cells and a Superpipe located within the Flatt Road Extension. These flows will be conveyed into Tributary 5 within Sub-catchment 539. Total storm storage required for the area is 540m^3, of which 327 m^3 will be provided by bioretention cells and 213 m^3 will provided by a section of superpipes. The release rate for this Superpipe will be 0.062m^3/s.

A 36 unit cluster housing block is proposed at the end of Street "B". A private SWM facility will be located within Block H and will function as a SWM facility for this area. The on-site underground storage will limit the flow rate to 0.019m^3/s and provide 180m^3 of storage for a 24 hour 100-year return period storm event. This facility will discharge flows to Tributary 6 within Sub-Catchment 612.

Figure 3-9 shows the location of all of the Superpipes and drainage boundaries of the Sub-Catchment. Figures 2-8, 2-9, and 2-10 show the arrangement of the Superpipes with respect to the other services in this area.



P:\Plotfiles\P09006-Eagle Heights\dwg\SWM Figures\Figure 3-9 Sub-Area 5 SWM Facilities.dwg

LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

503
3.29 17%

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FIGURE 3-9

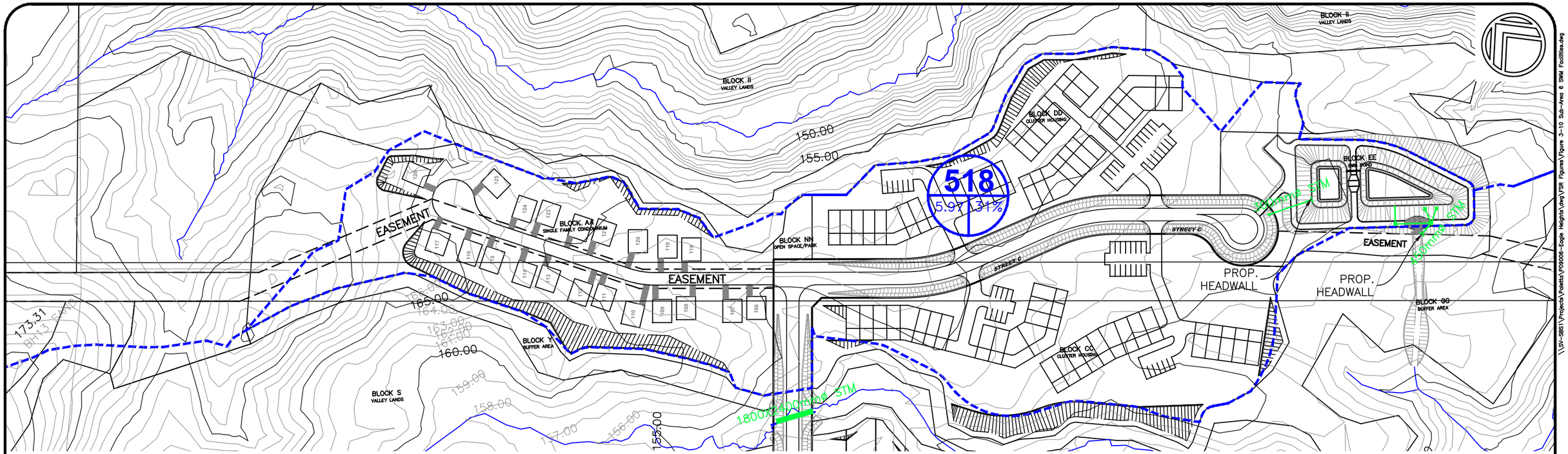
3.2.5 *Sub-Area 6*

Sub-Area 6 is comprised completely of Sub-Catchment 518. Flows from this catchment will be directed towards a conventional SWM pond located on Block EE.

The proposed development for this Sub-area is comprised of 21 single detached condominium units and two cluster housing blocks, Block CC containing 77 units and Block DD containing 64 units for a total of 141 units.

The SWM facility will be a conventional wet pond design. It will provide both quality and quantity controls. The approximate total volume of the SWM facility will be 4000m^3, of which 3285m^3 will be utilized for a 24 hour 100-year return period storm event.

Figure 3-10 shows location of the SWM facility and drainage boundary of the Sub-Catchment. Figures 2-10 and 2-11 show the road profile for the catchment leading to the facility.



\\SH--SBS1\Projects\Paletta\P09006--Eagle Heights\Dwg\FSR Figures\Figure 3-10 Sub-Area 6 SWM Facilities.dwg

LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

503
3.29 17%

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FIGURE 3-10

3.2.6 *Sub-Area 7*

This area is proposed for 51 single detached homes and a maximum of 111 cluster housing units split between two development blocks.

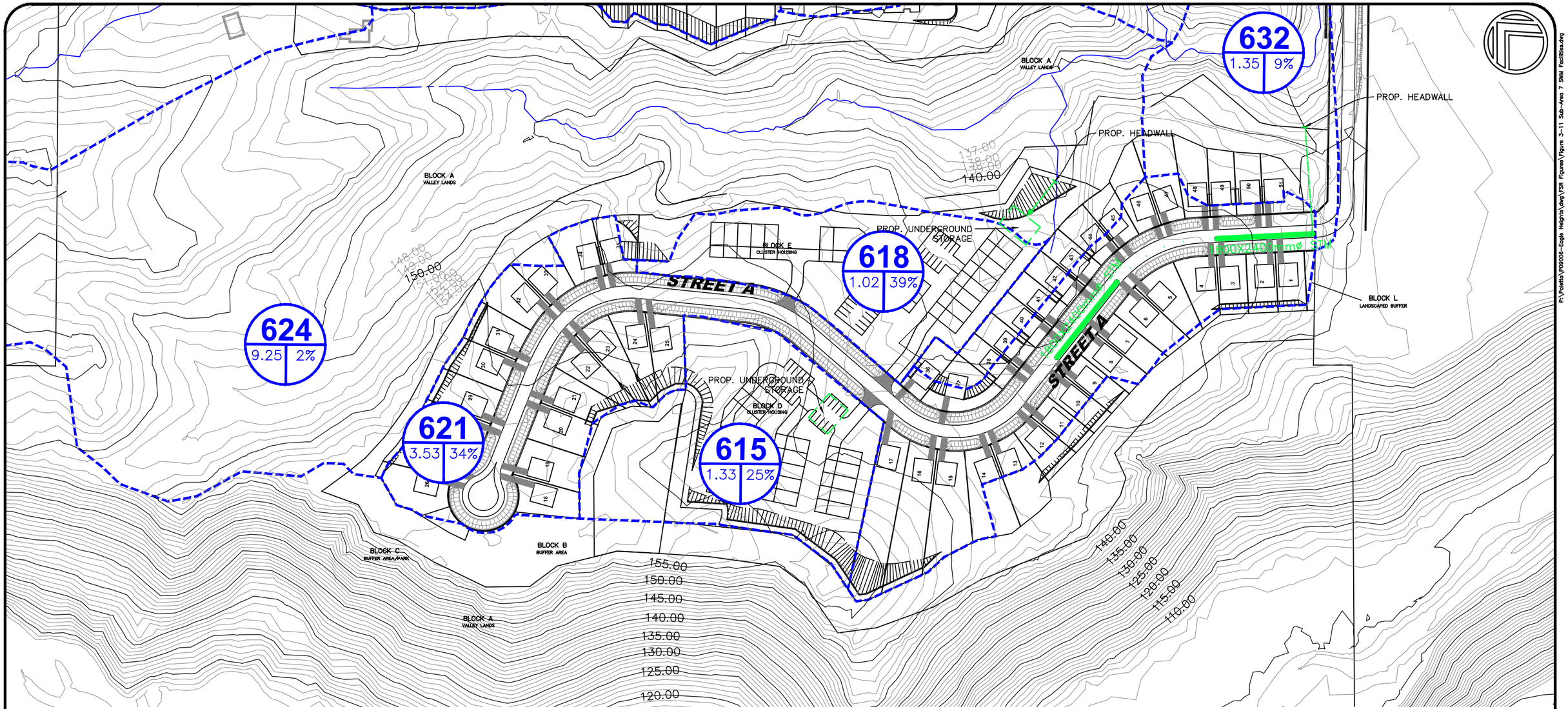
Sub-Area 7 drains to both Tributary 6 and the main Grindstone Creek valley. Six lots rear yard areas of the proposed development located adjacent to the Grindstone Creek valley will continue to drain to the valley through lot-level conveyances (sheet flow) as per existing drainage conditions.

The flows from the single detached homes fronting onto proposed Street A will be captured and treated by a combination of bioretention cells and a Superpipe system located within the roadway. Conveyance will be through an interconnected ditch and bioretention cells system collected via a DICB connected directly to the Superpipe. This system will discharge to a ditch which will direct treated flows back into Tributary 6 North of Flatt Road. Total stormwater storage required for this area will be 1123m^3, of which 725 m^3 will be provided by bioretention cells and 398 m^3 will be provided by a superpipes system. The release rate for this Superpipe will be 0.177 m^3/s.

The private SWM facilities will be located within Blocks D & E and will function as SWM facilities for these areas. On-site storage for Block D (Sub-Catchment 615) will provide a total 416m^3 of storage discharging at a rate of 0.043m^3/s for a 24 hour 100-year return storm event. Flows will discharge into the west roadside ditch of Street A. These flows will be conveyed southerly and directed into the Superpipe on Street A. The Superpipe will discharge into Tributary 6 north of Flatt Road.

On-site storage for Block E (Sub-Catchment 618) will provide 432 m^3 of storage discharging at a rate of 0.039 m^3/s for a 24 hour 100-year return storm event. This facility will discharge into Tributary 6 north of Flatt Road.

Figure 3-11 shows location of the Superpipes and SWM facilities, and drainage boundary of the Sub-Catchments. Figure 2-12 shows the arrangement of the Superpipes with respect to the other services in this area.



LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

503
3.29 17%

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FIGURE 3-11

P:\Paletta\P09006-Eagle Heights\dwg\FSR Figures\Figure 3-11 Sub-Area 7 SWM Facilities.dwg

3.2.7 *Sub-Area 8*

Sub-Area 8 comprises two areas of proposed development, both draining to Tributary 6.

Block JJ is a proposed 44 unit cluster housing block. A private SWM facility will be located within the block that functions as a SWM facility for this area. The on-site underground storage consists of 432m^3 of storage discharging at a rate of 0.043m^3/s for a 24 hour 100-year return storm event. This facility will discharge flows to the east roadside ditch on Flatt Road Extension. From here the ditch conveys the flows through a public storm sewer along Flatt Road, to Tributary 6 north of Flatt Road.

Block K is a 26 unit cluster housing block. A private SWM facility will be located within the block, functioning as a SWM facility for this area. On-site underground storage consists of 336m^3 of storage discharging at a rate of 0.032m^3/s for a 24 hour 100-year return storm event. This facility drains to the Flatt Road public storm sewer to Tributary 6 north of Flatt Road.

Figure 3-12 shows the location of the Superpipes and drainage boundaries for the Sub-Catchment. Figure 2-13 shows the arrangement of the roadside storm sewers with respect to the other services in this area.

BLOCK H
CLUSTER HOUSING

612
2.39 4%

BLOCK J
BUFFER AREA

BLOCK A
VALLEY LANDS

FLATT RD EXTENTION

BLOCK GG
BUFFER AREA

BLOCK HH
VALLEY LANDS

BLOCK MM
BUFFER AREA

521
12.45 2%

BLOCK JJ
CLUSTER HOUSING

BLOCK K
CLUSTER HOUSING

634
0.89 45%

636
1.24 39%

632
1.35 9%

PROP. UNDERGROUND STORAGE

300mmø STM

250mmø STM

250mmø STM

PROP. UNDERGROUND STORAGE

PROP. HEADWALL

BLOCK LL
5x5m DAYLIGHT TRIANGLE

FLATT ROAD

BLOCK KK
5x5m DAYLIGHT TRIANGLE

LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

503
3.29 17%

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SUB-AREA 8 SWM FACILITIES

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P09006

FIGURE 3-12

\\SH-SBS1\Projects\Paletta\P09006-Eagle Heights\dwg\SR Figures\Figure 3-12 Sub-Area 8 SWM Facilities.dwg

3.2.8 *Sub-Area 10*

Sub-Area 10 consists of two development areas draining to Tributary 4.

Block G is a 102 unit cluster housing block. A private SWM facility will be located within the block to function as a SWM facility for this area. On-site underground storage will provide 1000m^3 of storage discharging at a rate of 0.047m^3/s for a 24 hour 100-year return storm event. This facility will outlet southerly through a private storm sewer connecting to the public storm sewer on Street X.

Flows from 14 single detached homes fronting onto the west side of proposed Street X will be captured and treated via a Superpipe system located within the roadway. Conveyance will be through an interconnected swale system collecting rear yard catch basins (RYCB) and a DICB connected directly to the Superpipe. The remaining 18 single detached homes fronting onto the east side of the road will have their front yards drain into the roadside ditch. Stormwater generated from this area will be managed by a combination of bioretention cells constructed in roadside ditches and underground superpipes in Street X. Total storage for this facility will be 1080m^3 of which 344 m^3 will be provided by bioretention cells and 110 m^3 by two sections of Superpipes. These Superpipes will discharge into the creek within Sub-Catchment 418 and then to Tributary 4. The release rate for this Superpipe will be 0.110m^3/s.

Figure 3-13 shows the location of the Superpipes and drainage boundaries for the Sub Catchment. Figure 2-14 shows the arrangement of the roadside storm sewers with respect to the other services in this area.

PROP. EASEMENT

SCHOOL

N 20°56'05" W

36.60

7.14

20.00

EXISTING HOUSE

PROP. HEADWALL

LANDS OF HYDRO ONE

LANDS OF HYDRO ONE

BLOCK A
VALLEY LANDS

TRIBUTARY 4

BLOCK B
BUFFER AREA

BLOCK C
SERVICING BLOCK

BLOCK D

BLOCK E
BUFFER AREA

421
16.79 10%

STREET X

1350 X 1460mm @ 1.51M

418
2.95 32%

1350 X 1460mm @ 1.51M

STREET X

PROP. HEADWALL

BLOCK K
WETLANDS

BLOCK F
BUFFER AREA

415
2.09 45%

BLOCK G
CLUSTER HOUSING

560
13.52 4%

PROP. UNDERGROUND STORAGE

BLOCK J
VALLEY LANDS

BLOCK I
VALLEY LANDS

LEGEND

- STORM SUPERPIPE
- STORM PIPE
- POST DEVELOPMENT DRAINAGE AREAS
- PROPOSED CULVERT
- SUB CATCHMENT AREA No.
- DRAINAGE COEFFICIENT (%)
- AREA (Ha)

503
3.29 17%

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FIGURE 3-13

\\SH-SBS1\Projects\Paletta\P09006-Eagle Heights\dwg\SWI Figures\Figure 3-13 Sub-Area 10 SWM Facilities.dwg

4.0 GRADING

4.1 Grading Principles

The 1996 settlement agreement included principles that grading for lots and roads should, where feasible, conform to the existing landform and that grades should meet existing ground at the valley buffer zone limits without the need for retaining walls. The NAIR planning principles and evaluation criteria state that grading "should have regard for the topographic character of the landscape." OPA 197 states that "site design and development shall integrate with the existing topography to maximize the preservation of: significant existing trees, steep slopes (>15%) and existing drainage patterns." Further OPA 197 states "Regrading will be prohibited within three meters of the rear property boundary."

The preliminary grading plans, Figures 4-1 to 4-7 (In Pocket), show how these grading principles are maintained for the revised plans.

4.1.1 *Freehold Lot Grading*

The lots have been graded using split drainage and back to front drainage as appropriate. "Walkout" and "lookout" house models have been shown where the grades are suitable to minimize regrading. Retaining walls are minimized in their use, 3:1 slopes and terracing have been utilized, in some areas, to meet existing grades at the location of grading three meters from the buffers and to accommodate grade differences at internal lot boundaries.

The existing swale passing through the lots in Sub-Area 2 fronting on Waterdown Road will be preserved and allowed to meander through the lots. The homes will be located accordingly. Large trees on lots will be preserved, where feasible.

4.1.2 *Cluster Housing Block Grading*

The types of buildings proposed for the cluster housing blocks have been selected to best conform with the natural landform. The buildings will be located and oriented to best fit into the existing grades. Figures 4-1 to 4-7 show how landform sympathetic grading can be accomplished for each housing type.

Grass swales will generally be used to drain the run-off from the cluster housing blocks.

The grading for the cluster housing blocks will also be designed to accommodate the lot level and conveyance controls as discussed in Section 5. Grading has been designed to accommodate specimen trees and others designated for preservation, including the remnant hedge row in Sub-Area 6.

4.2 Cut/Fill Quantities

Preliminary cut and fill quantity estimates indicates a possible surplus of material. During detail grading design, the cut and fill quantities will be refined and adjusted to achieve closer to a balance, if possible. However, the grading principles will not be sacrificed to achieve such a balance.

4.3 Erosion and Sediment Control

Detailed Erosion and Sediment Control Plans will be prepared prior to pre-grading for each phase of the development in accordance with “Erosion and Sediment Control Guideline for Urban Construction, December 2006”.

Where possible the permanent storm water management ponds will be excavated to function as temporary sedimentation basins. Where pre-development sub-catchments do not include permanent SWM pond, temporary sedimentation basins will be constructed adjacent to outlets. Run-off from the sub-catchment areas will be directed to the sedimentation basins using temporary swales.

Other temporary sediment and erosion control measures will include:

Sediment traps
Silt fences around topsoil and fill stockpiles and at downhill limits of construction;
Double silt fences and Rock Check Dams along vegetated buffers adjacent to watercourses and wetlands
Pea gravel check dams in swales and ditches and at outlets to watercourses;
When the preliminary road construction is complete, catchbasin filters will be installed in all road catchbasins;
Gravel mud mats at construction entrances.

These measures will be monitored and maintained in place during grading, servicing and house construction. Contractors will be required to carry out construction Best Management Practices for management of materials, timing of works and spill management.

5.0 WASTEWATER INFRASTRUCTURE

5.1 Existing Infrastructure

As part of the improvements to the Waterdown Road / Hwy 403 interchange carried out in 2009/2010, a 300mm sanitary sewer was constructed on the North Service Road from the existing 450mm sewer crossing Hwy 403, to Waterdown Road and north on Waterdown Road to Craven Avenue with a stub sewer west on Craven Avenue for extension to the Eagle Heights development. This sewer also accommodates the remainder of the undeveloped lands south of Flatt Road, as shown in the Selected Sanitary Sewer Outlet Route and Other Related Issues Report (SAN Report) prepared my MCI in July 2016. The 300mm sewer was funded by Development Charges (with the cost being front ended by Penta Properties) and is proposed to serve the North Aldershot area. The existing residences and businesses on Waterdown Road, south of Craven Avenue and the proposed Cumis development, were provided with sanitary laterals when the sewer was constructed.

The CAMA Woodlands Nursing Home on Panin Road is serviced by a private pumping station and 150mm forcemain on Panin Road which connects to the 300mm North Service Road sewer at Waterdown Road.

Other residences, businesses and institutional properties in the area are currently serviced by private septic systems, but were provided with sanitary laterals when the sewer was constructed.

5.2 Design Criteria

Region of Halton design criteria will be used to design the sanitary sewer network which will include the following parameters.

Table 5 Sanitary Design Criteria

Average Domestic Flow	275 l/c/d
Infiltration Rate	0.286 l/s/ha
Maximum Velocity	3.0 m/s
Minimum Velocity	0.6 m/s
Single Detached Persons per Unit (PPU)	3.4
Cluster Housing Person per Unit (PPU)	2.5

5.3 Proposed Wastewater System

The analysis of the various alternative wastewater routes was completed in the 2016 SAN Report by MCI. The 2016 SAN Report reviewed the various options and recommended the route chosen within this FSR.

The overall North Aldershot sanitary drainage areas are shown on Figure 5-1 (in pocket) and the sanitary sewer design sheets attached in Appendix C. The proposed collection system is shown on Figure 5-2 (in pocket) and preliminary profiles for all major sewers are shown on Figures 2-5 to 2-15.

Internal streets will generally be serviced with 200mm diameter sewers and 150mm sewers will be used on the first sections of each separate sub-system to facilitate self-cleaning velocities.

Seven lots fronting on Waterdown Road will connect to a sanitary sewer constructed as part of the Waterdown Road widening project.

Figure 2-16 shows the sewer profile on Horning Road and the easement through Sub-Area 6. Because of the need to maintain existing grades at the hydro and gas pipeline crossings, the sewer will be deeper than usual but can be installed using conventional construction techniques. This sewer will cross the open space block to Sub-Area 6 via a proposed easement. There is also a proposed public trail within the easement

At the south end of Sub-Area 6, it is proposed that a gravity sewer be installed to connect to Flatt Road using trenchless technology. This will preserve the valleyland and avoid the need for a pumping station and forcemain. The geotechnical investigation has indicated that the proposed boring will be within the shale bedrock and that conventional rock boring techniques should be feasible.

Figure 5-2 shows the recommended route for the 300mm sanitary outlet sewer along Street X south from Flatt Road and then crossing under Tributary 4 to the church property on the east bank. The sewer crosses the corner of the church property to Nevarc Drive, follows Nevarc Drive to Craven Avenue and then Craven Avenue to the existing sewer at Waterdown Road.

Figures 2-5 to 2-16 show the preliminary plan and profile drawings for the development. These figures show the sanitary sewers and their connection to the recommended/existing 300mm outlet sewer. Design calculations are attached in Appendix C.

The crossing of Tributary 4 is proposed to be at the location of an old farm crossing. This location is supported by Savanta Inc. in its “Eagle Heights and Taylor Lands Environmental Impact statement, March 2013” and in the attached memo dated July 13, 2016 (see Appendix D). As shown on Figure 2-15, trenchless construction is proposed for the crossing and the length of sewer across the church property to avoid

environmental impacts. Clay or concrete plugs will be utilized to maintain groundwater levels and flow paths.

As previously stated, Penta Properties has a Servicing Agreement with the church for it to provide a 10m wide servicing easement to accommodate the outlet sewer and watermain(s). It can be seen that the 10m wide easement can be readily accommodated within the proposed site plan.

Also shown on Figure 2-15 is the Creek Block (valley lands plus setbacks) which is proposed to be dedicated to the City. The majority of the proposed easement falls within the Creek Block. As part of the church approval process, Penta is requesting that any dedication of land for the Creek Block should be subject to the Servicing Agreement.

5.4 External Wastewater System

Lands external to the proposed development have been included in the design of the wastewater system. The inclusion of the external areas in the overall design has been completed and is shown through the following.

The northern portion of the Aldershot Landscaping property can be accommodated within the Flatt Road sewer. As shown on Figures 5-1, 5-2 & 2-13, the proposed Flatt Road sewer is deep enough to service this portion of the lands north of the utility corridor (drainage areas 20A-1 & 20A-2) if these lands are to be developed.

On Figure 5-2, a sewer is proposed that can serve the “Morgante” property, the portion of the Aldershot Landscape property south of the utility corridor, the CAMA Woodlands Nursing Home and a portion of the Panin Road church property. These are drainage areas 24, 28, 29 and 33 respectively (see Figure 5-1). The sewer will connect to the existing trunk sewer at manhole 9A on Waterdown Road at the North Service Road. The plan & profiles for the sewer are shown on Figures 5-3 and 5-4.

Two crossings of watercourses (Tributaries 4 & 5) would be constructed using trenchless technology. The third watercourse crossing, of Tributary 6, on the Aldershot Landscape property might be trenchless or open cut. The preliminary sewer alignment also crosses an unevaluated wetland at the south end of the Penta property Sub-Area 10 and the north end of the Morgante property. This crossing would also likely be carried out by trenchless construction. Clay or concrete plugs will be utilized to maintain groundwater levels and flow paths for all trenchless construction sewers and in open trenches, if required.

To serve drainage area 29, including CAMA Woodlands Nursing Home, a sewer would be required as shown on Figure 5-5. Another sewer shown on Figure 5-6 could serve drainage area 33 if it were to be redeveloped.

The remaining properties that cannot be serviced by the gravity sewer (Areas Ex 31 & Ex 32) would continue to require pumping to connect to the sewer at Waterdown Road and the former Panin Road similar to the existing system. The existing pumping station and forcemain with any necessary upgrades, or new pumping facilities would be used.

6.0 WATER DISTRIBUTION

6.1 Existing Water Distribution Infrastructure

The existing water distribution system is shown on Figure 6-1

There is an existing water reservoir and pumping station on the west side of Waterdown Road between Flatt Road and Craven Avenue. This reservoir serves Zone B1A by gravity via a 600mm watermain on Waterdown Road south of the reservoir.

There is a 250mm Zone 5 equivalent main on Waterdown Road that connects to the City of Hamilton distribution system (Pressure District 16). This main was originally constructed to supply water from the reservoir to the former Village of Waterdown. The 250mm main is gravity fed from the Waterdown Standpipe under a ten year agreement between Halton Region and the City of Hamilton.

A 150mm main on Flatt Road is connected to the Zone 5 watermain resulting in relatively high static pressures (188 - 210 psi).

South of the reservoir there is a pressure reducing valve on the Zone 5 watermain to service the existing residences on Nevarc Drive, Craven Avenue and on Waterdown Road in that vicinity. The watermain on Waterdown Road is 350mm and on Craven Avenue and Nevarc Drive 150mm.

With the completion of the Waterdown Road / Hwy 403 intersection improvements in 2010, the existing 300mm/350mm watermains on the North Service Road and Panin Road have been switched from Zone 1A to Zone 2. The 350mm main on Waterdown Road has been replaced with a 300mm Zone 2 main from Panin Road to the realigned

North Service Road. A Zone valve at the North Service Road is closed to isolate the Halton system from the Hamilton fed system.

6.2 Proposed Water Pressure Zones

The ground elevation in North Aldershot varies between approximately 117m at the North Service Road and 220m at the intersection of Mountain Brow Road and Waterdown Road (Hamilton/Burlington boundary). To service the area will, therefore, require a number of pressure zones.

Pressure zones are proposed as follows:

Zone B2	-	Ground Elevations 97.5-132m
Zone B3A	-	Ground Elevations 132-168m
Zone B4A	-	Ground Elevations 168-200m
Zone B5A	-	Ground Elevations above 200m

6.2.1 *Master Plan Proposed Water Distribution Works*

The 2017 Development charges background study proposes a Zone B3A, fed by pumping station from the existing reservoir on Waterdown Road to supply to zones B2 and B3A. Zone B4A would be fed from Zone B5A via Pressure Reducing Valves (PRV's). The Hamilton supply connection to Zone B5A would be retained for emergency purposes.

The following capital works projects; all funded from Development Charges, are identified in the Halton Sustainable Water & Wastewater Master Plan:

Project ID	Project Description	Estimated Budget
6863	Waterdown Road Pump Station Expansion (Zones B2, B3A & B5A)	$5.629M
7570	4.5 ML North Aldershot in ground Reservoir (Zone B3A)	$5.623M
7014	400mm w/m from Waterdown Road Pumping Station to North Aldershot Reservoir (Zone B3A)	$2.437M
5881	400mm w/m on North Service Road from King Road to Waterdown Road (Zone B2)	$7.055M
6602	7.5ML expansion to Waterdown Road Reservoir	$8.305M

An excerpt of the 2017 Region of Halton Development Charges Background Study showing the allocation of funds can be found in Appendix E1. All projects (except 6602) are scheduled for 2019 completion.

As shown in section 6.2.4 of this report a new pumping station is required to service the Zone B4A lands. A review of the DC background study should be made to reallocate a portion of the Project 6863 funds to this new pumping station.

6.2.2 *Zone B2*

When the Zone B2 portion of the Waterdown Road Pumping Station and the 400mm main on the North Service Road are constructed, full Zone B2 pressures will be available for the North Aldershot area from the North Service Road/Panin Road to ground elevation 132m as shown on Figure 6-2. The existing residences on Craven Avenue, Nevarc Drive and Waterdown Road south of the reservoir should then be converted to Zone B2. Proposed development in Zone B2 will include the southern portion of Eagle Heights Sub-Area 10, the “Morgante property” and the proposed Cumis development. Potential future development properties would include the CAMA

Woodlands, the Panin Road church properties and the southern portion of the Aldershot Landscaping property.

6.2.3 *Zone B3A*

Zone B3A will include proposed Eagle Heights Sub- Areas 2, 5, 6, 7 and 8 and the northern portion of Sub-Area 10, potential other development areas include the northern portion of the Aldershot Landscaping property and the property at the north end of Flatt Road Extension. Existing residences on Flatt Road, the existing school and the existing Aldershot Landscaping business will be converted to Zone B3A. It is proposed that the existing residences on Waterdown Road from the Proposed Reservoir to proposed Street D also be converted to Zone B3A. This would provide water pressures to the existing residences within a more normal range while providing looping through proposed Streets D & E and Flatt Road.

It is recommended that the Zone B3A Reservoir have a top water level of 202m. The final location of the reservoir will be established by Class EA integrated with the Planning Act application. Section 6.3 of this report will analyze the alternative locations for the proposed Water Reservoir. Three locations, shown on Figure 6-3, have been identified as being suitable for the reservoir

Alternative Site 1 is also on the property owned by Penta adjacent to Horning Road on a draft approved lot, but not subject to the current application. It has a ground elevation of 202m which would allow the reservoir to be in-ground.

Alternative Site 2 is on property owned by Penta adjacent to Horning Road on also located on a draft approved lot but not subject to the current application. It has a ground elevation of 191m which could be suitable for a moderately elevated storage reservoir.

Alternative Site 3, at the north limit of Sub-Area 1, has a ground elevation of approximately 184m. This location would require an elevated storage tank.

The 400mm Zone B3A feedermain is recommended to be routed from the proposed pumping station at the Waterdown Road Reservoir to the B3A Reservoir via Waterdown Road, Flatt Road, Flatt Road Extension, Street C, servicing easement and Horning Road as shown on Figure 6-2.

6.2.4 *Zones B4A & B5A*

As previously stated, the existing Zone B5A is supplied from the City of Hamilton system under an agreement with the Region of Halton. Zone B4A can be fed from Zone B5A via a PRV.

The water in the Hamilton and Halton systems cannot be mixed because of different treatment systems (Hamilton uses Chlorine, Halton uses Chloramine).

Although it is possible at this point to maintain use of the existing Hamilton B5A supply, provision should be made for a Halton supply. Two options are available:

Option 1: As per the Master Plan, the Zone B5A component of the Waterdown Road Reservoir Pumping Station can be constructed. This would require a dedicated main running north along Waterdown Rd from the pumping station, which would have high costs associated given the restoration of a newly constructed road.

Option 2: Zone B5A Pumping Station can be constructed at the proposed Zone B3A Reservoir. A pump with a firm capacity of 200L/s would be required to satisfy fire flows. Individual prv's for the residences or a single PRV will also need to be installed, to reduce pressure for the residences on Horning Rd. Two locations have been indicated on Figure 6-2 to have closed valves (to separate the pressure districts), namely on the south end of Horning Rd and on Waterdown Rd just north of Street D.

The Hamilton supply would still be available as a backup for both options and would be regulated by a zone valve on Waterdown Rd, just north of Horning Rd.

From a financial, as well as an ease of servicing perspective option 2 is the preferred option.

6.3 Watermain Modeling

Watermain modeling has been carried out using the WaterCAD V8i program with the existing Region of Halton model imported from Infowater. City of Hamilton WaterCAD model information was added for Zone 16.

The existing model from Halton did not include any watermains north of the Waterdown B1A Reservoir. The proposed North Aldershot Zones B3A and B4A mains were added to the model and the model was run under the Average Day, Peak Hour, Maximum Day and Fire Flow scenarios. Nodes were placed at the street intersections and connections. The elevation of each node was obtained from the existing or proposed centreline of the road elevations.

6.3.1 *System Requirements*

The water system is generally considered adequate if it can meet the following:

Fire Flow with residual pressures of at least 20psi (139kPa); and,

Peak Hour Demand with all junctions maintaining at least 40psi (278kPa).

6.3.2 *Water Demands*

The daily average consumption demands were determined based on the MOE Drinking-Water Design Guidelines (2008), the South Halton Water and Wastewater Master Plan Update (2008) and Region of Halton Design Criteria (2001). The design criteria utilized in the model are presented in Table 6.

Table 6 Water Demand Design Criteria

Residential Avg. Day Demand	330L/capita/day
Cluster housing & Condo Avg. Occupancy	2.5 people/unit
Single Detached Dwelling Avg. Occupancy	3.0 people/unit
Max Day Factor	1.9
Peak Hour Factor	3
C-Factor 200mm and below	110
C-Factor 250mm to 400mm	120

The resulting water demands are summarized in Appendix E-2.

6.3.3 *Fire Flow Requirements*

Fire Demands have been estimated using the calculations prescribed by the Water Supply for Public Fire Protection (1999) from the Fire Underwriters Survey. Typically, the largest building dictates the fire flow demand requirements for a proposed development. In this case, the larger cluster housing buildings and the existing Flatt Road school building were considered. The Fire Demands calculated varied depending on the assumptions (construction type, sprinklers, etc.) that were made and ranged between 133.3L/s and 200L/s. Calculations and assumptions are presented in Appendix E-3.

6.3.4 *Fire Flow Analysis*

An analysis was performed to determine the adequacy of the proposed system to provide the necessary fire flow demands, while maintaining a minimum pressure of 20psi within Zones B3A and B4A mains. The highest calculated fire flow demand was found to be 200L/s within the Cluster Housing units. This is the value that was used for the simulations. The Fire flow demand was automatically added to each node within the development using the automated fire flow analysis tools within WaterCAD. All nodes within the district were determined to meet the minimum pressure requirement during the fire flow analysis performed. Tables showing the results are presented in Appendix E-4.

6.3.5 *Zone B3A Pumping Station*

The Zone B3A Pumping Station will need to be designed with a firm capacity based on the largest pump being out of service because floating storage will be provided by the proposed Zone B3A Reservoir. The pumps will need to be capable of supplying the Fire Flows, with the one pump off. Based on the initial Fire Demand estimates and total Max Day Demands for Zone B3A (15.2L/s), the minimum required firm capacity of the Pump Station could range from 150L/s to 220L/s. The potential impact of supplying Zones B4A and B5A from a Pumping Station at the Zone B3A Reservoir should be considered when determining what the firm capacity of the B3A Pump Station should ultimately be.

6.3.6 *Zone B3A Storage*

The storage requirements for Zone B3A have been approximated based on the MOE Design Guidelines for Drinking-Water Systems (2008).

Total Treated Water Storage = A + B + C

Where

A = Fire Storage;
B = Equalization Storage (25% of Max Day Demand);
C = Emergency Storage (25% of A + B)

Based on the projected population in Zone B3A, the suggested fire flow and duration as received from the Region will be 250L/s for 3 hours. This results in a Total Storage volume requirement for Zone B3A of 3800m^3. As specified in the 2017 DC background studies, at the time of writing, the proposed storage volume is 4500m^3. This greater number was used for modelling purposes. The total storage required and pump station firm capacity should be given further consideration at the detailed design stage.

6.3.7 *Domestic Flows*

To determine if adequate water supply and pressure requirements can be met, the peak hour scenario was modeled. The calculated peak hour demands were added to each of the respective nodes and the resultant pressures during the peak hour demand scenarios were determined. Adequate pressures under the peak hour demands will be available to the proposed development. Minimum and maximum pressures under the peak hour scenarios are shown in Table 7 below. For further details and calculations see Appendix E-5.

Table 7 Peak Hour Pressure Ranges

Zone	Pressure Range (psi)		Junction
B3A	Maximum	120.5	J-7
	Minimum	72.2	J-89
B4A	Maximum	136.7	J-28
	Minimum	53.5	J-31

6.3.8 *Sub-Area 10*

The watermain on Street X, Sub-Area 10, was modeled in Zone B3A. Predictably, some pressures exceeded 100psi in areas, as can be seen in Appendix E-2 as the boundary between Zones B3A and B2A falls approximately at the midway point of proposed Street X. Pressure reducing valves were added to two proposed mains supplying this Sub-Area and pressures were successfully reduced below 100psi. Alternatively the houses on this street could have individual pressure reducing valves installed. This would be acceptable under interim conditions and is supported by the modeling.

Ultimately the southern portion of Street X will be serviced in Zone B2A, looping through the “Morgante property” south of Street X. Permanently closed valves at the service corridor and at the south junction of the supply line for Block G will render the PRV’s obsolete.

6.3.9 *Waterdown Road – Horning Road to Street D*

On Waterdown Road, from Horning Road to proposed Street D in Zone B5A, pressures in the existing 250mm watermain just north of Street D, (junction J-28 on Figure 6-4) exceed 100psi. Although this is an existing condition, the option of including a PRV south of Horning Road changing this area to Zone B4A was modeled. Maximum pressures were reduced to below the 100psi threshold. The available fire flow with the PRV in place is 176 L/s whereas 250 L/s is available without the PRV (Zone B5A). The maximum fire flow demand from the existing dwellings in the immediate area would likely fall below 150L/s. Therefore, this section of Waterdown Road could be in either Zone B4A or Zone B5A. See Appendix E-5 for the analysis.

7.0 PHASING

Development of the Eagle Heights and Taylor lands will be phased. The phasing is determined by the availability of water and wastewater facilities and other considerations.

Figure 7-1 shows a proposed two phase concept. Other phasing concepts are possible. Phasing is more properly determined at the detailed design stage.

7.1 Phase 1

Phase 1 will require the establishment of the proposed water Zone B3A including construction of the B3A Pumping Station at the Waterdown Road Reservoir, the North Aldershot Reservoir and the 400mm feedermain from the Pumping Station to the Reservoir. All of these works are Development Charge funded projects. As previously mentioned these projects are currently scheduled for completion in 2022-2031, however, Penta is prepared to front end the infrastructure in order to advance the work and be reimbursed by the Region.

Sub-Area 1 and the eight Horning road lots that are in Phase 1 are in Zone B4A. This Zone can be supplied from the City of Hamilton Water system (Zone B5A pressure) via a PRV. Ultimately, if the “Halton only” system is implemented and a Zone B5A Pumping Station is constructed at the North Aldershot Reservoir, then Sub-Area 1 and the 8 Horning road lots could be supplied from it via a PRV.

The southern portion of Sub-Area 10 is intended to be within Zone B2. The proposed Zone B2 portion of the Pumping Station at the Waterdown Road Reservoir will be constructed within the Zone B3A portion and could supply the south portion of Sub-Area 10. The Zone B2 system will ultimately be looped through the “Morgante property” when it develops. As previously stated, the timing of the “Morgante property” is uncertain and therefore, the southern portion of Sub-Area 10 could be fed from Zone B3A with pressure reducing measures, if necessary.

Phase 1 will require completion of the 300mm trunk outlet sanitary sewer from Waterdown Road to Flatt Road. Local subdivision sewers will be constructed on Flatt Road, Flatt Road Extension, Streets C, D & E, Horning Road and Waterdown Road from Flatt Road to Street D. The existing residences on Craven Avenue and Nevarc Drive (including the rear of lots fronting on Waterdown Road) will be able to connect directly to the trunk sewer or local sewers may be constructed which will connect to the trunk.

The sanitary sewer design sheet for Phase 1 is attached in Appendix C. In addition to the proposed Eagle Heights development, allowance has been made for the Cumis property to be serviced, as well as existing properties on Waterdown Road, Craven Avenue and Nevarc Drive to be connected. The total peak flow for Phase 1 is estimated to be 45 l/s (the ultimate peak flow is 86 l/s).

7.2 Phase 2

The Phase 2 Eagle Heights development areas are within water pressure Zone B3A for which the major infrastructure will be in place for Phase 1. Extensions of local looped watermains for Sub-Areas 5 & 7 will be required.

Similarly, Phase 2 areas will only require extension of local sanitary sewers.

With the completion of the Phase 2 servicing, the property at the north end of Flatt Road and the portion of the Aldershot Landscape property north of the Hydro One corridor could be developed.

8.0 CONCLUSIONS

This report has demonstrated how the proposed draft plan of subdivision for the Eagle Heights can be serviced, drained and graded in accordance with municipal standards and respect the goals of the NAIR and OPA 197.

Development will take place within the approved tableland areas, modified where necessary by the geotechnical slope stability analysis, and will maintain the natural features identified for preservation by OPA 197.

Road construction will be to rural standards with open ditch drainage.

Lot and Block grading will be carried out in accordance with municipal standards and the grading principles established NAIR and OPA 197. Natural Features and drainage patterns will be maintained wherever feasible.

The development is within the Grindstone Creek Watershed. The stormwater management plan for the development will conform to the Grindstone Creek Subwatershed Study and the updated requirements of CH. It maximizes the use of “passive” lot level and conveyance controls. These passive measures, combined with the proposed “end-of-pipe” facilities, will provide protection to the creek valley systems.

The stormwater management plan provides the required quality, quantity and erosion control for all proposed development.

The existing and proposed road crossings of the tributaries will provide safe conveyance of Regulatory Storm flood flows.

All proposed development can be serviced by municipal water supply and wastewater collection. The necessary external infrastructure is either in place or provided for in the

City and Region Capital Works Forecasts. This report proposes phasing that provides orderly construction of the required water and wastewater infrastructure.

In summary, the engineering design proposed for the development concepts for the Eagle Heights and Taylor properties will be in harmony with the innovative planning approach and the unique natural features of the properties.

Prepared By:



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APPENDIX A Comments and Response Matrix

COMMENT REFERENCE	COMMENT	Response
Page 1, Site Visits	In the City's letter of March 9, 2012, it was stated that permission to access the site would provide several benefits to City and agency staff with respect to review of the applications. It is acknowledged with thanks that permission was granted by the applicant for three separate site visits (April 16, July 17, and August 20, 2013) for various City and agency staff. These site visits were helpful in preparing staff comments. It is the City's hope that the ability to visit the site remains available in the future.	Permission to visit site has been granted to various municipal staff as required. Staff from the City, CH, Region and NEC have been granted permission for site visits to review Top of Bank, Dripline, and general investigation. The top of bank and drip line have been staked out, surveyed and plotted on plan.
TECHNICAL COMMENTS ON REVISED STUDIES During the December 6, 2012 OMB prehearing conference, it was stated by the applicant's legal representative that some revised studies would be submitted to the City in response to the City's letter of March 9, 2012. The Board's disposition resulting from the prehearing conference indicated that these revised studies were to be submitted by January 31, 2013.		
Pages 1- 2	Staff acknowledge the receipt of the following studies: Traffic Impact Study – Eagle Heights/ Taylor Draft Plans of Subdivision Burlington-Read, Voorhees and Associates – Updated December 2012 (Received by City Planning staff via email on January 31, 2013). Functional Servicing and Stormwater Management Report – Eagle Heights & Taylor Property – Updated June 2010 – Addendum – Revised Section 7 to Address Region of Halton Comments – March 2013 (Received by the City Planning staff via email on Mar 13, 2013) Eagle Heights and Taylor Lands – Environmental Impact Assessment – Savanta Inc. – March 5, 2013 (Received by City Planning staff via email on April 5, 2013) These reports were circulated by City staff to internal departments as well as external agencies. In addition, copies were made available for review. Specific comments from City staff on each study are provided below.	Noted

TRAFFIC IMPACT STUDY – Reed Vorhees and Associates The revised Traffic Impact Study has been reviewed by the City staff and it has been determined that from the City's perspective, the study is generally acceptable. However, staff has the following specific comments regarding the study.

COMMENT REFERENCE	COMMENT	Response
Page 2	Considering the number of units being proposed with the primary access via Flatt Road, the City would prefer that pedestrian facilities be provided along the roadway connecting to the future multi-use path on Waterdown Road. Transit service is provided along Waterdown Road; therefore pedestrian facility on Flatt Road is appropriate and necessary in order to support this evidence.	In Section 2.3 and 2.5, it is indicated that sidewalks will be provided.
Page 2	The issue of additional roadway connections to Waterdown Road has not been examined in this study as requested by Transportation staff. The City again requests that consideration be given to provide these connections. If there are valid reasons why these connections cannot be provided, please document and provide them. Additional road connections will encourage alternative modes of transportation and improve the circuitous nature of the internal roadways in this proposed subdivision. Additional connection will also spread the traffic demand which may delay or possibly negate the need to signalize the Waterdown/Flatt Road intersection.	Road connections are discussed in Section 2.1. This section references the 2007 report prepared by Scott Burns Planning Consultants (SBPC) and Envision – The Hough Group (Envision). Specifically, section IV 4.0.
Page 2	The City agrees that Horning Road is acceptable as a two-lane roadway for capacity purposes. However, the question remains as to whether it can continue in its current state (i.e. narrow rural road with no pedestrian facilities) given the increase in volume expected from the proposed apartment unit at the southerly end. The City would like the issues of capacity and roadway width specifically for Horning Road to be explored further by the transportation consultant, and note the comments previously provided by Niagara Escarpment Commission staff with respect to changes and/or widening of Horning Road, as provided in the NEC staff's review of the TIS provided March 20, 2013.	A new road on a new alignment was proposed in the 2010 FSR/SWM Report by MCI as well as this report. The application for a development permit from the NEC is being addressed by MCI. The proposed section of Horning Rd is shown on Figure 4 of the FSR shows the inclusion of pedestrian facilities.
Page 2	Lastly, the City agrees that the future widening of Waterdown Road to a 3 and possibly a 4 lane cross section will accommodate this development proposal. However, at present it is not certain that Waterdown Road will be widened before the subdivision is built out (should approvals be granted). Should the Waterdown Road widening lag behind subdivision construction, the City would expect that improvements at Flatt Road (northbound left turn lane) to be implemented as the responsibility of the applicant.	The City is currently engaged in a design exercise for all of Waterdown Road. It is scheduled for construction in 2018. The northbound left turn lane is a City responsibility and is included in the approved EA. Eagle Heights will develop after the re-construction of Waterdown Road.

COMMENT REFERENCE	COMMENT	Response
Page 3 Functional Servicing and Stormwater Management Report (Addendum)	Staff notes that the submitted addendum is a revised Section 7 only, which specifically states that it is to "address Region of Halton Comments". Section 7 of the June 2010 updated FSR/SWM report deals strictly with water distribution and wastewater collection. Staff have reviewed the addendum and note that it does not respond to the items listed in City's previous letter, where a number of specific requirements were stated from the requested study addendum (see p. 21, under heading "Functional Servicing and Stormwater Management Report (Metropolitan Consulting Inc., Update June 2010")). City staff's preliminary comments on the June 2010 report were primarily concerned with stormwater management, but also related to overall development servicing particularly with respect to the proposed storage reservoir in Zone B3A. While staff are of the opinion that some of the information within the submitted addendum could be related to the City's previous comments (i.e. ground elevation, interaction of water and wastewater serving with stormwater management, location of stormwater management ponds, discussion of water reservoir elevations and locations), staff will wait for the submission of the previously requested information to complete a review of this study. Ideally, the June 2010 report should be updated to address comments from all agencies.	This comment pertains to the March 2013 FSR addendum, which only spoke to water distribution and wastewater collection. This addendum has now been incorporated in full into this report, as such, responses in full to this comment can be found within each of the corresponding sections of the latest report.
ENVIRONMENTAL IMPACT ASSESSMENT STUDY – General Comments The City has undertaken its own review of the submitted EIA, including having the document peer reviewed by Ecoplans Ltd. The City's detailed review of this document is provided below. Note that the detailed comments are arranged by corresponding section in the EIA, with appropriate headings. Staff also refers the applicant to the City's letter of March 9, 2012 for further discussion on the EIA and any additional items or requested revisions that are not discussed below.		
Page 3	As per the 2009 Minutes of Settlement between the City and Paletta International Corporation, staff acknowledges that the development sub-area boundaries proposed under the revised applications (2010 version) are the same as those implemented through OPA 197 as approved by the OMB in 1996. However, after conducting an independent review of the applications, including the revised EIA, City staff are of the opinion that a key issue in assessing the proposed increase in density is the establishment of appropriate buffers and/or setbacks for development from the sub-area boundaries as well as the identification and protection of any significant environmental features (i.e. significant woodlands, ANSI, etc.) that occur within or adjacent to a given sub-area. It is City's staff's view that the field of environmental legislation, policy, guidelines and practices has changed significantly since the time of the OMB draft approval of the previous plan. As specific examples, staff note the proposed removal of 7.1 ha of significant woodlands within development sub-areas 5, 7 and 8, as well as the expansion of the ANSI boundary adjacent to sub-area 7. It is assumed that the Terms of Reference/Agreement for the EIA between Savanta and the proponent would have emphasized the existing sub-area boundaries and conditions in place at the site. A clear statement of the scope of the EIS should be included within the EIA.	The August 2018 EIA assesses potential impacts resulting from the Updated Draft Plan with the new densities. See section 5 and 6 of the EIA. A discussion with respect to appropriate buffers and setbacks to significant environmental features is provided in section 5.1 of the EIA. The scope of work and history of the planning application is provided in Section 1 of the EIA. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,

COMMENT REFERENCE	COMMENT	Response
Page 3	Further, the cumulative impacts to natural heritage features from the proposed additional density and resulting population on the site must be discussed in the EIA. At present, there is no detailed discussion of the identification of expected cumulative impacts from the proposed density increase, and any necessary mitigation and implementation measures to reduce or eliminate those impacts.	The EIA and assessment of impacts is based on the Updated Draft Plan (2018) which includes the greater density. Therefore, the impacts and mitigation provided are based on the higher density. Please refer to section 5 and 6 of the EIA.
Page 4	In addition, identification, impacts and mitigation measures regarding natural heritage features such as fish habitat, significant woodlands, areas of natural and scientific interest (ANSI's), significant valley lands, trees and wildlife corridors have not been included in a comprehensive manner.	The identification of impacts and mitigation measures to natural heritage features are comprehensively addressed in section 6 of the EIA.
Page 4	Given its location in relationship to the Niagara Escarpment and Grindstone Creek, a greater emphasis on topographic conditions should occur in the report. The only figure showing contours is in the Attachment section – a figure extracted from the Metropolitan Consulting FSR/SWM report. Topographic relationships are one of the major physical/ecological conditions determining future use of the site.	Topography is addressed in the FSR. It is not clear what the City means by the comment, "Topographic relationships are one of the major physical/ecological conditions determining future use of the site." Natural features and associated functions have been addressed comprehensively in the reporting completed to-date including sections from MCI- FSR dealing with grading.
Page 4	The EIA should be updated to identify potential recreational uses (e.g. trails) on the site and how they will be managed. Commitments regarding habitat restoration and enhancement and a pre-, during- and post-construction monitoring strategy should be included.	Section 6 of the EIA identifies potential enhancement and restoration opportunities. Specific habitat restoration details and monitoring will be developed part of detailed design in cooperation with the City and CH. We agree with the Region's comments that the elimination of any trails and/or any public access to the valley would be an effective contribution to preventing impacts on the Grindstone Creek valley. Any trails that are internal to the proposed development could be reviewed for potential effects, should the City determine they are relevant to the Subject Lands.

COMMENT REFERENCE	COMMENT	Response
Page 4	The EIA should be updated to indicate how the recent changes to the *Endangered Species Act (2007)* will be addressed.	Species at Risk (SAR) is addressed in sections 1.4.7, 2.1.2, 2.2.2, 3.4.2 and 6.1.6 of the EIA. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.
ENVIRONMENTAL IMPACT ASSESSMENT STUDY – Specific/Detailed Comments		
Page 4 Section 1.0 Introduction	It is stated that the 2010 development applications are largely based on the development limits which were previously approved by the Ontario Municipal Board in 1996 (i.e. page 2 of the EIA states that the development areas, valley boundaries, buffer zones and environmental open space areas are the same as those approved in 1996, except in the southeast corner of Sub-Area 7). As noted above, it is City staff's view that utilization of the existing sub-area boundaries sets the basis for the detailed subdivision design work, and that a key issue in assessing the proposed increase in density is the establishment of appropriate buffers and/or setbacks for development from the sub-area boundaries as well as the identification and protection of any significant environmental features (i.e. Significant woodlands, ANSI, etc.) That occur within or adjacent to a given sub-area. The additional density proposed on the site is currently of concern to City staff because the cumulative impact from the additional population has not been fully assessed.	The EIA and assessment of impacts is based on the Updated Draft Plan (2018) which includes the greater density. Therefore, the impacts and mitigation provided are based on the higher density. Please refer to section 5 and 6 of the EIA. Clarification is required from the City regarding their use of the term cumulative impact. The term has likely been used in error and is intended to refer to their concern that an increase in proposed density will increase the magnitude of effects.
Page 4 Section 1.0 Introduction	In addition, wording in this section (i.e. "Compiled in response"), indicates that the EIA was done after detailed design work, rather than being an input into the design process. Staff note that the statement is made in this section that revisions to the EIA were made to "bring the documentation in line with applicable guidelines", rather than completing a full assessment of the proposed development under all current legislation, policies, guidelines and practices. City staff would like to see an exploration of design alternatives for the proposed plan using the EIA and other revised studies as key inputs.	Comments with respect to the use of specific wording are not relevant to the current EIA as the wording has changed and been updated. An EIA is completed in response to a proposed development. As per the Natural Heritage Reference Manual, the EIA was prepared in that manner\ The EIA is not a design document nor was it prepared to perform in an iterative manner during the design process. However, the EIA and environmental studies did provide some level of input into the detailed design process.
Page 4 Section 1.0 Introduction	The "Brief History" section is a critical component in understanding the EIA process and the document that was produced. A clearer statement and explanation of what the EIA was actually addressing should be provided (i.e. what the study will and will not address).	Sections 1.1, 1.2 and 1.3 of the EIA provide an explanation of what the EIA is addressing.

COMMENT REFERENCE	COMMENT	Response
Page 4 Section 1.0 Introduction	It is reiterated in this section that the proposed development will utilize innovative forms of design, however it is not clearly stated what these innovative forms are proposed to be, as the proposed plans show a number of single detached homes, townhouses, and what appear to be standard apartment buildings.	The reference to Innovative forms of development refers to housing in natural settings which is something that arises out of the work of Scott Burns and Eha Naylor. Innovative servicing is in reference to the proposed is the use of LID facilities; which can be found within the SWM report, as well as the works of Terra-Dynamics. Also of note is the proposed use of directional drilling construction methods to avoid areas of environmental sensitivity. The "Standard Apartment Buildings" as shown are not final design structures. They are representative and all proposed cluster units are proposed to be approved at a Site plan level.
Page 5 Section 1.0 Introduction	Elements of the Natural Heritage System are not depicted on the environmental features figure in Appendix A (Greenlands A and B).	According to "Map 1 – The Regional Structure" of the 1994 ROP the Subject Lands are designated as: • Environmentally Sensitive Area; • Parkway Belt West Plan Area; • Greenlands B; • North Aldershot Policy Area; and • Area Eligible for Urban Services. Please refer to the "Eagle Heights Planning Justification Report" (2018) prepared by Metropolitan for further explanation with respect to the ROP policies applicable to the Subject Lands.
Page 5 Section 2.0 Study Approach	Generally, more information regarding the methodology of species investigations should be included, such as weather, duration, start and end time.	Information with respect to surveys completed and methodology is provided in section 3.3 of the EIA. Table 2, Appendix B of the EIA provides a summary of surveys, surveyors and survey dates. Detailed information regarding weather and start and end times is provided on field sheets/cards which can be provided upon specific request.
Page 5 Section 2.0 Study Approach	As mentioned previously, several of the existing reports are dated and the question remains as to the validity of relying on this information. Relying on dated information to set development boundaries creates difficulties in interpreting and applying current legislative and policy requirements.	Boundaries were determined using information from both current and past studies. This comment suggests the reviewers may not be fully informed regarding the degree and timing of work completed. Based upon Savanta's detailed field experience on these lands, conditions have been generally stable in terms of vegetation and habitat.
Page 5 Section 2.0 Study Approach	There is some inconsistency in the document between the specific field survey dates listed in the text and in Appendix B (i.e. dates do not always match. As an example, see subsection 2.2.2.1 Breeding Bird Surveys).	This comment is no longer relevant as the EIA has been completely updated (2018). Information with respect to surveys completed and methodology is provided in section 3.3 of the EIA. Table 2, Appendix B of the EIA provides a summary of surveys, surveyors and survey dates.
Page 5 Section 2.0 Study Approach	Through the amendments to the *Endangered Species Act* (ESA) that came into effect on July 1, 2013, there are newly listed and transition species which have received regulated habitat protection. Notices of approval to MNR are required for the protection of these species through development planning approvals. Please indicate in the EIA how this new process will be addressed. For example, butternut is one of the newly listed species that has been identified on the site and now has regulated habitat protection.	This comment is no longer relevant as the EIA has been completely updated (2018) to address the current requirements of the ESA. Species at Risk (SAR) is addressed in sections 1.4.7, 2.1.2, 2.2.2, 3.4.2 and 6.1.6 of the EIA. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.

Page 5 Section 2.0 Study Approach	On Page 17, Peregrine Falcon should be listed as Special Concern.	The status of Peregrine Falcon has been updated to Special Concern in Section 2.1.3 of the EIA.
Page 5 Section 2.0 Study Approach	Clarification/discussion is required as to whether the point sample distribution is representative of all habitat (i.e. no observation point in Taylor property, etc.).	Updated fieldwork was carried out in 2014 , 2015 and 2016 which includes a thorough point sample distribution representation of habitat associated with the Subject Lands.

COMMENT REFERENCE	COMMENT	Response
Page 5 Section 2.0 Study Approach	In subsection 2.2.2.2, it is stated that the Savanta protocol was discussed with MNRF staff, however it is not explicitly stated as to whether the MNRF protocol was followed and/or whether MNR staff agreed with Savanta's methods (i.e. staff are of the understanding that the MNRF protocol requires 3 cycles of visits).	Updated fieldwork was carried out in 2014, 2015 and 2016. Surveys conducted have been based on and met protocols discussed with the MNRF. Please refer to section 3.3 of the EIA.
Page 5 Section 2.0 Study Approach	Salamander surveys were not included in the breeding amphibian survey.	On June 12, 2013 a site visit was conducted in, and adjacent to the Subject Lands. An early spring site visit (March and April 2013) recorded vernal pooling in five areas within the Subject Lands that were identified through aerial photo interpretation and analysis of ELC communities as potential salamander breeding pools. Areas examined included a range of habitat types including woodlands, watercourse riparian areas, wetlands, valley lands and tableland areas. No suitable salamander breeding pools were identified on the Subject Lands during these investigations. Please refer to section 3.3.2.2 of the EIA.
Page 5 Section 2.0 Study Approach	Citation for the Marsh Monitoring Program appears to be incorrect. Please ensure an up-to-date program is used and referenced.	Citations vary widely for these protocols in public and private reporting. The EIA (2018) reflects what Bird Studies Canada determines is the "current reference".
Page 5 Section 2.0 Study Approach	The text in subsection 2.2.2.4 (Reptile Surveys) indicates the survey was done for the entire site over one day. Based on staff's site visit, it would seem that one day may not be adequate to complete a thorough survey of the entire site. If there was a smaller area used for this survey, it should be indicated. Also, there is no mention of use of snake boards, or a description of the climate conditions.	Updated reptile surveys were completed in 2016 including snake emergence and reptile road crossing surveys. Please refer to section 3.3.2.3 of the EIA.
Page 5 Section 2.0 Study Approach	Subsection 2.2.2.5 (Aquatic Habitat Assessments) provides dates that differ than those provided in the Appendix. In addition, the survey points are not specified (i.e. were the tributaries walked or were specific points targeted?).	Updated fieldwork was carried out in 2014, 2015 and 2016 Including the completion of an updated headwater drainage assessment survey in the spring and summer of 2014. Please refer to section 3.3.3 of the EIA. The tributaries were walked and characterized along their length. No single point stations were established.
Page 6 Section 3.0 Subject Land Characterization	A detailed contour plan to accompany this section would allow for a more detailed review.	Topographic information is included in the FSR (Metropolitan 2018).
Page 6 Section 3.0 Subject Land Characterization	A more detailed discussion of the physiographic origin of the landscape would be useful. Glacial history would help in the discussion of soils that plays a role in some of the SWM innovations described later in the document.	Part of the SWM report details the physiographic origins of the site. This is also utilized with the works of Terra-Dynamics works for LID's
Page 6 Section 3.0 Subject Land Characterization	In subsection 3.1.2, the term "brush" is used, which is not a technical term. It should be replaced with the appropriate term (i.e. cultural thicket, etc.).	This term is quoted from Peto MacCallum's work.

COMMENT REFERENCE	COMMENT	Response
Page 6 Section 3.0 Subject Land Characterization	Staff notes that the Taylor lands are bordered on the west by Tributary 5, not 4.	The current EIA has been completed updated in 2018.
Page 6 Section 3.0 Subject Land Characterization	This section does not contain information indicating the depth of soil over shale bedrock.	Please refer to the updated report prepared by Soil Mat (2018).
Page 6 Section 3.0 Subject Land Characterization	The indicated 8-10 m ravine occurs between Tributary 6 and Flatt Road extension, not Tributary 5.	This information is quoted from Peto MacCallum's 2006 report as Savanta does not provide expertise on soils. Please refer to the updated report prepared by Soil Mat (2018) included as part of the overall submission for the Subject Lands.
Page 6 Section 3.0 Subject Land Characterization	This section is also missing a discussion of Tributary 4.	Tributary 4 is discussed under Section 3.3.3.2 of the EIA.
Page 6 Section 3.0 Subject Land Characterization	Section 3.2 (Biological Baseline Conditions) should provide a discussion on slope stability (i.e. are they considered stable?).	A geotech investigation was completed by Peto MacCallum in July 2006 which included slope stability considerations. An updated study was completed by Soil-Mat (2018) and is included as part of the overall submission for the Subject Lands.
Page 6 Section 3.0 Subject Land Characterization	Subsection 3.2.1 should include a discussion of the cultural meadow on the Taylor lands. The site visit provided an indication that this area is a former orchard.	The cultural meadow (current condition) on the Taylor lands is described in Table 3, Appendix B of the EIA.
Page 6 Section 3.0 Subject Land Characterization	It appears as though the study is relying to some degree on the vascular plant list compiled from work in 1991 and 1994. This particular work is an example of the information that should be updated to provide a current inventory.	An updated vascular plant list is provided in Appendix B of the EIA.
Page 6 Section 3.0 Subject Land Characterization	It was noted during the site visits that several of the cultural thickets appear to have been cleared and put to agriculture. This should be clearly indicated in the EIA and some discussion on impacts of this work should accompany the observation.	Impacts as a result of agricultural activities are not in the scope of this EIA. An EIA addresses current conditions in relation to potential impacts associated with the Updated Draft Plan.
Page 6 Section 3.0 Subject Land Characterization	Subsection 3.2.3 (Wildlife) indicates that several birds observed in 1991 and 1994 were uncommon or locally rare, but the species are not identified in text.	Uncommon or locally rare bird species tend not to weigh in any significant manner in impact determinations, unless they are associated with significant wildlife habitat. The EIA relies on more current data collected in 2014 and 2015. Please refer to section 3.3.2.4 of the EIA.

COMMENT REFERENCE	COMMENT	Response
Page 6 Section 3.0 Subject Land Characterization	It is believed that habitat for Meadowlark and Bobolink habitat was removed in 2011 or 2012. There should be discussion of this occurrence, whether MNR staff were made aware of this habitat, and also whether or not MNR approval was acquired for the habitat removal. If there is no longer suitable habitat for these birds in 2013, it should be stated why, and any impacts resulting from the habitat removal should be addressed.	The EIA addresses current conditions in relation to potential impacts associated with the Updated Draft Plan. We have advised Penta properties of your comments related to listed species habitat impacts that may have occurred on their lands and have requested they respond to these queries, as appropriate. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.
Page 6 Section 3.0 Subject Land Characterization	It is also noted that the breeding bird survey was done over one day for the entire site. As with the reptile survey, completing a detailed survey for this large, complex site within a one-day window does not appear to be sufficient. In addition, the report was submitted in March 2013, which is before prime breeding season.	Additional breeding bird and reptile surveys were completed in 2014, 2015 and 2016. Please refer to section 3.3.2.3 and section 3.3.2.4 of the EIA.
Page 6 Section 3.0 Subject Land Characterization	It is stated under the Insect Survey section that a full list is provided in Appendix E, but this appendix is not included in the document.	Updated insect surveys were completed in 2016 by Savanta and survey results are provided in Table 15, Appendix B of the EIA.
Pages 6-7 Section 3.0 Subject Land Characterization	The text under Amphibian and Reptiles should include information on how busy the roads were and what the noise levels were during the survey period.	Amphibian survey protocols are provided in Section 3.3.2.1 of the EIA and do include discussion with respect to noise.
Pages 6-7 Section 3.0 Subject Land Characterization	It is again noted that snake boards were not used, and therefore the information obtained from this survey may not be accurate or reflective of site conditions. Casual area surveys generally are not productive for many species, including snakes, as the survey results are generally not a reliable indicator of species presence.	Updated reptile surveys were completed in 2016 including snake emergence and reptile road crossing surveys. Please refer to section 3.3.2.3 of the EIA.
Page 7 Section 3.0 Subject Land Characterization	Section 3.2.4 provides more of a description of the individual channels rather than a detailed assessment/review of aquatic ecology on the subject lands. There is also a statement made that the tributaries rising along the escarpment are very susceptible to erosion, which would conflict with statements made earlier in the report.	There is sufficient information in the individual descriptions to draw conclusions about aquatic ecology on the lands. The individual descriptions discuss barriers and the likelihood of direct fish habitat on the Subject Lands. The statements regarding erosion made earlier in the report was quoted from a report by Peto MacCallum Ltd. (2006). The reference to tributaries rising along the escarpment is taken from the Fisheries Management Plan as information. Erosion evidence that was noted during our visits is documented for individual stream discussions in section 3.3.3 of the EIA. Please refer to the Eagle Heights Geomorphic Assessment completed by Matrix Solutions (2018), included as part of the overall submission for the Subject Lands.
Page 7 Section 3.0 Subject Land Characterization	The Tributary 5 section states that the tributaries are intermittent upstream of Flatt Road, but Figure 7 shows them as Warmwater Baitfish Habitat (i.e. non-intermittent).	Updated fieldwork was carried out in 2014, 2015 and 2016 including the completion of an updated headwater drainage assessment survey in the spring and summer of 2014. Please refer to section 3.3.3 of the EIA.

COMMENT REFERENCE	COMMENT	Response
Page 7 Section 3.0 Subject Land Characterization	Generally, the discussions provided under the tributary sections are confusing and unclear. There is some inconsistency with the information provided and it is not always clear as to what certain terms mean or what features are being described (i.e. inconsistencies between Figure 7 and tributary descriptions).	Updated fieldwork was carried out in 2014, 2015 and 2016 including the completion of an updated headwater drainage assessment survey in the spring and summer of 2014. Please refer to section 3.3.3 of the EIA.
Page 7 Section 3.0 Subject Land Characterization	On page 25, under Section 3.3.3, there is an analysis of significant woodlands. This is based on the criteria provided in the Ministry of Natural Resources' Natural Heritage Reference Manual (2010). The subject EIA should also provide an analysis of significant woodlands as per the criteria laid out in the Region of Halton's EIA Guidelines. This is in accordance with the City's Official Plan Policy 2.5e), which states that in the preparation of environmental evaluations, the City will utilize the Environmental impact Assessment (EIA) Guidelines adopted by the Region of Halton, as well as its own policies and guidelines.	An updated analysis of woodland significance is provided in Section 3, .4, 4 of the EIA based on guidance provided in the Natural Heritage Reference Manual (2010). This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,
Page 7 Section 3.0 Subject Land Characterization	The discussion under subsection 3.3.1 (Significant Portions of Habitat of Endangered and Threatened Species) should indicate that the current setback required from Butternut trees is 25 m, and how this buffer has been incorporated into the proposed development plans or how compensation has been provided within the subject lands.	Butternut is discussed in Section 6.1.6 of the EIA. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.
Page 7 Section 3.0 Subject Land Characterization	There should be an accompanying map showing the proposed development superimposed over the delineation of significant woodlands.	Figure 13, Appendix A provides an overlay of the Draft Plan over ELC communities.
Page 7 Section 3.0 Subject Land Characterization	Subsection 3.3.4 (Significant Valleylands) should include a discussion of the buffers provided and required. For instance, the plan clearly utilizes a 7.5 m buffer, which is carried over from the plan approved by the OMB in 1996. However, this setback does not reflect current requirements and therefore justification for the 7.5 m should be provided with accompanying assessment of the expected impacts from this buffer versus the current requirements.	This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,

COMMENT REFERENCE	COMMENT	Response
Page 7 Section 3.0 Subject Land Characterization	Subsection 3.3.5 discusses the Grindstone Creek Life Science ANSI. Staff is of the understanding that the ANSI boundary has been extended to cover part of the tableland proposed for development. There is no discussion on this ANSI boundary extension nor whether the proposed development plan has been modified to reflect this change.	Discussion with respect to the Grindstone Creek Life Science ANSI and potential impacts is provided in Section 6.1.5 of the EIA.
Page 7 Section 3.0 Subject Land Characterization	Subsection 3.3.6 - Significant Wildlife Habitat (SWH) is confusing, complex and should be revised to provide greater clarity with respect to each of the elements discussed. It is unclear whether the discussion in this section is based on original research or data on file.	An updated analysis of SWH is provided in section 3.4.7 of the EIA.
Pages 7-8 Section 4.0 Proposed Development	There is mention under subsection 4.1.1 that refinements to the development plan and servicing details are ongoing, but there is no mention as to what these are.	This comment is no longer relevant to the updated EIA.
Pages 7-8 Section 4.0 Proposed Development	Section 7.14 of the updated Functional Servicing and Stormwater Management Report, dated March 2013, states that passive stormwater management will be utilized where feasible. It states that the concept will be discussed with the City and refined during the detail design process. However, there should be an alternate design provided which considers fewer stormwater management ponds as a result of low impact development and passive stormwater management technologies such as swales, infiltration trenches and rainwater gardens. In addition, the extent and depth of the sandy soil deposits should be investigated to a greater degree at this stage to determine the feasibility and possible positive and negative effects of utilizing these areas for LID strategies (i.e. what are the infiltration capacities?). Section 7.14 of the updated Functional Servicing and Stormwater Management Report also states that the proposed lot level S W M measures should have no impact on Regional services. This statement should be clarified.	Alternative SWM measures are part of revisions to the SWM plan. See section 5.0 and 6.0 of the EIA. LID utilization is now incorporated into the plan. The Soils data has been reviewed and incorporated into the overall design of the SWM plan, with input from Terra-Dynamics
Pages 7-8 Section 4.0 Proposed Development	The discussion with respect to the various plans (i.e. 1996, 2003, 2006 and 2010) is confusing, as it appears there is a lack of consistency identifying which plan is under discussion. Further, staff appreciate a comparison of the 1996 plan as approved by the OMB with the proposed plan of 2010, but once again note that the 2010 plan must be judged on its own merits with respect to the policy framework identified, including a discussion and detailed rationale of the proposed unit increase.	The EIA assesses impacts to the Updated Draft Plan (2018) with these new densities. See Section 1.2 of the EIA. The buffers identified in the EIA consider the Updated Draft Plan (Section 5.1 of the EIA).
Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	A discussion on what role Savanta in general and the EIA in particular played in setting the priorities for tree-saving, design, landforms and grading should be provided (i.e. See earlier comment regarding using EIA study to guide and inform design, rather than other way around).	An EIA is completed in response to a proposed development. As per the Natural Heritage Reference Manual, the EIS was prepared in that manner. Mitigation is used to provide guidance to avoid, minimize or mitigate against potential effects. The EIA is not a design document nor was it prepared to perform in an iterative manner during the design process. Savanta did provide input into the 2018 draft plan with respect to the significance of features identified within the Subject Lands.

COMMENT REFERENCE	COMMENT	Response
Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Subsection 6.1.3 on Fish Habitat refers to a 15 m buffer where Tributary 5 crosses the Taylor lands. However, there is no reference to a 15m buffer where Tributary 5 crosses north of Flatt Road. North of Flatt Road, a 7.5m buffer from the minor valley is provided. However, a 15m buffer is recommended from Tributary 5, which has been classified in the EIA as providing warmwater baitfish habitat. This buffer is in accordance with the Conservation Halton EIS guidelines (November 2005).	A 7.5 m from the top of bank of the minor valley is proposed north of Flatt Road. A detailed discussion with respect to buffers is provided in Section 5.1 of the EIA. Tributary 5 is located in a valley. The valley slopes associated with these areas will serve as a deterrent to most human interaction and use of these areas. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further manage woodland access. The proposed vegetated buffer will provide protection for the rooting systems of retained trees within these features given the clay soils associated with the Subject Lands.
Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Subsection 6.1.4 on Significant Woodlands states that there are no anticipated direct effects of the development and removal of 7.4 ha of forested lands to the overall function of the significant woodlands. More justification is required to substantiate this statement. The removal of 7.4 ha of woodland is not an insignificant loss and it does not appear that the compensation proposed matches the potential loss.	This comment is no longer relevant to the updated EIA. The Subject Lands contain 63.9 ha of significant woodlands and the Draft Plan of Subdivision indicates that 6.68 ha of significant woodland will be removed to facilitate the proposed development. Based on the current Draft Plan of Subdivision, the proposed encroachment into the significant woodlands can meet the test of no negative impacts, subject to a condition to develop and implement appropriate mitigation measures and/or compensation (e.g., plantings, buffer installation, off-site measures, etc.). Block I on the Draft Plan of Subdivision is 0.82 ha in size and has been identified as an area for potential restoration which can be used to mitigate some impacts associated with the removal of significant woodlands through restoration plantings. In addition, enhanced buffer plantings will provide 6.07 ha of additional woodland area within the Subject Lands. Other measures that can be considered include offsite restoration areas within the Grindstone Creek watershed.
Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Subsection 6.1.4 states that no buffer is required for the woodlands not associated with valley lands that are adjacent to the Subject Lands as these areas were already approved for development by the City of Burlington and CH in the 1996 plan. However, there is a proposed change to the density of the proposed development since the 1996 plan. The MNR's Natural Heritage Reference Manual (2010) states that buffers are recommended around woodlands to protect the structural integrity of vegetation along the edge, as well as to minimize impacts on woodland functions.	Buffers are typically defined as areas adjacent to a natural feature that are intended to provide some separation and protection from proposed adjacent land uses. They are intended to reduce impacts that might negatively impact the natural feature or its associated functions. In residential developments, a primary impact requiring mitigation planning is the effect of increased numbers of people (and their pets if allowed to roam un-controlled). Buffers are one of a number of mitigation measures that were considered in this impact assessment, to reduce potential impacts and protect natural features/functions associated within the Subject Lands. The outer boundaries of the natural heritage system (NHS) have been established through a staking of the woodland dripline, wetland and top of bank features associated with the Subject Lands. As discussed in section 5 of the EIA, the proposed development plan incorporates variable vegetated buffer protection zones ranging in 7.5 m to 15 m in size. A detailed discussion with respect to buffers is provided in Section 5.1 of the EIA.
Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Although the subject lands are located adjacent to (not within) the Greenbelt Plan, the Greenbelt Plan requires a minimum 30 m buffer around significant woodlands. Therefore, there should be an assessment to the impacts on the significant woodlands from the proposed additional density, and there should be appropriate buffers recommended depending on the location, character of the woodland and the nature of proposed adjacent uses.	This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. Based on the guidance obtained from Penta's legal team we understand that the Greenbelt is not applicable to the Subject Lands. The EIA and assessment of impacts is based on the Updated Draft Plan (2018) which includes the greater density. Therefore, the impacts and mitigation provided are based on the higher density. Please refer to section 5 and 6 of the EIA.

Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Subsection 6.1.5 discusses impacts to significant Valleylands. It states that "the form and function of the Grindstone Creek valley are not expected to sustain any direct effects associated with the development." More evidence is needed to support this conclusion. P.4 of Region's EIA Guidelines under 4. Impact Assessment provides a list of steps, which are not included in this section: Provide an explanation of methods used to determine impacts. Citing scientific literature, evaluate the significance of impacts by considering: • Magnitude • Geographic extent • Timing • Duration • Frequency • Reversibility, and • Likelihood of occurrence.	The impact assessment process and analyses completed considered the factors raised by the City. See section 5 and 6 of the EIA. A 15 m vegetation protection zone is identified from the limits of the staked top of bank along the Grindstone Creek significant Valleylands, along the western edge of the Subject Lands. The steep valley slopes associated with this area will deter human interaction/use and no trails are proposed along the edge which will further limit human use of this area. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further discourage woodland access. The 15 m vegetated buffer will provide protection for the rooting zones of trees given the clay soils associated with the Subject Lands. None of the stormwater management ponds will outlet directly into the main Grindstone Creek valley. Indirect effects and recommended mitigation measures to address impacts (erosion control, sedimentation) are generally similar to those outlined for fish habitat described in section 7.1.3.2. Of the EIA.

COMMENT REFERENCE	COMMENT	Response
Pages 8-9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	In addition, there are indirect impacts associated with urban development within and adjacent to natural areas, which can be quite significant. There should be identification of proposed mitigation of indirect impacts as well. Refer to pages where addressed.	Section 6 and Table 22 address direct and indirect impacts.
Page 9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Subsection 6.1.6 on ANSI should provide an explanation of development being proposed within an area designated as ANSI by the MNR (see earlier point regarding ANSI boundary expansion, etc.).	According to Section 2.1.5 of the PPS (2015) development or alteration within or adjacent to an ANSI unless no negative impact can be demonstrated to the natural features and functions. The 1997 PPS states that development and site alteration may be permitted in ANSI's ... "if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified". Section 6.1.5 of the EIA addresses impacts to the ANSI. The proposed draft plan will result in the removal of 0.66 ha of cultural woodland located on the tablelands adjacent to the valley but within the ANSI boundary. Impacts of this removal would be similar to those described to be associated with significant woodlands (section 6.1.2). As with significant woodlands this proposed encroachment into ANSI could meet the test of no negative impacts, subject to developing and implementing appropriate mitigation measures and/or compensation (e.g., plantings, buffer installation, off-site measures, etc.). Block I on the Draft Plan of Subdivision is 0.82 ha in size and has been identified as an area for potential restoration which can be used to mitigate some impacts associated with the removal of this feature though proposed restoration plantings. Other measures that can be considered include offsite restoration areas within the Grindstone Creek watershed.
Page 9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	In accordance with the City's Official Plan, Part V, Policy 2.4(x), a tree protection plan should be included in the EIA. Policy 2.4(x) states that significant trees, wooded areas and hedgerows shall be retained wherever possible.	A tree saving plan will be prepared as a condition of draft plan approval. The EIA has considered the impacts to significant trees and woodlands. Impacts to SAR trees (Butternut and Eastern Flowering Dogwood) will be addressed directly with the MRNF through the IGF process.
Page 9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	This section of the EIA should address re-vegetation with native species and identification of critical wildlife corridors. Relying on the surrounding natural areas to carry out the same functions is not sufficient.	Please define what the City considers to be Critical Wildlife Corridors and where they are defined in policy/criteria. Section 6.0 of the EIA discusses potential restoration measures that can be developed in cooperation with the City and CH. Other measures that can be considered include offsite restoration areas within the Grindstone Creek watershed.
Page 9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	This section of the EIA should also discuss impacts from recreation and human occupation. Mitigation measures should be described in the EIA.	The EIA includes impacts from all aspects of the development, which includes human occupation. No specific recreation activities are anticipated in the proposed development. A variety of methods exist to manage access away from more sensitive ecological areas (e.g., education, outreach, signage, natural barrier planting). As per comments from the Region, we support the prohibition of trails along the main Grindstone Creek valley to avoid effects on that feature where it is adjacent to the valley. Any and all public access should be prevented and fencing, and plantings should be installed to limit the likelihood of effects associated with recreation.
Page 9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	Page 45 states that public access and dumping will be discouraged with the inclusion of a sufficient buffer between the forest and development. The "sufficient buffer" width should be specified.	Discussion with respect to buffers is provided in Section 5.1 of the EIA. It is recommended that mitigation strategies be implemented as a condition of draft approval.
Page 9 Section 6.0 Impacts, Effects, Mitigation and Net Effects	No commitments appear to have been made in the EIA regarding habitat restoration and enhancement options. No commitments appear to have been made in the EIA regarding a pre, during and post-construction monitoring strategy.	Section 6.0 of the EIA discusses potential restoration measures that can be developed in cooperation with the City and CH. Other measures that can be considered include offsite restoration areas within the Grindstone Creek watershed. Monitoring measures are discussed in section 6.0 and Table 22 of the EIA. Pre and post construction monitoring details/measures should be developed as a condition draft plan approval.

Pages 9-10 Section 7.0 Conclusion	Commitments to mitigation measures should be provided rather than examples of potential mitigation measure.	The EIA addresses mitigation measures associated with the Updated Draft Plan (2018) in section 6. Commitments are generally associated with detailed planning and engineering as well as conditions of approval.
COMMENT REFERENCE	COMMENT	Response
Pages 9-10 Section 7.0 Conclusion	There should be a long-term management plan to ensure that the natural features on the site will be protected. In addition, there should be discussion on how the woodlands and ANSI's on the subject lands will be managed and maintained.	Management discussions should be addressed with the applicant and in association with any land dedication dialogue.
Appendix A, page 10	There is an existing woodland linkage between sub-areas 5 and 8. This can be seen on Figure 10 as well as on the City's Official Plan Schedule D. According to the proposed site plan in Figure 8, it appears that this woodland linkage is proposed to be removed through development. The site plan should be revised to allow for the maintenance of the linkage.	Based on our review of the updated figures and the current draft plan (2018) it appears that this linkage will be maintained. Linkage opportunities will be maintained within the retained watercourse channels.
Appendix A, page 10	Figures should include the proposed development superimposed over the applicable provincial, city and regional policy designations, including the Regional OP 2006 and ROPA 38 RNHS mapping. In addition, include the proposed development plan superimposed over the map that shows the locations of significant woodlands.	The Updated Draft Plan is superimposed on the significant features determined through the EIA process on Figure 12. This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. Based on the guidance obtained from Penta's legal team we understand that the Regional OP 2006 and ROPA 38 are not applicable to the Subject Lands. Please refer to the Planning Justification Report prepared by Metropolitan (2018).
Appendix A, Page 10	Regarding Figure 9, development appears to be proposed within part of the Grindstone Creek ANSI as identified by the MNR. This should be revised to avoid impacts to the ANSI.	Redundant comment – responded above.
Appendix A, Page 10	Significant Valleylands should be shown on Figure 10. Figure 11 of the EIA will be amended to include suggested corridors, linkages and Eco passages.	Significant Valleylands are shown on Figure 13.
Appendix B, Page 10	There should be columns included that provide the exact location, weather and time of the surveys (start and end time). Conservation Halton requested, in their original comments that original photocopies and electronic versions of the field data sheets. Will those be provided?	Exact locations of survey points are provided on the figures in Appendix A of the updated EIA (2018). Survey dates and types are provided in Table 2 of Appendix B. Survey protocols (weather, dates and times) are provided in section 3 of the EIA. Original field sheets can be provided for Savanta field surveys, subject to authorization by Penta Properties Inc...
Page 10 Section 8.0 Background Materials and References	On page 51, the Region of Halton's EIA Guidelines should be referenced in the Background Material and References section.	It is not clear whether these guidelines are applicable to the Subject Lands since they reference the ROP (2009). We have been advised by Penta's legal team that the Regional Official Plan (ROP) adopted on March 30, 1994 and approved by the Minister of Municipal Affairs and Housing (MMHA) on November 27, 1995 is the operative document for review of this application.

Page 10 Public Comments	City staff did not receive a large volume of public comments on the submitted revised studies. Comments provided were in verbal format via phone or at neighbourhood meetings. The comments received can be summarized as follows: • Majority of items identified in City's letter of March 9, 2012 have not been provided or addressed • Revised studies do not appear to provide a direct, itemized response to the requests made in the City's letter (i.e. no identification of new study information with corresponding City or agency comment provided) • Studies do not justify the proposed development	Please refer to the comment response matrix and the updated technical reports.

COMMENT REFERENCE	COMMENT	Response
Pages 10-11 Items Still Outstanding from the City's March 9, 2012 Letter	The City's letter of March 9, 2012 was intended to accomplish the following objectives: 1. Identification and explanation of the applicable planning framework to be used to review the applications. 2. Summarization of the public and agency comments received up until that date. 3. Summarization of the preliminary City comments developed up until that date. 4. Outline of processing steps and action items, including the identification of additional information and/or revisions to studies and plans required The letter provided a coherent and clear picture of the status of the applications and a compilation of all issues identified resulting from the City's circulation of plans and studies submitted. Staff acknowledges the submission of the updated studies referenced above. However, staff notes that the majority of the comments and information provided and addendums requested in the City's previous letter have not been addressed. Staff once again refers to this letter as a comprehensive package of the issues identified, and the material needed to consider the applications complete and to continue the application review process. In addition to the specific comments on the revised studies as provided above, the following other technical requirements remain outstanding: Report Updates/Addendums 1. Updated/amended Planning Justification and Environmental Analyses 2. Updated/amended Geotechnical investigation 3. Updated/amended Functional Servicing and Stormwater Management Report (to address City comments in this letter and our previous letter) 5. Updated/amended Environmental Impact Study/Assessment (as per comments above and any comments still outstanding from previous letter) Updated/amended Traffic Impact Study (as per comments above, comments in our March 2012 letter, and other agency specific comments) 6. Updated Erosion Assessment Report 7. Updated/amended Preliminary Site/Subdivision Plan Issues Requiring Resolution: • Resolution of MMAH position on road crossing from Flatt Road to the Taylor Lands • Resolution of Niagara Escarpment Plan Amendment (see NEC letter from March 20, 2013 regarding the updated TIS plus additional comments on revised and existing studies) • Staff recommendation, Public Meeting, Council Decision Staff also refers the applicant to the detailed public, agency and preliminary City comments provided in Section 2.0 - Summary of Public and Agency Comments and Section 3.0 - Preliminary City Comments in the City's letter of March 9, 2012, in addition to the formal detailed public, City and agency comments provided directly (including those provided on the revised studies). These substantial public, City staff and agency comments provide further detail and comprehensive discussion of the high level items outlined above.	A Planning Justification report has been complete and is included within the submitted document. SoilMat has completed a geotechnical investigation of the site, in addition to the works of Peto MacCallum Ltd A complete FSR, and SWM Report have been completed and are included in the submitted document Savanta has completed a revised EIA for the property. Erosion assessment has been included within the SWR Report, as well as within the Matrix Solutions report MMAH concerns with the Hydro Crossings are addressed within 2.8 of the FSR See technical reports and balance of Response Matrix

COMMENT REFERENCE	COMMENT	Response
Pages 11-12 Conclusion	Staff wishes to reinforce the main points listed in the conclusion portion from the City's March 9, 2012 letter, in addition to highlighting some additional items arising from the review of the revised studies. With respect to the City's previous letter, staff provides the following: Additional Information is Required. In the City's letter of March 9, 2012, various updates and addendums were identified in Section 4.0. Further, it was indicated that these updates and addendums were critical to evaluating the proposed development. While staff acknowledges the receipt of the most recent updated studies, deficiencies remain with respect to the studies submitted in support of the applications. In addition to the establishment of appropriate buffers and/or setbacks for development from the sub-area boundaries and the identification and protection of any significant environmental features (i.e. significant woodlands, ANSI, etc.) that occur within or adjacent to a given sub-area, the provision of updated studies as outlined in Section 4.0 of the City's March 9, 2012 letter remains a crucial component in providing a current and complete picture of the proposed development in relation to applicable policy, science and methodology. Further, staff have assessed the revised studies submitted and have provided detailed comments which outline areas of concern or where clarification and/or additional information is required to complete a review of these studies.	See updated technical reports and response matrix
Page 12 Open to Fair Consideration of Increased Density in the Context of Provincial and Local Planning Objectives	Staff are still of the opinion that given that it is a provincial objective to promote cost-effective development standards to minimize servicing costs, and that the subject lands have been identified as eligible for urban servicing and established for residential development, the City will remain open to fair consideration of increasing density on these lands with the following provisos: • The proposed development and increased density must comply with all applicable provincial law, policies or regulations, which have been previously outlined as being the planning framework within which the City will review the proposed development • The development complies with NAIR and cannot result in significant harm to the environment • Applicable Official Plan policies, particularly financial impact and growth management policies, have been addressed.	See updated technical reports and response matrix
Page 12 Ecosystem Approach Remains Integral	NAIR established the concept of an ecosystem approach to planning these lands in 1994, and staff are still of the opinion that this approach remains critical to reviewing the proposed development. The ecosystem approach is also reflected in provincial and local planning documents, which staff has identified as comprising the applicable planning framework.	An ecosystem approach is implicit and integral to the EIA process.

COMMENT REFERENCE	COMMENT	Response
Page 12 Additional Information Required	In the City's letter of March 9, 2012, various updates and addendums were identified in Section 4.0. Further, it was indicated that these updates and addendums were critical to evaluating the proposed development. While staff acknowledges the receipt of the most recent updated studies, deficiencies remain with respect to the studies submitted in support of the applications. In addition to the establishment of appropriate buffers and/or setbacks for development from the sub- area boundaries and the identification and protection of any significant environmental features (i.e. significant woodlands, ANSI, etc.) that occur within or adjacent to a given sub-area, the provision of updated studies as outlined in Section 4.0 of the City's March 9, 2012 letter remains a crucial component in providing a current and complete picture of the proposed development in relation to applicable policy, science and methodology. Further, staff have assessed the revised studies submitted and have provided detailed comments which outline areas of concern or where clarification and/or additional information is required to complete a review of these studies.	Comments are addressed throughout the technical reports and in this response matrix
Pages 12-13 Additional Items Resulting from Review of Revised Studies	In addition to re-iterating some of staff's previous comments above, staff wish to state the following with respect to the more recent processing and review of the applications: 1. Development Sub-Area Boundaries- During the site visits City staff noted that tree cutting and woodlot and habitat clearing appears to have occurred on site. While City staff did not conduct an on-site feature-by-feature identification and review during the site visits (with accompanying comparison to supporting studies), visual cues were observed that indicated tree removal had occurred at some time over the recent past. Specifically, it appeared as though development sub- area boundaries were subject to tree clearing and removal, and several wooded areas (such as between sub-areas 1 and 6) no longer appear to match up with historical air photos of the site. The potential enlargement of development sub-area boundaries through removal of vegetation is of concern to staff, as the applicant has stated that the increase in density proposed through the revised 2010 development plans maintains the previously approved development sub-area boundaries. 2. Agency Comments on Revised Studies- a deadline of Sept 27, 2013 was agreed to for the submission of comments by the various agencies on the revised studies. The City of Burlington did not coordinate comments amongst the various agencies. As such, City staff received formal comments from some external agencies on Sept 27, and therefore did not have an opportunity to review these formal comments for identification of any issues raised with which staff may also agree. City staff reserves the right to review agency comments (which may include comments on other relevant matters), and may identify additional areas of concern or interest not listed in the letter above (or previous communications) which the City determines are relevant to review of the applications. In summary, staff refers the applicant to the detailed comments on specific studies and issues provided above, in addition to the City's letter of March 9, 2012 (attached for your reference) for the City's current view of the proposed development and the status of the plans and studies submitted. As in the past, staff are willing to meet to discuss the applications and the contents of this and the previous letter.	Penta Properties Inc. has been made aware of comments related to vegetation removal. See the technical reports included herein and this response matrix. In addition, members of the consulting team and the client have met with staff of the agencies where possible.

Matrix of Region of Halton Letter dated September 27, 2013

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
TECHNICAL COMMENTS ON THE 2013 ADDENDUM TO THE FUNCTIONAL SERVICING REPORT, PREPARED BY METROPOLITAN CONSULTING		
Page 1 Existing Water & Wastewater Services	There is a 250mm diameter watermain on Waterdown Road adjacent to the prosed subdivision and a 150mm diameter watermain on Flatt Road adjacent to the proposed subdivision. There is no watermain on Flatt Road Extension. On Ireson Road, adjacent to the proposed subdivision, there is a 150mm diameter watermain and no watermain exists on Horning Road. Craven Avenue and a small portion of Nevarc Drive contain a 150mm diameter watermain. There is a 300mm diameter watermain on the southerly portion of Panin Road. With respect to wastewater mains, a 300mm diameter main exists on Waterdown Road at Craven Avenue, just south and east of the propose subdivision.	
Pages 2- 3 Existing Water & Wastewater Services	Regional staff have reviewed the Functional Servicing Report prepared by Metropolitan Consulting Inc. dated March 2013 for the above noted plans of subdivision, and have the following comments. 1. Section 7 does not appear to state the number of units that were approved by the Ontario Municipal Board in 1996, which would be helpful for context to the currently proposed number of units 2. The report acknowledges that there are three options for the location of the proposed reservoir. The final location of the reservoir will be established by a Class Environmental Assessment to be carried out by the Region. It should be further acknowledged that the timing of the reservoir is dependent on the completion of the Class EA 3. Please revise Section 7.2 – The Waterdown Standpipe has TWL of 277.7m, which results in existing pressures on Flatt Road of 188 to 210psi. 4. Section 7.3 – Ground contour elevations for Zone B2 would range from 97.5 to 132.0m based on the reservoir range of operation from 166 to 167.9 meters. Revise accordingly. 5. Based on our review of pressure requirements for the area, Zone B3A should have a TWL of 202m, which would accommodate ground contours of 132 to 168. Zone B4A would have a TWL of 236m to accommodate ground contours of 168 to 200 meters. Revise accordingly. 6. Section 7.4 – ID 6863 has a cost of $5.265M identified in the most recent Sustainable Halton Master Plan. Revise accordingly. 7. Consideration is being given to construction of the Zone B5A Pump Station at Zone B3A reservoir rather than at the Waterdown Road Pump Station. There should be further discussion on this in the	Responses to these items can be found in the revised FSR in the respective sections to each item.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	report. 8. Consideration is being given to replacing the 400mm watermain on North Service Road (ID 5884) with a PRV between Zones B3A and B2. There should be further discussion on this in the report. 9. The last paragraph of Section 7.4 should be revised to reflect that all identified projects are scheduled for Design 2016, Constriction 217 and "in Service" 2019 except for ID 6602 which is Design 2017, Construction 2018 and "in Service" 2019. 10. Section 7.5 – a contour limit of 132m would be more appropriate for Zone B2. Revise Accordingly. 11. Section 7.6 – the text refers to Locations A. B, & C for the reservoir where Figure 7-13 identifies them as Locations 1, 2, &3. Revise accordingly, 12. Halton has always allowed local mains to be connected to trunk mains, but has prohibited service connections. Please revise the last paragraph of Section 7.6 to reflect this. 13. Section 7.7 – Halton uses chlorine and Hamilton uses chloramines (not the other way around). Please revise. 14. In the last paragraph of Section 7.7. Please replace the line "if a Halton only solution is preferred" with "although it is possible at this point to maintain use of the existing Hamilton B5A supply, provision must be made for a Halton supply". 15. Section 7.8 – Please note that the Zone B3A Pump Station must supply max day demands rather than "max day plus fire" Fire demand will be stored in the proposed B3A reservoir. 16. In order to allow for the possibility of supplying B2 fire demands from Zone B3A, please allow for a reservoir fire flow calculation of 250L/s for 3 hours. Please revise Section 7.8. Accordingly. 17. Rather than use Table 8.1 of the MOE Guidelines for establishing fire protection, Halton uses the Fire Underwriters Survey to establish flows. Please allow for the fire demand of 250L/s for 3 hours. Please revise 7.8 accordingly. 18. Figure 7-11 – the zone boundary between Zones B2 and B3A does not follow the 132m contour. Revise Figure accordingly. 19. The region would prefer a hard boundary between Zones B3A and B2 rather than use the PRVs south of Flatt Road to create a sub- zone. Revise Figure 7-11 accordingly. 20. A clear summary of units/population by proposed pressure zone is needed to accurately size the pimp stations and reservoir. This is required for lands within and external to the Eagle Heights and	

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	Taylor Subdivisions. I would recommend obtaining guidance from the City of Burlington Planning Department, and including this information in the study. 21. Please clarify the intent to install a watermain through lands located south of the existing Waterdown Road Reservoir (as show in Figure 7-11)/ Halton is in receipt of a development plan form the landowner of this location that would prevent creation of a utility corridor as shown. 22. The Region notes that the watermain has been doubled on Street A, presumably to provide looping. The Region recommends a single main be installed. All dead end mains should be provided with auto-flushers. These auto-flushers must include provision to discharge the water used in flushing. Please revise the watermain plan accordingly. 23. For wastewater mains, Section 7.10, please remove reference to "first section 150mm sewers" and replace with, to be in conformance with Halton's Linear Design Standards. 24. The lands to the west and the south of these subdivisions, between Panin Road and Flatt Road, are schematically shown as being able to be serviced by gravity wastewater main (sanitary sewers). Please provide topographical, contours and elevation information to support the design of gravity sanitary sewers to these areas. 25. Include an Implementation Plan in the report for all water and wastewater component works internal an/or external to their subdivisions that are directly related to the Region's Master Plans projects including the Sustainable Halton Water & Wastewater Master Plan projects that the Region currently forecasts for design and construction in future years as per the Region's Capital Budget. Should the owner/ developers require some work to ahead of the Region's timing then they will be responsible to front end finance the work until the Region has identified the works in a current year Capital Budget. 26. Servicing work required for this development is to be coordinated with any municipal road project initiated by the City of Burlington. Project timing for roadwork initiated by the City of Burlington, which may be impacted by Regional servicing works, should be included in the Implementation Plan. The Functional Servicing Report needs to be revised to reflect he above noted comments.	

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
COMMENTS ON THE 2013 ENVIRONMENTAL IMPACT ASSESSMENT STUDY, PROVIDED ON BEHALF OF THE REGION BY MIRAK SHARP – NORTH SOUTH ENVIRONMENTAL		
Pages 3-4 1.2 Summary of the Proposed Development	Although this is a new application, the EIA relies on development limits established in OPA 197 and the NAIR report. However, these documents pre-date the 2005 PPS and the associated 2010 reference manual, and various other policy guidance document (SWH 2000) and legislation (ESA), and therefore do not reflect the prevailing policy regime.	See the updated EIA and other technical reports
Page 3-4 1.2 Summary of the Proposed Development	The Region notes that the list of bullets listing principles and criteria that have been adhered to includes 'Retaining any significant ... vegetation..." However, it is noted that there has been recent (2013) cutting along the edges of the Significant Woodlands in many places, thus this principle, at least, has not been respected.	The landowner, Penta Properties Inc. (PPI), is aware of this comment.
Page 4 3.1.2 Soils and Physiography	The text indicates that there is little evidence of erosion on valley slopes. During the site visit a thorough inventory of slopes was not conducted, however, even in the brief reconnaissance visits there were at least two areas on Tributary 5 where substantial erosion gullies resulting from run- off from the adjacent tablelands were noted. This speaks to the need to be careful not to direct rear-yard surface drainage to the ravine slopes, provide a fully vegetated buffer and to substantiate erosion control measures during construction. There is a huge potential for slope erosion during construction and once it occurs it will be exceedingly difficult to repair owing to the steepness of the ravine slopes.	It is acknowledged that the management of the drainage regime will need to have regard for the potential to increase slope erosion. Mitigation approaches to deal with this potential issue as well as to provide protection during construction will be provided in the Erosion and Sedimentation Control Plan for Construction at the time of the submission of detail design. In locations where rear yard run off is directed towards valley lands, the use of level spreaders is proposed, as discussed in section 3.2.1.of the FSR
Page 4 Biological Baseline Conditions	The intro provides a very brief description of the landscape context of the site. However, it does not identify the important linkage function performed by Grindstone Creek valley in providing connection between the Escarpment and associated natural features and the Jake Ontario/Cootes Paradise area to the south. Given the extent of the barriers (development, utility and transportation corridors) that separate the Escarpment from the Lake, this linkage is critical and needs to be preserved. This argues for higher than normal protection measures along the valley.	The EIA (2018) provides description of the linkage function associated with the Grindstone Creek Valley. See section 3.2.1 of the EIA. A 15 m vegetation protection zone is identified from the limits of the staked top of bank along the Grindstone Creek significant valleylands, along the western edge of the Subject Lands. The steep valley slopes associated with this area will deter human interaction/use and no trails are proposed along the edge which will further limit human use of this area. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further discourage woodland access. The 15 m vegetated buffer will provide protection for the rooting zones of trees given the clay soils associated with the Subject Lands. None of the stormwater management ponds will outlet directly into the main Grindstone Creek valley. Indirect effects and recommended mitigation measures to address impacts (erosion control, sedimentation) are generally similar to those outlined for fish habitat described in section 6.1.7. of the EIA.
Page 4 3.2.2 Vascular Plants and Significant Species	The text claims that Eastern Flowering Dogwood has not been found on the site since 1994 and it is not addressed further in the report. However, two individual stems were located by CH staff during one of the site visits. As this is an Endangered Species it will need to be addressed. The EIA text indicates that it was not found in 2007, 2009 or 2012. However, the methods and Appendix B indicate that there were no botanical searches undertaken in 2012, and that the two in 2007 and 2009 were undertaken in August, when this species is not conspicuous. Given that two individual stems were located in a brief site walk, we question whether there have been adequate searches conducted for this species. Given its Endangered status, it is recommended a search be undertaken for it in the spring when it is in flower and more easily detect.	The species was found in two locations on July 17, 2013. Both locations were located deep within the valley of the east branch of Tributary 5 outside of the development limits. Given the location of these trees no impacts are anticipated. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 4 3.2.2 Vascular Plants and Significant Species	There is no summary of Regionally rare plants these assist in characterizing the site and although not providing a lot of weight from a protection perspective are still important for understanding the overall significance of natural features on and adjacent to the site.	We agree that the inclusion of regionally rare plants will not provide a lot of weight from a protection perspective. A summary of Regionally rare plants is provided in Section 3.3.1 of the EIA.
Page 4 Wildlife	In the discussion of significant birds, the report takes a very site-oriented perspective, indicating that there are few of these species on the property and there is more habitat for them on adjacent lands. A more ecological approach would be to recognize the extent of the landscape that supports viable populations of these species and that development impacts that would reduce/eliminate these species from the site constitute a reduction in the population sizes in the general area. Even if the majority of the populations occur off-site, this does not provide a rationale for impacting them on the site.	The EIA (2018) appropriately addresses potential impacts associated with proposed development on the Subject Lands and immediately adjacent lands, based on the Updated Draft Plan. The EIA section 3.4.7 and Table 21 (Appendix B) – Significant Wildlife Habitat provides an analysis related to woodland area sensitive breeding bird habitat and early successional shrub and open country breeding bird habitats. This section states that these habitats were not deemed to be significant on the Subject Lands. Habitat suitability is greater on adjacent lands.
Pages 4, 5 3.2.4 Aquatic Ecology	Tributary 4: The Region does not think the origin of Tributary 4 is correctly identified, nor is its full extent mapped on the various Figures. Tributary 4 has its origins in the mowed grass landscape associated with a residence immediately north of the Eagle Heights lands. There is a defined swale that focuses run-off from these lands and directs them onto the northernmost field on the Eagle Heights property. This swale eventually develops into a channel and flows through a culvert in a hedgerow separating the two agricultural fields adjacent to Waterdown Road, on the Eagle Heights land. The channel meanders southward, and as described in the EIS, forms a small Typha-dominated wetland north of Flatt Road. It is doubtful there is much contribution of flow from Waterdown Road as there is no evidence of surface run-off along the bank of the road where it is adjacent to the channel. The Region defers to Conservation Halton for comments regarding the fisheries potential of this watercourse.	We disagree with this comment. There is a small catchment area associated with the mowed grass landscape mentioned in the comment, and a very minor flow path is present that flows towards Waterdown Road. However, there is also distinct drainage that enters the field from Waterdown Road (this can be seen at the end of the hedgerow mentioned in the comment) and it is downstream of this point that riling becomes much more pronounced in the agricultural field. There is much less drainage coming from the lawn to the north. Updated fieldwork was carried out in 2014, 2015 and 2016 including the completion of an updated headwater drainage assessment survey in the spring and summer of 2014. Please refer to section 3.3.3 of the EIA.
Pages 4, 5 3.2.4 Aquatic Ecology	Tributary 5: There is no description of the Tributary 5 valley on or adjacent to the Taylor Lands.	Tributary 5 is described as warmwater fish habitat in Section 3.3.3 of the EIA. The majority of the tributary is outside of the Taylor Lands limits and will be protected.
Pages 4, 5 3.2.4 Aquatic Ecology	Both Tributaries: Figure 11 identifies both valleys ‘‘minor valleys” and assigns a 7.5m buffer. Buffers will be addressed elsewhere, but the Region would like to understand how the identification of this valley as ·'minor” was determined. Certainly on the Taylor lands the ravine slope is steep and well vegetated and would not, in our opinion, be considered to be minor. The text describes them as "deep ravine valleys" at Flatt Road.	Peto MacCallum described the valleys as minor in their report (2006) which was provided for historical references. The habitat assessment by Savanta confirmed that they were not Significant Valleylands as per the PPS and therefore, are identified as minor valleys.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 5 3.2.2 Vascular Plants and Significant Species	The Halton ESA Consolidation Report (April 2005) lists rare plant and animal species known from Grindstone Creek Valley that are not included in the EIA. Likewise, the Halton Natural Areas Inventory provides lengthy lists of significant plants and animals that are not mentioned or discussed in the report. Even if these species do not actually occur on the subject lands, they need to be addressed with respect to potential impacts as they may occur on adjacent lands.	The EIA (2018) was appropriately completed with a focus on the Subject Lands where development is proposed and where detailed data have been gathered over several years/seasons. Potential impacts on adjacent lands were considered A number of background studies were reviewed and are listed in Section 2.1 of the EIA. This information assisted in defining the search effort and target species for studies on and immediately adjacent to the Subject Lands.
Page 5 3.3.1 Significant portions of Habitat of Endangered and Threatened Species	The text fails to note that Eastern Flowering Dogwood is listed as "Endangered" in Ontario and is thus subject to the Endangered Species Act. This species has been commented on above.	This comment is no longer relevant to the current EIA.
Page 5 3.3.1 Significant portions of Habitat of Endangered and Threatened Species	Chimney Swift: While it is agreed that it is unlikely that this species breeds on the site, the July 10th date is too late to be confirming breeding for this species as it could already have left nesting sites, and although unlikely it could be using snags and hollows.	Updated breeding bird surveys were conducted on the Subject Lands in 2015. See section 3.3.2.4 of the EIA. Chimney swift was observed flying over the Subject Lands during 2015. However, no suitable breeding structures were observed (anthropogenic or natural). Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF
Pages 5 3.3.3 Significant Woodlands	The Region has several comments on the analysis of Significant Woodlands • First, the test uses the NHRM for identifying Significant Woodland on the property. This is not the correct guidance to use as the current Halton Official Plan has criteria for defining Significant Woodland and these would take precedence over the NHRM. Possibly because of this, the extent of Significant Woodland is not fully mapped on Figure 10 and should include the CUP3-3/CUS unit in the north part of the site as well as the CUW 1-5 that extends onto the tableland from the Grindstone Creek valley. • Second, the text notes that the mapping of Significant Woodlands was prepared in the context of earlier agreements among parties. However, since this is a new application, the identification of Significant Woodlands should rely on the current guidance, which would be the Regional OP. • The text also notes that "those limits" (in reference to the earlier agreed-on development limits) are assumed to exclude significant woodlands. However, a comparison of Figures 10 and 11 clearly shows a number of areas where development either encroaches on Significant Woodlands (as mapped on Figure 10) or eliminates substantial portions of Significant Woodlands. The proposed development does not direct development away from these areas and does not appear to be in conformity with the Regional Official Plan. • The section on Significant Woodlands does not address the issue of buffers, particularly the width of buffer that is appropriate to protect the Significant Woodlands that occur within the deep ravines on the property.	The reference to the NHRM (2010) is appropriate as woodland significance is to be "identified using criteria established by the Ontario Ministry of Natural Resources…" An updated analysis of woodland significance is provided in Section 3.4.4 of the EIA based on guidance provided in the Natural Heritage Reference Manual (2010). This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands, It is further complicated by the degree of successional advancement and canopy closure that has occurred over the decades since the original definition of woodland limits. The Updated Draft Plan is contained within the footprint of the approved development pods (1996 Settlement) and does not encroach further into the adjacent woodlands. A 15 m vegetation protection zone is identified from the limits of the staked top of bank along the Grindstone Creek significant valleylands, along the western edge of the Subject Lands. The steep valley slopes associated with this area will deter human interaction/use and no trails are proposed along the edge which will further limit human use of this area. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further discourage woodland access. The 15 m vegetated buffer will provide protection for the rooting zones of trees given the clay soils associated with the Subject Lands. None of the stormwater management ponds will outlet directly into the main Grindstone Creek valley. Indirect effects and recommended mitigation measures to address impacts (erosion control, sedimentation) are generally similar to those outlined for fish habitat described in section 6.1.7. of the EIA.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 6 3.3.4 Significant Valleylands	The Region questions the adequacy of 7.5m buffers. One role of the EIA is to assess buffer requirements. This should be based on an assessment of the significance and sensitivity of features. The buffer policies represent minimums and are not intended to be applied without analysis. The most significant feature that will be affected by this proposed development is the Grindstone Creek Valley. The significance of this feature is not adequately described in the text. It is an ANSI, part of the Greenbelt NHS, and is an ESA. There is no reference to the Region's ESA Consolidation Report from 2005, which provides a summary of the Region's ESAs and shows the Grindstone Valley to have the fifth highest native plant species richness, and 4th highest FQI rating in the Region. It fulfills 11 of the 15 criteria for ESA status, none of which are discussed in the EIS. Varga and Allen (1990) list it as one of the top botanical sites in Halton. The Halton Natural Areas Inventory provides long lists of significant flora and fauna that occur there. The EIA notes that the valley "would seem" to provide Significant Wildlife Habitat (pg. 29). Given the significance and sensitivity of this valley system, the EIS should be recommending extraordinary measures to demonstrate how it will be protected from the anticipated long term influx of people and domestic pets. The Natural Area Inventory recommends adequate setbacks to assist in the protection of this feature	The Updated Draft Plan does not encroach beyond the development pods approved as part of the 1996 Settlement. The EIA assessed impacts to all features associated with the Subject Lands including the Grindstone Creek Valley and ANSI. Please refer to section 6 and Table 22 of the EIA for potential impacts and mitigation specific to the ANSI. Section 3.3.5 of the EIA provides discussion with respect to the significance of the Grindstone Creek ANSI. A 15 m vegetation protection zone is identified from the limits of the staked top of bank along the Grindstone Creek significant valleylands, along the western edge of the Subject Lands. The steep valley slopes associated with this area will deter human interaction/use and no trails are proposed along the edge which will further limit human use of this area. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further discourage woodland access. The 15 m vegetated buffer will provide protection for the rooting zones of trees given the clay soils associated with the Subject Lands. None of the stormwater management ponds will outlet directly into the main Grindstone Creek valley. Indirect effects and recommended mitigation measures to address impacts (erosion control, sedimentation) are generally similar to those outlined for fish habitat described in section 6.1.7. of the EIA.
Page 6 3.3.5 ANSIs	The text indicates that the development area does not encroach into the ANSI. However, a comparison of Figures 2 and 9 clearly shows that the development encroaches on the woodland CUW 1-5 that extends onto the tableland and is part of the ANSI (and which should also be Significant Woodland). Moreover, the ANSI is also part of the Greenbelt NHS and thus requires a minimum 30m Vegetation Protection Zone.	Section 6.1.5 of the EIA addresses impacts to the ANSI. The proposed draft plan will result in the removal of 0.66 ha of cultural woodland located on the tablelands adjacent to the valley but within the ANSI boundary. Impacts of this removal would be similar to those described to be associated with significant woodlands (section 6.1.2). As with significant woodlands this proposed encroachment into ANSI could meet the test of no negative impacts, subject to developing and implementing appropriate mitigation measures and/or compensation (e.g., plantings, buffer installation, off-site measures, etc.). Block I on the Draft Plan of Subdivision is 0.82 ha in size and has been identified as an area for potential restoration which can be used to mitigate some impacts associated with the removal of this feature though proposed restoration plantings. Other measures that can be considered include offsite restoration areas within the Grindstone Creek watershed. We have been advised by Penta's legal team that the Greenbelt is not applicable to the Subject Lands. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,
Page 6 3.3.6 Significant Wildlife Habitat	The Region notes that there are 4 areas of specialized habitat that are identified as not occurring on the subject lands, however, at least two: mature forest and highly diverse areas occur in the Grindstone Creek valley, which occur partially on the subject lands, and in any case certainly need to be addressed from an adjacent lands perspective. Under "Animal Movement Corridors", Grindstone Creek needs to be identified as a linkage between the Escarpment (and associated ESAs) and Lake Ontario (although it is mentioned in the Summary). In the Summary of Significant Wildlife Habitat, reference is made to portions that occur on the subject property, however, the EIA must also consider the potential for impact to features to which the subject lands are adjacent in the context of the PPS	This comment is no longer relevant with as the EIA has been updated. The EIA section 3.4.7 and Table 21 (Appendix B) provide an updated assessment of significant wildlife habitat.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 6 4.0 Proposed Development - Table 5	The table title indicates that it illustrates the difference between the 1996 and 2010 plans, but the data appear to compare the 1996 and 2003 plan. The test then describes a 2012 plan. Moreover, the Table focuses on the differences in footprint, however, it is anticipated that a large portion, if not the majority of impacts on features will be from the increase in human use and are thus density-dependent. The increase in absolute numbers of people resulting from the development needs to be articulated and discussed as an impact.	The current EIA considers the updated draft plan (2018) and increased densities. Please refer to section 5.0 and 6.0 of the EIA, A variety of methods exist to manage access away from more sensitive ecological areas (e.g., education, outreach, signage, natural barrier planting, etc.).
Page 6 4.3 Grading	As noted earlier, there are several places where existing over-bank runoff has resulted in erosion gullies on valley slopes. These may be isolated occurrences, but as there is no mention of them in the text, and no indication that there had been an attempt to locate them all, their frequency is not known. Certainly in these cases preservation of the existing drainage is probably not desirable, although if buffer width was greater and they were vegetated, they may mitigate the problem. The mitigation of these erosional gullies should be looked at in more detail.	It is acknowledged that the management of the drainage regime will need to manage and mitigate the potential to increase slope erosion. Mitigation approaches to deal with this potential issue as well as to provide protection during construction will be provided in the Erosion and Sedimentation Control Plan for Construction at the time of submission of detail design.
Pages 6, 7 4.4.2 Stormwater Management Plan	Figure 11, which shows the proposed development overlaid on the features and buffers but does not include the stormwater ponds and outlets (although the SWM Blocks are shown), thus it is difficult to ascertain the direct impacts of the proposed ponds on natural features. However, a general comparison of the SWM and natural features is provided. Pond 5A is particularly problematic. A large proportion of it encroaches into a deciduous woodland (FOD5-3) identified as Significant Woodland. Also, the rip-rap swale, which comprises part of the outlet structure, traverses a wooded slope within the Significant Woodland and would entail the removal of trees and disturbance of the slope. Pond I appears to encroach into a deciduous Significant Woodland (FOD4-1). Pond 4B shows an outlet structure which is not within the subject lands and the Region does not see how this can be part of the approval. Also, pond 4B encroaches into the wetland area at the south end of the Taylor property.	This comment is no longer relevant to the current EIA and updated SWM study.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 7 5.0 EIA Recommendations	In general, it is impossible to determine the areas referenced in the Recommendations: • Figure 8 is at such a small scale that it is unreadable; and • The Blocks, Lot numbers and Street numbers do not correlate to the Draft Plan in the stormwater report (which is at a scale that can be read). Recommendation 6: this does not appear to be accurate as at least 2 SWM ponds encroach on Significant Woodlands.	The legibility of figures has been improved in the current EIA (2018). Figures 12 and 13, Appendix A provide an overlay of the draft plan over significant features and ELC.
Page 7 6.0 Potential Impacts, Effects, Mitigation and Net effects	The Region notes that this analysis assumes that the agreements with respect to developable area are still in effect. However, at the outset of this EIA, the proposed development is described as a new application, thus it is not understood how agreements made as part of a previous application are relevant. Because of this assumption a number of impacts are not identified, notably the encroachment into Significant Woodland in a number of areas.	The EIA (2018 describes all encroachments into significant woodlands. Please refer to section 6.1.2.
Page 7 6.1.1 Vegetation Removal	Table 4 addresses the removal of vegetation collectively by lumping all areas to be removed into one figure (7.4 ha) and discussing them in general. This does not allow evaluation of the removal in each of the several areas. The Region recommends that there be a short discussion of each occurrence where woodlands are proposed for removal, noting the community, quality, slope, impact on the remaining feature, etc. The Region notes that there is not necessarily agreement with the removal of any woodland.	Section 6.1.2 of the EIA describes the impact to woodlands and section 6.1.1 describes the impacts to wetland units within the Subject Lands. Figure 12 and 13 Appendix A provide an overlay of the draft plan over significant features and ELC.
Page 7 6.1.2 Significant Portions of the Habitat of Endangered and Threated Species	Butternut: The Region will defer to the MNR with respect to approvals for protection and/or removal of Butternut; however, it is noted that the suggested 5 m outside of drip-line is likely less than the usual 25 m radius from trunk that is generally required. Eastern Flowering Dogwood: The Region notes that this is not addressed in the conclusions, probably as earlier text claims it is not present on the property. However, two stems were located by CH staff during field visits thus protection measures for this species must be addressed as it is listed as "Endangered" in the Endangered Species Act.	Eastern Flowering Dogwood was found in two locations on July 17, 2013. Both locations were located deep within the valley of the east branch of Tributary 5 outside of the development limits. Given the location of these trees no impacts are anticipated. Please refer to Section 3.4.2 of the EIA. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 7, 8 6.1.4 Significant Woodlands	This section confuses the CH buffer requirement for valleys with the determination of adequate buffers for woodlands. There is no indication of where the buffer is measured from, drip-line or trunk. Also, areas of Significant Woodland have recently been removed by the applicant. The new edge was evidently established using a hand-held GPS unit. There is no explanation of the accuracy of this method and it is not clear if these new boundaries were used as a basis for determining buffers as illustrated in the EIA and how they relate to the "agreed on development limits" from the earlier application. As noted earlier, current woodland boundaries need to be flagged in the field with the Region and other agencies as required surveyed and then mapped with appropriate woodland buffers. Only then can impacts be evaluated and conclusions reached. The text notes that a 15 m buffer is required for woodlands associated with Grindstone Creek. The proposed plan shows some of these woodlands (CUW 1-5) as being partially removed. Moreover, as Grindstone Creek valley is part of the Greenbelt NHS, the Region believes a minimum 30m Vegetation Protection Zone is required, subject to an evaluation of adequacy. The Region does not agree with the claim that no buffers are needed where woodlands are subject to agreement from the 1996 Plan.	The outer boundaries of the natural heritage system (NHS) have been established through a staking of the woodland dripline, wetland and top of bank features associated with the Subject Lands. As discussed in section 5 of the EIA, the proposed development plan incorporates variable vegetated buffer protection zones ranging in 7.5 m to 15 m in size. We have been advised by Penta's legal team that the Greenbelt is not applicable to the Subject Lands. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands, A 15 m vegetation protection zone is identified from the limits of the staked top of bank along the Grindstone Creek significant valleylands, along the western edge of the Subject Lands. The steep valley slopes associated with this area will deter human interaction/use and no trails are proposed along the edge which will further limit human use of this area. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further discourage woodland access. The 15 m vegetated buffer will provide protection for the rooting zones of trees given the clay soils associated with the Subject Lands. None of the stormwater management ponds will outlet directly into the main Grindstone Creek valley. Indirect effects and recommended mitigation measures to address impacts (erosion control, sedimentation) are generally similar to those outlined for fish habitat described in section 6.1.7. of the EIA
Page 8 6.1.6 Significant Areas of Natural and Scientific Interest	As noted previously, the significance of the Grindstone Creek Valley has been understated in this EIA. It is our opinion that substantial indirect impacts to this valley are unavoidable if this development proceeds. The long-term impact resulting from increased use by humans, and the anticipated increase in predatory pets (primarily cats, but also dogs), will overtime degrade the area, and create slope erosion and a result in a reduction of species biodiversity. Rather than steep slopes representing a barrier to residents (as suggested in the EIA), the Region predicts they will serve as a challenge to many, resulting in damage to the sensitive slope vegetation. The Region does not feel that there are any mitigation measures that will prevent these impacts, although it is agreed that a formal trail system and adequate buffers (more than the proposed 7.5 m), may reduce them. It is important to realize that this indirect impact is density dependent, meaning that it is proportional to the increase in people who live in proximity to the natural features. Because of this, the most effective mitigation is to reduce the density of the development. There are no formulas or thresholds to determine the appropriate density, however in determining a balance, the exceptional significance of Grindstone Creek should be taken into account. An additional impact that is not specifically noted is encroachment from lots backing onto ravines. Such encroachment is a universal impact in such situations and has noted this in numerous other situations along wooded valleys. To mitigate this, it is recommended that there be substantial and continuous fencing of the rear of lots backing onto wooded ravine slopes, especially Grindstone Creek valley, with no provisions for gates. These should be constructed by the builder prior to houses being occupied. The Region also suggests a trail within the buffers along woodland edges, especially where they border ravines. These will further discourage encroachment from lots backing onto ravines. The inclusion of such a trail will require buffers greater than 7.5 m. Long term indirect impacts to the Grindstone Creek valley will, in our opinion, be the major net impact from this development.	Discussion with respect to the Grindstone Creek valley is provided in section 3.2.1, 3.4.5 and 3.4.6. of the EIA. The EIA (2018) is based on the Updated Draft Plan with the greater density. Therefore, the impacts and mitigation provided are based on the higher density. Section 6 of the EIA (Impact Assessment , Avoidance and Mitigation Measures) identifies that the need for and benefits of human access management in terms of the natural areas should be subject to further discussion during detailed design. A variety of methods exist to manage access away from more sensitive ecological areas (e.g., education, outreach, signage, natural barrier planting, elimination of trails and/or any public access to the valley, etc.).

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 8 6.1.7 Significant Wildlife Habitat	Many of the comments made above apply here also. With respect to the note about cat control, the Region disagrees that outreach and education is effective. Cat-owners tend to be blind to the incredible impact that cats, even if de-clawed, have on wildlife. We would urge the City to enact a Cat-control By-law. Although these are difficult to enforce, it does empower by-law officers and/or the Humane Society to respond to complaints and address particular situations. Without such a by-law, there is no recourse to respond to particular situations. The Region does not agree with the suggestion of managing future human access but trying to prevent it.	Agreed; a municipal By-law would be a useful vehicle to mitigate and to manage this impact. That tool would require significant outreach and a commitment to enforcement. Discussions with Penta about this issue have included the potential for a development condition preventing owners in the proposed development from allowing cats to move freely outdoors, as a means to support a City-wide Bylaw. It is also agreed that the prevention of any public trails or public access to the valley would help to avoid impacts.
Page 8 7.0 Conclusions	Development limits need to be revised to reflect updated feature boundaries, as has been suggested, and the Region recommends the draft plan be revised to avoid encroachment into features. Buffers need to be proposed for woodlands (not just wooded valleylands) and the proposed 7.5 m is not adequate given the Region's recommendations regarding encroachment and trails. The conclusions recognize the long term indirect impact of the proposed development. As noted, in evaluating the merits of this new application against the previously approved application (which had a lower density), the significance of Grindstone Creek should be properly recognized, and consideration given to a plan that would support fewer residents.	The updated draft plan (2018) has been revised to minimize encroachment into significant features, The outer boundaries of the natural heritage system (NHS) have been established through a staking of the woodland dripline, wetland and top of bank features associated with the Subject Lands. As discussed in section 5 of the EIA, the proposed development plan incorporates variable vegetated buffer protection zones ranging in 7.5 m to 15 m in size. The EIA assesses impacts of the draft plan (2018) with the increased densities. A 15 m vegetation protection zone is identified from the limits of the staked top of bank along the Grindstone Creek significant valleylands, along the western edge of the Subject Lands. The steep valley slopes associated with this area will deter human interaction/use and no trails are proposed along the edge which will further limit human use of this area. Native thorny shrubs (e.g., raspberry species) and fencing can be employed to further discourage woodland access. The 15 m vegetated buffer will provide protection for the rooting zones of trees given the clay soils associated with the Subject Lands. None of the stormwater management ponds will outlet directly into the main Grindstone Creek valley. Indirect effects and recommended mitigation measures to address impacts (erosion control, sedimentation) are generally similar to those outlined for fish habitat described in section 6.1.7. of the EIA
Page 9 Region's Conclusions	Based on the comments above it is clear that Halton Region cannot support the updated studies without additional revisions. The EIA has provided inadequate information, identification and analysis on a number of issues, including, but not limited to, significant features, buffers and development setbacks, wildlife, endangered species, habitat and impacts of development. Further, to this, while the document clearly identifies the proposal as a new application, it relies heavily on agreements made as part of a previous application. As a result of this approach, the development limits indicated on the plans and in the report do not represent accurate development limits based on current standards, regulations, analysis and protection of the natural environment. The Region is not supportive of this approach and recommends the study be updated to address the current regulatory requirements, policies and standards of practice applicable with respect to natural environment and further, that the draft plan be revised to reflect these updates. Similarly, there are a number of revisions required to the Functional Servicing Report. Halton Region also notes that as stated in previous comments, there are significant updates and supplementary information required for the Region to be able to adequately evaluate the proposal against the evaluation criteria of NAIR and the principles of good planning among other relevant documents. The applications are not supported by sufficient information addressing the natural heritage features and functions, the ability to adequately service the lands, archaeological and contamination investigations. Regional staff requires additional information prior to providing additional comments or a recommendation. Halton Region encourages the applicants to submit the requested information. Doing so will allow the Region to conduct a complete and thorough analysis of the proposal and provide a formal position on the applications.	This comment is no longer relevant. The current EIA was updated to address these comments. Notwithstanding the application of earlier policy documents, Savanta has employed current science in order to complete the natural heritage feature assessment and delineation. The requested information is included in these technical reports and response matrix.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 2, section E Ontario Regulation 162/06 *(modified comments)*	Therefore, based on the text of the Regulation, portions of both properties are regulated by Conservation Halton pursuant to Ontario Regulation 162/06. Ontario Regulation 162/06 requires that a Permit be obtained from Conservation Halton prior to development, interference with wetlands or alterations to shorelines and watercourses.	It is acknowledged that certain portions of the development will require a permit from Conservation Halton. These permit applications will be sought prior to development
Page 2, section E Ontario Regulation 162/06 *(modified comments)*	Additionally, Conservation Halton Board approved policies do not permit any new development within 15 meters of the greater of the existing physical top of bank (as staked by CH), or the long term stable top of slope for confirmed watercourses, regulatory storm flood plain or meander belt.	Staking of natural features associated with the Subject Lands including the TOB staking of watercourses was completed in 2015 more information can be found in Section 1.4 of the FSR. The other watercourses are described as being contained within valleys in some portions of their length. Various tributaries have been reviewed from a hydrogeological perspective and can be found within the report completed by Matrix-Solutions. Response by MCI including issue of buffer "up to 15m"
Page 2, section E Ontario Regulation 162/06 *(modified comments)*	Development within 15 meters of wetlands less than 2 ha (and not Provincially Significant) and within 30 meters of wetlands greater than 2ha or Provincially Significant Wetlands, is also not permitted.	It is acknowledged that certain portions of the development will require a permit, and that issues related to setbacks and buffers will be resolved prior to the issuance of such permits. Response by Savanta
Page 3, bullet 2, section E Ontario Regulation 162/06 *(modified comments)*	The unnamed tributary on the Taylor lands has been reviewed and deemed to not be considered a regulated feature. Staff note that the wetland (MAS2-1/Pond) on the Taylor property *(see Appendix ID* is a regulated wetland under Ontario Regulation 162/06, thereby affording it protection pursuant to Conservation Halton's Policies, Procedures and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document (August 11, 2011). This wetland is less than 2 hectares in size, which gives it a 30m regulation limit. Currently development is proposed immediately adjacent and potentially within this wetland. Staff will require that development be removed from the wetland and its regulated limit. At this time, as no discussions have been provided regarding the need to maintain the hydrologic function of this wetland, staff are unable to support development within the regulated limit. Please be advised, that the required 15m no touch setback from the wetland is in place, as per Conservation Halton Policy 3.39. Revisions to the submitted draft plan will be required to reflect this regulation limit and associated setback. The limit of the wetland will need to be established in the field with Conservation Halton staff and the applicant's Ontario Land Surveyor, during the appropriate time of year (i.e., May -September). Please be advised that in recognition of the dynamic nature of wetlands, the limits of the wetland staked by Conservation Halton staff will be recognized as accurate for a period of two (2) years from the date of the staking.	The Taylor wetland will be retained and protected with a 15 m enhanced buffer. The limits of the wetland on the Taylor property were staked in the field with Conservation Halton on August 28, 2014. The two-year timeframe identified as the period of staking validity seems far less than expected by the MNRF and other conservation authorities (i.e., standards are typically 5 years). Conservation Halton to provide a copy of policy/guideline defining where a 2-year period is required.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 3, bullet 3, section E Ontario Regulation 162/06 *(modified comments)*	Several locations require top of bank staking	Top of Bank staking was completed on August 13, 2015 information can be found in Section 1.3, of FSR
Page 4, bullet 1, section E Ontario Regulation 162/06 *(modified comments)*	Tributary 4 transitions from an unconfined valley system north of Flatt Road to a confined valley system south of Flatt Road *(see Appendix II- Regulated Feature Map),* and therefore the regulation limit associated with Tributary 4 would be based on the greater of the floodplain and/or meander belt plus an associated 15 meter setback for areas north of Flatt Road, or greater of the long term stable top of bank or floodplain, plus 15 meter regulated setback for areas south of Flatt Road.	The geomorphic assessment by Matrix Solutions reflects that Tributary 4 transitions from a confined setting (downstream) to an unconfined setting (upstream). The geomorphic assessment provides a toe erosion allowance (Section 4) for the confined reaches of Tributary 4 and a meander beltwidth (Section 5) for the unconfined reaches.
Page 4, bullet 2, section E Ontario Regulation 162/06 *(modified comments)*	Staff have also determined that portions of the west branch of Tributary 5 are unconfined, and therefore the greater of the meander belt erosion hazard or floodplain, plus the associated 15 meter regulated setback would apply.	October 12, 2017 Conservation staff were present for a site visit and discussion related to this issue. Matrix-Solutions has included this area within the scope of their investigation (Section 7).
Page 4, section E Ontario Regulation 162/06 *(modified comments)*	Due to the size of the property, and the vegetation conditions on site, staff have not had sufficient time to confirm the location of the top of bank staking across the entire property. An additional 10 days of site work would be required to confirm the location of the remaining stakes, and stake top of bank and wetland areas not previously staked in the field.	Feature staking was carried out on July 24, 2015 and TOB staking on August 13, 2015. Staking of the wetland on the Taylor property was carried out on August 28, 2014.
Page 4, section E Ontario Regulation 162/06 *(modified comments)* *July 11, 2011 correspondence issues carried forward by Conservation Halton as unaddressed*	The development boundaries established through the 1996 draft plan approval do not reflect Conservation Halton's current regulated limit. As a result, the draft plan shows development and the creation of new lots within Conservation Halton's regulated limit, contrary to our policies. Conservation Halton's policies do not support the creation of new lots or other development (e.g. filling, grading and structures) within the regulated area and associated allowance. At present the draft plans do not respect the regulation limit associated with the Main Grindstone Creek, Tributaries 4, 5, and 6 and the wetlands on the property.	The regulatory limit does not necessarily represent a development prohibition; it is a determinant for permitting process initiation.
Page 4, section E Ontario Regulation 162/06 *(modified comments)* *July 11, 2011 correspondence issues carried forward by Conservation Halton as unaddressed*	Staff are not supportive of the revisions to the erosion hazard and flooding limits as currently presented in Peto MacCallum's July 2006 "Stable Top of Bank Assessment, Eagle Heights and Taylor Properties" and Metropolitan Consulting Inc.'s Updated June 2010 "Functional Servicing and Stormwater Management Report-Eagle Heights & Taylor Property" reports, as these reports are not consistent with the MNR Natural Hazards Technical Guidelines. See Appendix 1 for detailed comments.	Both reports in question have been updated. The Peto MacCallum report investigations have been extended by the works of Soil-Mat. The geomorphic assessment by Matrix Solutions provides toe erosion allowances in accordance with the MNR Natural Hazards Technical Guidelines (Section 4). MCI has expanded upon previous works with respect to SWM and Erosion controls found within the updated Stormwater Management Report

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 4, 5 section E Ontario Regulation 162/06 *(modified comments)* *July 11, 2011 correspondence issues carried forward by Conservation Halton as unaddressed*	The need to adjust lot lines to remove development from within the regulated areas of the Main Grindstone Creek Valley, Tributaries 4, 5 and 6 could have an impact on the Horning Road re-alignment, Horning Road, and virtually all lots and blocks within the Eagle Heights Subdivision. Key issues that may result in the elimination as opposed to the adjustment of lots are summarized below. a. Tributary 4 through the Eagle Heights Subdivision is a regulated watercourse (floodplain and meander belt erosion hazard +15m) and will have substantial impacts on the draft plan, unless the elimination or realignment is supported by a current subwatershed study. b. Street X from Flatt Road and through the Hydro One lands and the Homing Road Extension. Both appear to be located within the 100- year erosion hazard, and may need to be relocated to ensure safe access and egress. c. Block H (SWM pond 4B) and Block 0 (SWM pond 6B) are proposed within a confined valley, which is contrary to Conservation Halton policies. d. No longer applicable	The geomorphic assessment by Matrix Solutions provides a toe erosion allowance (Section 4) for the confined reaches of Tributary 4 and a meander beltwidth (Section 5) for the unconfined reaches.
Page 5, section E Ontario Regulation 162/06 *(modified comments)*	As previously stated in Conservation Halton's July 11, 2011 letter, to date, the applicant has not provided sufficient information to determine the limit of the natural hazards and as such, staff cannot determine if development is proposed to be located within areas regulated by Conservation Halton.	As indicated above, feature staking was carried out on July 24, 2015 and TOB staking on August 13, 2015. Staking of the wetland on the Taylor property was carried out on August 28, 2014. A site visit was held to view and discuss the confined/unconfined valley classification for Tributary 5 west was held on October 12, 2017.
Page 5, section E Ontario Regulation 162/06 *(modified comments)* & Appendix 1	Appendix 1of Conservation Halton's July 11, 2011 Letter The following comments reflect 'new' or 'modified' comments from Conservation Halton's July 11, 2011 letter. For clarity, staff have made a notation at the end of each comment that indicates Conservation Halton's review responsibility- as previously provided. Staff would ask that you refer to the attached July 11, 2011 letter for the comments that have not changed.	

SAVANTA MARCH 5, 2013 EAGLE HEIGHTS AND TAYLOR LANDS EIA		
COMMENT REFERENCE	**COMMENT**	**SUGGESTED RESPONSE**
Page 6	Within this section it is indicated that the 2006 plan provides a comprehensive trails plan, however this has not been included in the EIA.	In earlier discussions, CH noted some concerns with the safety of trails near the steep ravines. The Region has expressed concern regarding trail/human impacts on the main Grindstone Creek valley. These points support the prohibition of any trail creation or public access adjacent to the valley. Rearlot fencing, an absence of public access points and other methods can mitigate many aspects of this potential effect. Conservation Halton and other parties should discuss local trail potential with the applicant, elsewhere in the Subject Lands.
Page 6	... development creates a "residential community that takes advantage of the extensive ecological resources of the area"... Please clarify what is meant by this statement and how this is in keeping current practices. (Halton MOU) *(modified comment)*	The residential community respects the boundaries of the natural features present while allowing for potential nature appreciation (e.g., proven benefits of proximity to natural areas and managed appreciation of some portions of those resources). This was quoted from the Envision and Scott Burns Planning Consultants 2007. Please refer to this report for further clarification, Given Regional and other concerns with potential effects on the Grindstone valley resources (including safety risks), that nature appreciation will be focused on other, more resilient resources.
Pages 6-7	The EIA highlights that emphasis has been placed on "retaining any significant trees and significant vegetation..." however preservation of these features is not reflected in the draft plan and during the July 2013 site visit it was observed that additional vegetation removal had occurred within areas identified as significant. In addition, this section identifies that the plan proposes to preserve important existing landscape features within the development area, remnant specimen trees, and local landforms such as knolls and drainage channels. During the site visits of the summer of 2013, it was observed that the vegetated knoll associated with the Area of Natural and Scientific Interest (ANSI) was removed. Please demonstrate how the proposed plan will fulfill the commitment in the EIA and remain in line with the recommendations of the NAIR. We note that the 2010 EIA included the retention of localized hedgerows as "important existing landscape features", which has now been removed from this report. Staff question why this "important feature" has now been removed from the document. (Halton MOU) *(modified comment)*	The landowner, Penta Properties Inc. (PPI), has been made aware of comments related to vegetation removal. There are differences in ecological function and significance across various features. Some locally "important" features may not meet thresholds for a determination of "significance" and/or retention.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 7, point 9	This section states that the dripline associated with the valley was staked and confirmed by Metropolitan Consulting, however it is not clear if the Region of Halton was also involved in staking of the Environmentally Sensitive Area (ESA) limit. As raised previously, staff do not consider this survey to be complete until such time that the Region has confirmed this limit in the field. Once this dripline has been established, then the Region of Halton would be the appropriate agency to determine the buffer distances required from these features. We do note that a portion of the property is located within the Greenbelt Plan Natural Heritage System (NHS), therefore larger buffer distances to features within that area may be warranted as per the Plan. (Halton MOU) *(modified comment*	Feature staking was carried out on the Subject Lands with Conservation Halton on July 24, 2015 and TOB staking on August 13, 2015. On October 10 & 11, 2015 the digital files were sent to Regional forces in order for them to review the stakings and compare with their GIS records prior to determining if field investigation follow up was required. The outer boundaries of the natural heritage system (NHS) have been established through a staking of the woodland dripline, wetland and top of bank features associated with the Subject Lands. As discussed in section 5 of the EIA, the proposed development plan incorporates variable vegetated buffer protection zones ranging in 7.5 m to 15 m in size. We have been advised by Penta's legal team that the Greenbelt is not applicable to the Subject Lands. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,
Page 7, point 11	As discussed in the 2011 letter, Staff supports the consideration of wildlife corridors and linkages. Have studies been completed to identify wildlife movement corridors? Please include a discussion about wildlife corridors and linkages within the subject lands and surrounding landscape and how wildlife passage will be incorporated into development, so that the development is in keeping with the Provincial Policy Statement, Policies 2.1.2 and 2.2.l(e). Ecopassages should be also included as part of the discussion where appropriate. (Halton MOU) (new comment)	The EIA (2018) provides a comprehensive assessment of wildlife and habitat. As noted by others, the most important wildlife corridor and linkage functions are associated with the main Grindstone Creek valley. Please refer to section 3.2.1 of the EIA. Eco-passage consideration is also discussed in Section 3.2.1 and can be incorporated as a component of detailed design
Page 7, point 11	Although the report indicates some aspects of the NAIR Planning Principles and Evaluation Criteria were given particular emphasis, the two aspects of significance not mentioned include "Minimize impacts of stormwater runoff' and "Do not negatively impact Grindstone Creek fisheries". Stormwater management facilities often result in negative impacts to the receiving watercourses, including change in thermal regime, erosion, loss of natural flow patterns/inputs and loss of infiltration. Staff therefore have significant concerns with the proposed development and the expected impacts to the Grindstone Creek fisheries given the proposed stormwater management. (0. Reg 162/06, DFO Level II, Halton MOU) *(new comment)*	Direct and Indirect impacts to fish habitat and as a result of the Updated Draft plan and the proposed SWM plans were assessed in the EIA and are discussed in Section 6 and Table 22.
Page 8 Section 1.3 Purpose of the Study	It should be noted that a portion of the Grindstone Creek Valley Area of Natural and Scientific Interest is present on the Eagle Heights lands as well as Significant Woodlands, which are not reflected in this section. Please revise. (Halton MOU) *(new comment)* • The Region of Halton EIS guidelines are noted in this section; however; it is unclear if these were used to develop this study. Please confirm. (Halton MOU) *(new comment)*	The Halton EIA guidelines were one of a number of IA guidelines used to guide the development of the EIA. Section 2.1,1 and section 3.4.6 of the EIA discusses the Grindstone Creek ANSI. Significant woodlands are discusses in section 3.4.4 of the EIA and are shown on Figure 12 (Appendix A).
Page 8 Section 2.1 Background Information	Within the list of technical reports used, the Hamilton Natural Areas Inventory (NAI) is listed, however as this proposed development is located within the Region of Halton, it would be pertinent to use the Halton NAI (2006). Staff recommend that the Halton NAI be referred to for local species status and background information on adjacent lands. (Halton MOU) *(new comment)* • Staff question why the Halton and Conservation Halton EIS guidelines were not referenced given that this report is prepared for a property within the jurisdiction of these agencies? We would also expect that the Natural Heritage Reference Manual (2010) and the Significant Wildlife Habitat Technical Guide (2000) and associated appendices and/or schedules be used for this study. Staff request confirmation that the most current pieces supporting documentation were used in the development of this study. (Halton MOU) *(new comment)*	Halton Natural Areas Inventory (NAI) is referenced in EIA (2018)and was used to evaluate the local status of flora and fauna within the Subject Lands. Please refer to the Bibliography. The Halton EIA guidelines were one of a number of IA guidelines used to guide the development of the EIA.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 8 Section 2.2 Field Investigations	Please include original photocopies and electronic versions of all field data sheets (e.g. ELC and vegetation inventories, breeding bird surveys, amphibian surveys, etc.) as part of the submission. Without these, staff are unable assess the comprehensiveness of the biological baseline conditions, and as such the submission of the data sheets is crucial. In addition to the requested field data sheets, we recommend that a table be included in the EIA that clearly outlines the date, time, weather conditions, staff and intention for all field work completed as part of this EIA. We note that the table provided in Appendix A does not include all of these points. (Halton MOU) *(new comment)* Staff note additional field sampling was conducted to provide updated and more current data for terrestrial components only. Staff reiterate the need for updated aquatic habitat and benthic data to appropriately characterize the existing habitat and water quality within the watercourses on the subject property. (0. Reg 162/06, DFO Level m *(new comment)*	Subject to authorization from Penta/Paletta, photocopies and/or electronic versions of field data sheets can be provided for studies completed by Savanta. Updated fieldwork was carried out in 2014 , 2015 and 2016 including the completion of both terrestrial and aquatic components including benthic sampling. These updated field results can also be provided in section 3 of the EIA. Survey protocols (weather, timing) are provided in Section 3 and survey dates are provided in Table 2, Appendix B of the EIA.
Page 8 Section 3.1.1 Hydrology	The report refers to Figures 7, Stream and Fish Habitat Classification, for watercourses on the subject lands. Staff note Figure 7 is incomplete and does not accurately delineate all existing regulated watercourses, hydrologic connections and fish habitat. Per Conservation Halton staff mapping and field observations, additional watercourses are noted on the property. Staff note that the figure does not show two tributaries of Tributary 6, multiple tributaries associated with Tributary 5, and the appropriate length associated with Tributary 4. Please address. (0. Reg 162/06, DFO Level M) *(new comment)*	Updated fieldwork was carried out in 2014 , 2015 and 2016 including the completion of an updated headwater drainage assessment survey in the spring and summer of 2014. Please refer to section 3.3.3 of the EIA.
Page 9 Section 3.1.2 Soils and Physiography	This section reported there was no evidence of recent erosion in Grindstone Creek (from the 2006 report). Tributary 5 was reported to possess a few relatively inactive erosion scars on the toe of slope and weathered shale bedrock in the stream channel. Additionally, small areas of seepage were reported in Tributary 5 near Flatt Road. The Erosion Assessment submitted by Parish Geomorphic (May 2010) indicates numerous reaches within the study area are degrading. Staff note numerous erosion gullies and erosion scars were observed within the valleys during the site walks and therefore request the erosion assessments recognize the active erosion ongoing throughout the property as part of their analysis. (0. Reg 162/06, Halton MOU) *(new comment)*	The geomorphic assessment by Matrix Solutions documents the geomorphic conditions of the Grindstone Creek Tributaries on a reach scale using the Rapid Geomorphic Site Assessment technique. In addition, survey and desktop analyses were used to establish geomorphic setbacks (i.e. toe erosion analysis and meander beltwidth) and to provide watercourse crossings recommendations.
Page 9 Section 3.2.1 Vegetation Communities	The EIA states that "a list of all vascular plants recorded on the Subject Lands in 1991 and 1994 is provided in Appendix C". Staff questions if the vascular plants observed in the 2007, 2012 and 2013 surveys are also included in this list? Should these species not be present, staff request that these species be added, and the list updated to reflect the e full component of species present. (Halton MOU) *(new comment)* Staff reiterate that the wetland located on the Taylor property is a regulated wetland feature. (0. Reg 162106) *(new comment)*	The vascular plant list provided in Appendix C is an amalgamation of all surveys, from 1991 to 2012. Botanical surveys conducted in 2013 did not contribute any new species. However this list was updated as part of the updated EIA and is provided in Appendix B, Comment acknowledged with respect to the wetland on the Taylor property being a regulated wetland feature.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 9, 10 Section 3.2.2 Vascular Plant and Significant Species	The EIA alludes to the fact that field surveys for vascular plants were completed in 1991, 1994 and 2003 however Appendix B Table of Natural Heritage Fieldwork Dates details a variety of other botanical surveys completed in 2007, 2009 and 2012. Were plant species not recorded during these later field surveys and if yes, were these included in the report? If not, staff questions why this was not completed. There is also some clarification warranted on this issue, given that Section 3.2.1 suggests that only the 1991 and 1994 species are provided. (Halton MOU) *(new comment)* • Please be advised the eastern flowering dogwood was observed by Conservation Halton staff during the site visit on July 17, 2013 within the valley associated with tributary 5. Discussion on these observations on the property is needed and the Ministry of Natural Resources (MNR) should be consulted for additional information. (Halton MOU) *(new comment)* • It should be noted that butternut *(Juglan cinera)* is listed as Endangered in Ontario. The EIA states that it is Endangered but not regulated, which is terminology no longer used with the current *Endangered Species Act.* Please update. (Halton MOU) *(new comment)* • Table 2 indicates that Oldham (1993) was used for local rarity. It is unclear to staff why Oldham (1993) was used, given that the Hamilton NAI was referenced in Section 2.1. This report is 20 years old and as such, staff would recommend using a more current report to assess the local status of species. We also note that Appendix C indicates that Crins (2006) and Varga et al. (2000) was used. Please be advised that in order to complete a comprehensive review of the local rarity on site, the Halton NAI should be used. (Halton MOU) *(new comment)*	The majority of floristic work was completed during earlier surveys (1991 and 1994), supplementary ELC surveys in 2012 resulted in records of additional species which were added to the tally as a running species list. The vascular plant list that was provided in Appendix C was an amalgamation of all surveys, from 1991 to 2012. Botanical surveys conducted in in 2013 did not contribute any new species. Updated botanical inventories were carried out in 2016 and any new species noted have been added to the list of vascular plants provided in Table 4, Appendix B of the EIA. Eastern Flowering Dogwood was found in two locations on July 17, 2013. Both locations were located deep within the valley of the east branch of Tributary 5 outside of the development limits. Given the location of these trees no impacts are anticipated. Please refer to Section 3.4.2 of the EIA. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF. Please refer to section 3.3.1 of EIA for current terminology with respect to Butternut. The vascular plant table in Appendix B of the EIA (2018) ranks species according to Varga 2005 and Crins 2006.
Page 10 Plant species table	Staff reviewed the species list of Table 2 and those listed on Page 14, in relation to the Halton NAI and note the following species are of local significance. Further details for observations of Marsh vetchling (*Lathyrus palustris)* and Swamp thistle (*Cirsium muticum*) are requested.	The records for these species are from the initial Stantec surveys from the early 1990s and no details regarding their location were provided. Neither *Lathyrus palustris* nor *Cirsium muticum* were located in subsequent surveys conducted by Savanta including updated botanical surveys conducted by Savanta in 2016.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 10-11 Breeding Birds	In the initial discussion regarding the breeding bird field work completed in 1991 and 1994, it is indicated that the results from these surveys is found in Appendix C. Appendix D contains the breeding bird results but only those from the 2007, 2011 and 2012 surveys. Please provide the results of the earlier surveys. (Halton MOU) *(new comment)* • It is stated that four species at risk birds were observed on the site, bobolink, eastern meadowlark, chimney swift and bam swallow, however Appendix D also includes eastern wood-pewee (Special Concern species at a federal level), bank swallow (Threatened at the federal level) and wood thrush (Threatened species at a federal level). Please revise this section and Appendix D to reflect the current status of species observed on the property and provide discussion as to the impacts this development may have on these additional species. (Halton MOU) *(new comment)* • No discussion regarding local rarity is provided. Staff have reviewed those species listed in Appendix D and note the following species are considered either rare or uncommon according to the Halton NAI: - Wild turkey – uncommon - Chimney swift – rare - Red-bellied woodpecker – uncommon - Eastern bluebird – uncommon - Blue-winged warbler – uncommon - Magnolia warbler – rare - Eastern towhee – uncommon - Baltimore oriole - rare Discussion with regards to Significant Wildlife Habitat, specifically Habitats of Species of Conservation Concern as it relates to "species that are rare within the planning area, even though they may not be provincially rare" should be added to the text. Staff would expect that this discussion will include Appendix G and Q of the Significant Wildlife Habitat Technical Guide (2000) where applicable. (Halton MOU) *(new comment)*	Section 3.2.3 of the old EIA (2013) states that the results of 1991 and 1994 surveys were provided in Appendix B of the 1994 EIA. The current EIA considers more recent data (2011-2015). Historical species assisted in defining the search effort and target species for studies on and immediately adjacent to the Subject Lands. Higher importance was given to rarity of species in Ontario and species were assessed using COSSARO, not COSEWIC. Updated breeding bird surveys were completed in 2015, please refer to section 3.3 of the EIA. Locally important species do not tend to add substantial weight to conservation and mitigation decisions. An updated SWH analysis is provided in section 6.1.3 and Table 21 (Appendix B) of the EIA.
	Figure 4, Breeding Bird Survey Stations and Calling Amphibian Monitoring Stations: Staff question why more bird point count locations were not situated within the woodland? Given that development is proposed immediately adjacent to the wooded areas, it would seem imperative to staff that these areas also be studied so that appropriate setback are established should they be required. Staff suggest that additional point count locations be added to the current locations so as to capture a more complete and accurate assessment of the bird species present. This is important given that the current survey results have indicated low forest bird species present, without using the Forest Bird Monitoring Protocol or without siting point count locations within the continuous forest along Sub-Area 7. (Halton MOU) *(new comment).*	Updated breeding bird surveys were completed in 2015 to include more point counts adjacent to or within woodlands, please refer to section 3.3 of the EIA for survey results and Figure 8 (Appendix B) for survey locations. Updated amphibian surveys were conducted in 2014 and 2016. Please refer to Section 3.3 of the EIA for survey results and Figure 5 (Appendix B) for survey locations.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 11 Amphibians and Reptiles	During the April 2013 site visit a western chorus frog was found in the wetland located on the Taylor property. Please update the EIA to reflect this observation.	Western chorus frog was not observed during the April 2013 site visit by Savanta staff. The species that was observed is Spring Peeper. In addition, updated amphibian surveys of the pond were carried out in 2014 and 2016. Western chorus frog was not observed during these more current surveys.
Pages 11-13 Aquatic Ecology	The report indicates that both the GCSS and FSSR provide extensive background information on the Grindstone Creek and associated tributaries on the Subject Lands. However, the GCSS provides information for the watercourse from 17 years ago (1995) and the FSSR does not provide any background information on the tributaries as it relates to fish habitat. This section also states that aquatic surveys were conducted 19 years ago (1992) for the Natural Environmental Inventory Report. Staff has concerns with the aquatic assessments occurring 17 and 19 years ago as this likely does not reflect the current conditions of the watercourses and therefore accurate assessments of development impacts on the adjacent features cannot be appropriately evaluated. (Halton MOU, DFO Level IT) *(modified comment)* According to the Region of Halton EIA Guidelines, the Biophysical Inventory should include fish species and fisheries habitat including related watercourse flow, channel and riparian characteristics. Under Section 34 of the Fisheries Act, "fish habitat" is defined as "spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes." Habitat assessments and stream morphology assessments according to the Ontario Stream Assessment Protocol (OSAP) should be completed. Water quality as it relates to fish habitat should also be provided in accordance with the Ontario Benthos Biomonitoring Network (OBBN) protocol or OSAP (Section 2) for invertebrate sampling. (Halton	Savanta conducted visual aquatic habitat survey of the watercourse in 2009 as described in Section 3.3.1 of the EIA. No fisheries sampling was possible given the absence of water at sampling periods. Updated Headwater Drainage Assessment was completed in 2014. Please refer to section 3.3.1 of the EIA. Additional benthic collections and/or additional HDFA information may inform SWM design and/or potential post development monitoring initiatives. As noted above updated HDFA assessments were completed in 2014. Information including the harmonization of classification labels is provided in the EIA (2018). Technical differences of opinion remain regarding Tributary 4. Savanta's more detailed and current work served as the basis for accurate watercourse characterizations.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	MOU, DFO Level II) *(modified comment)* Staff note a discussion of the existing composition and spatial distribution of benthic communities was not provided as part of the EIA with regard to existing habitat quality Staff acknowledge benthic sampling was completed as part of the GCSS in 1994 however, this data is outdated. As indicated later in *Section 6.1.3 (Fish Habitat)* under *Section 6.0 Potential Impacts, Effects, Mitigation and Net Effects,* potential impacts include changes in base flow and surface flow, increase in sedimentation and contamination during and post construction resulting in degradation of water quality, and change in temperature regime of downstream systems. While mitigation measures are proposed to offset these impacts (e.g. bottom-draw outlets, pond shading, ESC controls during construction) all residual and cumulative impacts may not be eliminated by these measures. Updated multi-year baseline benthic data will be necessary to determine the natural annual fluctuations in species composition and community and water quality aspect OSAP Section 2 (or OBBN), is essential to enable suitable pre-to post-construction comparisons to adequately assess impacts. (Halton MOU, DFO Level m *(modified comment)* • Staff also note that Appendix B indicates an Aquatic Habitat Assessment utilizing the CVC/TRCA guidelines for the "Evaluation, Classification, and Management of Headwater Drainage Features" was completed on September 4, 2009. The descriptions of the watercourses provided in the EIA are not reflective of the classifications discussed in the headwater drainage guidelines. Additionally, the classifications don't appear to be utilized in determining the appropriate management options (e.g. replicating on- site flows and maintaining external flows at the top of the system). However, staff believe utilization of the Headwater Drainage Features guidelines in describing existing habitat within the watercourses on the subject property is not appropriate as the features on the subject property should be considered watercourses and not headwater drainage features (with the potential exception of Tributary 4 upstream of Flatt Road). To adequately assess existing habitat and provide a standard means of assessing the impacts to the habitat, staff believe OSAP (2013) should be utilized for habitat assessments (minimally Sections 1, 2, 4 and 5). These assessments should be incorporated into the EIA to provide sufficient background data to enable suitable pre- to post-construction comparisons to adequately assess impacts (O. Reg 162/06, Halton MOU, DFO Level 10 *(new comment)* • Staff disagree with the characterization of Tributary 4 developing "as a cultivated depression in the agricultural lands in the southern half of the Eagle Heights Lands" and "serving only to convey flows that are generated from runoff from Waterdown Road". Based on field observations, staff identified a small drainage feature entering the property along the northern boundary and crossing cultural woodland through a small diameter culvert before continuing southerly to confluence with drainage from Waterdown Road. This upstream catchment represents a much larger areal contribution than the contributing drainage area from Waterdown Road. It is acknowledged that Tributary 4 is indirect fish habitat and has a limited drainage area, which includes a small portion of Waterdown Road, however, despite being plowed through in the upper reaches, the tributary has sufficient stream power to form defined bed and banks through much of the property. It drains external areas north of the Eagle Heights property that must be addressed through the design of the subdivision. The NAIR Final Report Landuse Concept Figure illustrates Tributary 4 as "Environmental Protection" area across the Eagle Heights lands extending from Flatt Road north to Waterdown Road (approximately 510 m north of Flatt Road). (0. Reg 162/06, Halton MOU, DFO Level II) (new comment)	

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	• Staff note the NAIR Final Report Landuse Concept Figure also illustrates a hydrologic connection draining into Tributary 4 that is identified as "Environmental Protection" however the need to protect this feature is not discussed in the report. Please address. (0. Reg 162/06, Halton MOU, DFO Level II) *(new comment)* • Similarly, the small tributary identified as regulated during the August 20, 2013 site visit, that flows from the west into the East Branch of Tributary 5, partially included in Block SS (cluster housing) appears to be included under "Environmental Protection" in the NAIR report. Appropriate setbacks pursuant to Ontario Regulation 162/06 must be applied. (0. Reg 162/06, Halton MOU, DFO Level II) • Staff note that the classification of the flow regime of Tributary 5 is inconsistent with previous reports. The flow regime of the branches of Tributary 5 upstream of Flatt Road are described as intermittent while the east branch upstream of Flatt Road was described as "likely expresses intermittent flow conditions". Please note the Grindstone Creek Subwatershed Study reports that "water flow was detected in this reach during all the field reconnaissance. The flow was minimal in the summer periods". The report also indicates that "despite the lack of fish, this reach is classified as warmwater baitfish habitat due to the well-defined stream channel, potential for fish utilization if the barriers to fish migration were removed and permanent, albeit minimal, flow during the summer period." Further, the EIA reports that observations completed on September 3, 2009 demonstrated minor flows. The east branch was flowing during all site visits conducted by Conservation Halton staff (April 13, July 17 and August 20, 2013). As flow was observed during a week of extreme heat events and during all previously recorded inspections, staff require additional information to warrant the intermittent classification. (0. Reg 162/06, Halton MOU, DFO Level II) *(modified comment 17, from Section 3.2 of previous letter)* • From the Grindstone Creek Subwatershed Study, the East Branch of Tributary 5 was classified as warmwater baitfish habitat from approximately 705 m upstream of Flatt Road and from approximately 270m upstream on the West Branch. These classifications should be incorporated into the EIA report. Should the Grindstone Creek Subwatershed Study classifications be indicative of existing conditions, 15 m buffers adjacent to the warmwater baitfish habitat should be applied as per downstream of Flatt Road and within accordance with Conservation Halton Policy 3.6, (Riparian Buffers and Fish Habitat). According to Appendix D of the Halton Region EIS Guidelines, impact analysis should include the alteration of the quantity, quality, timing (hydroperiod) or direction of flow, of surface or groundwater within or contiguous to an element of the natural heritage system. Updated habitat assessments and data sheets are required to clarify the current extent of direct and indirect fish habitat and periodicity of the watercourses on the subject property to accurately determine any expected impacts and appropriate mitigation for the proposed development. (0. Reg 162/06, Halton MOU, DFO Level II) *(modified comment 17, from Section 3.2 of previous letter)*	Savanta's more detailed and current work served as the basis for accurate watercourse characterizations. Updated HDFA studies were completed in 2014. As noted in Section 3.3.3 of the EIA only the portion of Tributary 5 within the open agricultural field between two wooded areas was assessed, since no development will occur within the wooded areas upstream and downstream from the assessed reach.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 13-14 Section 3.3 Consideration of Natural Heritage Components of the PPS	This section outlines the various Natural Heritage (NH) components of the PPS that were assessed as part of this EIA. It does not include all relevant parts that should have been included in the report such as: • 2.1.1 Natural features and areas shall be protected for the long term. • 2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features. • 2.1.6 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.3, 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. As such, staff does not consider the EIA as having addressed all of the applicable NH components of the PPS. In addition to the above outstanding policies, there are relevant NH policies located in the Water Policy (2.2) of the PPS which should be addressed, specifically: • 2.2.1 Planning authorities shall protect, improve or restore the quality and quantity of water by: c) identifying surface water features, ground water features, hydrologic functions and natural heritage features and areas that are necessary for the ecological and hydrological integrity of the watershed. e) maintaining linkages and related functions among surface water features, ground water features, hydrologic functions and natural heritage features and areas. (Halton MOU) *(new comment)* Further, no discussion of the Greenbelt Plan (2005) has been provided in the EIA even though a portion of the Eagle Heights property is designated as Greenbelt Natural Heritage System. Discussion on the Greenbelt Plan, specifically Key Natural Heritage Features and Key Hydrologic Features Policies that are found on the site should be included in the EIA. These Key Natural Heritage Features include: • Significant habitat of endangered species, threatened species and special concern species; • Fish habitat; • Wetlands; • Life Science Areas of Natural and Scientific Interest (ANSIs); • Significant valleylands; • Significant woodlands; and, • Significant wildlife habitat; While the Key Hydrologic Features include: • Permanent and intermittent streams; • Seepage areas and springs; and, • Wetlands Included in this discussion should be the appropriate buffers to these features as based on the direction and policies of the Greenbelt Plan developed through consultation with the appropriate review agencies. (Halton MOU) *(new comment)*	This comment with respect to the PPS is not relevant as the current EIA assesses impacts based on the PPS 1997. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands, The EIA addresses natural heritage considerations in section 3.4. Based on the guidance obtained from Penta's legal team we understand that the Greenbelt is not applicable to the Subject Lands.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 13 to 14 Section 3.3 Consideration of Natural Heritage Components of the PPS	As currently titled as per the PPS, Section 2.1.3 (a), please note that the actual wording of this title should be "Significant Habitat of Endangered and Threatened Species", rather than "portions of habitat". (Halton MOU) *(new comment)* • While staff agree that discussions regarding the listed SAR. SAR should be addressed under the provisions of the *Endangered Species Act,* we also note that in order to ensure compliance with the PPS, Significant Habitat as it relates to the PPS must be maintained. The PPS defines this as: *"in regard to the habitat of endangered species and threatened species, means the habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or the recovery of natural occurring or reintroduced populations of endangered species or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of its life cycle";* Please clearly indicate within the EIA if the proposed development adheres to the Section 2.1.3 (a) of the PPS. Currently, it is staff's opinion that this has not been accomplished. (Halton MOU) *(new comment)* • During the site visit on July 17, 2013, eastern flowering dogwood was observed by Conservation Halton and Savanta on the property. This should be discussed in the EIA as well as the direction from the MNR on this issue.	The MNRF will be engaged directly to address and ESA or PPS related matters associated with Endangered and Threatened species. We expect the MNRF will serve as the ESA regulatory authority in this regard Eastern Flowering Dogwood was found in two locations on July 17, 2013. Both locations were located deep within the valley of the east branch of Tributary 5 outside of the development limits. Given the location of these trees no impacts are anticipated. Please refer to Section 3.4.2 of the EIA. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF.
Pages 13 to 14 Section 3.3.2 Fish Habitat	Staff note Tributary 6 is classified as not fish habitat. Given the channel characteristics described by Parish Geomorphic Ltd, and due to the provisions of flow and allochthonous inputs through the piped section downstream of the study area, staff believe this channel should be considered as providing indirect fish habitat. Although existing conditions are not providing direct fish habitat, any future land use applications on the downstream property may provide an opportunity to daylight the piped portions of the existing watercourse and remove online ponds to improve aquatic habitat throughout the reach. (Halton MOU, DFO Level II) *(modified comment)*	Figure 3 (Appendix A) and section 3.3.3 of the EIA provide a current classification for Tributary 6 based on updated field surveys conducted by Savanta.
Pages 15 to 16 Section 3.3.2 Significant Woodlands *(Staff note the section number repeated in the EIA)*	Comments numbered 29, 30, 31, and 32 are replaced by the comments listed below in this section: Staff are concerned with the criteria used to determine the presence or absence of Significant Woodland for the subject lands, given that the Region of Halton Official Plan (OP) has clear policies in place that should have been used to assess the woodlands on the site. Given that the PPS clearly states that "criteria for determining significance for the resources identified in sections (c)-(g) are recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used", staff question why the consulting team did not use the Regional OP? Please revise this section to adhere to the Regional OP requirements when determining Significant Woodlands. (Halton MOU) *(modified comment)*	The reference to the NHRM (2010) is appropriate as woodland significance is to be "identified using criteria established by the Ontario Ministry of Natural Resources…" (PPS). Based on the guidance obtained from Penta's legal team we understand that the Regional OP 2006 and ROPA 38 are not applicable to the Subject Lands. Please refer to the Planning Justification Report prepared by Metropolitan (2018). An updated analysis of woodland significance is provided in section 3,.4,4 of the EIA based on guidance provided in the Natural Heritage Reference Manual (2010).

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 15 to 16 Section 3.3.2 Significant Woodlands *(Staff note the section number repeated in the EIA)*	We note that Figure 10 has excluded the plantations from the Significant Woodland feature. According to the Regional OP definition of woodland, unless these plantations have been certified by the Region, they should be considered as woodlands and then assessed as continuous woodland to determine their significance. Moreover, the Natural Heritage Reference Manual also directs that plantations are recognized as investments made with the objective of forest restoration and can be considered to be woodlands (page 72). For this reason, staff request that Figure 10 be updated to reflect current Regional and Provincial direction as it pertains to woodlands and Significant Woodlands. (Halton MOU) *(new comment*). Further, Figure 10 illustrates those features found on the site that would meet the criteria outlined in the main report, however there are inconsistencies throughout this mapping. For example, meadow marshes have been included when they do not meet any of the criteria and cultural plantations that should be included have not been. Given that the Regional criteria were not used, and only certain aspects of the Natural Heritage Reference Manual were used, staff request that this figure be revised to show the actual limits of the Significant Woodlands on the site. Appropriate setbacks to the Significant Woodland also need to be included on this figure and the text of the report revised to include these setbacks. We defer development of these setbacks to the Region. (Halton MOU) *(new comment)*	
Pages 15 to 16 Section 3.3.2 Significant Woodlands *(Staff note the section number repeated in the EIA)*	During the site visits of 2013, it was noted that a number of areas previously flagged for protection have now been removed, i.e., through extensive tree removal. Staff are concerned that the protected areas are not being respected from the original OMB decision, while the current studies are being completed to assess any additional areas that warrant protection. It was clarified during the July site visit that the current dripline as shown on the mapping (yellow outline) is reflecting the conditions after the tree removal occurred. Staff request that a map be prepared that illustrates the original dripline and also includes this new dripline so that the full impact of this vegetation removal can be assessed. (Halton MOU) *(new comment)*	The EIA provides an assessment of direct and indirect impacts associated with the Updated Draft Plan and reflects current features associated with the Subject Lands. The landowner, Penta Properties Inc. (PPI), is aware of this comment.
Pages 15 to 16 Section 3.3.2 Significant Woodlands *(Staff note the section number repeated in the EIA)*	As discussed above, adjacent lands to this feature need to be commented on and the appropriate buffer to this feature based on the Greenbelt Plan needs to be included where applicable and maintained. It should be noted that the Greenbelt Plan direction indicates that a minimum 30m vegetation protection zone adjacent to Significant Woodlands is required. In locations outside of the Greenbelt Plan Area where Significant Woodlands exist, direction on these buffers should be obtained from the Region. (Halton MOU) *(new comment)* Ultimately, as Significant Woodlands are a Regional designation and the Region is the Planning Authority, Conservation Halton defers to the Region for acceptance and approval as well as appropriate setback distances for these features. (Halton MOU) *(new comment)*	Based on the guidance obtained from Penta's legal team we understand that the Regional OP 2006 and ROPA 38 are not applicable to the Subject Lands. Please refer to the Planning Justification Report prepared by Metropolitan (2018).

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 16 Section 3.3.3 Significant Valleylands	Previous comments noted that this Section of the EIA stated ‘‘The proposed plan will result in some minor, unavoidable refinements to the valley boundary in the south comer of Sub-Area 7". Conservation Halton staff noted at that time that the extent of the valley is not a negotiable physical feature and cannot be refined. Staff now note the EIA states, ‘The proposed Plans of Subdivision...respect these valley areas with a minor intrusion in the south corner of Sub-Area 7". Staff wish to reiterate that Conservation Halton's regulation limit is 15 meters from the greater of the appropriate erosion hazard - top of bank as staked by Conservation Halton or the stable top of bank associated with Grindstone Creek. As such, the draft plan will have to be redesigned to respect the appropriate setbacks from the top of bank as staked by Conservation Halton or determined long-term stable top of bank. (0. Reg 162/06) *(new comment)* While Conservation Halton recognizes that Official Plan Amendment (OPA) 197 is the current Policy in effect for the Eagle Heights Subdivision and only requires the dedication of all creeks, associated valley lands and 7.5 meter buffers to the City of Burlington (1996), the current application is being reviewed under current standards and policies at the time it was submitted (2010). As such Conservation Halton’s O. Reg 162/06 applies and we will recommend the full dedication of all creeks, valleylands and associated 15 meter regulated setbacks to the City of Burlington. (Halton MOU) *(new comment)*	
Pages 16, 17 Section 3.3.4 Significant Areas of Natural and Scientific Interest (the EIA is incorrectly titled)	It is staffs understanding that in 2005 the Ministry of Natural Resources (MNR) refined the Grindstone Creek Area of Natural and Scientific Interest (ANSI) limits, which now extend onto the subject property. The ANSI limit is correctly illustrated on Figure 2 of the EIA, however Figure 11 does not include this refinement. Please revise Figure 11 to present the actual ANSI limit as determined by the MNR. (Halton MOU) (new comment)	Figures in Appendix A of the updated EIA reflect the current ANSI boundary.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	We not that during the July 2013 site visit it was evident that a portion of the ANSI in the CUW1-5 was removed. (Halton MOU) (new comment) As discussed above, adjacent lands to this feature need to be commented on and the appropriate buffer to this feature based on the Greenbelt Plan needs to be included where applicable and maintained. (Halton MOU) (new comment)	The landowner, Penta Properties Inc. (PPI), has been made aware of this comment as it related to vegetation removal. Based on the guidance obtained from Penta's legal team we understand that the Regional OP 2006 and ROPA 38 are not applicable to the Subject Lands. Please refer to the Planning Justification Report prepared by Metropolitan (2018).
Pages 17, 18 Section 3.3.5 Significant Wildlife Habitat (the EIA is missing this in the Table of Contents) (the EIA is incorrectly titled)	Rare or Specialized Habitat - In this section, it is noted that there is 'non-woodland' breeding habitat present on the Taylor lands within the pond, according to the Provincial Significant Wildlife Habitat Eco-region 7E Criterion Schedule (MNR 2012). Upon review of this criterion, it is staff's opinion that the type of Significant Wildlife Habitat present is the amphibian-breeding habitat (woodland) given that the pond is located within 120m of a woodland (FOD3-l). The criterion also indicates that when this type of amphibian breeding habitat is present, Amphibian Movement Corridors must also be considered. We note that a number of the defining criteria are met for an Amphibian Movement Corridor, such as corridors consisting of native vegetation and while we recognize that this corridor is less than 200m wide, the Criterion does indicate that shorter corridors are more significant than longer corridors, provided amphibians must be able to get to and from their summer and breeding habitat, which staff believe is achievable in this location. For these reasons, we support that Significant Wildlife Habitat is present in the pond, we believe it to be of a slightly different type than presented, specifically Amphibian Breeding Habitat (Woodland) and Amphibian Movement Corridors. (Halton MOU) (new comment)	An updated analysis of SWH is provided in section 3.4.7 of the EIA.
Pages 17, 18 Section 3.3.5 Significant Wildlife Habitat (the EIA is missing this in the Table of Contents) (the EIA is incorrectly titled)	Given that at this time the draft plan proposes a road and SWM pond within and/or immediately adjacent to this wetland, staff are concerned that there will be an impact the Significant Wildlife Habitat and its associated adjacent lands, which does not comply with the PPS or O. Reg. 162/06. For this reason, staff are unable to support the proposed layout in this area. (O. Reg 162/06, Halton MOU) (new comment)	The proposed plan now has the Roadway ending prior to the Wetland, and grading will collect flows and treatment will occur, with outfall of said treatment facility avoiding discharge into the wetland. Any flows directed towards the wetland are clean surface runoff. Response by Savanta and MCI. Impacts to the wetland are addressed in section 6.1.1 of the EIA.
Pages 17, 18 Section 3.3.5 Significant Wildlife Habitat (the EIA is missing this in the Table of Contents) (the EIA is incorrectly titled)	Species of Conservation Concern- During the April 2013 site visit, a western chorus frog was observed by Conservation Halton and Savanta staff, however this species was not identified during the amphibian breeding surveys. Western chorus frog is listed as Threatened at the Federal level, however it is not listed under the Ontario Endangered Species Act, which if its habitat was observed on site, it could be deemed Significant Wildlife Habitat. Given the uncertainty around potential habitat of western chorus frog on the site, staff recommend that a spring survey be undertaken specifically for the confirmation of western chorus frog during its breeding season. Western chorus frog is an early breeder and so the survey would have to be timed in such a manner to capture the potential observance of the species. Staff would be happy to discuss this further with the appropriate field staff. (Halton MOU) (new comment) It should be noted that there are additional species that should be discussed further in this section, specifically bank swallow and western chorus frog, which are both federally Threatened species. Please provide a discussion on their presence in relation to the applicable policies of the PPS. (Halton MOU) (new comment)	Western chorus frog was not observed during the April 2013 site visit by Savanta staff. The species that was observed is Spring Peeper. In addition, updated amphibian surveys of the pond were carried out in 2014 and 2016. Western chorus frog was not observed during these more current surveys. Bank Swallow (threatened in Ontario) was not observed within the Subject Lands based on surveys conducted by Savanta. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 17, 18 Section 3.3.5 Significant Wildlife Habitat (the EIA is missing this in the Table of Contents) (the EIA is incorrectly titled)	Animal Movement Corridors - As discussed above, when amphibian breeding habitat (woodland) Significant Wildlife Habitat is identified then Animal Movement Corridors associated with this habitat must also be assessed. Staff are of the opinion that a corridor is present in the surrounding areas of the wetland as these areas meet the criteria set out in the SWH Criterion Schedule (Halton MOU) (new comment) Consideration should be given to the corridors identified in the North Aldershot Agency Review (NAIR) report, for example "At the Escarpment brow the Grindstone Creek valley connects to the east- west geologic feature and the plant and animal communities it supports" (page 19). Please provide a discussion on these corridors. (Halton MOU) (new comment) Adjacent lands to the identified Significant Wildlife Habitat also require consideration as it pertains to the PPS Policy 2.1.6 and should be discussed within the EIA. (Halton MOU) (new comment) Summary of Significant Wildlife Habitat Present on the Subject Lands- Please provide a map of all the identified Significant Wildlife Habitat present on the site as well as lands that would be considered adjacent to the site, i.e. using the provincial direction of 120 meters' adjacent lands. This is essential so that staff can assess whether the development will impact the Significant Wildlife Habitat present and ensure conformity with the PPS. (Halton MOU) (new comment)	The EIA provides a comprehensive assessment of wildlife and habitat. As noted by others, the most important wildlife corridor and linkage functions are associated with the main Grindstone Creek valley. Local wildlife corridors and linkage functions are described in section 3.2.1 of the EIA. An updated analysis of SWH is provided in section 3.4.7 of the EIA. Figure 12, Appendix A of the EIA is a figure of SWH identified within the Subject Lands.
Page 18 Section 4.1Development Plans	It was confirmed during the August 2013 that there is a discrepancy between the proposed development plans illustrated on the Savanta figures versus those prepared by Metropolitan Consulting. Please ensure that all figures within the EIA contain the same development plan area. (0.Reg 162106, Halton MOU) *(new comment)* The Eagle Heights property section is unclear as to what is presented in the table as reference to the 1996, 2006, 2010 and 2012 plans are provided when discussing this table. Please clearly indicate which plan is being used as the comparison point and ensure all applicable figures include this plan. (0. Reg 162/06, Halton MOU) *(new comment)*	This comment is no longer relevant as the Draft Plan and EIA were updated in 2018. The development plan in the EIA is consistent with the figures presented by Metropolitan in their reports. An updated description of the proposed development is provided in section 5.0 of the EIA.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 18 Section 4.2 Road Standards	This section states that with respect to future drainage from Waterdown Road "...drainage will continue along the road rather than exit onto the field at Tributary 4 . The review of this area should be carried out in the context of future widening or realignment proposed for Waterdown Road." Please clarify how the context of future widening impacted the review of Tributary 4. To ensure a consistent understanding of future conditions, staff note that per Dillon Consulting Ltd.'s April 2012 "Waterdown Road Corridor Class Environmental Assessment Environmental Study Report" minor system flows (up to the 1:5 year return event) from a portion of Waterdown Road extending to approximately 250m south of Flatt Road will bypass current outlets to Tributary 4 across the Eagle Heights lands and outlet to Tributary 4 through a regulated watercourse on the Taylor lands. The majority of the Tributary 4 catchment area will continue to drain through the Eagle Heights property under all storm events, given that the drainage design for the minor system will convey less than half of the Tributary 4 catchment during frequent flows. Under intense storm events, the Waterdown Road drainage system will carry a much smaller proportion of the flow from the contributing drainage area. (0. Reg 162106) *(new comment)*	This comment will be reviewed in detail and discussed with Conservation Halton. It may also be useful to discuss the Class EA process and discussions with Dillon.
Page 19 Section 5.0 1994 EIA Recommendations	It should be noted that the 1994 EIA Recommendations were based on policy approved at that time. Given that this is being considered a new application and therefore current policy is being applied to it, staff question the validity of including this discussion within the report as it is not in keeping, for the majority, with the policy of today. For example, there are servicing corridors proposed well into Significant Woodlands, encroachment proposed within a regulated wetland, and as maps of Significant Wildlife Habitat have been provided, there is potential that development may also be proposed in those areas. Staff advise that this section be removed as it is no longer applicable to the development and the current policies applied to the site (O. Reg 162/06, Halton MOU) (new comment)	Section 5.0 of the EIA (1994 EIA Recommendations) has been removed from the updated EIA (2018).
Page 19 Section 5.0 1994 EIA Recommendations	Please ensure all lot setbacks adhere to current policy and legislation as outlined in various sections of this letter	Section 5.0 of the EIA (1994 EIA Recommendations) has been removed from the updated EIA (2018). This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,
Page 19 Section 5.0 1994 EIA Recommendations	Staff cannot locate lots 290-309 on the Updated Draft Plan, however if the setback is from the required valley feature, the setbacks are 15 meters from the hazard limit. If the buffer is in relation to the dripline setback beyond CH's regulation limit, staff defer to the Region of Halton for appropriate widths (O. Reg 162/06, Halton MOU) (modified comment)	The draft plan was revised in 2018 please refer to the draft plans included in the FSR

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 19 Section 6.0 Potential Impacts, Effects, Mitigation and Net Effects Section 6.1 Summary of Key Impacts and Mitigation Measures	As raised above, there are a number of different draft plans referred to or provided in the text and on figures. Please ensure that the correct draft plan is applied to all figures and the correct date is used in discussions. For example, Figure 11 does not have the same plan as Figure 5-2 of the FSR. (0. Reg 162/06, Halton MOU) *(new comment)* While staff acknowledge that in 1996 a development plan was supported by Conservation Halton, as previously raised the current plan proposed is considered a new application and therefore current legislation and policy must be used to delineate the limit of the proposed development. As this draft plan is not adhering to current policy and legislation, staff do not feel that this section addresses the need to be compliant with the PPS, the Greenbelt Plan, Conservation Halton's O. Regulation 162/06 and associated policies, and the Region of Halton's Official Plan and associated policies. While discussion is provided on potential impacts, staff questions their merit given that they are not in keeping with current direction for buffers, legislation requirements and are therefore not fully addressing the impacts of the development. Staff recommend that this section be updated to reflect the requirements and direction of the previously noted policy and legislation. (Halton MOU) *(new comment)* Please include an expanded discussion on the potential impacts from servicing on the site. Currently reference is given to the FSR for further details, however no information on the environmental impacts are included in the report. Staff request that a figure be prepared that overlays the proposed servicing for the site with the environmental constraints with a current air photo. (0. Reg 162/06, Halton MOU) *(new comment)*	The EIA (2018) assesses impacts with respect to the updated draft plan (2018). Please refer to section 5 and 6 of the EIA. The EIA has also been updated to include an expanded discussion on potential impacts for servicing on the site (Section 6). This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,
Pages 19, 20 Section 6.1.3, Fish Habitat	This section makes reference to Ontario Regulation 162/02 with regard to the required setbacks for fish habitat. Please note the appropriate reference should be to Section 3.6.1 of Conservation Halton's Policies, Procedures and Guidelines for the Administration of Ontario Regulation 162/06. Further, the policy document indicates an allowance may also be required from the long-term migration of the watercourse further to Policy 3.5 (O. Reg 162/06) (new comment)	This comment is no longer relevant to the updated EIA. Revised discussion with respect to impacts to fish habitat are provided in section 6.1.7 of the EIA.
Pages 19,20 Section 6.1.3 Fish Habitat	Paragraph 2 references development will not be permitted within a 7.5 m setback from the long term stable top of slope associated with Tributaries 5 and 6. Conservation Halton policies define all tributary and valley systems associated with Grindstone Creek (including tributaries 4, 5 and 6) as Major Valley systems, and therefore, development will not be permitted within a 15 m setback from the erosion hazard (i.e. the long term stable top of bank or meander belt width). (0. Reg 162/06) (new comment)	Peto MacCallum described the valleys of Tributaries 4, 5 and 6 as minor in their report (2006). The habitat assessments by Savanta confirmed that they were not Significant Valleylands as per the PPS and therefore are identified as minor valleys.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 19,20 Section 6.1.3 Fish Habitat	Staff clarify that Tributary 4 transitions from an unconfined valley system north of Flatt Road to a confined valley system south of Flatt Road, and therefore the regulation limit associated with Tributary 4 would be based on the greater of the floodplain or meander belt plus an associated 15 m setback for areas north of Flatt Road, or the greater of the long term stable top of bank or floodplain, plus 15 m regulated setback for areas south of Flatt Road. Please refer to APPENDIX II for details. (0. Reg 162/06) (new comment)	
Pages 19,20 Section 6.1.3 Fish Habitat	Staff have offered several comments on the stormwater management plan under comments on the Functional Servicing Report prepared by Metropolitan Consulting. Appropriate portions of the EIS should be updated to reflect any changes to the design as a result of addressing Conservation Halton's comments (new comment). The Sanitary Sewer Construction discussion under Section 6.1.3 states that there are several options for routing of the sewer main, which are discussed in the Functional Servicing and Stormwater Management report. Further, it is stated that the preferred alternatives will use trenchless construction, which will mitigate direct impacts on habitat from the drilling and installation of the pipe. An analysis of hydrogeological impacts from the proposed servicing should be included within the EIA. Additional details are also required within the EIA to discuss the potential impacts of the proposed techniques on riparian habitat (e.g. location of bell holes for punch and bore installations). (O. Reg162/06, DFO Level II) (new comment)	Revised discussion with respect to impacts to fish habitat are provided in section 6.1.7 of the EIA.
Pages 19,20 Section 6.1.3 Fish Habitat	The Watercourse Crossings section under Section 6.1.3 lists the potential impacts that may occur from the widening and improvement of Flatt Road along the southern boundary of the Eagle Heights lands. The FSR discusses grade changes proposed along Flatt Road but does not discuss the widening of Flatt Road. Please clarify if widening of Flatt Road is proposed. (O. Reg 162/06, Halton MOU, DFO Level II) (comment from Section 6.1.4 of previous letter)	Widening of Flatt Rd will occur. Section 2.6 discusses the works in this area, and a figure has been provided.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 20 Section 6.1.4 Extended Detention Ponds	The Extended Detention Pond section under Fish Habitat, states that although no SWM ponds outlet directly into the Grindstone Creek valley, two extended detention wet ponds are proposed within swales, which lead to the onsite tributaries that join with the Grindstone Creek downstream of the Subject Lands. Staff note that the outlets of 4 ponds (Ponds 4A, 4B, 5A and 6B) outlet directly into watercourses that are regulated by Conservation Halton. Pond 6A appears to outlet to the ditch that flows directly into Tributary 6. Therefore, all SWM ponds are directly connected to the tributaries that join Grindstone Creek downstream. Studies will need to demonstrate that thermal impacts and erosion will not affect the tributaries on the subject lands and/or the coldwater tributary downstream. (0. Reg 162/06, Halton MOU, DFO Level II) (modified comment).	The SWM Report has been updated to include erosion and thermal mitigation.
Page 20 Section 6.1.4 Extended Detention Ponds	Watercourse Crossing - Street X is proposed to run adjacent to a regulated branch of Tributary 4 on the Taylor lands. The potential impacts to the adjacent watercourses and fish habitat are not provided. Please revise the document to include a discussion of impacts to the tributary as a result of the location of Street X (Halton MOU, DFO Level II).	Street X is located to the west of the ravine of Tributary 4, on the tablelands, and a row of houses separates the Street from Tributary 4. No direct or indirect impacts are anticipated to Tributary 4. Revised discussion with respect to impacts to fish habitat are provided in section 6.1.7 of the EIA.
Page 21 Section 6.1.5 Significant Valleylands Savanta March 5, 2013 Eagle Heights and Taylor Lands EIA	As all tributaries to Grindstone Creek are deemed major valley systems under CH's policies, therefore, a 15 m development setback from the greatest hazard (long term stable top of bank, meander belt or the floodplain) will be required along Tributaries 4, 5 and 6, as well as along Grindstone Creek. (0. Reg 162/06) *(new comment)* Staff require additional detail on the noted 'minor intrusion' into the valley lands associated with the south comer of Sub-Area 7. Our policies generally exclude development intrusions into regulated valleylands. (0. Reg 162/06) *(new comment)*	Peto MacCallum described the valleys of Tributaries 4, 5 and 6 as minor in their report (2006). The habitat assessments by Savanta confirmed that they were not Significant Valleylands as per the PPS and therefore are identified as minor valleys.
Pages 21, 22 Appendix A	Figure 2 It should be noted that Figure 2 illustrates the correct ANSI boundary as updated by the MNR. Please ensure that the EIA report document is updated to reflect this current boundary. (Halton MOU) *(new comment)*	Please refer to Figure 2 (Appendix A) of the EIA for the current ANSI boundary.
Pages 21, 22 Appendix A	Figure 3 Figure 3 identifies a number of cultural plantations in the north of the property, however during the site visits these areas appeared to be more natural in their structure. Given that the original ELC mapping was completed in 2003 and only one day in 2012 was assigned to verify and update these boundaries for the entire site, staff question if these areas would be better classified as mixed forest or coniferous forest? It appears that from the site visits and in looking at air photos that this area has not been maintained as a plantation and so these communities have naturalized. We also question the CUP3-3/CUS classification, as there does not appear to be a cultural savannah present any longer in this area. Please provide further details on these areas. (Halton MOU) *(new comment)*	Updated botanical and ELC surveys were completed in 2016. Please refer to Figure 3 (Appendix A) of the EIA.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 21, 22 Appendix A	Figure 4 It is unclear to staff how the locations of the amphibian monitoring were selected. For example, as the Marsh Monitoring Program protocols were used, we question why sites that were not wetlands were selected for monitoring. For example, stations A, B, C, D, J, M and N. Given that a number of the sites were located in non-wetland areas, staff are concerned with the validity of the results presented in the report. (Halton MOU) (new comment) In addition, no point call locations were situated in the well-established forest (FOD5-3) along the main Grindstone Creek valley. This is concerning as a number of assumptions regarding the bird community of the site have been made, however they are based on data that is incomplete for the site. Please refer to our comments on Section 3.2.3 Wildlife - Breeding Birds. Staff request clarification on the site selection for both surveys and note that should sufficient justification on the location of the surveys not be provided, additional surveys may be warranted in order to fully capture the amphibian and breeding bird populations of the site. (Halton MOU) (new comment) Further, please provide the location of all previous breeding bird and amphibian surveys completed for the site. We note that this figure only includes the 2009 and 2012 locations, while the natural heritage fieldwork dates table Appendix B includes all of the surveys. A historic fieldwork figure should be supplied to illustrate these locations. (Halton MOU) (new comment)	Amphibian stations were identified using a preliminary review of aerial photography and verified in the field to confirm the presence of suitable breeding habitat. Monitoring locations L, N, E, K, and I are located within wetlands or within approximately 100 meters of wetlands, or within watercourse channels. Other survey locations were along roadsides (where watercourses crossed the road) or adjacent to woodlots. In addition, 2009 surveys were roadside surveys due to access restrictions. Updated amphibian surveys were conducted in 2014 and 2016, survey protocols and results are discussed in section 3.3.2.1 of the EIA. Breeding bird surveys were conducted in 2015 that address the concern with point count locations and are illustrated on Figure 8 (Appendix A) of the EIA. A figure of historic survey points for birds and amphibians was not provided as the locational information is not available.
Pages 21, 22 Appendix A	Figure 5 This figure should be updated to include the location of the western chorus frog observed in the wetland on the Taylor lands. (Halton MOU) *(new comment)*	The observation of western chorus frog in the wetland on the Taylor property was not confirmed by Savanta during the April 16, 2013 site walk. According to a field memo from this visit the species that was observed was Spring Peeper. Breeding amphibian surveys were conducted in the pond on the Taylor lands in the spring of 2014. Results of these surveys confirmed that habitat for western chorus frog is not present within the pond. If a disagreement remains, please provide a copy of your field notes that have indicated this information so the information can be reviewed and considered.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 21, 22 Appendix A	Figure 8 As raised above, it appears that the proposed draft plan presented on Figure 8 is not the same as the plan on Figure 5-2 of the FSR. Please ensure that the same plan is located on all drawings. (0. Reg 162/06, Halton MOU) (new comment)	This discrepancy has been resolved in the updated EIA. MCI to provide final draft plan Savanta to incorporate
Pages 21, 22 Appendix A	Figure 9 Staff have a number of concerns with this figure, as discussed above, as it is not adhering to any current policy or legislation. For example, there are a number of areas where intrusion and removal of a portion of a Significant Woodland are proposed, there is intrusion into area that contain Endangered species, the regulated wetland on the Taylor property is encroached within, as well as numerous other instances that staff would not be able to support based on current practices. Please revise the figure to reflect the issues presented above and to correspond with current standards. (Halton MOU) *(new comment)*	Figure 12 (Appendix A) of the EIA illustrates significant features identified within the Subject Lands with an overlay of the current draft plan. Impacts to significant woodlands and endangered species are addressed in section 6.0 of the EIA. This application is complicated by potentially different planning interpretations of the regime under which these analyses are to be completed. The Eagle Heights Planning Justification report (Metropolitan 2018) provides further explanation with regard to the planning regime applicable to the Subject Lands,
Pages 21, 22 Appendix	Figure 10 This figure presents an Analysis of Significance for the NHS as per the Natural Heritage Reference Manual, however we question the Significant Woodland designation layer. As raised previously, the Regional criteria for evaluating Significant Woodlands should be used. Additionally, if cultural communities meet the stem count requirements for designation as a woodland, then these should also be included in the Significant Woodland designation. Staff question the current methodology used for this site as wetlands and cultural thickets are included in the Significant Woodland layer, in areas that would not meet the stem count requirement. This figure should also include all other NHS designations for the site, such as Significant Wildlife Habitat, Regulated features, Habitat of Endangered or Threatened Species, ANSI, ESA, Wildlife Corridors, etc. (Halton MOU) *(new comment)*	Section 3.4.4 provides an updated analysis of significant woodlands and significant woodlands are illustrated on Figure 12 (Appendix A) of the EIA. Figure 12 also includes significant wildlife habitat identified within the Subject Lands. Figure 2 (Appendix A) illustrates the ANSI limits and ESA designations. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF including the location of species observations.
Pages 21, 22 Appendix A	Figure 11 It is unclear what policies have directed the development of Figure 11, Buffers and Mitigation Measures. Staff assume this figure is based on the OMB decision and not on current legislation and policy. As outlined above, staff is not supportive of this approach and we continue to recommend that all aspects of the PPS, Greenbelt Plan, Endangered Species Act, Ontario Regulation 162/06 and relevant Official Plans be used to direct the proposed draft plan. Until such time that the report has been updated to reflect current standards, staff are unable to support the proposed development. (O.Reg 162/06, Halton MOU) *(new comment)*	The buffers have generally been guided by the OMB decision. A discussion with respect to buffers is provided in section 5.1 of the EIA.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Pages 21, 22 Appendix A	General Comment on Figures EIS Figures 6, 8, 9, and 11 show Tributary 5 being located within the 7.5 m buffer block XY opposite lot 95, as opposed to within Valleyland Block YY. The block fabric in this area will need to be adjusted to maintain the tributary within the valleyland block and have the appropriate setbacks of 15 meters from the limit of the greatest hazard, as discussed earlier in this letter. (0. Reg 162/06) *(new comment)*	
Pages 22, 23 Appendix B	As raised above, please include the time of the surveys completed as well as the weather conditions during the surveys. This is important as many survey protocols have specific requirements pertaining to weather and time of completion. Without this information, staff are unable to determine if the fieldwork completed to date is appropriate. (Halton MOU) *(new comment)* On December 14, 2012, woodland density sampling occurred however the results of this assessment are not discussed within the text of the report. Given that there are a number of cultural woodlands within the study area that may warrant a Significant Woodland designation, staff request that information be provided. (Halton MOU) *(new comment)*	Section 3.0 of the EIA provides a description of survey protocols (weather, times), survey dates are provided in Table 2 (Appendix A). An updated analysis of woodland significance is provided in Section 3.4.4 of the EIA based on guidance provided in the Natural Heritage Reference Manual (2010).
Page 23 Appendix C	It should be noted that Table 2 on page 15 of the EIA does not include all of the locally rare species included in the plant list. Please revise the table to reflect the uncommon and rare plants present on the site so that a holistic assessment of the rare plants present on the site can occur. (Halton MOU) *(new comment)*	Locally important species do not tend to add substantial weight to conservation and mitigation decisions.
Page 23 Appendix D	Please update this appendix to reflect the current status of the birds observed on the site. For example, eastern wood-pewee is listed as Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), bank swallow is listed as Threatened by COSEWIC and wood thrush is listed as Threatened by COSEWIC. (Halton MOU) *(new comment)* A local rarity column should be added to the table, please refer to the Halton Natural Areas Inventory for local status. (Halton MOU) *(new comment)*	Please refer to Table 13 (Appendix A) of the EIA.
Page 23 Appendix F	Comments 50 through 55 are all replaced by the Appendices A, B, C & D comments notes above.	

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
EAGLE HEIGHTS EROSION ASSESSMENT, BURLINGTON, ONTARIO, PREPARED BY PARISH GEOMORPHIC, DATED MAY 26, 2010 While all comments regarding this document in Conservation Halton's July 11, 2011 letter remain applicable (see Appendix I), the following new comments are also to be addressed.		
Page 23	Staff are not supportive of the potential localized erosive impacts of directing uncontrolled flows into the watercourse on site and providing over-control within a downstream stormwater management facility. Best efforts must be made to address potential flow changes prior to discharge to the watercourses, however the potential change in the hydrologic regime must be incorporated into the meander belt width and stable top of bank assessments. (O. Reg 162/06, Halton MOU) (*modified comment)*	The meander beltwidth and toe erosion analysis assume that the SWM design results in minor hydrologic regime change. The cumulative erosion index and hydrographs included (see comment below) that will be included in the SWM report will have to demonstrate minor/no change in hydrologic regime change for approval.
Page 23	Page 13 of the report discusses re-alignments to Tributaries 5 and 6 in the vicinity of Flatt Road to minimize crossing requirements, address downstream erosion and provide greater separation between the creek and existing retaining wall (supporting Flatt Road at Tributary 6). These works must be supported through a Subwatershed Study, Environmental Assessment (should Flatt Road widening be completed by the Municipality) or similarly comprehensive review. (O. Reg 162/06, Halton MOU)	The conceptual watercourse crossing designs in the Geomorphic Assessment (Section 9) notes that minor channel realignment may be required at watercourse crossing 2 – Flatt Road at Tributary 5-6.
Page 24	As part of any re-submitted design, please: • demonstrate that the erosion threshold calculated represents the most sensitive of the bed or bank threshold, including supporting calculations, etc., (O. Reg 162/06, Halton MOU) • detail observed field conditions and document how observed field conditions supported the results of the geomorphic assessment (O. Reg 162/06, Halton MOU); and provide summary calculations of cumulative effective shear stress/effective work and a sample hydrograph supporting pre and post development exceedance analysis. (O. Reg 162/06, Halton MOU)	See Section 8 of the geomorphology assessment by Matrix Solutions for details on the Erosion Threshold Analysis • The erosion thresholds are based on modelling the Tributaries using Manning's equation to calculate flow and velocity from survey data. • Erosion thresholds are based on unit tractive force curves by Chow (1959) and empirical method developed by Komar (1987) The thresholds represent erosion of the channel bed. The channel bed is typically more sensitive to erosion compared to the channel banks based on the following considerations: • Typically, there is less shear on banks compared to the channel during the critical flow • Both the bed and banks are generally composed of fine material (e.g. silty clays) • Vegetation and root mass in the banks provide resistance to shear and erosion At Reach 4-1b, the erosion threshold is based on a channel bed consisting of large substrate. At this reach, the channel banks may be more sensitive to erosion than the channel bed. To account for this, an erosion threshold was calculated immediately downstream at Reach 4-1a. cumulative erosion analysis and hydrographs addressed in SWM report.

PALETTA INTERNATIONAL LIMITED, FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT: EAGLE HEIGHTS & TAYLOR PROPERY, CITY OF BURLINGTON DATED UPDATED JUNE 2010, ADDENDUM REVISED SECTION 7 TO ADDRESS REGION OF HALTON COMMENTS, MARCH 2013 While all comments regarding this document Conservation Halton's July 11, 2011 letter remain applicable (see Appendix 1) as the revised FSR submitted was to address the Region of Halton Comments, the following comments are new or modified from the original letter.		
Page 24	Given the number of environmental constraints associated with the subject properties, staff request that a figure be prepared and included in both the FSR and the EIA that clearly outlines the required buffers and servicing requirements. (O. Reg 162/06, Halton MOU)	Section 1.4 discusses the proposed plan, as well as providing a plan which shows all environmental constraints with respect to the development.

COMMENT REFERENCE	COMMENT	suggested RESPONSE
Page 24 Section 5	The FSSR indicated the external storm drainage area 4E on Figure 5.2 was to be directed alone Waterdown Road to a downstream on-line dry pond facility. Please note that this information does not appear to be consistent with the drainage scheme currently being considered as part of the on-going Waterdown Road Environmental Assessment (EA). Under the EA, Conservation Halton has request that treatment of stormwater flows from the road be incorporated into the development scheme of adjacent lands. Should evaluation of grades identify that directing road drainage into Pond 4A (by crossing Tributary 4 at Flatt Road) or into the proposed on-site storage within the institutional block is not feasible, staff still recommend that accommodation from all drainage from catchment $E with exception of the paved lanes for Waterdown Road itself, be directed through the Sub-Area 2 Lands. This will ensure that the drainage area has accounted for as Waterdown Road is being reconstructed with an urban cross section. Ass discussed previously, staff also recommend incorporation of an additional pond to this drainage area in conjunction with catmint 4C, 4D, 4E, and 4G. (O. Reg 162/06, Halton MOU) (*modified comment)*	See SWM Report
Page 24 Section 5	13.c) Not only is Conservation Halton supportive of the use of rural cross sections due to the water quality, erosion, and infiltration benefits it will provide, the NAIR document states, "…roadside swales and ditches should be employed to conduct runoff to SWM facilities". Should an urban cross section be considered, this needs to be modeled at this stage to ensure that the SWM pond blocks are appropriately sized. (O. Reg 162/06, Halton MOU) (*modified comment)*	The proposed road cross sections are of a rural type as discussed in section 2.3. With the exception of Flatt Rd, and Horning Rd, which are discussed in Section 2.4
Pages 24-25 Section 5	Staff requests all that SWM outlets discharge at the greatest distance feasible from the watercourse to reduce the need for additional erosion protection within watercourses. The outfalls requiring a channel outlet must be situated such that the discharge flows are in the same direction as the flow in the main creek (i.e. not perpendicular to the main flow) to decrease the potential for erosion on the bed and banks. Staff will also require the profile of the location of the outlet pope in relation to the watercourse ordinary high water mar/bankful channel, and details of any proposed bank treatment/protection. (O. Reg 162/06, Halton MOU, DFO Level II, Detailed Design) (*modified comment)*	
Page 25 Section 5	Section 6.3 (Post Development Conditions Flatt Road Crossings) of the FSSR indicates the existing 550mm CSP on Tributary 4 under Flatt Road is to be upgraded to a 675 mm concrete pipe. The Erosion Assessment reports the maximum bankful channel width in Reach 4-4 to be 1.58m. Staff request that the proposed concrete pipe be upgraded to a concrete box culvert, to be countersunk a minimum of 10% to natural substrate through the culvert. Minimally, staff request a CSP culvert is preferred over a smooth walled concrete pipe. Culverts should be sized appropriately to allow for a minimum of 10 % countersinking, while maintaining appropriate hydraulic capacity. Staff recommends sizing the culverts according to recommendations of a fluvial Geomorphologist. (O. Reg 162/06, Halton MOU, DFO Level II) (*modified comment)*	

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 25 Section 5	Section 7.6. identifies the need to construct a new reservoir to service the Eagle Heights subdivision. The location of the proposed Horning Road extension and Potential Reservoir locations are shown on Figure 7.13. Staff note that the proposed location of Horning Road as well as Reservoir location 2 both fall within Conservation Halton approximate regulation limit, and potentially the erosion hazard associated with the natural valley processes of the Grindstone Creek Valley. Staff are unable to determine whether reservoir location 1 falls within or outside of the approximate regulation limit. Staff will be unable to permit the proposed road construction without the completion of a detailed study to confirm the long term stable top of bank associated with the Grindstone Creek valley and the refinement of the regulated hazards. Per Conservation Halton Policy 3.51 new utility and transportation corridors are required to locate outside of the hazard and associated regulated tableland. Without further study, staff cannot confirm the acceptability of the proposed location for the Horning Road extension or potential water reservoir and zone B5A pumping station at locations 1 and 3. ((O. Reg 162/06))	Please see section 6 of the Updated FSR. A development permit application is being sought
Page 25 Section 5	Staff note a 499mm trunk watermain, a Zone B3A watermain and a sanitary main are proposed to cross all tributaries along Flatt Road. Please discuss the consideration/design measures to minimize the number of utility crossings. (O. Reg 162/06, Halton MOU)	Please see section 6 of the Updated FSR
Page 25 Draft Plan of Subdivision Drawings	It appears from the Draft Plan Drawing that the west branch of Tributary 5 is not contained within the proposed channel block and runs through the buffer area adjacent to Lot 95 (adjacent to Block XX). Please note staff are not supportive of a channel realignment unless supported by a subwatershed study or similar level study to fully evaluate the impact and consider other appropriate alternatives. (O. Reg 162/06)	The proposed plan has been adjusted in this area.
Page 25 Planning Justification Report, prepared by Walker, Nott, Dragicevic, July 2002	Previous comments where applicable.	
Page 25	Previous comments where applicable.	

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Eagle Heights Planning Justification & Environmental Analysis, prepared by Scott Burns Planning Consultants & Envision, January 2001		
STABLE TOP OF BANK ASSESSMENT, PREPARED BY PETO MACCALLUM, JULY 2006 Staff reviewed a copy of Peto MacCallum Ltd.'s 2006 "Stable Top of Bank Assessment Eagle Heights and Taylor Properties, Waterdown Road, Burlington, Ontario dated July 20, 2011. As the report was received after the preparation of our first submission comments, the following represent new comments under the Ontario Regulation 162/06. Staff have reviewed the 2006 PML report and are unable to support the location of long term stable top of slope at this time. Further clarification and justification are required. We off the following preliminary comments:		
Pages 26-27	The report and analysis appear to have been largely base on topographic information references as "Plan produced from an untitled and undated site plan, drawn and provided by Metropolitan Consulting Inc. in an email dated June 22, 2006." In several instance the approved top of bank line *assumed to be top of bank as staked by Conservation Halton Staff) is not consistent with the topographic information provided on the plans. Additionally the surface elevations identified for several of the boreholes do not appear to be consistent with the topographic information on the detailed plans. Please provide detailed references information on the plans for the topographic survey, staked top of bank and borehole information, and reconfirm that the three surveys (staked top of bank, borehole, and detailed topographic) were appropriately geospatially referenced. Please note that staff require a detailed topographic survey of the property, and that use of topographic information from local base mapping will not be sufficient to identify the hazards. As both the staked top of bank and topographic analysis are dated, in order to confirm location of Conservation Halton's Regulated Limit and the long term stable top of slow, staff will require: • A site visit with a licensed surveyor to re-stake and re-survey the top of bank across both properties, and either • The provision of a written confirmation from the Geotechnical Engineer that base on a site inspection of all valley slopes and watercourses across the Eagle Heights and Taylor properties, that the topographic information currently presented and used in the 2006 report and any updated analysis of the long term stable slop crest is still accurate with respect to the watercourse location, toe of slope, top of slow and slope inclination, or	Addressed in the Slope Stability report by SoilMat

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	• The completion of a new topographical survey for the properties. Please refer to Section E Ontario Regulation 162/06 with regards to Conservation Halton's outstanding requirements for staking on site for valleylands (and wetlands). Staff may also be supportive of the completion of a partial topographic survey in the areas identified to have experienced change relative to the previous topographic survey, provided the partial survey data was able to consistently tie into historic survey data. Please note that Conservation Halton will only be able to accept a written confirmation of the topographic information or completion of a partial topographic survey if the analysis presented in the 2006 report was based on a site specific detailed topographic survey, completed by an Ontario Land Surveyor or License Professional Engineer. Regardless of whether a new topographic survey is completed or if a statement confirming the accuracy of the slope is provided, staff will require an updated geotechnical assessment be completed to address the comments below. While the report indicates that the limited equilibrium method of analysis was completed to determine the stable inclination, no calculations or summary of the values used in the calculation were provided within the report. Per the MNR technical Guidelines, Conservation Halton requires development to be setback relative to the long term stable slope crest [which staff have defined as having a minimum factor of safety of 1.5 under long term condition and 1.3 under temporary conditions (i.e. seasonally high groundwater table, etc.)]. Please provide summary output from calculations to confirm that the selected stable slope inclination of 2:1 in soil is applicable for all cross section locations under both long-term and temporary site conditions. The output should show that the limit equilibrium analysis considered 20 to 30 slices (consisting of analysis of multiple centers of rotation each with multiple slip surfaces of various radii focused at the same center of rotation), and summarize the key inputs included in the computerized analysis. Staff also note that the identified stable inclination of 2:1 in soil differs from previous analysis of the area completed by Terraprobe as part of Cosburn Patterson Wardman Ltd.'s 1995 "Grindstone Creek Subwatershed Study.". Per the 1995 subwatershed study, a stable inclination of 2.5:1 was identified for clayey silt till. If the proposed stable slope inclination recommendation remains steeper than 2.5:1, please highlight how the Peto MacCallum's analysis differs from the analysis by Terraprobe as part of the Grindstone Creek Subwatershed Study. (Note – due to the age of the previous study and the potential for advances in the field of geotechnical engineering to modify previous findings, staff are not able to simply accept the previously approved value for use on the property,	Addressed in the Slope Stability report by SoilMat

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	and will require a detailed geotechnical investigation be completed.)	
Page 27	Staff are unable to accept the identified stable shale bedrock inclination of 1.25:1 without the completion of detailed studies of the rock competency. A geotechnical peer review (at the expense of the applicant) of the detailed rock studies will be required for staff to accept a stable slope inclination of less than 1.4:1 in shale.	Addressed in the Slope Stability report by SoilMat
Page 27	While the toes erosion component of the long term stable slope inclination for the Grindstone Creek lies within the recommended range of values presented in Table 3 of the MNR's Technical Guide: River and Stream System Erosion Hazard Limit" staff request additional justification as to why the lower spectrum of typical values for systems under active erosion was selected. Staff further not that the 1995 Grindstone Creek Subwatershed Study identified a toe erosion component of 5m for shale and 8m for clayey silts under active erosion, and 2 meters for shale and 4m for clayey silts where no identification of active erosion had been found. These values relate specifically to the table land creeks and not the Main Grindstone Valley. Staff believe that this section of the main Grindstone Creek to be highly susceptible to toe erosion, as Grindstone Creek gains substantial erosive potential dropping over the escarpment face immediately upstream of the property. Approximately 100m north of Horning Mill Road, the Creek goes over the escarpment face, and the base of the valley is at an average gradient of approximately 11%. Although the base of the valley flattens considerable and the gradient is reduced to approximately 1.6% through the mid portion of Eagle Heights property, the channel still exhibits a relatively steep gradient. Given the relative size of the Grindstone Creek's drainage area at the property, approximately 7,200ha, and the steep gradient of the system, staff believe that the Grindstone Creek at this location is not representative of "typical" Ontario stream, and request that a detailed toe erosion assessment be completed to confirm an appropriate value for toe erosion.	Addressed in the Slope Stability report by SoilMat
Pages 27-28	Staff are unable to accept the proposed toes erosion component of 50% of the value for the Main Grindstone Creek for the "ravine creeks" without further justification. Although it is acknowledged that the ravine creeks have a smaller contributing drainage area, these systems have a steeper inclination along the base of the valley as compared to the Main Grindstone through the property and will be subject to changing flow regime due to the development. Additionally, these systems are less likely to be founded in shale or bedrock, are deeply incised, and typically less vegetated as compared to the main Grindstone valley. In the absence of a geomorphic analysis to set the 100-year toe erosion rate of these creeks, staff recommend consideration of conservative toe	Addressed in the Slope Stability report by SoilMat

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	erosion rates provided in Table 3 of the MNR's Technical Guidelines for actively eroding systems. Staff not that the values in the MNR Technical Guidelines are consistent with values identified in the 1995 Grindstone Creek Subwatershed Study prepared by Cosburn Patterson Wardman Ltd.	
Page 28	As the topographic information did not appear to be accurate, staff could not confirm that the cross sections analyzed to determine the long term stable top of slope were representative of the critical cross sections. Please ensure that the revised report presents factor of safety analysis of the most critical cross sections under long term and temporary slope conditions. The revised report must also include photographs of the slope and indicate the length of validity associated with the analysis or confirmation and be signed and sealed by a licensed professional engineer.	
Page 28	Please note that for confined valley systems associated with Grindstone Creek and all other major valley systems, Conservation Halton's Regulated limit extends t15m from the greater of: top of bank as staked by Conservation Halton, the long term stable top of slope as calculated by an approved signed and sealed geotechnical investigation, or the regulatory floodplain. Please revise the buffer areas shown on the plans accordingly.	
PLANS OF SUBDIVISION – FIGURES 2-1 AND FIGURE 2-2		
Pages 28-29	1. Remains applicable. 2. Remains applicable. 3. Remains applicable. Please refer back to Section E Ontario Regulation 162/06 for areas outstanding that require additional staking (both valleylands and wetlands). 4. At the present the extent of the flooding and erosion hazard limit associated with the Main Grindstone Creek, and tributaries 4, 5, 6 have not been properly identified (O. Reg 162.06) *(modified comment)* 5. Staff are not supportive of the revisions to the flooding and erosion hazard limits as currently represented in Peto MacCallum's July 2006 "stable Top of Bank Assessment, Eagle Heights and Taylor Properties" and Metropolitan Consulting Inc,'s Updated June 2010 "functional Servicing and Stormwater management Report – Eagle Heights * Taylor property" reports, as these reports are not consistent with technical guidelines provide by the MNR for the evaluation of natural hazards. For any identified unconfined reaches, an erosion assessment (meander belt width + 200 year	4/5. Matrix Solutions delineated meander beltwidths in unconfined reaches and recommended toe erosion allowances in confined reaches. These beltwidths and toe erosion allowances form part of the erosion hazards.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	erosion rate) signed and sealed by a fluvial geomorphologist licensed by the Association of Professional Geoscientists of Ontario, or by a licensed Professional Engineer must be submitted to CH for review and approval to confirm a revised erosion hazard limit. (O. Reg 162/06, Prov. MOU) *(modified comment)* 6. No longer applicable 7. The proposed draft plan for eagle Heights does not include a corridor for the Tributary 4, as the channel's current alignment lies within Blocks PP, OO and residential lots fronting Waterdown Road and Street E. Per the EIA and FSSR, the drainage functions of this feature are to be provided through a ditch along Street E. Based on CH's current mapping, Tributary 4 is considered to be a regulated watercourse for a distance of approximately 635m upstream of Flatt Road (See Appendix I). Therefore, a subwatershed study or similar level of study must be completed to support the relocation or removal of this feature. Alternatively, the flooding and erosion hazard limits may be calculated as per the MNR's Technical Guidelines on Natural Hazards and the development plans adjusted to eliminate any development within the regulated hazard and associated 15m setback. (O.Reg 162/06, Prov. MOU) 8. Remains applicable. However, based on site visit, Conservation Halton does not have concerns with the stability of Street X provided it is outside of the erosion hazard associated with Tributary 4. (O.Reg 162/06, Prov. MOU) 9. Remains applicable. 10. Please note that Conservation Halton has a specific policy related to the development of stormwater management ponds within the Regulated Limit. Please note however, that based on the topographic data show on the plan, staff anticipate that significant portion of Block H appears to be within the 15meter regulation limit associated with a valley and potentially the wetland MAS2-1 Pond301 and its associated setbacks, as such, contrary to CH's polices. Therefore, development of even a temporary stormwater management pond will likely not be supported at the present location. Similarly, staff note that Block O, SWM Pond 6B is also located within a valley, therefore the placement of this block is not supported. (O.Reg 162/06, Prov. MOU) 11. Remains applicable. 12. Wetlands – all development (including any proposed grading changes) within the 20 meter associated allowance of a wetland must be supported through the completion of a hydrologic evaluation confirming that the development would not have	7. Matrix Solutions delineated a meander beltwidth for the Reach 4-5 directly upstream of Flatt Road (Section 5). Farther upstream in Reach 4-6, Matrix Solutions developed conceptual channel realignment (Section 6). This realignment is based on the assessment that Reach 4-6 is a headwater drainage feature requiring mitigation management.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	negative impact on the hydrologic functions of the wetland. Given the nature of the surrounding development; the hydrologic evaluation must include a hydrogeologic component. 13. Remains applicable. 14. Remains applicable.	
OVERALL SUBDIVISION PLAN COMMENTS		
Pages 29-30	The following comments in this new section have been generated by the most recent submission. • Staff require that Tributary 4 and the west branch of Tributary 5 be vegetated to the satisfaction of Conservation Halton staff in the reach currently crossing through agricultural fields to create a riparian buffer. The Remedial Action Plan for Hamilton Harbour, Urbanization and Land Management component, long term target for Riparian Buffers is to have "all rural watercourses within the Hamilton Harbour watershed be buffered by a 15 meter vegetative riparian buffer adjacent to warmwater fish habitat and a 30 meter vegetative buffer adjacent to coldwater fish habitat: by 2015. Further, there is a recommendation to "establish appropriate riparian buffering in urban watershed". Environment Canada's How Much Habitat is Enough? (Third Edition, 2013) indicates, "both sides of streams should have a minimum 30 meter wide natural vegetated riparian area to provide and protect aquatic habitat. The provision of highly functional wildlife habitat may require total vegetated riparian widths greater than 20 meters." (O. Reg 162/06, Halton MOU) • Staff recommend the recommendations and targets within the Hamilton Harbour Remedial Action Plan (RAP) be adhered to during subdivision design and development. (Hamilton Harbour RAP Agreement) The RAP Stage 1 & 2 Reports identified suspended solids/ sediments as issues related to the streams entering Hamilton Harbour. The report indicates that one of the most beneficial focus for additional suspended solids reduction should come from watershed and urban runoff best management practices. Reducing total phosphorus loading to the Harbour is the single most important means to reduce algae and increase water clarity. The RAP target is to reduce total phosphorous loads to 23µg/L. To assist in achieving this, a detailed phasing plan for development should be established to minimize bare soil conditions and employ a treatment train approach and strict site monitoring Erosion and Sediment Control implementation to reduce erosion and runoff during and post construction.	Comments to be addressed by Metropolitan. To be addressed by MCI, Savanta and ? Buffers are typically defined as areas adjacent to a natural feature that are intended to provide some separation and protection from proposed adjacent land uses. They are intended to reduce impacts that might negatively impact the natural feature or its associated functions. In residential developments, a primary impact requiring mitigation planning is the effect of increased numbers of people (and their pets if allowed to roam un-controlled). Buffers are one of a number of mitigation measures that were considered in this impact assessment, to reduce potential impacts and protect natural features/functions associated within the Subject Lands. Please refer to section 5.1 of the EIA for further discussion with respect to buffers.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
	• Section 3.1 Road Standards of The North Aldershot Inter-Agency Review (NAIR) Final Report provides guidance on Stormwater Management. The report outlines various design guidelines for managing stormwater (e.g. runoff should be minimized and detained on site; runoff shall be detained within each development note to address water quality and erosion outletting of water should not impact natural features; design of facilities to harmonize with abutting natural features; and roadside swales and ditches shall be employed to conduct runoff to SWM facilities etc.). Staff request additional discussion on how these guidelines have been incorporated into the design. • The Nair Report indicate any disturbed or degrading environments must be rehabilitated. Please note Conservation Halton's Landscaping and Tree Preservation Guidelines should be review for details on restoration of any disturbed areas and for any propose watercourse realignments (only where supported through a SWS).	Overall stormwater management approach has changed in the 2018 SWM Report. Extensive LID measures have been implemented in the latest SWM Report which address the concern raised on this comment. Agreed. Nair Report's recommendations will be implemented.

Matrix of Niagara Escarpment Commission Letter dated September 27, 2013

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 1, 2 Environmental Impact Assessment (EIA)	Of concern is the statement on page 1 that the EIA does not address lands north of the Hydro corridor because that area is not included in the new application for development. The lands north of the Hydro corridor are within the Niagara Escarpment Plan area and any development will require a Development permit. The works proposed within the NEP include the extension of Horning Road and the Installation of infrastructure to service lots south of the Hydro corridor.	Acknowledged. A Development Permit will be obtained for the extension of Horning Road and the servicing lots.
Page 1, 2 Environmental Impact Assessment (EIA)	It is our view that there should be an addendum to the EIA to include the lands within the NEP Area in consideration of the policies and development criteria of the Niagara Escarpment Plan (NEP), which designate lands in this area as Escarpment Natural Area and Escarpment Protection Area. This is particularly important given the identification in the EIA of the habitat of Species at Risk in the development area. Based on the policies of the NEP, including Part 2.8 (Wildlife Habitat) NEC staff will need to assess the implications of the identification of SAR habitat, if located within the NEP Area and confirmed by the Ministry of Natural Resources. Lastly, we note that the Planning Principles identified in the EIA do not include the potential visual impact of the development as an important principle. We have indicated in our previous correspondence the importance of undertaking visual impact assessment to assist in determining the potential impact of the proposed development on views to and through the Niagara Escarpment. Our attendance at the two site visits has confirmed that significant tree removal could result from the proposed realignment southerly and extension of Horning Road. The implications of the need to bring in fill or alter topography to support any change in the location of Horning Road has also not been assessed. Tree removal and the importation of fill could have significant impacts on the open landscape character, visual attractiveness and scenic characteristics of the Escarpment and the implications of this should be properly assessed in the EIA and a visual impact assessment taking into consideration the dimensions, alignment, grading and drainage implications of the proposed infrastructure.	The EIA has been amended to include an assessment of the development activities to be undertaken on NEP lands. Please refer to Section 6.1.8. Potential impacts to SAR associated with the Subject Lands will be addressed directly with the MNRF through the SAR Information Gathering Form (IGF) process. Due to the sensitive nature of this information, all correspondence and related materials will remain with the MNRF including the location of species observations. A Visual Impact Assessment Report has been completed.

COMMENT REFERENCE	COMMENT	SUGGESTED RESPONSE
Page 2 Functional Servicing Report (FSR)	We understand that the update to the FSR was intended to address the comments of the Region of Halton. We note that a new reservoir would be required to service the development and that the reservoir would be the subject of a future Class EA. Figure 7-13 shows alternative locations for the reservoir and Locations 2 and 3 (referred to in the FSR as also Locations B and C) are within the NEP area. The report appears to prefer Location 3 at the north end of Horning Road, within the area shown on the raft as "not part of the application. The FSR notes that "a moderately elevated water tank" would be needed for a reservoir in this location. The NEC has previously expressed concerns about the potential visual impact of any elevated structure and the need to assess this impact as part of the review of the development applications, in accordance with a Terms of Reference satisfactory to the NEC. We recommend that the preferred reservoir location be Location 1, outside the NEP, south of the Hydro corridor where an elevated structure would not be required. Other proposed infrastructure within the NEP required to service the development includes a waterline, a sewer line and a possible pumping station adjacent to the reservoir. All of the proposed infrastructure would require Development permit form the NEC. The site visits were of assistance in location the proposed infrastructure relative to Escarpment features. We have confirmed through GPS measurements taken on site that the extension of Horning Road will pass through the Escarpment Natural Area. The applicant must demonstrate that the road is "essential" infrastructure in accordance with the definition in the NEP and that all alternatives to avoiding the Escarpment Natural Area have been considered. In addition, the criteria in Par 2.4 of the NEP (New Development on Steep Slopes and Ravines) must be addressed as the proposed road and development infrastructure would occur in an area of steep slopes and it would need to be determined if appropriate development setbacks could be established. We note on pages 15-16 of the FSR that it is assumed that the 8 lots proposed on Horning Road are proceeding as part of the application as they are indicated to be within the proposed Phase 1 of the development phasing scheme. This inconsistency should be clarified to confirm whether the 8 lots are proposed as part of the development under consideration. We reiterate that for development proposed within the NEP, approvals for a Development Permit must first be obtained from the NEC before other approvals can be granted, in accordance with Section 24(3) of the Niagara Escarpment Planning and Development Act.	See previous comments.

APPENDIX B 2017 City of Burlington Capital Budget

Ref. #	Year	Project	Category	2017	2018	2019	2020	2021-2026	TOTAL
Part 'RL': Locals									
82	2020	**Blair Road and Landmark Road Minor Reconstruction** RD-RL-1425 Infrastructure Renewal **CAP_Capital Works,** 2020 The City's investment in infrastructure repair provides an opportunity to enhance the condition of the City's roadway assets at a reduced cost. Minor Reconstruction involves the removal and replacement of all road asphalt and the replacement of deficient curbs & sections of sidewalk where required.	**Capital**				136		136
			Reserve Funds				755		755
			External						
			Gross Cost				890		890
		2020: Location=Blair Road, Landmark Road							
83	2020	**Flatt Road Reconstruction** RD-RL-230 Growth **CAP_Capital Works,** 2020 Reconstruction to urban cross section including sidewalk, this upgrade will be necessary as a result of future development. A developer recovery is included in the amount of $717,500. The developer is expected to coordinate the functional plan for the project which may affect the required funding contribution.	**Capital**				718		718
			Reserve Funds						
			External				718		718
			Gross Cost				1,435		1,435
		2020: Location=Waterdown Road to Flatt Road extension							

Ref. #	Year	Project	Category	2017	2018	2019	2020	2021-2026	TOTAL
Part 'RL': Locals									
84	2020	**Glenwood School Drive Reconstruction and Storm Sewer** RD-RL-1468 Infrastructure Renewal **CAP_Capital Works,** 2020 Reconstruction of street to urban standards including the construction of a new storm sewer, curb & gutter and sidewalks. This work is being completed to bring the road segment to urban standards in order to accommodate pedestrian traffic and improve drainage.	**Capital**				157		157
			Reserve Funds				2,143		2,143
			External						
			Gross Cost				2,300		2,300
2020: Location=Glenwood School Dr (Queensway - W. End)									
85	2020	**Horning Road Reconstruction** RD-RL-765 Growth **CAP_Capital Works,** 2020 Modified Urban section to accommodate a sidewalk. Pending new development in Eagle Heights area . A developer recovery is included in the amount of $370,000. The developer is expected to coordinate the functional plan for the project which may affect the required funding contribution.	**Capital**				370		370
			Reserve Funds						
			External				370		370
			Gross Cost				740		740
2020: Location=Construction									

APPENDIX C Sanitary Sewer Design Calculations

ion: North Aldershot — SANITARY SEWER DESIGN — Calculated by: — Checked by:

Catch. ID	Location Street	Tributary Area [ha] From	To	Increment Ex. SF Res.	Pr SF Res.	Pr Cl Res	Non Res.	Area	Cumulative Area	Residential Units SF @ 3.4 ppu	Cl @ 2.5 ppu	Population Total Res Pop.	Non Res @ 90 ppha	Total Pop.	Average Flow [l/s]	Average Peaking Factor	Peak Flow [l/s]	Infil-tration [l/s]	Max. Flow [l/s]	Sewer Size [mm]	Slope [%]	Capacity [l/s]	Velocity [m/s] Full	Actual	% of Full Capacity [%]	Pipe Material	Manning's n	Proportion Flow Ave./Full	Proportional depth	roportiona Velocity	Actual Velocity
30A	Waterdown Rd	A	46A	1.04				1.04	1.04	2		7	0	7	0.02	4.43	0.10	0.30	0.39	200	5.70%	78.32	2.49	0.34	0.5%	PVC	0.013	0.01	0.03	0.14	0.34
30B	Waterdown Rd	46A	47A	1.41				1.41	2.45	4		14	0	20	0.06	4.38	0.28	0.70	0.99	200	5.70%	78.32	2.49	0.75	1.3%	PVC	0.013	0.01	0.07	0.30	0.75
30C-1	Waterdown Rd	47A	48A	2.70				2.70	5.15	8		27	0	48	0.15	4.32	0.65	1.47	2.13	200	5.70%	78.32	2.49	1.00	2.7%	PVC	0.013	0.03	0.10	0.40	1.00
30C-2	Waterdown Rd	48A	51A	0.53				0.53	5.68	1		3	0	51	0.16	4.31	0.70	1.62	2.32	200	5.70%	78.32	2.49	1.03	3.0%	PVC	0.013	0.03	0.10	0.41	1.03
30E	Ireson	49A	50A	1.46				1.46	1.46	4		14	0	14	0.04	4.40	0.19	0.42	0.61	200	0.30%	17.97	0.57	0.24	3.4%	PVC	0.013	0.03	0.11	0.43	0.24
30D	Ireson	50A	51A	1.07				1.07	2.53	4		14	0	27	0.09	4.36	0.38	0.72	1.10	200	0.30%	17.97	0.57	0.31	6.1%	PVC	0.013	0.06	0.16	0.54	0.31
30F	Waterdown Rd	51A	52A	1.40				1.40	8.21	1		3	0	82	0.26	4.27	1.11	2.35	3.46	200	2.17%	48.32	1.54	0.88	7.2%	PVC	0.013	0.07	0.18	0.57	0.88
30G	Waterdown Rd	52A	AA	3.40				3.20	11.41	3		10	0	92	0.29	4.25	1.24	3.26	4.51	200	5.70%	78.32	2.49	1.27	5.8%	PVC	0.013	0.06	0.14	0.51	1.27
31	Waterdown Rd	-	AA		5.76			5.76	5.76	20		68	0	68	0.22	4.29	0.93	1.65	2.57	200	1.46%	39.64	1.26	0.68	6.5%	PVC	0.013	0.06	0.16	0.54	0.68
30H-1	Waterdown Rd	AA	53A	0.74				0.74	17.91	2		7	0	167	0.53	4.18	2.21	5.12	7.34	200	5.50%	76.93	2.45	1.52	9.5%	PVC	0.013	0.10	0.21	0.62	1.52
30H-2	Waterdown Rd	53A	54A	1.50				1.50	19.41	3		10	0	177	0.56	4.17	2.35	5.55	7.90	200	5.50%	76.93	2.45	1.57	10.3%	PVC	0.013	0.10	0.21	0.64	1.57
30I	Waterdown Rd	54A	55A	3.70				3.70	23.11	9		31	0	207	0.66	4.14	2.73	6.61	9.34	200	1.55%	40.84	1.30	1.01	22.9%	PVC	0.013	0.23	0.31	0.78	1.01
30J	Waterdown Rd	55A	56A	2.20				2.20	25.31	3		10	0	218	0.69	4.13	2.86	7.24	10.10	200	1.55%	40.84	1.30	1.01	24.7%	PVC	0.013	0.25	0.31	0.78	1.01
30K	Waterdown Rd	56A	57A	0.64				0.64	25.95	1		3	0	221	0.70	4.13	2.91	7.42	10.33	200	1.55%	40.84	1.30	1.01	25.3%	PVC	0.013	0.25	0.31	0.78	1.01
30L	Waterdown Rd	57A	58A	1.62				1.62	27.57	3		10	0	231	0.74	4.12	3.04	7.89	10.92	200	1.55%	40.84	1.30	1.01	26.7%	PVC	0.013	0.27	0.31	0.78	1.01
30M	Waterdown Rd	58A	B	0.82				0.82	28.39	3		10	0	241	0.77	4.12	3.16	8.12	11.28	200	2.92%	56.06	1.78	1.39	20.1%	PVC	0.013	0.20	0.31	0.78	1.39
6A	Waterdown Rd	B	59A	0.66				0.66	29.05	1		3	0	245	0.78	4.11	3.21	8.31	11.51	200	2.92%	56.06	1.78	1.39	20.5%	PVC	0.013	0.21	0.31	0.78	1.39
6B	Waterdown Rd	59A	60A	0.62				0.62	29.67	3		10	0	255	0.81	4.11	3.33	8.49	11.82	200	2.92%	56.06	1.78	1.39	21.1%	PVC	0.013	0.21	0.31	0.78	1.39
6C	Waterdown Rd	60A	61A	1.11				1.11	30.78	5		17	0	272	0.87	4.10	3.55	8.80	12.35	200	2.92%	56.06	1.78	1.39	22.0%	PVC	0.013	0.22	0.31	0.78	1.39
18, 6D	Waterdown Rd	60A	61A	0.57		2.18		2.75	33.53	2	123	314	0	586	1.87	3.94	7.35	9.59	16.94	200	2.92%	56.06	1.78	1.55	30.2%	PVC	0.013	0.30	0.38	0.87	1.55
6E	Waterdown Rd	61A	62A	1.03				1.03	34.56	4		14	0	600	1.91	3.93	7.51	9.88	17.39	200	3.65%	62.67	1.99	1.56	27.8%	PVC	0.013	0.28	0.31	0.78	1.56
6F	Waterdown Rd	62A	63A	1.24				1.24	35.80	2		7	0	607	1.93	3.93	7.59	10.24	17.83	200	3.65%	62.67	1.99	1.56	28.4%	PVC	0.013	0.28	0.31	0.78	1.56
6G	Waterdown Rd	63A	64A	0.13				0.13	35.93	0		0	0	607	1.93	3.93	7.59	10.28	17.86	200	3.65%	62.67	1.99	1.56	28.5%	PVC	0.013	0.29	0.31	0.78	1.56
6H	Waterdown Rd	64A	AD	0.22				0.22	36.15	0		0	0	607	1.93	3.93	7.59	10.34	17.93	200	3.65%	62.67	1.99	1.56	28.6%	PVC	0.013	0.29	0.31	0.78	1.56
6I	Waterdown Rd	64A	AD	1.30				1.30	37.45	0		0	0	607	1.93	3.93	7.59	10.71	18.30	200	3.65%	62.67	1.99	1.56	29.2%	PVC	0.013	0.29	0.31	0.78	1.56
16 / 17A	Street D	C	34A		0.19	0.97		1.16	1.16	1	116	293	0	293	0.93	4.08	3.81	0.33	4.14	200	1.00%	32.80	1.04	0.67	12.6%	PVC	0.013	0.13	0.21	0.64	0.67
17B	Street D	34A	35A		0.36			0.36	1.52	4		14	0	307	0.98	4.07	3.98	0.43	4.42	200	1.00%	32.80	1.04	0.67	13.5%	PVC	0.013	0.13	0.21	0.64	0.67
17C	Street D	36A	35A		0.38			0.38	0.38	3		10	0	10	0.03	4.41	0.14	0.11	0.25	200	1.00%	32.80	1.04	0.22	0.8%	PVC	0.013	0.01	0.05	0.21	0.22
17D	Street E	35A	37A		0.35			0.35	2.25	4		14	0	331	1.05	4.06	4.27	0.64	4.92	200	2.00%	46.39	1.48	0.95	10.6%	PVC	0.013	0.11	0.21	0.64	0.95
17E	Street E	37A	38A		0.54			0.54	2.79	8		27	0	358	1.14	4.04	4.61	0.80	5.41	200	2.00%	46.39	1.48	0.95	11.7%	PVC	0.013	0.12	0.21	0.64	0.95
17F-1	Street E	38A	38-1A		0.30			0.30	3.09	4		14	0	372	1.18	4.04	4.78	0.88	5.66	200	2.00%	46.39	1.48	0.95	12.2%	PVC	0.013	0.12	0.21	0.64	0.95
17F-2	Street E	38-1A	39A		0.36			0.36	3.45	5		17	0	389	1.24	4.03	4.98	0.99	5.97	200	2.00%	46.39	1.48	0.95	12.9%	PVC	0.013	0.13	0.21	0.64	0.95
17G	Street E	39A	40A		0.90			0.90	4.35	14		48	0	436	1.39	4.00	5.56	1.24	6.80	200	1.00%	32.80	1.04	0.81	20.7%	PVC	0.013	0.21	0.31	0.78	0.81
17H	Street E	40A	41A		0.40			0.40	4.75	5		17	0	453	1.44	4.00	5.76	1.36	7.12	200	1.00%	32.80	1.04	0.81	21.7%	PVC	0.013	0.22	0.31	0.78	0.81
17I	Street E	41A	42A		0.19			0.19	4.94	2		7	0	460	1.46	3.99	5.85	1.41	7.26	200	1.00%	32.80	1.04	0.81	22.1%	PVC	0.013	0.22	0.31	0.78	0.81
17J	Street E	42A	43A		0.82			0.82	5.76	10		34	0	494	1.57	3.98	6.25	1.65	7.90	200	1.00%	32.80	1.04	0.81	24.1%	PVC	0.013	0.24	0.31	0.78	0.81
19A	Street E	43A	44A		0.28			0.28	6.04	3	0	10	0	504	1.60	3.97	6.38	1.73	8.10	200	1.00%	32.80	1.04	0.81	24.7%	PVC	0.013	0.25	0.31	0.78	0.81
19B	Street E Easement	44A	45A		0.09			0.09	6.13	0		0	0	504	1.60	3.97	6.38	1.75	8.13	200	1.00%	32.80	1.04	0.81	24.8%	PVC	0.013	0.25	0.31	0.78	0.81
19C	Street E Easement	45A	D		0.05			0.05	6.18	0		0	0	504	1.60	3.97	6.38	1.77	8.14	200	1.00%	32.80	1.04	0.81	24.8%	PVC	0.013	0.25	0.31	0.78	0.81
5A	Street C + Easement	LL	96A			0.43		0.43	0.43		64	160	0	160	0.51	4.18	2.13	0.12	2.25	200	2.00%	46.39	1.48	0.70	4.9%	PVC	0.013	0.05	0.13	0.48	0.70
5B	Street C + Easement	96A	95A			0.41		0.41	0.84		77	193	0	353	1.12	4.05	4.54	0.24	4.78	200	2.00%	46.39	1.48	0.95	10.3%	PVC	0.013	0.10	0.21	0.64	0.95
5C	Street C + Easement	95A	28A			0.71		0.71	1.55		0	0	0	353	1.12	4.05	4.54	0.44	4.98	200	2.00%	46.39	1.48	0.95	10.7%	PVC	0.013	0.11	0.21	0.64	0.95
5D	Street C + Easement	28A	29A			0.83		0.83	2.38		0	0	0	353	1.12	4.05	4.54	0.68	5.22	200	2.00%	46.39	1.48	0.95	11.3%	PVC	0.013	0.11	0.21	0.64	0.95
5E	Street C + Easement	29A	30A			0.96		0.96	3.34		0	0	0	353	1.12	4.05	4.54	0.96	5.50	200	2.00%	46.39	1.48	0.95	11.8%	PVC	0.013	0.12	0.21	0.64	0.95
5F	Street C + Easement	30A	31A			0.53		0.53	3.87		0	0	0	353	1.12	4.05	4.54	1.11	5.65	200	2.00%	46.39	1.48	0.95	12.2%	PVC	0.013	0.12	0.21	0.64	0.95
5G	Street C + Easement	31A	32A			0.67		0.67	4.54		0	0	0	353	1.12	4.05	4.54	1.30	5.84	200	2.00%	46.39	1.48	0.95	12.6%	PVC	0.013	0.13	0.21	0.64	0.95
5H	Street C + Easement	32A	33A			0.26		0.26	4.8		0	0	0	353	1.12	4.05	4.54	1.37	5.91	200	1.00%	32.80	1.04	0.75	18.0%	PVC	0.013	0.18	0.27	0.72	0.75
	Street C + Easement	33A	J			0		0	4.8		0	0	0	353	1.12	4.05	4.54	1.37	5.91	200	1.00%	32.80	1.04	0.75	18.0%	PVC	0.013	0.18	0.27	0.72	0.75
1A	Horning Rd	F	18A	2.72				2.72	2.72	9		31	0	31	0.10	4.35	0.42	0.78	1.20	200	5.00%	73.35	2.33	0.76	1.6%	PVC	0.013	0.02	0.07	0.33	0.76
1B	Horning Rd	18A	19A	1.51				1.51	4.23	5		17	0	48	0.15	4.32	0.65	1.21	1.86	200	5.00%	73.35	2.33	0.93	2.5%	PVC	0.013	0.03	0.10	0.40	0.93
1C	Horning Rd	19A	G	0.82				0.82	5.05	0		0	0	48	0.15	4.32	0.65	1.44	2.10	200	0.50%	23.20	0.74	0.46	9.0%	PVC	0.013	0.09	0.21	0.62	0.46
2A	Horning Rd	G	20A	0.11				0.11	5.16	0		0	0	48	0.15	4.32	0.65	1.48	2.13	200	0.50%	23.20	0.74	0.46	9.2%	PVC	0.013	0.09	0.21	0.62	0.46
2B	Horning Rd	20A	21A	0.62				0.62	5.78	7		24	0	71	0.23	4.28	0.97	1.65	2.63	200	0.50%	23.20	0.74	0.47	11.3%	PVC	0.013	0.11	0.21	0.64	0.47
2C	Horning Rd	21A	H	1.16				1.16	6.94	11		37	0	109	0.35	4.23	1.47	1.98	3.45	200	0.50%	23.20	0.74	0.47	14.9%	PVC	0.013	0.15	0.21	0.64	0.47
3A	Horning Rd	H	22A	1.58				1.58	8.52	0	70	175	0	284	0.90	4.09	3.69	2.44	6.13	200	0.50%	23.20	0.74	0.58	26.4%	PVC	0.013	0.26	0.31	0.78	0.58
3B	Horning Rd	22A	23A	0.09				0.09	8.61	0	0	0	0	284	0.90	4.09	3.69	2.46	6.16	200	0.50%	23.20	0.74	0.58	26.5%	PVC	0.013	0.27	0.31	0.78	0.58
3C	Horning Rd	23A	24A	0.06				0.06	8.67	0	0	0	0	284	0.90	4.09	3.69	2.48	6.17	200	4.00%	65.61	2.09	1.29	9.4%	PVC	0.013	0.09	0.21	0.62	1.29
3D	Horning Rd	24A	25A	0.08				0.08	8.75	0	0	0	0	284	0.90	4.09	3.69	2.50	6.20	200	4.00%	65.61	2.09	1.29	9.4%	PVC	0.013	0.09	0.21	0.62	1.29
3E	Horning Rd	25A	I	0.05				0.05	8.80	0	0	0	0	284	0.90	4.09	3.69	2.52	6.21	200	1.50%	40.18	1.28	0.92	15.5%	PVC	0.013	0.15	0.27	0.72	0.92
4A-1	Street C	I	26A	0.63				0.63	9.43	0		0	0	284	0.90	4.09	3.69	2.70	6.39	200	4.00%	65.61	2.09	1.29	9.7%	PVC	0.013	0.10	0.21	0.62	1.29
4A-2	Street C	26A	27A	0.92				0.92	10.35	14		48	0	331	1.05	4.06	4.28	2.96	7.24	200	5.50%	76.93	2.45	1.52	9.4%	PVC	0.013	0.09	0.21	0.62	1.52
4A-3	Street C	27A	JJ	0.55				0.55	10.90	7		24	0	355	1.13	4.05	4.57	3.12	7.69	200	1.00%	32.80	1.04	0.81	23.4%	PVC	0.013	0.23	0.31	0.78	0.81
4B	Street C	JJ	14A	0.28				0.28	11.18	0		0	0	284	0.90	4.09	3.69	3.20	6.89	200	1.50%	40.18	1.28	0.92	17.2%	PVC	0.013	0.17	0.27	0.72	0.92
13	Flatt Rd Extension	KK	13A		3.60			3.60	3.60	37		126	0	126	0.40	4.21	1.69	1.03	2.72	200	0.50%	23.20	0.74	0.47	11.7%	PVC	0.013	0.12	0.21	0.64	0.47
14A	Flatt Rd Extension	13A	14A		0.84			0.84	4.44	9		31	0	156	0.50	4.19	2.08	0.24	2.32	200	0.50%	23.20	0.74	0.47	10.0%	PVC	0.013	0.10	0.21	0.64	0.47256
14B	Flatt Rd Extension	14A	15A		0.74			0.74	16.36	8		27	0	467	1.49	3.99	5.93	0.21	6.15	200	0.50%	23.20	0.74	0.58	26.5%	PVC	0.013	0.26	0.305	0.78	0.57593

ion: North Aldershot — SANITARY SEWER DESIGN — Calculated by: — Checked by:

Catch. ID	Location Street	Tributary Area [ha] From	To	Increment Ex. SF Res.	Pr SF Res.	Pr Cl Res	Non Res.	Area	Cumulative Area	Residential Units SF @ 3.4 ppu	Cl @ 2.5 ppu	Population Total Res Pop.	Non Res @ 90 ppha	Total Pop.	Average Flow [l/s]	Average Peaking Factor	Peak Flow [l/s]	Infil-tration [l/s]	Max. Flow [l/s]	Sewer Size [mm]	Slope [%]	Capacity [l/s]	Velocity [m/s] Full	Actual	% of Full Capacity [%]	Pipe Material	Manning's n	Proportion Flow Ave./Full	Proportional depth	roportiona Velocity	Actual Velocity
14C	Flatt Rd Extension	15A	L		1.33			1.33	17.69	16		54	0	522	1.66	3.96	6.58	5.06	11.64	200	0.50%	23.20	0.74	0.74	50.2%	PVC	0.013	0.50	0.50	1.00	0.74
10 / 11A	Street B	N	11A		0.75	1.04		1.79	1.79	9	124	341	0	341	1.08	4.05	4.40	0.51	4.91	200	2.00%	46.39	1.48	0.95	10.6%	PVC	0.013	0.11	0.21	0.64	0.95
11B	Street B	11A	12A		0.66	0.00		0.66	2.45	9	0	31	0	371	1.18	4.04	4.77	0.70	5.47	200	1.00%	32.80	1.04	0.75	16.7%	PVC	0.013	0.17	0.27	0.72	0.75
11C	Street B	12A	O		0.76	0.00		0.76	3.21	8	0	27	0	398	1.27	4.02	5.10	0.92	6.02	200	1.00%	32.80	1.04	0.75	18.3%	PVC	0.013	0.18	0.27	0.72	0.75
12 / 100	Street B EASEMENT	O	L		0.07	0.82		0.89	4.10	0	83	208	0	606	1.93	3.93	7.58	1.17	8.75	200	0.50%	23.20	0.74	0.64	37.7%	PVC	0.013	0.38	0.38	0.87	0.64
14D	Flatt Rd Extension	L	16A			0.23		0.23	22.02	0		0	0	1128	3.59	3.77	13.52	6.30	19.81	200	0.50%	23.20	0.74	0.82	85.4%	PVC	0.013	0.85	0.67	1.11	0.82
14E	Flatt Rd Extension	16A	17A			0.2		0.2	22.22	0		0	0	1128	3.59	3.77	13.52	0.06	13.57	200	0.50%	23.20	0.74	0.74	58.5%	PVC	0.013	0.59	0.5	1	0.74
15	Flatt Rd Extension	17A	M			2		2	24.22		42	105	0	1233	3.92	3.74	14.67	0.57	15.24	200	2.00%	46.39	1.48	1.28	32.9%	PVC	0.013	0.33	0.375	0.87	1.28
7A	Street A	P	1A		0.82			0.82	0.82	10		34	0	34	0.11	4.35	0.47	0.23	0.70	200	3.50%	61.37	1.95	0.54	1.1%	PVC	0.013	0.01	0.06	0.28	0.54
7B	Street A	1A	2A		0.28			0.28	1.10	4		14	0	48	0.15	4.32	0.65	0.31	0.97	200	2.00%	46.39	1.48	0.55	2.1%	PVC	0.013	0.02	0.09	0.38	0.55
7C	Street A	2A	3A		0.29			0.29	1.39	4		14	0	61	0.19	4.30	0.84	0.40	1.23	200	2.00%	46.39	1.48	0.59	2.7%	PVC	0.013	0.03	0.10	0.40	0.59
8A	Street A	3A	4A		0.74			0.74	2.13	0	111	278	0	339	1.08	4.06	4.37	0.61	4.98	200	2.00%	46.39	1.48	0.95	10.7%	PVC	0.013	0.11	0.21	0.64	0.95
8B	Street A	4A	5A		0.80			0.80	2.93	0	0	0	0	339	1.08	4.06	4.37	0.84	5.21	200	2.00%	46.39	1.48	0.95	11.2%	PVC	0.013	0.11	0.21	0.64	0.95
8C	Street A	5A	6A		1.22			1.22	4.15	0	0	0	0	339	1.08	4.06	4.37	1.19	5.56	200	2.00%	46.39	1.48	0.95	12.0%	PVC	0.013	0.12	0.21	0.64	0.95
9A	Street A	6A	7A		0.53			0.53	4.68	5		17	0	356	1.13	4.05	4.58	1.34	5.92	200	2.00%	46.39	1.48	0.95	12.8%	PVC	0.013	0.13	0.21	0.64	0.95
9B	Street A	7A	8A		0.32			0.32	5.00	3		10	0	366	1.16	4.04	4.71	1.43	6.14	200	1.00%	32.80	1.04	0.75	18.7%	PVC	0.013	0.19	0.27	0.72	0.75
9C	Street A	8A	9A		0.70			0.70	5.70	12		41	0	407	1.29	4.02	5.20	1.63	6.83	200	1.00%	32.80	1.04	0.81	20.8%	PVC	0.013	0.21	0.31	0.78	0.81
9D	Street A	9A	9-1A		0.20			0.20	5.90	3		10	0	417	1.33	4.01	5.33	1.69	7.01	200	1.00%	32.80	1.04	0.81	21.4%	PVC	0.013	0.21	0.31	0.78	0.81
9E	Street A	9-1A	9-2A		0.08			0.08	5.98	1		3	0	420	1.34	4.01	5.37	1.71	7.08	200	1.00%	32.80	1.04	0.81	21.6%	PVC	0.013	0.22	0.31	0.78	0.81
9F	Street A	9-2A	10		0.24			0.24	6.22	3		10	0	431	1.37	4.01	5.49	1.78	7.27	200	1.00%	32.80	1.04	0.81	22.2%	PVC	0.013	0.22	0.31	0.78	0.81
9G	Street A	10A	S		0.40			0.40	6.62	6		20	0	451	1.44	4.00	5.74	1.89	7.63	200	1.00%	32.80	1.04	0.81	23.3%	PVC	0.013	0.23	0.31	0.78	0.81
20A-1	Flatt Rd	S	65A		1.20			1.20	7.82	10		34	0	485	1.54	3.98	6.14	2.24	8.38	200	1.00%	32.80	1.04	0.81	25.5%	PVC	0.013	0.26	0.31	0.78	0.81
20A-2	Flatt Rd	65A	M		1.12			1.12	8.94	10		34	0	519	1.65	3.97	6.55	2.56	9.11	200	1.00%	32.80	1.04	0.81	27.8%	PVC	0.013	0.28	0.31	0.78	0.81
20B-1	Flatt Rd	M	66A		2.00			2.00	35.16	18		61	0	1813	5.77	3.62	20.88	10.06	30.94	300	0.50%	68.39	0.97	0.91	45.2%	PVC	0.013	0.45	0.44	0.94	0.91
20B-2	Flatt Rd	66A	J		0.20			0.20	40.16	0		0	0	2165	6.89	3.56	24.53	11.49	36.01	300	0.50%	68.39	0.97	0.97	52.7%	PVC	0.013	0.53	0.50	1.00	0.97
20C	Flatt Rd	J	E	0.54				0.54	40.70	3		10	0	2176	6.92	3.56	24.63	11.64	36.27	300	0.50%	68.39	0.97	0.97	53.0%	PVC	0.013	0.53	0.50	1.00	0.97
21D	Flatt Rd	AD	D	0.11				0.11	37.56	0		0	0	607	1.93	3.93	7.59	10.74	18.33	200	1.87%	73.35	2.33	1.82	25.0%	PVC	0.013	0.25	0.31	0.78	1.82
19/21A	Flatt Rd	D	E	0.44			1.6	2.04	45.78	2		7	144	1262	4.02	3.73	14.99	13.09	28.08	200	1.87%	44.86	1.43	1.49	62.6%	PVC	0.013	0.63	0.56	1.04	1.49
21B	Street X	E	67A	0.43				0.43	86.91	1		3	0	3441	10.95	3.39	37.14	24.86	61.99	300	1.00%	96.72	1.37	1.42	64.1%	PVC	0.013	0.64	0.56	1.04	1.42
21C	Street X	67A	T	0.25				0.25	87.16	0		0	0	3441	10.95	3.39	37.14	24.93	62.07	300	1.00%	96.72	1.37	1.42	64.2%	PVC	0.013	0.64	0.56	1.04	1.42
23A	Street X	T	68A		0.18			0.18	87.34	2		7	0	3447	10.97	3.39	37.20	24.98	62.18	300	1.00%	96.72	1.37	1.42	64.3%	PVC	0.013	0.64	0.56	1.04	1.42
23B	Street X	68A	U		0.93			0.93	88.27	14		48	0	3495	11.12	3.39	37.66	25.25	62.90	300	1.00%	96.72	1.37	1.42	65.0%	PVC	0.013	0.65	0.56	1.04	1.42
22 / 23C	Street X	69A	U	1.21		2.30		3.51	3.51	14	24	108	0	108	0.34	4.23	1.45	1.00	2.45	300	1.00%	96.72	1.37	0.55	2.5%	PVC	0.013	0.03	0.10	0.40	0.55
25A	Nevarc/Craven/Easement	U	70A	0.14				0.14	91.92	0		0	0	3603	11.47	3.37	38.69	26.29	64.98	300	0.75%	83.76	1.18	1.28	77.6%	PVC	0.013	0.78	0.61	1.08	1.28
	Nevarc/Craven/Easement	70A	71A	0.00				0.00	91.92			0	0	3603	11.47	3.37	38.69	26.29	64.98	300	0.75%	83.76	1.18	1.28	77.6%	PVC	0.013	0.78	0.61	1.08	1.28
												0																			
25B/25C	Nevarc/Craven/Easement	71A	72A	3.21				3.21	95.13	4		14	0	3616	11.51	3.37	38.82	27.21	66.02	300	0.75%	83.76	1.18	1.28	78.8%	PVC	0.013	0.79	0.61	1.08	1.28
25E	Nevarc/Craven/Easement	76A	75A	2.60				2.60	2.60	45		153	0	153	0.49	4.19	2.04	0.74	2.78	200	0.30%	17.97	0.57	0.41	15.5%	PVC	0.013	0.15	0.27	0.72	0.41
	Nevarc/Craven/Easement	75A	74A	0.00				0.00	2.60	0		0	0	153	0.49	4.19	2.04	0.74	2.78	200	0.30%	17.97	0.57	0.41	15.5%	PVC	0.013	0.15	0.27	0.72	0.41
	Nevarc/Craven/Easement	74A	73A	0.00				0.00	2.60	0		0	0	153	0.49	4.19	2.04	0.74	2.78	200	0.30%	17.97	0.57	0.41	15.5%	PVC	0.013	0.15	0.27	0.72	0.41
	Nevarc/Craven/Easement	73A	72A	0.00				0.00	2.60	0		0	0	153	0.49	4.19	2.04	0.74	2.78	200	0.30%	17.97	0.57	0.41	15.5%	PVC	0.013	0.15	0.27	0.72	0.41
25D	Nevarc/Craven/Easement	72A	77A	0.57				0.57	98.30	2		7	0	3776	12.02	3.36	40.33	28.11	68.45	300	0.75%	83.76	1.18	1.32	81.7%	PVC	0.013	0.82	0.67	1.11	1.32
25F	Nevarc/Craven/Easement	77A	Ex 11A	1.40				1.40	99.70	4		14	0	3790	12.06	3.35	40.46	28.51	68.97	300	0.75%	83.76	1.18	1.32	82.3%	PVC	0.013	0.82	0.67	1.11	1.32
27	Waterdown Rd	Ex 11A	Ex 9A				4.50	4.50	104.20	0		0	405	4195	13.35	3.31	44.26	29.80	74.06	300	0.96%	94.76	1.34	1.45	78.2%	PVC	0.013	0.78	0.61	1.08	1.45
33	Panin Church	ZY3	ZZ2		2.89			2.89	2.89	50		170	0	170	0.54	4.17	2.26	0.83	3.08	200	0.30%	17.97	0.57	0.41	17.2%	PVC	0.013	0.17	0.27	0.72	0.41
28	Cama Woodlands	80A	Z		12.97			12.97	15.86	100		340	0	510	1.62	3.97	6.44	4.54	10.98	200	0.30%	17.97	0.57	0.59	61.1%	PVC	0.013	0.61	0.56	1.04	0.59
												0																			
29	Aldershot Landscape	ZX4	Z		2.70			2.70	2.70	20		68	0	68	0.22	4.29	0.93	0.77	1.70	200	0.35%	19.41	0.62	0.37	8.8%	PVC	0.013	0.09	0.19	0.60	0.37
24	Morgante Property	Z	Ex 9A		3.40			3.40	21.96	35		119	0	697	2.22	3.90	8.64	6.28	14.92	200	0.30%	17.97	0.57	0.63	83.1%	PVC	0.013	0.83	0.67	1.11	0.63
26	Waterdown Rd	Ex 9A	Ex 1A		1.60			1.60	127.76	6		20	0	4912	15.63	3.25	50.85	36.54	87.39	300	0.90%	91.75	1.30	1.48	95.2%	PVC	0.013	0.95	0.74	1.14	1.48
Ex 31	Panin Church 2	EX 13A	Pump Station		3.04			3.04	3.04	25		85	0	85	0.27	4.26	1.15	0.87	2.02	200	1.00%	32.80	1.04	0.56	6.2%	PVC	0.013	0.06	0.16	0.54	0.56
Ex 32	Cama Wood 2	Pump St	Ex 5A		1.29			1.29	4.33	10		34	0	119	0.38	4.22	1.60	1.24	2.84	150	Pump station & Forcemain										
												0																			
	NSR	Ex 5A	Ex 1A						132.09			0	0	5031	16.01	3.24	51.92	37.78	89.70	300	0.90%	91.75	1.30	1.48	97.8%	PVC	0.013	0.98	0.74	1.14	1.48

APPENDIX D Proposed Watercourse Crossing Location Memo

SAVANTA

July 13, 2016

Paletta International Corporation
Penta Properties Inc.
4480 Paletta Court
Burlington, Ontario
L7L 5R2

Attention: Dave Pitblado
Director, Real Estate Development

Dear Mr. Pitblado:

Re: Proposed Watercourse Crossing Location and Aquatic Habitat Considerations
Tributary 4, Eagle Heights (Taylor Lands)

Savanta Inc. (Savanta) was contacted by Chris Povell from Metropolitan Consulting Inc. (Metropolitan) to review and provide an opinion regarding the aquatic/fish habitat and the proposed location of a sanitary sewer line crossing of Tributary 4 [as identified in Savanta's 2013 Environmental Impact Study (EIS)] along the southeastern boundary of the Eagle Heights and Taylor Lands (Subject Lands) in Burlington.

Background

Tributary 4 arises in the agricultural fields north of the Taylor Lands and is a tributary of Grindstone Creek, south of Highway 403 and is identified within our EIS as intermittent warm water baitfish habitat, although no fish have been observed in the watercourse.

We understand that the proposed sanitary sewer line will be constructed to service the future development of the Taylor Lands which are located south of Flatt Road and will connect to an existing sewer network to the east of the Subject Lands on Nevarc Drive. The proposed crossing of Tributary 4 would be carried out using a trenchless construction method such as high pressure directional drilling or punch and bore, such that no open cut through the watercourse will be required.

Current Site Conditions

Savanta completed a site visit of the Subject Lands on July 4, 2016 to review existing aquatic and riparian habitat conditions at the proposed crossing location. Example photos of existing conditions of the proposed crossing location are provided as an attachment to this letter (**Appendix A**). At the time of the investigation, Tributary 4 was flowing at an estimated rate of <0.5 L/s. At the crossing location, the tributary was contained within a well-defined low flow channel and was classified as a "slow moving run". The watercourse was approximately 1 m wide and 0.05 m deep at the crossing location and substrate consisted of fine sediments. There were some instream grasses within the low flow channel, although the majority of the channel bed was un-vegetated. The banks of the low flow channel are relatively low in this location (<0.15 m), compared to further upstream areas, where the channel is incised and bankfull depths are approximately 0.70 m. An approximately 2 m wide and 0.15 m deep pool was located approximately 5 m downstream from the crossing the location.

The watercourse runs within a well vegetated, approximately 50 m wide valley, with the tablelands adjacent to the valley being approximately 10 m higher than the bed of the watercourse, which meanders through the valley bottomland. The bottomland, approximately 30 m wide on average and considered to be within the average annual floodplain, consists of a variety of wet meadow vegetation, shrubs and larger trees [primarily Ash (*Fraxinus spp.*) and Willow (*Salix spp.)* species].

The actual proposed sanitary sewer crossing location is situated at the site of a former farm access road crossing of the watercourse. This is evident by the remnant earth fill abutments that remain as prominent topographical features within the valley adjacent to the low flow channel. The tops of the abutments, are approximately 5 m above the watercourse channel bed, which is situated within an approximately 5 m wide cut through the former road. The abutment slopes adjacent to the watercourse are relatively steep and generally well-vegetated, although some erosion is evident.

Summary

Based on field observations of the existing conditions and an understanding of the proposed crossing method, the crossing location is acceptable from a fish and fish habitat perspective subject to the following conditions being met:

- The trenchless crossing is appropriately designed and installed to ensure no impact to the fish and fish habitat;
- Mitigation measures are implemented to prevent damage to the stream bed and banks;
- Vegetation removal (i.e., associated with any bell holes that may be necessary for the trenchless installation) within the valley is limited to the extent possible (with no vegetation removed from the valley floor); and
- Sediment and erosion control measures, including a contingency plan in the event that unanticipated effects occur during installation (e.g. frat-outs) are in place.

Although no in-water work is required, additional mitigation measures may also be necessary to prevent effects to fish and fish habitat including scheduling the installation to occur outside the warm water baitfish in-water works timing window (i.e., March 15 to July 15).

We trust you will find this information helpful. Please do not hesitate to contact us if you have questions or comments.

Yours truly,
Savanta Inc.

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Attachments

c: Chris Povell - Metropolitan Consulting Inc.
File

APPENDIX A - WATERCOURSE AQUATIC HABITAT PHOTOGRAPHS



Photo 1 – Watercourse at proposed crossing location (view downstream)



Photo 2 – Watercourse and valley bottomlands (view downstream). Note former access road abutments adjacent to watercourse.

APPENDIX E Watermain Modelling

APPENDIX E1 2017 Halton Region Development Charges Background Study

Halton Region
2017 Development Charge Study
Water Capital Projects - Total ($2017, $000's)

Table B-7

Unique ID	Description	2017	2018	2019	2020	2021	Sub-total (2017-2021)	Sub-total 2022-2031	Total (2017-2031)	Bynd 2031 (Ovrszng)	Non-Growth	Net Growth	Residential	Non Residential
Greenfield														
3713	400mm WM on Burnhamthorpe Rd from Trafalgar Rd to new North Oakville road (Zone O4) (Design) (OAK)	-	468	-	-	-	468	-	468	-	-	468	346	122
4983	400mm WM on new North Oakville road from Burnhamthorpe Rd to Dundas St (Zone O4) (Design) (OAK)	-	635	-	-	-	635	-	635	-	-	635	470	165
5627	600mm WM through North Oakville Lands from Tremaine Rd to Bronte Rd (Zone O3) (OAK)	-	-	-	-	-	-	7,739	7,739	-	-	7,739	5,727	2,012
5850	1050mm WM on Upper Middle Rd from Burloak Drive to Appleby Line (Zone B2) (Construction) (BUR)	-	-	-	-	-	-	10,283	10,283	3,496	-	6,787	5,022	1,765
5853	600mm WM on Tremaine Rd from Dundas St to approximately 950 m north (North Oakville Lands) (Zone O3) (OAK)	-	-	-	-	-	-	1,422	1,422	-	-	1,422	1,052	370
5881	400 mm WM from Waterdown pumping station along North Service Rd to King Rd (Zone B2) (BUR)	-	-	-	-	-	-	7,055	7,055	-	-	7,055	5,221	1,834
6318	300mm WM on No 14 Siderd from Tremaine Rd. to Milton Reservoir (Zone M5G) (MIL)	-	279	1,520	-	-	1,799	-	1,799	-	1,349	450	333	117
6367	Burloak Pumping Station Phase 1, 60 ML/d (Zone B2) - Construction (BUR)	-	-	-	-	-	-	13,693	13,693	8,764	-	4,929	3,647	1,282
6368	1050mm WM on Burloak Dr from the QEW to Upper Middle Rd (Zone B2) - Construction (OAK)	-	-	-	-	-	-	9,766	9,766	4,102	-	5,664	4,191	1,473
6443	400mm WM on Burnhamthorpe Rd from Trafalgar Rd to new North Oakville road (Zone O4) (Construction) (OAK)	-	-	-	2,547	-	2,547	-	2,547	-	-	2,547	1,885	662
6444	400mm WM from Burnhamthorpe Rd to Dundas St on new North Oakville road (Zone O4) (Construction) (OAK)	-	-	-	3,461	-	3,461	-	3,461	-	-	3,461	2,561	900
6597	300mm WM on RR 25 from No. 32 Siderd to 640 m north of Wallace St. (Zone A9G) (HHACT)	-	-	-	-	-	-	1,430	1,430	-	-	1,430	1,059	371
6600	300 mm WM on No. 32 Siderd from RR 25 to 3rd Line Reservoir (Zone A9G) (HHACT)	-	-	-	-	-	-	1,333	1,333	-	-	1,333	987	346
6603	400mm WM on 8th Line from 10th Siderd to existing 400mm (Zone G6L) (HHGEO)	-	-	361	1,963	-	2,324	-	2,324	-	-	2,324	1,720	604
6608	750mm WM on Trafalgar from 15th Siderd to 22nd Siderd Lake Based Reservoir (Zone G6L) (HHGEO)	-	-	2,533	13,806	-	16,339	-	16,339	-	-	16,339	12,090	4,249
6609	400mm WM on 17th Siderd from Trafalgar Rd to Main St (Zone G6L) (HHGEO)	-	-	388	2,116	-	2,504	-	2,504	-	-	2,504	1,853	651
6611	600mm WM on No 10 Siderd from 8th Line to 9th Line (Zone G6L) (HHGEO)	-	612	3,339	-	-	3,951	-	3,951	-	-	3,951	2,924	1,027
6612	600mm WM on No 10 Siderd from 9th Line to 10th Line (Zone G6L) (HHGEO)	-	691	3,768	-	-	4,459	-	4,459	-	-	4,459	3,299	1,160
6613	600mm WM on No 10 Siderd from 10th Line to Adamson St S (Zone G6L) (HHGEO)	-	-	-	-	-	-	1,606	1,606	-	-	1,606	1,189	417
6614	600 mm WM on Adamson St from 10th Siderd to Guelph St (Zone G6L) (HHGEO)	-	-	-	-	-	-	2,661	2,661	-	-	2,661	1,969	692
6615	600mm WM on Guelph St from Adamson St to Bovaird Dr (Region of Peel) (Zone G6L) (HHGEO)	-	-	-	-	-	-	1,971	1,971	-	-	1,971	1,459	512
6616	400mm WM on Thompson Rd South from Brittania Rd to approx. 1,211 south (Zone M4) (MIL)	-	-	-	-	-	-	1,746	1,746	-	-	1,746	1,292	454
6617	400mm WM on new roadway south of Britannia Rd from Thompson Rd South to 4th Line (Zone M4) (MIL)	-	-	-	-	-	-	2,278	2,278	-	-	2,278	1,685	593
6618	400mm WM on new roadway south of Britannia Rd from 4th Line to 5th Line (Zone M4) (MIL)	-	-	-	-	-	-	2,314	2,314	-	-	2,314	1,713	601
6619	400mm WM on new roadway south of Britannia Rd from 5th Line to 6th Line (Zone M4) (MIL)	-	-	-	-	-	-	1,559	1,559	-	-	1,559	1,154	405

Halton Region
2017 Development Charge Study
Water Capital Projects - Total ($2017, $000's)

Table B-7

Unique ID	Description	2017	2018	2019	2020	2021	Sub-total (2017-2021)	Sub-total 2022-2031	Total (2017-2031)	Bynd 2031 (Ovrszng)	Non-Growth	Net Growth	Residential	Non Residential
Greenfield														
6647	400mm WM in the 401 growth corridor north of Steeles Ave. from 600 m west of 10th Line to 1,000 m east of 10th Line (Zone 250) (HHS)	-	-	-	-	-	-	2,136	2,136	-	-	2,136	1,581	555
6648	400mm WM in the 401 growth corridor from Steeles Ave to 340 m north (Zone 250) (HHS)	-	-	-	-	-	-	1,512	1,512	-	-	1,512	1,118	394
6649	400mm WM on Esquesing Line from James Snow Parkway to approximately 800 m north (Zone 267) (MIL)	-	-	-	-	-	-	1,270	1,270	-	-	1,270	940	330
6650	400mm WM on new roadway from Esquesing Line to approximately 360 m west of Boston Church Rd (Zone 267)	-	-	-	-	-	-	3,443	3,443	-	-	3,443	2,548	895
6652	400mm WM on new roadway from 400 m west of Third Line to No 5 Siderd (Zone 267) (MIL)	-	-	-	-	-	-	1,177	1,177	-	-	1,177	871	306
6653	400mm WM on No 5 Siderd from approximately 400 m west of 3rd Line to 3rd Line (Zone 267) (MIL)	-	-	-	-	-	-	465	465	-	-	465	344	121
6654	750mm WM on Trafalgar Rd from 10th Siderd to approximately 1,700 m north of 10th Siderd (Zone G6L) (HHGEO)	-	840	-	4,583	-	5,423	-	5,423	-	-	5,423	4,013	1,410
6655	750mm WM on Trafalgar from 1,700 m north of 10th Siderd to 15th Siderd (Zone G6L) (HHGEO)	-	753	-	4,108	-	4,861	-	4,861	-	-	4,861	3,597	1,264
6657	400mm WM on Tremaine Rd from Britannia Rd to 2,200 m south of Britannia Rd (Zone 223.5) (MIL)	-	-	-	-	-	-	3,632	3,632	-	-	3,632	2,687	945
6659	400mm WM on new road alignment from Tremaine Rd to approximately 360 m west (Zone 223.5) (MIL)	-	-	-	-	-	-	467	467	-	-	467	346	121
6662	600 mm WM on Wyecroft Rd from Burloak Dr to the 900mm WM on the SE corner of the 3rd line and QEW (OAK)	-	-	-	-	-	-	16,341	16,341	-	-	16,341	12,092	4,249
6666	750mm WM on Neyagawa Blvd. from Burnhamthorpe Rd W to Lower Base Line W (MIL)	-	-	-	-	-	-	8,699	8,699	7,829	-	870	644	226
6694	10 ML Zone G6L Storage at 22nd Siderd (HHGEO)	-	-	-	-	-	-	11,660	11,660	-	-	11,660	8,629	3,031
6697	15 ML storage expansion at Zone M4 Reservoir (TWL = 250m) (HHGEO)	-	-	-	-	-	-	16,609	16,609	-	-	16,609	12,290	4,319
6701	Kitchen Zone O3 Pumping Station Expansion by 80 ML/d (OAK)	-	-	-	-	-	-	12,830	12,830	8,596	-	4,234	3,133	1,101
6702	40 ML/d Expansion at the Neyagawa Pumping Station (OAK)	-	-	-	-	-	-	7,200	7,200	-	-	7,200	5,328	1,872
6863	Waterdown Road Pumping Station Expansion (Zones B2, B3A & B5A) (BUR)	-	-	-	-	-	-	5,629	5,629	-	-	5,629	4,165	1,464
7014	400 mm WM from Waterdown Reservoir Pumping Station to new North Aldershot Reservoir (Zone B3A) (BUR)	-	-	-	-	-	-	2,437	2,437	-	-	2,437	1,803	634
7284	400mm WM and valve chamber to be constructed on Neyagawa Blvd (Regional Road 4) (OAK)	-	223	-	-	-	223	-	223	-	-	223	165	58
7357	400mm WM on Sixth Line from the proposed William Halton Parkway (RR 40) southward approximately 300m (OAK)	-	270	-	-	-	270	-	270	-	-	270	200	70
7497	400mm WM on Sixth Line from approximately 300m southward of William Halton Parkway (RR 40) to Burnhamthorpe Rd (OAK)	-	642	-	-	-	642	-	642	-	-	642	475	167
7498	Lake Based Servicing transfer of Derry Rd/R.R. 25 area (MIL)	-	-	-	56	-	56	224	280	-	-	280	207	73
7501	400mm WM on new North Oakville Rd west of Neyagawa Blvd. (OAK)	-	-	600	-	2,400	3,000	-	3,000	-	-	3,000	2,220	780
7504	1200mm WM on Britannia Rd from 4th Line to RR 25 (Zone M4) - Construction (MIL)	-	25,000	-	-	-	25,000	-	25,000	8,000	-	17,000	12,580	4,420
7505	1050mm WM on Burloak Dr from Burloak Pumping Station to the QEW - Construction (OAK)	-	-	-	-	-	-	6,690	6,690	2,810	-	3,880	2,871	1,009
7507	600mm WM on 10th Siderd from Trafalgar Rd to 8th Line (Zone G6L) - Construction (HHGEO)	-	3,675	-	-	-	3,675	-	3,675	-	-	3,675	2,720	955
7570	4.5 ML North Aldershot in ground Reservoir (Zone B3B) (BUR)	-	-	-	-	-	-	5,623	5,623	-	-	5,623	4,161	1,462
Greenfield - Total		**-**	**34,088**	**12,509**	**32,640**	**2,400**	**81,637**	**226,715**	**308,352**	**43,597**	**1,349**	**263,406**	**194,919**	**68,487**

Halton Region
2017 Development Charge Study
Water Capital Projects - Total ($2017, $000's)

Table B-7

Unique ID	Description	2017	2018	2019	2020	2021	Sub-total (2017-2021)	Sub-total 2022-2031	Total (2017-2031)	Bynd 2031 (Ovrszng)	Non-Growth	Net Growth	Residential	Non Residential
Built Boundary														
6602	7.5 ML storage expansion at Waterdown Reservoir (existing site) (Zone B1A) (BUR)	-	-	-	-	-	-	8,305	8,305	-	7,724	581	441	140
6704	200mm WM on Brock Ave from Elgin Street to Lakeshore Rd (BUR)	-	-	-	91	-	91	363	454	-	-	454	345	109
6705	200mm WM on Regina Drive from Maple Avenue to Ecole Renaissance Schoolyard (BUR)	-	-	-	75	-	75	302	377	-	-	377	287	90
6708	300mm WM on Elizabeth St from James St to approximately 95 m north (BUR)	-	-	-	-	-	-	192	192	-	-	192	146	46
6709	300mm WM on Plains Rd East from north of Grandview Rd to twinned section on Plains Rd (BUR)	-	492	1,968	-	-	2,460	-	2,460	-	-	2,460	1,870	590
6710	300mm WM on Plains Rd East (Twinning adjacent to 6709) (BUR)	-	-	-	-	-	-	671	671	-	-	671	510	161
6711	300mm WM on Birchwood Avenue from Plains Rd East southwards towards Fairwood Place East (BUR)	-	-	-	-	-	-	111	111	-	-	111	85	26
6712	300mm WM on Gallagher Rd from Plains Rd East to 160 m Northerly (BUR)	-	-	-	-	-	-	256	256	-	-	256	195	61
6713	300mm WM on Downsview Rd from Plains Rd East to Dowland Crescent (BUR)	-	-	-	-	-	-	238	238	-	-	238	180	58
6714	300mm WM on Brant St from Fairview St to 180 m northerly (BUR)	-	-	-	81	-	81	324	405	-	-	405	308	97
6715	300mm WM on Woodview Rd from Fairview St to 100 m Northerly (BUR)	-	-	-	46	-	46	185	231	-	-	231	176	55
6716	200mm WM on from end of Commerce Crt north to Fairview St (BUR)	-	-	-	74	-	74	296	370	-	-	370	281	89
6717	300mm WM on Fairview St from Appleby Line to Taylor Crescent (BUR)	-	-	-	200	-	200	800	1,000	-	-	1,000	760	240
6721	300mm WM on Ontario St South from Main St East to Parkway Drive East (MIL)	416	1,666	-	-	-	2,082	-	2,082	-	-	2,082	1,582	500
6722	300mm WM on Woodward Avenue between Martin St and Ontario St North (MIL)	410	1,366	-	-	-	1,776	-	1,776	-	-	1,776	1,350	426
6723	400mm WM on Bronte St between Main St West and Barton St (MIL)	-	-	-	-	-	-	1,212	1,212	-	-	1,212	921	291
6724	300mm WM on Main St East between James St and Martin St (MIL)	-	-	-	-	-	-	575	575	-	-	575	437	138
6725	300mm WM on Laurier Avenue between Bronte St and Commercial St (MIL)	-	-	-	-	-	-	2,436	2,436	-	-	2,436	1,851	585
6726	300mm WM on Sovereign St between Bronte Rd and East St (OAK)	-	419	-	1,678	-	2,097	-	2,097	-	-	2,097	1,593	504
6728	300mm WM on Cowan Ave between Kerr St and Inglewood Drive (OAK)	-	-	-	-	-	-	653	653	-	-	653	497	156
6729	300mm WM on Deane Ave between Kerr St and Felan Ave (OAK)	-	-	-	-	-	-	1,049	1,049	-	-	1,049	798	251
6731	300mm WM on Forsythe St between Rebecca St and Burnet St (OAK)	-	-	-	-	-	-	617	617	-	-	617	468	149
6733	300 mm Replacement on Cross St from Guelph St to Main St (HHGEO)	-	-	-	-	-	-	214	214	-	-	214	163	51
6735	300 mm replacement on Guelph St between Mountainview Rd North and Sinclair Ave (HHGEO)	-	391	-	1,564	-	1,955	-	1,955	-	-	1,955	1,486	469
7500	Milton West Looping - 400mm WM on Derry Rd from Santa Maria Blvd. to Bronte St South, and a 400 mm WM on Main St West from Scott	-	579	-	3,158	-	3,737	-	3,737	-	187	3,550	2,698	852
7503	300 mm WM on Sixth Line from Hays Blvd to River Glen Blvd. Project required to support Zone 3/4/5 Boundary Re-alignment (OAK)	-	30	-	120	-	150	-	150	-	8	142	108	34
Built Boundary - Total		**826**	**4,943**	**1,968**	**7,087**	**-**	**14,824**	**18,799**	**33,623**	**-**	**7,919**	**25,704**	**19,536**	**6,168**
Total Water Projects		**986**	**64,999**	**15,036**	**57,643**	**4,158**	**142,822**	**392,290**	**535,112**	**43,597**	**11,411**	**480,104**	**357,718**	**122,386**

Note: May not add due to rounding

APPENDIX E-2 Max Day & Peak Hour Demand Calculations

METROPOLITAN CONSULTING INC.

Date: May 24, 2018
File #: P09006
Prepared By: W Gaerdes

Eagle Heights
Water Demand Calculations

Junction ID	Population Derived form Unit Counts													Daily Average usage rate L/person/day [3]	Daily Average usage		Max. Day		Peak Hour		CL Road Elevation at Junction
	Unit Counts					Equivalent Pop. Coefficients				Equivalent Population											
	Single Family homes	Cluster Housing	Condominuims	Other		Single Family	Cluster Housing	Condominuims	Other	Single Family	Cluster Housing	Condominuims	Other	Total Equivalent Population		L/day	L/s	Coefficent[3]	Demand L/s	Coefficent[3]	Demand L/s	
				No.	Description																	
J-1	16	0	0	0		3.0	2.5	0	0	48	0	0	0	48	330	15840	0.18	1.90	0.35	3.00	0.55	137.26
J-2	16	0	0	0	Block G - Cluster Housing [6]	3.0	0.0	0	0	48	0	0	0	293	330	96690	1.12	1.90	2.13	3.00	3.36	126.55
J-3	4	0	0	0		3	0	0	0	12	0	0	0	12	330	3960	0.05	1.90	0.09	3.00	0.14	165.58
J-4	0	123	0	14	Ex. Housing[6] Block AE - Cluster Housing [7]	0	2.5	0	3	0	308	0	42	568	330	187506	2.17	1.90	4.12	2.00	4.34	158.64
J-5	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	142.14
J-6	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	140.21
J-7	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	134.63
J-8	0	0	0	0	Ex. Housing[5]	3	0	0	3	0	0	0	15	15	330	4950	0.06	1.90	0.11	3.00	0.17	140.74
J-9	33	0	0	2	Ex Housing[5]	3	0	0	3	99	0	0	6	105	330	34650	0.40	1.90	0.76	3.00	1.20	140.46
J-10	14	0	0	0		3	0	0	0	42	0	0	0	42	330	13860	0.16	1.90	0.30	3.00	0.48	150.13
J-11	18	0	0	0		3	0	0	0	54	0	0	0	54	330	17820	0.21	1.90	0.39	3.00	0.62	157.82
J-13	0	0	0	0		3	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	153.56
J-14	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	159.02
J-15	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	158.78
J-16	0	26	0	0		0	2.5	0	0	0	65	0	0	65	330	21450	0.25	1.90	0.47	3.00	0.74	163.65
J-17	8	0	0	0		3	0	0	0	24	0	0	0	24	330	7920	0.09	1.90	0.17	3.00	0.28	163.98
J-18	55	0	0	0		3	0	0	0	165	0	0	0	165	330	54450	0.63	1.90	1.20	3.00	1.89	143.20
J-19	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	140.83
J-20	23	36	0	0		3	2.5	0	0	69	90	0	0	159	330	52470	0.61	1.90	1.15	3.00	1.82	147.94
J-21	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	150.43
J-22	8	0	0	35	Future Development[4]	3	0	0	3	24	0	0	105	129	330	42570	0.49	1.90	0.94	3.00	1.48	162.16
J-23	21	0	0	0		3	0	0	0	63	0	0	0	63	330	20790	0.24	1.90	0.46	3.00	0.72	163.28
J-24	0	0	0	0		0	0.0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	150.73
J-25	0	66	0	0	Block CC - Cluster Housing [6]	0	2.5	0	0	0	165	0	0	165	330	54450	0.63	1.90	1.20	3.00	1.89	154.66
J-26	0	66	0	0	Block DD - Cluster Housing [6]	0	2.5	0	0	0	165	0	0	165	330	54450	0.63	1.90	1.20	3.00	1.89	152.60
J-27	0	102	0	0		0	2.5	0	0	0	255	0	0	255	330	84150	0.97	1.90	1.85	3.00	2.92	133.24
J-28	0	0	0	27	Ex. Housing[5]	0	0	0	3	0	0	0	81	81	330	26730	0.31	1.90	0.59	3.00	0.93	168.80
J-29	0	7	0	8	Ex. Housing[5]	0	2.5	0	3	0	18	0	60	78	330	25575	0.30	1.90	0.56	3.00	0.89	206.82
J-30	18	0	0	0		3	0	0	0	54	0	0	0	54	330	17820	0.21	1.90	0.39	3.00	0.62	184.37
J-31	0	70	0	0		0	2.5	0	0	0	175	0	0	175	330	57750	0.67	1.90	1.27	3.00	2.01	181.92
J-34	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	202.34
J-35	0	59	0	0		0	2.5	0	0	0	148	0	0	148	330	48675	0.56	1.90	1.07	3.00	1.69	148.34
J-38	0	0	0	4	Ex. Housing[5]	0	0	0	3	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	134.63
J-39	0	0	0	6	School[1][3]/Ex. Housing[5]	0	0	0	3	0	0	0	18	18	330	5940	0.07	1.90	0.13	3.00	0.21	140.22
J-40	20	0	0	2	Ex. Housing[5]	3	0	0	3	60	0	0	6	66	330	21780	0.25	1.90	0.48	3.00	0.76	150.43
J-41	11	0	0	0		3	0	0	0	33	0	0	0	33	330	10890	0.13	1.90	0.24	3.00	0.38	195.93
J-44	0	0	0	25	Ex. Housing[5]	0	0	0	3	0	0	0	75	75	330	24750	0.29	1.90	0.54	3.00	0.86	199.82
J-45	0	0	0	10	Ex. Housing[5]	0	0	0	3	0	0	0	30	30	330	9900	0.11	1.90	0.22	3.00	0.34	195.93

Date: May 24, 2018
File #: P09006
Prepared By: W Gaerdes

Eagle Heights
Water Demand Calculations

Junction ID	Population Derived form Unit Counts													Daily Average usage rate L/person/day [3]	Daily Average usage		Max. Day		Peak Hour		CL Road Elevation at Junction
	Unit Counts					Equivalent Pop. Coefficients				Equivalent Population											
	Single Family homes	Cluster Housing	Condominuims	Other		Single Family	Cluster Housing	Condominuims	Other	Single Family	Cluster Housing	Condominuims	Other	Total Equivalent Population		L/day	L/s	Coefficent[3]	Demand L/s	Coefficent[3]	Demand L/s	
				No.	Description																	
J-46	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	213.28
J-47	8	0	0	3	Ex. Housing[5]	3	0	0	3	24	0	0	0	24	330	7920	0.09	1.90	0.17	3.00	0.28	202.34
J-49	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	158.79
J-50	0	26	0	0		0	2.5	0	0	0	65	0	0	65	330	21450	0.25	1.90	0.47	3.00	0.74	137.29
J-51	0	44	0	0		0	2.5	0	0	0	110	0	0	110	330	36300	0.42	1.90	0.80	3.00	1.26	140.12
J-53	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	130.60
J-54	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	129.75
J-55	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	123.50
J-56	0	0	0	0		0	0	0	0	0	0	0	0	0	330	0	0.00	1.90	0.00	3.00	0.00	123.75
J-60	0	0	0	17	Future Development[4]	0	0	0	3	0	0	0	51	51	330	16830	0.19	1.90	0.37	3.00	0.58	124.25
	273	625	0	153																		

NOTES:

1. Demand for Ex. School was based on 30L/person/day s per OBC Table 8.2..1.3.B (2012) & assuming 200 students and staff.
2. Average Daily Usage Rate (L/person/day), Max Day Coefficient, and Peak Hour Coefficient were based on values from the South Halton Water and Wastewater Master Plan Update (2008);
3. Peak Hour Coefficients for the Ex. School and the Institutional lands were based on Table A.2.3 from the Region of Halton Design Criteria (2001);
4. Unit counts for Future Devlopment were taken from Figure 7-2 of the 2010 FSR update prepared by MCI;
5. Unit counts for Existing dwellings were estimated based on digital aerial mapping ;
6. Block G total equivalent population was found by using an area of 2.72Ha and 90pe/Ha. Results were entered directly into Total Equivalent Population column
7. Block AE total equivalent population was found by using an area of 2.43Ha and 90pe/Ha. Results were entered directly into Total Equivalent Population column

APPENDIX E-3 Fire Flow Requirements

File #: P09006
Date: May 24, 2018
Prepared By: WG

Eagle Heights

Fire Flow Demand Calculations - Cluster Block Housing

F = 220C√ A

C = coefficient for type of construction
A = total floor area in m² (including all storeys, but excluding basements)
F = fire flow required

Fire Flow Calculation for Cluster Block Housing

1) ***F= 220*C*√A***

C= 0.8 Assume non-combustible construction

A= 9440 m^2 Assumes 4 stories with an average floor area of 2360m^2 per story

F= 17100 L/min Rounds off to 17000 L/min

2) ***Assume limited combustible contents, therefore fire-flow requirements can be reduced by 15%***

F= 14450 L/min

3) ***Assume Cluster Blocks have automatic sprinkler protection, therefore fire-flow requirements can be reduced by 30%***

F= 10115 L/min

4) ***Exposure to adjacent buildings. Assumes 1 @ 3.1m to 10m & 3 @ > 45m therefore fire-flow requirements increase 20%***

12138 L/min

FIRE DEMAND (Calculated**) = 12000 L/min** (Result from step 4) taken and rounded to nearest thousand Litres

or

FIRE DEMAND (Calculated**) = 200.0 L/s**

Fire Underwriters Survey 1999 Water Supply for Public Fire Protection states, "If buidlings are contiguous, use a minimum of 8000L/min" (133.33L/s)

Therefore use 200 L/s for Fire Demand for the Cluster Block Housing

APPENDIX E-4 Max Day Demands plus Fire Flow Scenario Results

Junctions

Zone	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (L/s)	Fire Flow (Available) (L/s)	Flow (Total Needed) (L/s)	Flow (Total Available) (L/s)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Zone Lower Limit) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Is Fire Flow Run Balanced?
J-3	B3A	23	TRUE	200	304.27	200	20	24.2	20	42.3	J-89	TRUE
J-4	B3A	4	TRUE	200	322.1	200	20	20	20	44.9	J-89	TRUE
J-5	B3A	6	TRUE	200	339.4	200	20	26.1	20	46.1	J-89	TRUE
J-6	B3A	3	TRUE	200	600	200	20	81.5	20	59.5	J-89	TRUE
J-7	B3A	2	TRUE	200	600	200	20	88.2	20	59.6	J-89	TRUE
J-8	B3A	3	TRUE	200	600	200	20	75.6	20	59.5	J-89	TRUE
J-9	B3A	23	TRUE	200	463.84	200	20	44.7	20	59.4	J-89	TRUE
J-10	B3A	23	TRUE	200	309.62	200	20	30.9	20	51.7	J-11	TRUE
J-11	B3A	4	TRUE	200	259.83	200	20	20	20	59.4	J-89	TRUE
J-13	B3A	4	TRUE	200	427.31	200	20	20	20	59.6	J-89	TRUE
J-14	B3A	3	TRUE	200	600	200	20	47.7	20	59.6	J-89	TRUE
J-15	B3A	3	TRUE	200	600	200	20	49.7	20	59.7	J-89	TRUE
J-16	B3A	4	TRUE	200	321.84	200	20	20	20	44.5	J-89	TRUE
J-17	B3A	23	TRUE	200	323.77	200	20	25.7	20	44.4	J-89	TRUE
J-18	B3A	3	TRUE	200	600	200	20	57	20	57	J-89	TRUE
J-19	B3A	3	TRUE	200	600	200	20	81.8	20	59.5	J-89	TRUE
J-20	B3A	4	TRUE	200	451.4	200	20	20	20	59.6	J-89	TRUE
J-21	B3A	3	TRUE	200	600	200	20	59.4	20	59.6	J-89	TRUE
J-22	B3A	12	TRUE	200	209.13	200	20	20	20	59.6	J-89	TRUE
J-23	B3A	3	TRUE	200	600	200	20	47.3	20	59.8	J-89	TRUE
J-24	B3A	3	TRUE	200	600	200	20	37.3	20	59.7	J-89	TRUE
J-25	B3A	3	TRUE	200	600	200	20	31.1	20	59.7	J-89	TRUE
J-26	B3A	3	TRUE	200	600	200	20	35.5	20	59.7	J-89	TRUE
J-33	B3A	3	TRUE	200	600	200	20	80.5	20	59.6	J-89	TRUE
J-35	B3A	23	TRUE	200	327.8	200	20	33.5	20	54.4	J-11	TRUE
J-36	B3A	5	TRUE	200	574.12	200	20	42.2	20	59.4	J-89	TRUE
J-38	B3A	4	TRUE	200	386.58	200	20	20	20	54.6	J-89	TRUE
J-39	B3A	4	TRUE	200	331.77	200	20	20	20	51.5	J-89	TRUE
J-40	B3A	3	TRUE	200	600	200	20	53.8	20	59.6	J-89	TRUE
J-41	B3A	3	TRUE	200	600	200	20	42.3	20	59.6	J-89	TRUE
J-48	B3A	3	TRUE	200	600	200	20	46.4	20	59.8	J-89	TRUE
J-49	B3A	3	TRUE	200	600	200	20	30.8	20	59.7	J-89	TRUE
J-50	B3A	3	TRUE	200	600	200	20	67	20	59.4	J-89	TRUE
J-51	B3A	4	TRUE	200	488.44	200	20	20	20	57.2	J-89	TRUE
J-60	B3A	4	TRUE	200	331.78	200	20	20	20	58.6	J-89	TRUE
J-65	B3A	3	TRUE	200	600	200	20	69	20	59.5	J-89	TRUE
J-66	B3A	3	TRUE	200	600	200	20	68	20	59.5	J-89	TRUE
J-73	B3A	3	TRUE	200	600	200	20	83.9	20	59.9	J-89	TRUE
J-77	B3A	2	TRUE	200	600	200	20	79.2	20	72.4	J-89	TRUE
J-89	B3A	4	TRUE	200	275.59	200	20	20	20	46.5	J-3	TRUE
J-90	B3A	3	TRUE	200	426.64	200	20	20	20	59.5	J-89	TRUE
J-91	B3A	2	TRUE	200	600	200	20	101.6	20	72.4	J-89	TRUE
J-92	B3A	3	FALSE	200	149.06	200	20	20	20	59.5	J-89	TRUE
J-28	B5A	3	TRUE	200	369.65	200	20	20	20	53.5	J-31	TRUE
J-29	B5A	2	TRUE	200	600	200	20	47.5	20	53.5	J-31	TRUE
J-30	B5A	3	TRUE	200	342.69	200	20	20	20	52.5	J-87	TRUE
J-31	B5A	3	TRUE	200	600	200	20	26.2	20	56.4	J-47	TRUE
J-44	B5A	3	TRUE	200	592.38	200	20	20	20	53.5	J-31	TRUE
J-45	B5A	3	TRUE	200	543	200	20	20	20	53.5	J-31	TRUE
J-47	B5A	2	TRUE	200	600	200	20	21.7	20	53.5	J-31	TRUE
J-87	B5A	3	TRUE	200	528.44	200	20	20	20	52.9	J-47	TRUE
J-88	B5A	3	TRUE	200	239.91	200	20	20	20	52.6	J-87	TRUE
J-1	B2	3	TRUE	200	531.13	200	20	20	20	41.9	J-93	TRUE
J-2	B2	3	TRUE	200	201.29	200	20	29.9	20	20.3	J-93	TRUE
J-27	B2	3	TRUE	200	512.35	200	20	20	20	41.9	J-93	TRUE
J-53	B2	5	TRUE	200	224.84	200	20	21.5	20	24.2	J-93	TRUE
J-54	B2	5	TRUE	200	318.31	200	20	25.3	20	32.6	J-93	TRUE
J-55	B2	2	TRUE	200	600	200	20	25.3	20	39	J-93	TRUE
J-86	B2	3	TRUE	200	600	200	20	99.2	20	41.9	J-93	TRUE
J-93	B2	3	FALSE	200	118.19	200	20	20	20	25.8	J-53	TRUE

Pipes

Start Node	Stop Node	Length (m)	Diameter (mm)	Hazen-Williams C	Flow (Absolute) (L/s)	Velocity (m/s)
J-19	J-6	69.1	392.9	120.0	4.6	0.04
J-6	J-7	143.3	392.9	120.0	6.8	0.06
J-21	J-14	213.1	392.9	120.0	7.0	0.06
J-14	J-15	148.9	392.9	120.0	11.6	0.10
J-15	J-23	193.9	392.9	120.0	11.6	0.10
J-9	J-35	276.8	297.0	120.0	1.8	0.03
J-38	J-39	143.3	204.0	110.0	1.6	0.05
J-40	J-41	220.2	297.00	110.00	2.6	0.04
J-41	J-14	5.9	204.00	120.00	3.7	0.11
J-40	J-20	87.9	204.00	110.00	0.3	0.01
J-20	J-13	216.7	204.00	110.00	0.8	0.03
J-13	J-41	84.8	204.00	110.00	0.8	0.03
J-7	J-24	319.2	297.00	120.00	3.8	0.06
J-24	J-25	47.6	297.00	120.00	3.8	0.06
J-25	J-26	102.4	297.00	120.00	5.0	0.07
J-17	J-18	555.4	297.00	120.00	3.4	0.05
J-18	J-19	86.2	297.00	120.00	4.6	0.07
J-3	J-17	107.8	297.00	120.00	2.8	0.04
J-17	J-16	69.6	297.00	120.00	0.5	0.01
PRV-1	J-47	84.2	297.00	120.00	1.8	0.03
J-23	J-48	4.8	297.00	120.00	6.7	0.10
J-48	J-49	196.8	297.00	120.00	6.2	0.09
J-51	J-38	113.6	204.00	110.00	1.6	0.05
J-5	J-39	208.6	204.00	110.00	1.5	0.04
J-6	PRV-2	39.3	297.00	120.00	2.2	0.03
PRV-2	J-1	196.9	297.00	120.00	2.2	0.03
J-1	J-27	39.6	297.00	120.00	1.9	0.03
J-53	J-2	107.5	297.00	120.00	2.1	0.03
J-53	J-54	203.7	297.00	120.00	2.1	0.03
J-54	J-55	158.1	297.00	120.00	2.1	0.03
J-36	J-60	388.1	204.00	110.00	0.7	0.02
J-60	J-51	485.9	204.00	110.00	0.3	0.01
J-14	J-22	150.8	204.00	110.00	0.9	0.03
J-9	J-36	100.9	297.00	120.00	2.5	0.04
J-8	J-65	57.6	392.90	120.00	8.8	0.07
J-65	J-66	20.3	392.90	120.00	8.8	0.07
J-66	J-21	227.2	392.90	120.00	8.8	0.07
J-26	J-49	90.5	297.00	120.00	6.2	0.09
J-35	J-10	61.9	297.00	120.00	0.7	0.01
J-10	J-11	246.3	297.00	120.00	0.4	0.01
J-23	J-31	449.6	392.90	120.00	18.3	0.15
J-31	p. B3A Reser	665.1	392.90	120.00	19.6	0.16
J-8	J-51	125.7	204.00	110.00	2.0	0.06
J-36	J-50	97.5	297.00	120.00	3.2	0.05
J-50	J-8	50.1	297.00	120.00	3.7	0.05
J-73	J-19	65.3	392.90	120.00	0.0	0.00
J-7	J-33	113.6	392.90	120.00	3.0	0.02
J-33	J-8	125.7	392.90	120.00	3.0	0.02
J-29	J-77	156.7	297.00	120.00	3.7	0.05
PRV-1	J-29	20	297.00	120.00	1.8	0.03
T-2	J-77	10	297.00	120.00	3.7	0.05
J-28	J-45	692.7	297.00	120.00	0.6	0.01
J-4	J-3	322.1	297.00	120.00	2.7	0.04
J-5	J-4	384.5	297.00	120.00	1.5	0.02
J-45	J-44	75.2	297.00	120.00	0.8	0.01
J-44	J-29	126.6	297.00	120.00	1.4	0.02
T-3	PMP-1	65	392.90	120.00	(N/A)	(N/A)
J-86	J-73	420.8	392.90	120.00	0.0	0.00
PMP-1	J-86	52	392.90	120.00	(N/A)	(N/A)
J-47	J-87	75.6	297.00	120.00	1.7	0.02
J-87	J-30	405.4	297.00	120.00	1.7	0.02
J-30	J-88	592.7	297.00	120.00	1.3	0.02
J-3	J-89	96	297.00	120.00	0.0	0.00
T-3	J-86	117	392.90	120.00	0.0	0.00
J-40	J-21	6.8	204.00	120.00	1.8	0.05
J-27	J-90	112.1	297.00	120.00	0.0	0.00
J-55	down Rd Res	69.7	297.00	120.00	2.1	0.03
J-92	J-27	293.8	204.00	110.00	0.0	0.00
J-2	J-93	121.2	204.00	110.00	0.0	0.00
J-91	T-3	61	297.00	120.00	0.0	0.00
J-90	PRV-3	288.6	297.00	120.00	0.0	0.00
PRV-3	J-91	5.8	297.00	120.00	0.0	0.00
J-87	J-30	405.4	297.00	110.00	10.9	0.16
J-87	p. B3A Reser	23.1	297.00	120.00	0.0	0.00

APPENDIX E-5 Peak Hour Scenario Results

Junctions

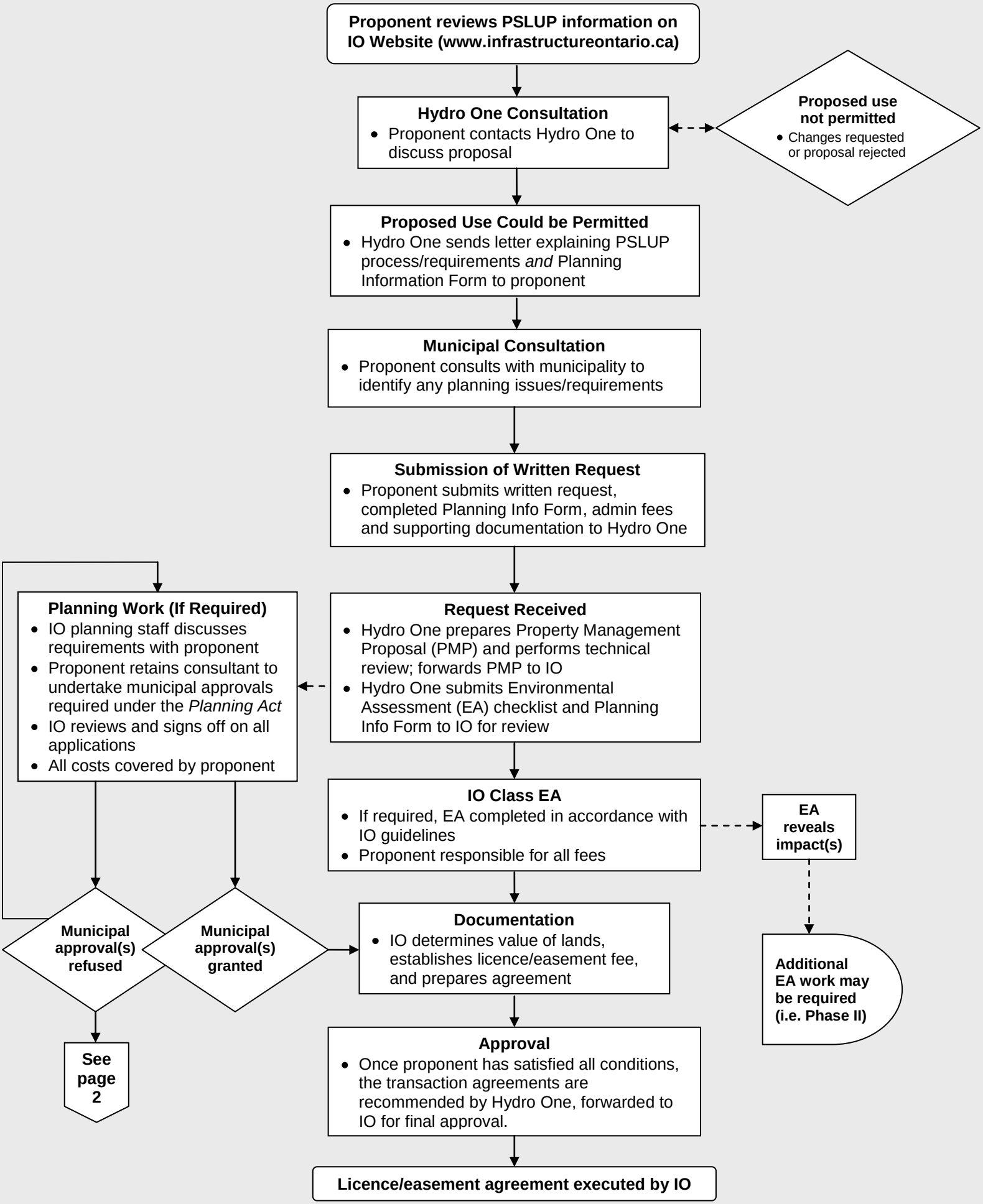
Label	Elevation (m)	Zone	Demand Collection	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Test
J-3	163.88	B3A	<Collection: 1 item>	0.14	217.67	76.5	Pass - meets minimum 40psi criteria
J-4	156.94	B3A	<Collection: 1 item>	4.34	217.67	86.3	Pass - meets minimum 40psi criteria
J-5	140.44	B3A	<Collection: 1 item>	0	217.67	109.8	Pass - meets minimum 40psi criteria
J-6	138.51	B3A	<Collection: 1 item>	0	217.68	112.6	Pass - meets minimum 40psi criteria
J-7	132.93	B3A	<Collection: 1 item>	0	217.69	120.5	Pass - meets minimum 40psi criteria
J-8	139.04	B3A	<Collection: 1 item>	0.17	217.69	111.8	Pass - meets minimum 40psi criteria
J-9	138.76	B3A	<Collection: 1 item>	1.2	217.69	112.2	Pass - meets minimum 40psi criteria
J-11	156.12	B3A	<Collection: 1 item>	0.62	217.69	87.5	Pass - meets minimum 40psi criteria
J-13	151.86	B3A	<Collection: 1 item>	0	217.71	93.6	Pass - meets minimum 40psi criteria
J-14	157.32	B3A	<Collection: 1 item>	0	217.72	85.9	Pass - meets minimum 40psi criteria
J-15	157.08	B3A	<Collection: 1 item>	0	217.73	86.2	Pass - meets minimum 40psi criteria
J-16	161.95	B3A	<Collection: 1 item>	0.74	217.67	79.2	Pass - meets minimum 40psi criteria
J-17	162.28	B3A	<Collection: 1 item>	0.28	217.67	78.7	Pass - meets minimum 40psi criteria
J-18	141.5	B3A	<Collection: 1 item>	1.89	217.68	108.3	Pass - meets minimum 40psi criteria
J-19	139.13	B3A	<Collection: 1 item>	0	217.68	111.7	Pass - meets minimum 40psi criteria
J-20	146.24	B3A	<Collection: 1 item>	1.82	217.71	101.6	Pass - meets minimum 40psi criteria
J-21	148.73	B3A	<Collection: 1 item>	0	217.71	98.1	Pass - meets minimum 40psi criteria
J-22	160.45	B3A	<Collection: 1 item>	1.48	217.71	81.4	Pass - meets minimum 40psi criteria
J-23	161.58	B3A	<Collection: 1 item>	0	217.75	79.8	Pass - meets minimum 40psi criteria
J-24	149.03	B3A	<Collection: 1 item>	0	217.71	97.6	Pass - meets minimum 40psi criteria
J-25	153.12	B3A	<Collection: 1 item>	1.89	217.71	91.8	Pass - meets minimum 40psi criteria
J-26	150.94	B3A	<Collection: 1 item>	1.89	217.72	94.9	Pass - meets minimum 40psi criteria
J-35	146.64	B3A	<Collection: 1 item>	1.69	217.69	101	Pass - meets minimum 40psi criteria
J-36	140.46	B3A	<Collection: 1 item>	0	217.69	109.8	Pass - meets minimum 40psi criteria
J-38	132.93	B3A	<Collection: 1 item>	0	217.68	120.5	Pass - meets minimum 40psi criteria
J-39	138.52	B3A	<Collection: 1 item>	0.21	217.67	112.5	Pass - meets minimum 40psi criteria
J-40	148.73	B3A	<Collection: 1 item>	0.76	217.71	98.1	Pass - meets minimum 40psi criteria
J-41	157.31	B3A	<Collection: 1 item>	0.38	217.72	85.9	Pass - meets minimum 40psi criteria
J-48	161.58	B3A	<Collection: 1 item>	0.72	217.75	79.8	Pass - meets minimum 40psi criteria
J-49	157.08	B3A	<Collection: 1 item>	0	217.73	86.2	Pass - meets minimum 40psi criteria
J-50	135.59	B3A	<Collection: 1 item>	0.74	217.69	116.7	Pass - meets minimum 40psi criteria
J-51	138.42	B3A	<Collection: 1 item>	1.26	217.68	112.7	Pass - meets minimum 40psi criteria
J-60	122.5	B3A	<Collection: 1 item>	(N/A)	(N/A)	(N/A)	Pass - meets minimum 40psi criteria
J-65	143.06	B3A	<Collection: 1 item>	0	217.7	106.1	Pass - meets minimum 40psi criteria
J-66	143.64	B3A	<Collection: 1 item>	0	217.7	105.3	Pass - meets minimum 40psi criteria
J-10	148.43	B3A	<Collection: 1 item>	0.48	217.69	98.5	Pass - meets minimum 40psi criteria
J-73	138.41	B3A	<Collection: 1 item>	0	217.68	112.7	Pass - meets minimum 40psi criteria
J-33	136.69	B3A	<Collection: 1 item>	0	217.69	115.1	Pass - meets minimum 40psi criteria
J-77	216.99	B3A	<Collection: 1 item>	(N/A)	(N/A)	(N/A)	Pass - meets minimum 40psi criteria
J-89	166.86	B3A	<Collection: 0 items>	0	217.67	72.2	Pass - meets minimum 40psi criteria
J-90	129.41	B3A	<Collection: 1 item>	0	197.8	97.2	Pass - meets minimum 40psi criteria
J-91	124.25	B3A	<Collection: 1 item>	0	209	120.5	Pass - meets minimum 40psi criteria
J-92	130.5	B3A	<Collection: 1 item>	0	197.8	95.7	Pass - meets minimum 40psi criteria
J-28	167.1	B5A	<Collection: 1 item>	0.93	263.28	136.7	Pass - meets minimum 40psi criteria
J-29	205.12	B5A	<Collection: 1 item>	0.89	263.28	82.7	Pass - meets minimum 40psi criteria
J-30	182.67	B5A	<Collection: 1 item>	0.62	263.28	114.6	Pass - meets minimum 40psi criteria
J-31	180.22	B5A	<Collection: 1 item>	2.01	217.84	53.5	Pass - meets minimum 40psi criteria
J-45	194.23	B5A	<Collection: 1 item>	0.34	263.28	98.2	Pass - meets minimum 40psi criteria
J-47	200.64	B5A	<Collection: 1 item>	0.28	263.28	89.1	Pass - meets minimum 40psi criteria
J-44	198.58	B5A	<Collection: 1 item>	0.86	263.28	92	Pass - meets minimum 40psi criteria
J-87	198.8	B5A	<Collection: 0 items>	0	263.28	91.7	Pass - meets minimum 40psi criteria
J-88	180.37	B5A	<Collection: 0 items>	0	263.28	117.9	Pass - meets minimum 40psi criteria
J-1	135.56	B2	<Collection: 1 item>	0.55	197.8	88.5	Pass - meets minimum 40psi criteria
J-2	123.5	B2	<Collection: 1 item>	3.36	197.8	105.6	Pass - meets minimum 40psi criteria
J-27	131.54	B2	<Collection: 1 item>	2.92	197.8	94.2	Pass - meets minimum 40psi criteria
J-53	129.41	B2	<Collection: 1 item>	0	197.8	97.2	Pass - meets minimum 40psi criteria
J-54	126.8	B2	<Collection: 1 item>	0	209	116.9	Pass - meets minimum 40psi criteria
J-55	127	B2	<Collection: 1 item>	0	209	116.6	Pass - meets minimum 40psi criteria
J-86	135.54	B2	<Collection: 0 items>	0	217.68	116.8	Pass - meets minimum 40psi criteria
J-93	130.5	B2	<Collection: 1 item>	0	197.8	95.7	Pass - meets minimum 40psi criteria

Pipes

Label	Start Node	Stop Node	Length (m)	Diameter (mm)	Hazen-Williams C	Flow (Absolute) (L/s)	Velocity (m/s)
P-23	J-38	J-39	143.3	204	110	1.84	0.06
P-26	J-41	J-14	5.9	204	110	5.96	0.18
P-27	J-40	J-20	87.9	204	110	0.54	0.02
P-28	J-20	J-13	216.7	204	110	1.28	0.04
P-29	J-13	J-41	84.8	204	110	1.28	0.04
P-63	J-51	J-38	113.6	204	110	1.84	0.06
P-65	J-5	J-39	208.6	204	110	1.63	0.05
P-80	J-36	J-60	388.1	204	110	(N/A)	(N/A)
P-81	J-60	J-51	485.9	204	110	(N/A)	(N/A)
P-100	J-14	J-22	150.8	204	110	1.48	0.05
P-118	J-8	J-51	125.7	204	110	3.1	0.09
P-171	J-40	J-21	6.8	204	110	3	0.09
P-189	J-92	J-27	293.8	204	110	0.66	0.02
P-190	J-2	J-93	121.2	204	110	0.66	0.02
P-203	J-93	J-92	1	204	110	0.66	0.02
P-15	J-9	J-35	276.8	297	120	2.79	0.04
P-25	J-40	J-41	220.2	297	120	4.3	0.06
P-33	J-7	J-24	319.2	297	120	6.31	0.09
P-34	J-24	J-25	47.6	297	120	6.31	0.09
P-35	J-25	J-26	102.4	297	120	8.2	0.12
P-41	J-17	J-18	555.4	297	120	3.87	0.06
P-42	J-18	J-19	86.2	297	120	5.76	0.08
P-50	J-3	J-17	107.8	297	120	2.85	0.04
P-51	J-17	J-16	69.6	297	120	0.74	0.01
P-58	J-23	J-48	4.8	297	120	10.81	0.16
P-59	J-48	J-49	196.8	297	120	10.09	0.15
P-66	J-6	PRV-2	39.3	297	120	6.83	0.1
P-67	PRV-2	J-1	196.9	297	120	6.83	0.1
P-68	J-1	J-27	39.6	297	120	6.28	0.09
P-70	J-53	J-2	107.5	297	120	2.7	0.04
P-73	J-54	J-55	158.1	297	120	0	0
P-104	J-9	J-36	100.9	297	120	3.99	0.06
P-111	J-26	J-49	90.5	297	120	10.09	0.15
P-112	J-35	J-10	61.9	297	120	1.1	0.02
P-113	J-10	J-11	246.3	297	120	0.62	0.01
P-119	J-36	J-50	97.5	297	120	3.99	0.06
P-120	J-50	J-8	50.1	297	120	4.73	0.07
P-130	J-29	J-77	156.7	297	120	(N/A)	(N/A)
P-134	T-2	J-77	10	297	120	(N/A)	(N/A)
P-138	J-28	J-45	692.7	297	120	0.93	0.01
P-142	J-4	J-3	322.1	297	120	2.71	0.04
P-144	J-5	J-4	384.5	297	120	1.63	0.02
P-145	J-45	J-44	75.2	297	120	1.27	0.02
P-146	J-44	J-29	126.6	297	120	2.13	0.03
P-159	J-47	J-87	75.6	297	120	3.3	0.05
P-164	J-30	J-88	592.7	297	120	0	0
P-166	J-3	J-89	96	297	120	0	0
P-178	J-27	J-90	112.1	297	120	2.7	0.04
P-185	J-55	own Rd R	69.7	297	120	(N/A)	(N/A)
P-193	J-91	T-3	61	297	120	0	0
P-194	J-90	PRV-3	288.6	297	120	(N/A)	(N/A)
P-195	PRV-3	J-91	5.8	297	120	(N/A)	(N/A)
P-199	J-87	PRV-18	11.3	297	120	0.62	0.01
P-200	PRV-18	J-30	394.1	297	120	0.62	0.01
P-201	J-91	J-55	74	297	120	0	0
P-202	J-90	J-53	1	297	120	2.7	0.04
P-208	J-47	J-29	104.2	297	120	3.02	0.04
P-209	op. B3A Reserv	PMP-8	2.5	297	120	3.92	0.06
P-210	PMP-8	J-87	2.5	297	120	3.92	0.06
P-211	J-53	PRV-19	152.6	297	120	0	0
P-212	PRV-19	J-54	51	297	120	0	0
P-2	J-19	J-6	69.1	392.9	120	5.76	0.05
P-3	J-6	J-7	143.3	392.9	120	12.59	0.1
P-6	J-21	J-14	213.1	392.9	120	11.28	0.09
P-7	J-14	J-15	148.9	392.9	120	18.72	0.15
P-8	J-15	J-23	193.9	392.9	120	18.72	0.15
P-105	J-8	J-65	57.6	392.9	120	14.28	0.12
P-107	J-65	J-66	20.3	392.9	120	14.28	0.12
P-108	J-66	J-21	227.2	392.9	120	14.28	0.12
P-114	J-23	J-31	449.6	392.9	120	29.53	0.24
P-115	J-31	B3A Res	665.1	392.9	120	31.54	0.26
P-122	J-73	J-19	65.3	392.9	120	0	0
P-123	J-7	J-33	113.6	392.9	120	6.28	0.05
P-124	J-33	J-8	125.7	392.9	120	6.28	0.05
P-155	T-3	PMP-1	65	392.9	120	(N/A)	(N/A)
P-157	J-86	J-73	420.8	392.9	120	0	0
P-158	PMP-1	J-86	52	392.9	120	(N/A)	(N/A)
P-170	T-3	J-86	117	392.9	120	0	0

APPENDIX F Provincial Secondary Land Use Program

Secondary Use Application Process



Municipal Approvals Refused

If planning approvals are refused by the municipality, there are three possible next steps:

1. Revision of Application

There may be an opportunity to revise the proposal and related municipal applications to meet the local and/or regional planning requirements associated with the proposed secondary use.

2. Appeal to Ontario Municipal Board (OMB)

If revision is not possible and/or desirable, IO will discuss with the applicant the option to appeal the decision to the OMB. Depending on the circumstances, IO may or may not support this appeal. Next steps, including IO involvement, will be determined on a case-by-case basis.

3. Termination of Provincial Secondary Land Use Program Proposal

If the proposed secondary use is not permitted by the municipality and steps 1 and 2 are not viable options, the proponent may, at the sole discretion of IO, have to withdraw its application to the PSLUP. IO will not enter into secondary use licence/easement agreements if the appropriate planning approvals are not in place.

Hydro One Networks Inc.
Real Estate Services
185 Clegg Road
Markham, Ontario L6G1B7
Rick.Schatz@HydroOne.com

Tel: (905) 946 6233
Fax: (905) 946 6242

Richard (Rick) Schatz
Senior Real Estate Coordinator

March 14, 2011

Dave Pitblado
Paletta International Corporation
4480 Paletta Court
Burlington ON L7L 5R3

RE: Eagle Heights Road Crossing Hydro Corridor
Our File: Burlington 634-3380

Our review of your request for a road crossing has been reviewed and approved in principle subject to a review of your detailed construction drawings showing all improvements that cross our hydro corridor.

The road crossing with the 13.5-metre clearance from the tower to the edge of the ROW (and 18.5 metres to edge of the actual road) can be conditional approved under the following conditions:

1. The proponent must be aware that Hydro One will not be liable for any damage caused by our maintenance truck crossing the road when carrying out maintenance on our facilities.

2. The proponent must ensure that there is adequate vertical clearance. The minimum clearance for 230kV lines is 7.3 metres.

3. The proponent must ensure that an access path for Hydro One maintenance crew vehicles must be provided at all times, during the construction period and after.

4. Hydro One will not be held responsible for this secondary land use and any liability associated with this use, such as falling ice and other elements that may fall from overhead conductors. The proponent will assume all liabilities associated with this secondary land use.

Please refer to the comments below prior to completing the detailed drawings:

- Provide detailed construction drawings showing plans and elevations. Include full details on grading, drainage, underground services, landscaping, and lighting.

- The drawings must show the existing and proposed geodetic elevations for the area affected by this proposal and for right-of-way adjacent to the proposal. The Hydro One towers, as well as their centrelines, must also be shown. A cross-section through the tower must also be provided.

- Should illumination form part of the proposal, detailed drawings showing the location and maximum height including footing, rise in arm, and fixture must be submitted for approval. Hydro One discourages the placement of lighting poles under its circuits. A suitable location would be at the edge of the corridor and/or at the midway point between towerlines.

- No plantings are to be placed within the ROW limits that grow higher than 4.5m at maturity. This includes all trees proposed for planting with the road allowance but located within the limits of the ROW. Any planting plans must be pre-approved by Hydro One.

- Access must be provided on both sides of the new road for Hydro One maintenance crews. This access must be a minimum of 6 metres in width. The access must be capable of withstanding the weight of heavy construction equipment. Loading that may occur: mobile crane with counterweights in place – 267kN per tandem axle (dual wheel, 1.53 axle spacing, 360mm tires).

- The road crossing details are to include curb cuts and secured access to both sides of the ROW for this purpose.

- Following construction, post and cable fences and gates are to be placed on both sides of the road at these access points to limit access to HONI ROW.

- The road and underground services must be capable of withstanding the weight of heavy construction equipment. Loading that may occur: mobile crane with counterweights in place – 267kN per tandem axle (dual wheel, 1.53 axle spacing, 360mm tires).

- All work must comply with the safety and clearance regulations stated in the Occupational Health and Safety Act.

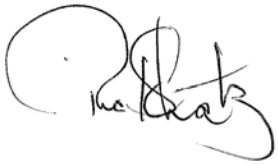
- The construction area must be defined by the installation of temporary fencing. As well, any towers or structures located with in the area must also

be protected by temporary fencing installed 10 feet from the structure. These fences must be removed when construction is complete.

- All disturbed areas must be restored to the satisfaction of Hydro One.

Please provide me with 4 copies (folded) of the detailed construction drawings for our final approval.

Yours truly,



Richard (Rick) Schatz
Senior Real Estate Coordinator

Hydro One Networks Inc.
Real Estate Services
185 Clegg Road
Markham, Ontario L6G1B7
Rick.Schatz@HydroOne.com

Tel: (905) 946 6233
Fax: (905) 946 6242

Richard (Rick) Schatz
Senior Real Estate Coordinator

January 24, 2012

Dave Pitblado
Paletta International Corporation SENT BY E-MAIL
4480 Paletta Court
Burlington, ON L7L 5R2

RE: Eagle Heights Crossing – Horning Road
Our File: Burlington 634-3557

I am pleased to advise you that your proposed road crossing has received preliminary technical approval. This preliminary approval is subject to a submission of detailed plans that will take into consideration the following conditions / concerns:

- Hydro One requires engineered drawings showing plan and profile with reference to existing Hydro One facilities and desired location of proposed use or installation. All plans shall indicate the adjacent uses of lands that run parallel to the intended use. The drawings must show the existing and proposed geodetic elevations for the area affected by this proposal and for right-of-way adjacent to the proposal. The Hydro One towers, as well as their centrelines, must be shown. Profiles of all above grade installations must also be submitted.

- All plans must be numbered and dated and any revisions recorded when submitted to Hydro One for full internal review.

- Proponent is responsible for all other utility permits and permissions which may be required for the proposed use. The proponent or their agents must circulate plans for review to the various utilities for their review and comment.

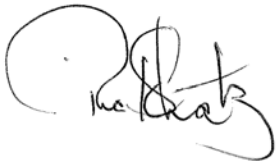
- Should illumination form part of the proposal, detailed drawings showing the location and maximum height including footing, rise in arm, and fixture must be submitted for approval. Hydro One discourages the placement of lighting poles under its circuits. A suitable location would be at the edge of the corridor and/or at the midway point between towerlines.

- Suitable access points, complete with curb cuts, and having a minimum width of 6.0m must be installed on both sides of the corridor. Should the road be elevated access slopes must not exceed 10%. Post and cable fencing must also be installed.

- Plans for any landscape plantings proposed within the corridor area must be submitted for review. Plantings shall have a maximum mature height of 4 meters.

Please provide 4 hard copies (folded) of the required drawings for our final review.

Yours truly,



Richard (Rick) Schatz
Senior Real Estate Coordinator

METROPOLITAN
CONSULTING
INC.

December 5, 2010

Hydro One Networks Inc.
Real Estate Services
185 Clegg Road
Markham, Ontario
L6G 1B7

Attention: Richard Schatz

Re: Eagle Heights Road Crossings Hydro Corridor
Your File Numbers: 634-3380 and 634-3557

We are submitting the following documents for your review, comment and/or approval.

Four (4) copies of the engineered drawing,P09006 – HYD1, showing the plan & profiles along HONI's ROW.

As per your letters draft March 14th, 2011 and January 24, 2012 to the attention of Dave Pitblado (Paletta International Corporation), we have addressed HONI's conditions in the following manner:

The drawing shows the existing and proposed geodetic elevations and the local geodetic benchmark has been noted on the drawing. The Hydro One towers have been shown and a cross-section through the towers have been provided.

The design of the proposed illumination has not been conducted and is premature at this stage. A note, "No lighting poles shell be placed under Hydro One circuits" has been placed on the engineered drawing.

No Planting plans have been conducted, premature at this time. A note, "No plantings are to be placed within the ROW limits of the corridor that grow higher than 4.0m at maturity. Planting plans must be pre-approved by Hydro One."

6m meter wide asphalt accesses have been provided on both sides of the new roads for Hydro One maintenance crews.

No curb cuts are required as the proposed road has a rural cross-section. Please see the detail provided on P09006-HYD1.

2290 QUEENSWAY DRIVE
BURLINGTON, ON L7R 3T2
TEL. 905.637.2926
FAX. 905.637.3268
Email: engineering/planning@metrocon.ca

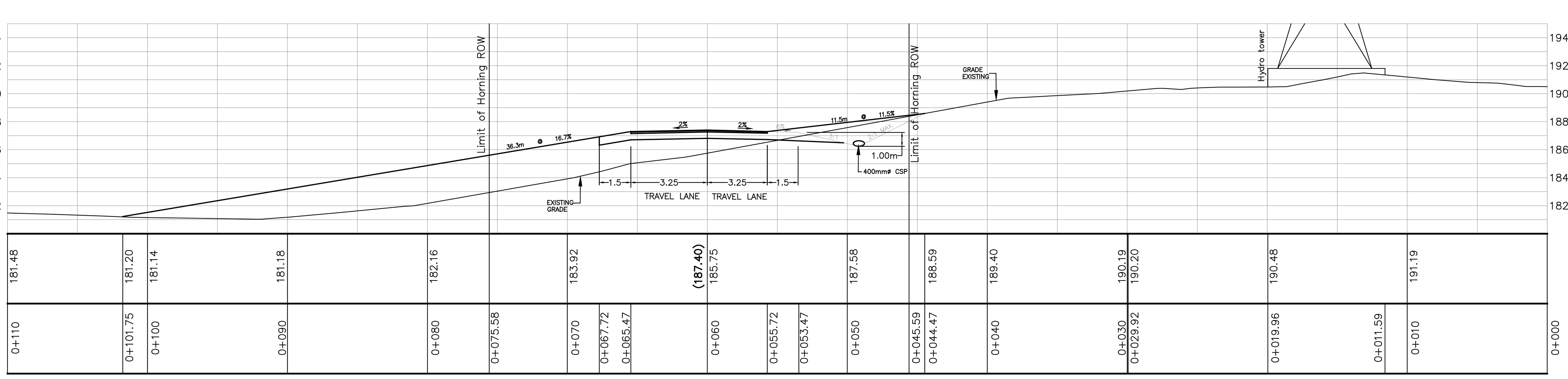
Post and cable fences and gates have been shown and noted to be installed to the satisfaction of Hydro One.

A note, "The construction area must be defined by the installation of temporary fencing" has been placed on the engineered drawing.

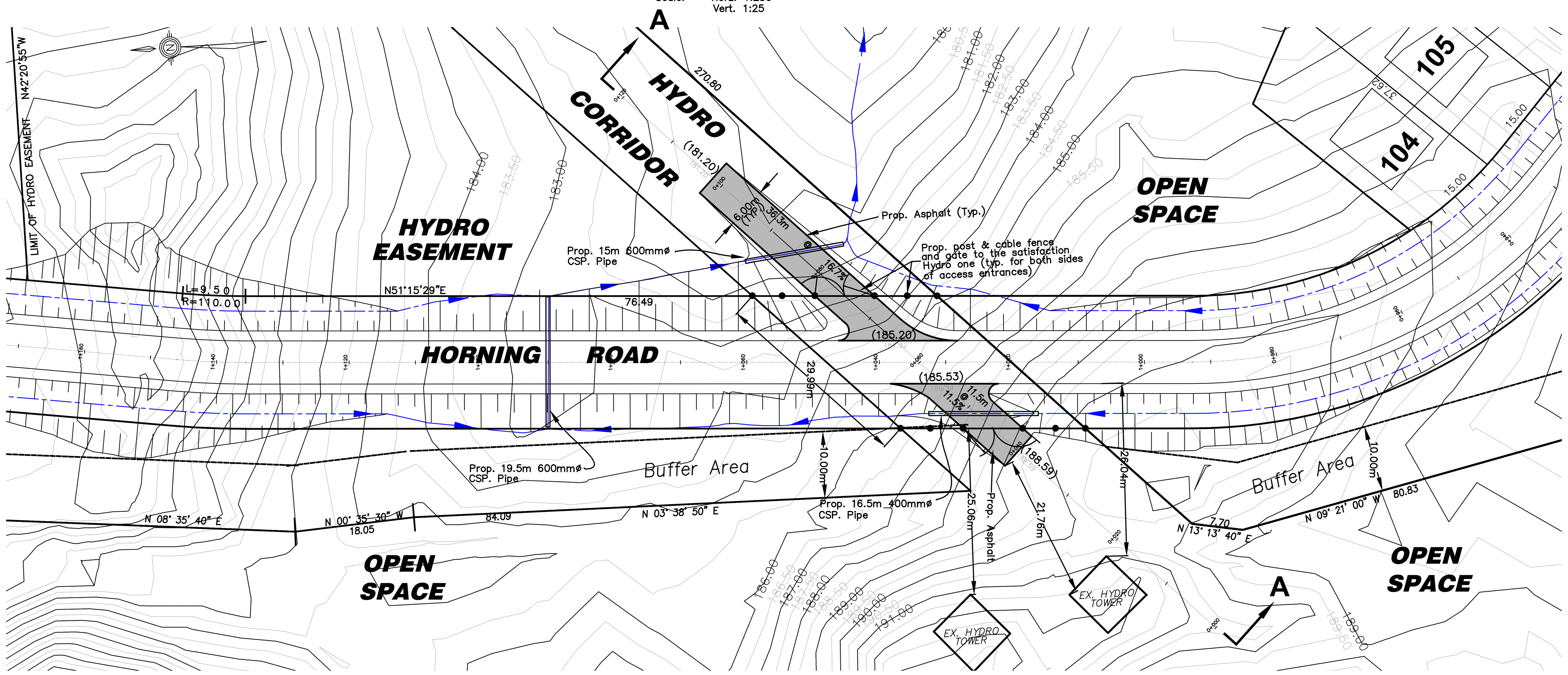
If you have any questions, require more information or would like to meet, please to contact me at 905-637-2926 Ext. 230 or you can email me at: frukavina@metrocon.ca.

Frank Rukavina

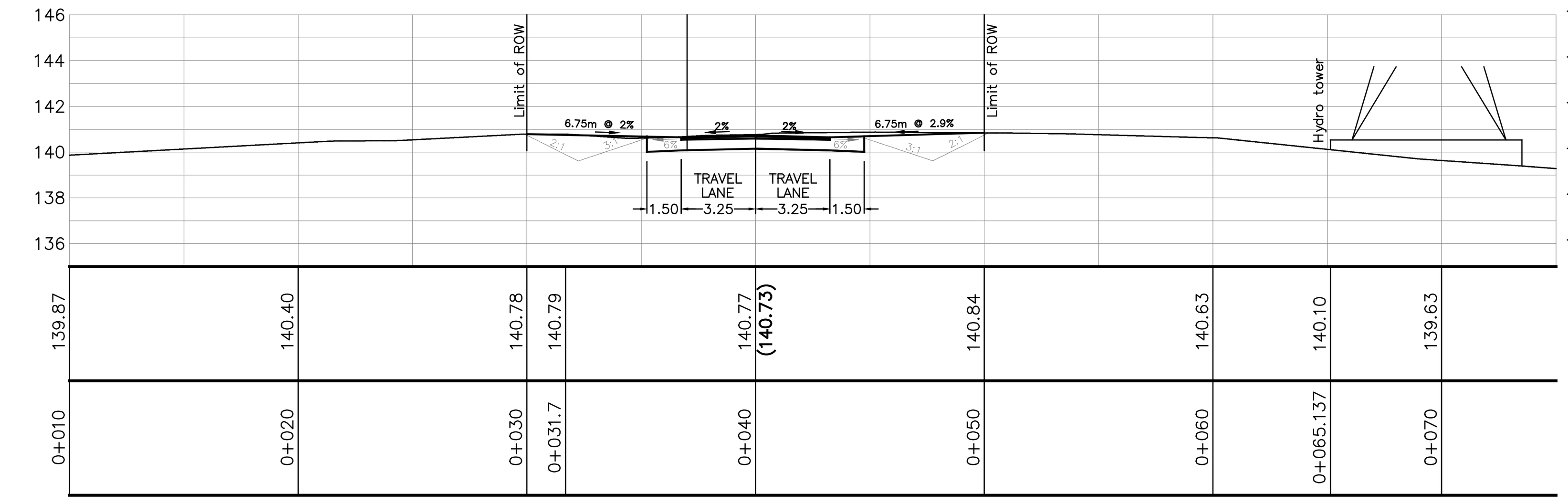
cc: Mr. Dave Pitblado – Paletta International Croporation.



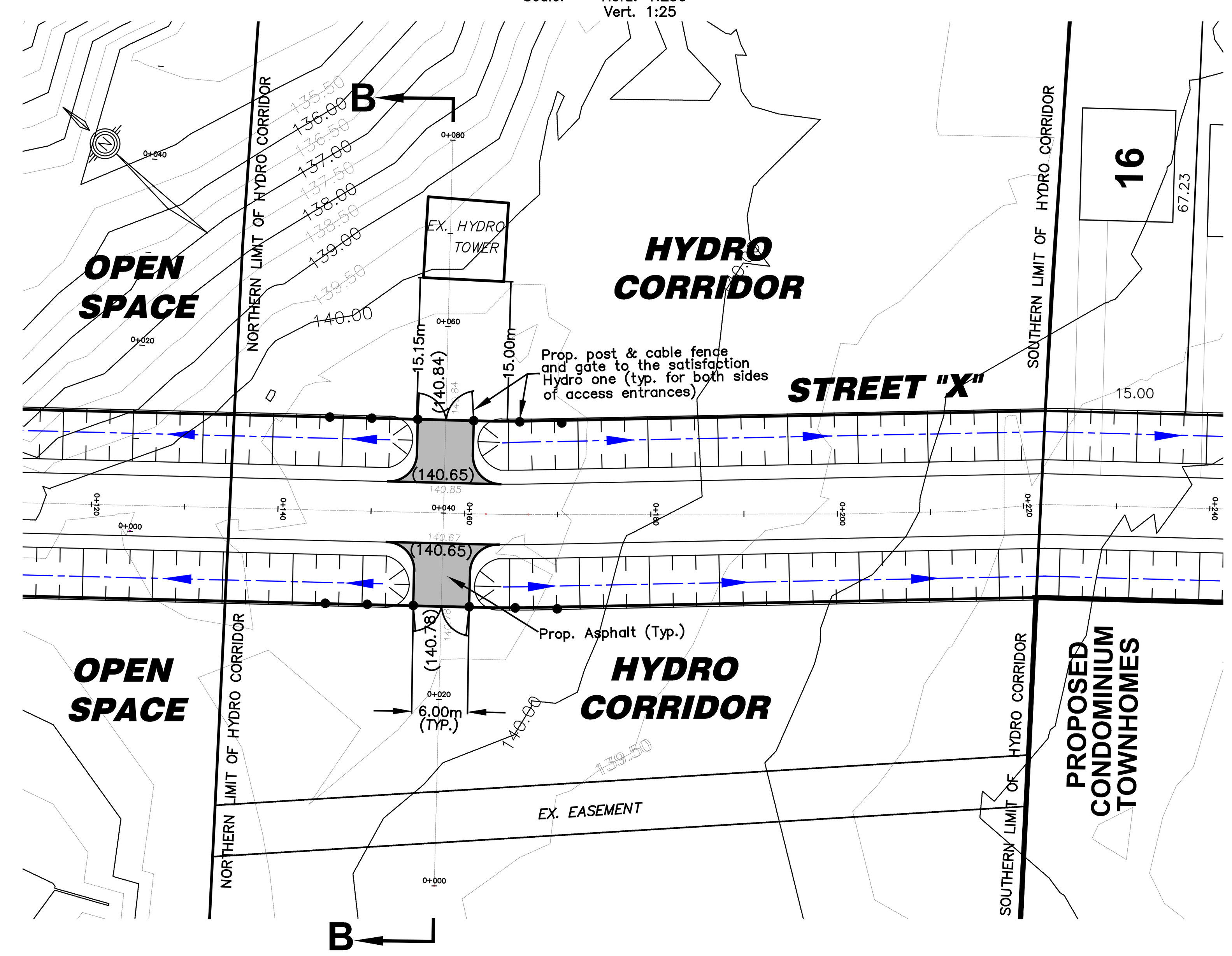
Section A:A
Cross Section of Horning Road thru the Hydro Corridor
Scale: Horz. 1:250
Vert. 1:25



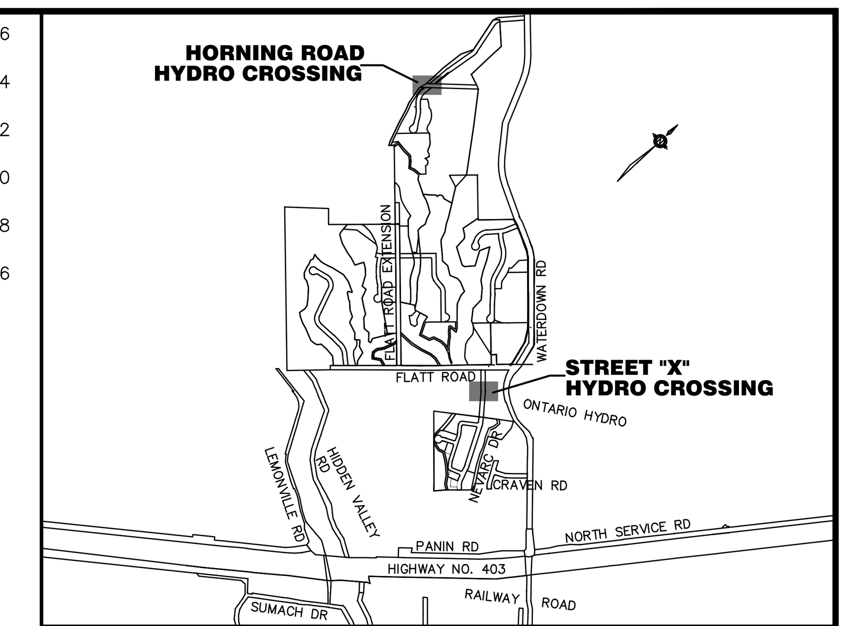
HYDRO CORRIDOR CROSSING OF HORNING ROAD



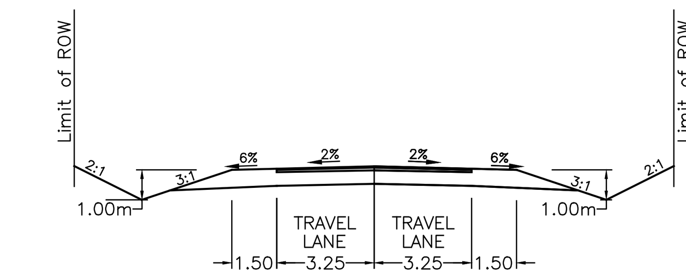
Section B:B
Cross Section of Street "x" thru the Hydro Corridor
Scale: Horz. 1:250
Vert. 1:25



HYDRO CORRIDOR CROSSING OF STREET "x"



KEY PLAN: N.T.S.
SCALE : 1:20,000
SUBJECT AREA



Typical Cross Section for Horning Road and Street "X"
NTS

NOTE:

AN ACCESS PATH FOR HYDRO ONE MAINTENANCE CREW VEHICLES MUST BE PROVIDED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
NO LIGHTING POLES SHELL BE PLACED UNDER HYDRO ONE CIRCUITS.
NO PLANTINGS ARE TO BE PLACED WITHIN THE ROW LIMITS OF THE CORRIDOR THAT GROW HIGHER THAN 4.0m AT MATURITY. PLANTING PLANS MUST BE PRE-APPROVED BY HYDRO ONE.
THE CONSTRUCTION AREA MUST BE DEFINED BY THE INSTALLATION OF TEMPORARY FENCING.

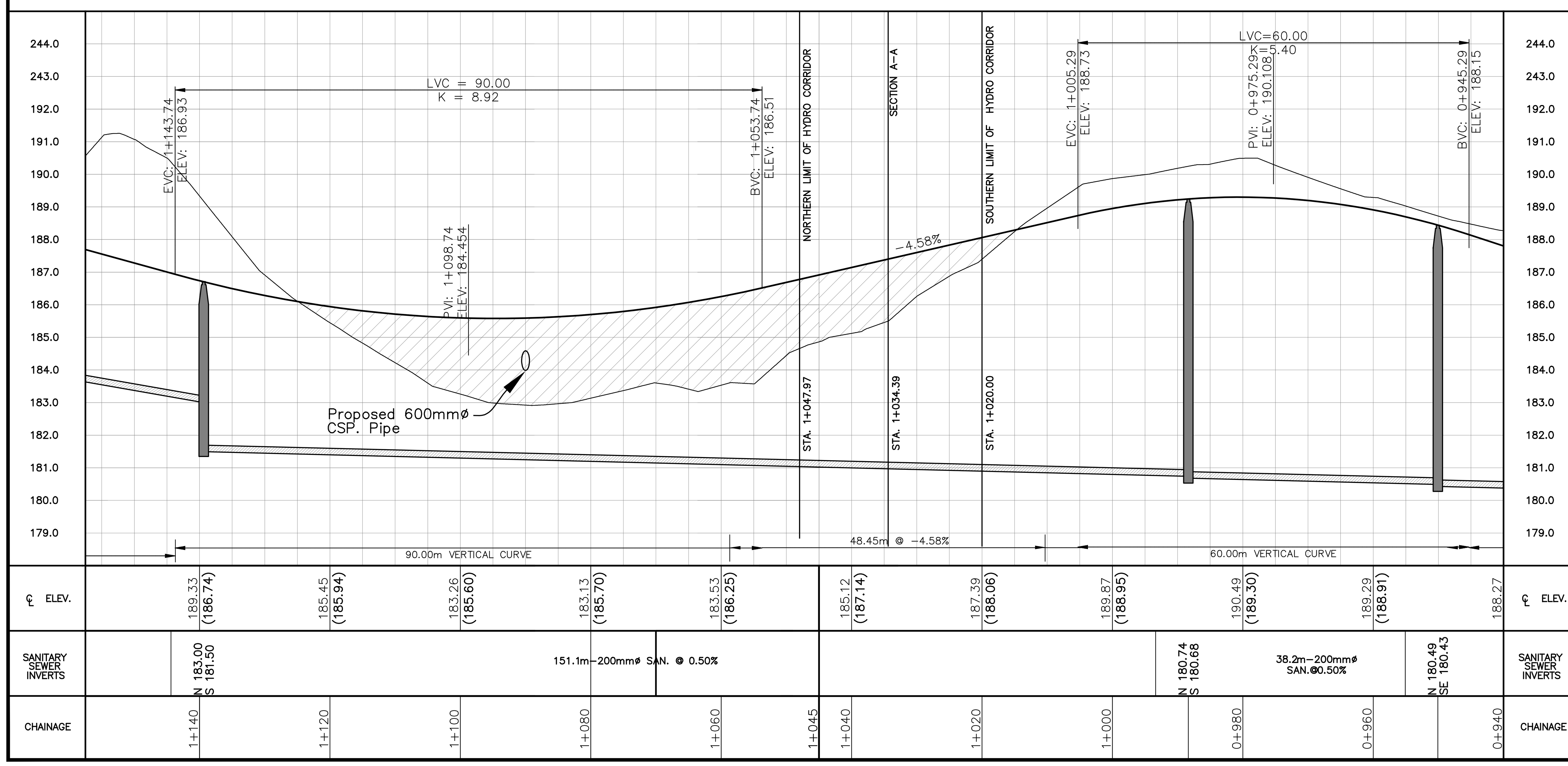
THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

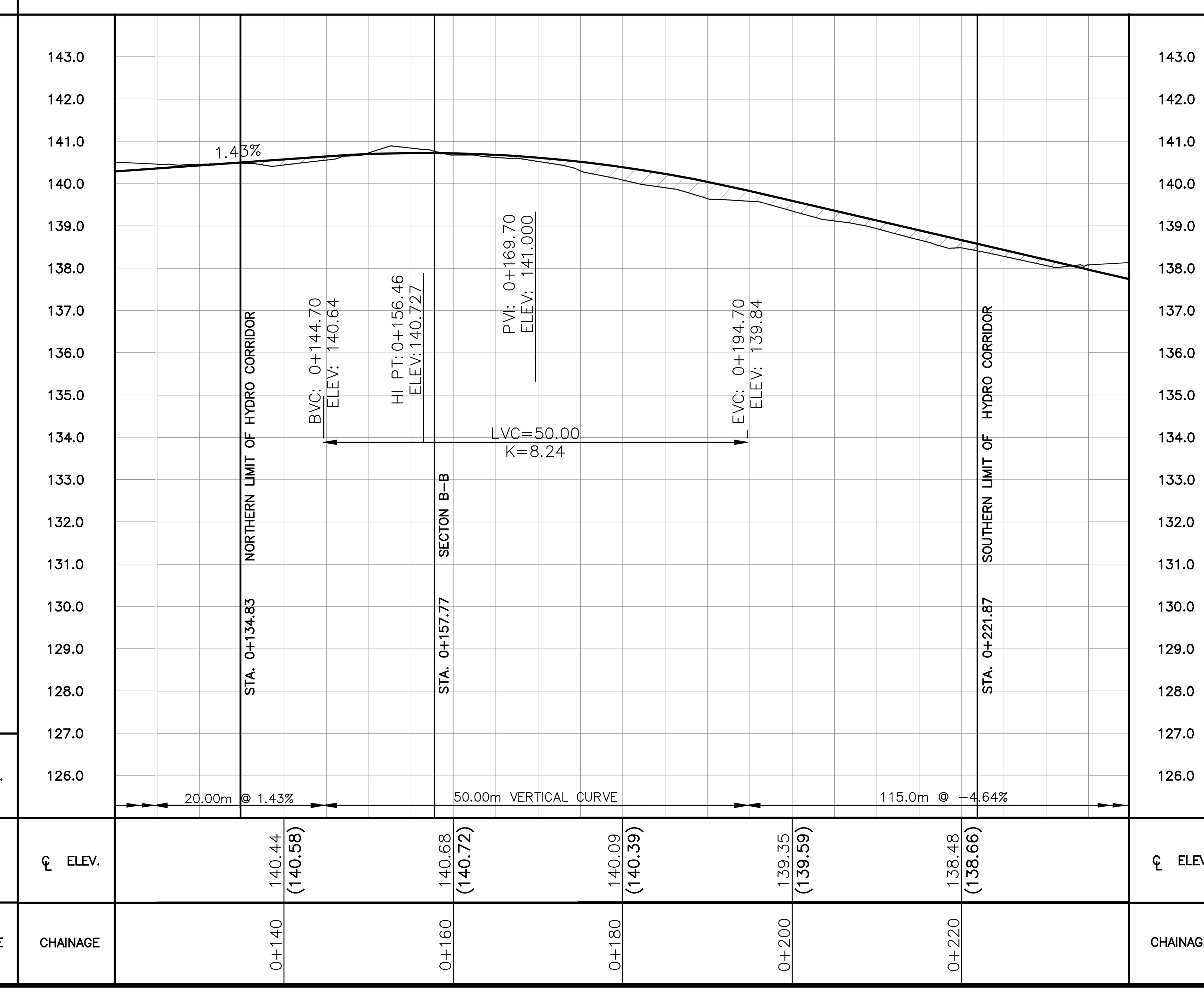
BEFORE STARTING WORK, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

BENCHMARK

WOODVIEW SCHOOL, NO. 69 FLATT ROAD, 400 FEET SOUTHWEST OF WATERDOWN ROAD; TABLET IN NORTHEAST END OF PROTECTED CONCRETE FOUNDATION WALL AT MOST EASTERLY CORNER OF BUILDING, 0.08m BELOW BRICK, 14.2m SOUTHWEST OF BRACED POWER POLE, 41.3m NORTHWEST OF THE CENTRE LINE OF FLATT ROAD. NO. 65-U-129.

ELEVATION 142.541m.





NO.	DATE	BY	REVISIONS
1	NOV./12	FLR	SUBMITTED TO HYDRO ONE

DATE: NOVEMBER 2012

DESIGN: FLR CHECKED: CCP
DRAWN: FLR CHECKED: CCP
SCALE

STAMP: LICENSED PROFESSIONAL ENGINEER C.C. POVELL Dec 5 2012 PROVINCE OF ONTARIO

Paletta International Corporation
4480 Paletta Court
Burlington, Ontario L7L 5R2

METROPOLITAN CONSULTING INC.
2290 QUEENSWAY DRIVE
BURLINGTON, ON L7R 3T2
TEL. 905.637.2926
FAX. 905.637.3268
EMAIL: ENGINEERING@METROCON.CA

City of Hamilton, Ontario, Canada

TITLE: **EAGLE HEIGHTS / TAYLOR PROPERTY**

DWG. **HYDRO CORRIDOR STREET CROSSINGS HORNING ROAD AND STREET "X"**

MUNICIPAL FILE. No.
PROJECT:
CONTRACT No.
SHEET: P09006 - HYD1

Appendix G Correspondence from Region

Legislative and Planning Services
1151 Bronte Road,
Oakville, ON L6M 3L1
Fax: 905.825.8822

February 27, 2012

Ms. Andrea Smith
Planning & Building Department
City of Burlington
426 Brant Street, Box 5013
Burlington ON L7R 3Z6

Dear Ms. Smith:

Re: Proposed Draft Plan of Subdivision, Official Plan Amendment and Zoning Bylaw Amendment
Part of Lots 7, 8, and 9, Concession II EF and Part of the Unopened Road Allowance between Lots 7 and 8 (Paletta Lands)
Part of Lot 7, Concession I EF (Taylor Lands)
Files 505-12/04, 510-06/04, 520-23/04, 24T-04006/B (Paletta Lands)
Files 505-13/04, 520-24/04, 510-07/04, 024Y-04007/B (Taylor Lands)

Halton Region has received the above noted applications and offers the following **PRELIMINARY** comments. The comments are preliminary as the reports filed require further updates and addendums. The comments assess the proposal as set out in the 2010 amended applications:

Proposal:

The owner's draft plan (Paletta) proposes 171 single detached residential units, 20 single family condominium units and 624 cluster housing block units on existing and new municipal right-of-ways. The owner's draft plan (Taylor) proposed 31 single detached residential units and 24 cluster housing block units on existing and new municipal right-of-ways.

Background:

Paletta International Corporation and Mr. Ed Taylor have expressed interest in developing the subject lands for a number of years.

On October 3, 1996, OMB approval for development of the subject lands was granted, approving 409 residential units. The OMB approval established the principle of development of a defined density on the subject lands, and further confirmed that the development will be municipally serviced.

The applicants have indicated that the approved proposal is not economically viable and instead have filed new applications seeking approvals for increased densities. The 1996 draft plan approval does not have a lapsing date (owing to the nature of approvals at that time). Given the foregoing, there should be further discussion as to whether the 1996 draft plan approval should be collapsed and that file closed.

In 2004, the applicants submitted to the City several planning applications comprised of amendments to the City of Burlington Official Plan and Zoning By-law, along with draft plans of subdivision. The proposal sought approval for 665 residential units. The applications were subsequently appealed to the OMB. Halton Region did not provide comments on the proposal for 665 units as the appropriate supporting information and studies were not provided for review.

In 2010, the applicants amended the applications to include additional units, totalling, 870 (815 units on the Paletta lands and 55 units on the Taylor lands). This is a substantial amendment (200+ units) to the 2004 applications.

The applicant has submitted the following reports:

- Planning Justification Report (July 2002)
- Planning Justification and Environmental Analysis (January 2007)
- Functional Servicing and Stormwater Management Report (June 2010)
- Environmental Impact Assessment (December 2010)
- Erosion Assessment Report (May 2010)

Halton Region has assessed the 2010 proposal on the basis of the planning framework as of 2010.

Staff note that the 2010 proposal is based, for the most part, on the development limits which were previously approved by the Ontario Municipal Board in 1996, (development limits often referred to as "development pods" or simply "pods"). However, the development pods need to be refined within the limits of those development pods to conform with current science and practice with respect to natural heritage features, servicing, standards, etc. Additionally, much of the documentation draws comparisons with, and utilizes decisions from, the proposal previously approved in 1996, which is not appropriate given the current applications are separate and distinct from the previous approval; the passage of time; and the changed policy framework.

POLICY DOCUMENTS:

General:

Halton Region has provided a brief summary of potential areas for consideration:

Provincial Policy Statement (2005):

Regional staff has determined the following sections, among others **may be considered** in the evaluation of the application:

- Developing Strong Communities
- Housing
- Infrastructure
- Agricultural Policies
- Water Quality and Quantity
- Cultural Heritage and Archaeological Resources
- Natural Hazards
- Human Made Hazards.

As many of the studies and/or information are out of date, insufficient (studies and documentation with respect to natural heritage/hazards, servicing information for the subject lands) or has not been provided (archaeological investigations, investigations into human made hazards), Halton Region is not in a position to provide detailed comments on compliance with the above noted sections of the PPS.

In addition to the PPS and the Region's Official Plan being considered during the evaluation, the following additional documents may be considered in the Region's review to assist in determining whether the proposal amounts to good planning which has taken current science into consideration.

- ***Growth Plan 2006:***

  The Growth Plan provides a framework for implementing the Province's vision for building stronger, prosperous communities by better managing growth. The Plan directs growth to build up areas through intensification where development proposals can efficiently use existing transportation and servicing infrastructure. The Growth Plan also looks to direct intensification to specific areas and such Urban Growth Centres, intensification corridors, major transit station areas, brownfield sites and greyfields. The Plan also has policies respecting infrastructure and natural heritage systems.

  The reports filed do not meet the Growth Plan definition for intensification. Furthermore, the reports do not adequately assess compliance with the Growth Plan nor do they demonstrate that the subject lands are appropriate candidates for intensification.

- ***Greenbelt Plan (2005):***

  The information provided within the submitted studies/reports is insufficient to evaluate the proposal with respect to the Greenbelt Plan (2005) and the relevant environmental concerns. The Region requires additional information in this regard.

Halton Region's Official Plan:

The subject lands contain the designations North Aldershot Policy Area and Greenlands A and B and are further identified as being Areas Eligible for Urban Services.

Policy 137 of the Regional Plan states that the objectives of the Norther Aldershot Policy Area are as follows:

(1) to recognize and maintain the distinct and unique character of the North Aldershot area within the context of the surrounding built up area; and,
(2) to provide limited amount of development in certain locations while preserving significant natural areas and maintaining the predominately rural and open space character of the landscape,

Policy 138 of the Regional Plan speaks to permitted uses. Single detached dwellings on existing lots are permitted, however, development must be in accordance with the planning framework set out in the North Aldershot Inter Agency Review Final Report (May 1994). The applications must be reviewed against the NAIR report with the appropriate supporting information. This is discussed in further detail below.

With respect to servicing, Policy 139(3) states the following:

Permit the extension of urban services to those locations within the North Aldershot Policy Area shown as 'Eligible for Urban Services" on Map 1 provided that:
(a) a feasibility study has been prepared to the satisfaction of the Region;
(b) Regional Council deems it prudent to extend services;
(c) the landowner/developer has met the financial obligations as specified by the Region; and,
(d) sufficient servicing capacity is available as determined by the Region

Development within greenlands and natural areas designations require the submission of an Environmental Impact Assessment (EIA). As previously noted, the applicant has submitted an EIA, however, an update/revisions to this document are required.

The applicant is also requested to provide the Region with a Site Screening Questionnaire and Phase 1 Archaeological Assessment and any associated documents which may be required upon review of those documents, to adequately address any archaeological or contamination concerns.

NAIR:

In 1994, a secondary planning study was conducted to address planning issues in the area of North Aldershot, which resulted in the North Aldershot Interagency Review. The result of the process was a final report that present planning principles and evaluation criteria, a character plan, land use designations and design guidelines for the area. The NAIR principles were incorporated into Halton Region's Official Plan through ROPA #2 (which are set out as policies 137 to 139 in the Regional Plan).

The land use concept for NAIR notes the following:

North Aldershot should remain a distinct, identifiable area defined by its special characteristics including the Escarpment, topography, habitat, vegetation, creeks, valleys and ravines, and settlement patterns. There should continue to be a diversity of uses, activities and users. Therefore, while change should be permitted, it must regard and respect the area's existing character.

The NAIR report established planning principles which represent the central objectives to guide the future of planning for North Aldershot. The five (5) principles are elaborated upon by Evaluation Criteria which provide a context for preparing the land use concept and represent the conditions under which planning policy will be prepared and proposals for development will be evaluated. The NAIR report confirms, however, that the Evaluation Criteria are not to be considered in isolation of, or to take precedent over the regulations and policies administered by various agencies of the government (Provincial Ministries, Conservation Authorities, etc.).

To this end, the Region notes that there are a number of outstanding issues related to applying agency and government regulations and policies, noted by Conservation Halton in their July 11, 2011 letter, some of which, being:

- Issues with respect to identification of the limits of natural hazard features and their associated allowances that are regulated such as Regional Storm floodplains, stable top of bank staking, meanderbelt widths, wetland limits, flooding and erosion hazards, and associated impacts to lots and road realignments etc.
- Creation of lots within CH regulated area
- Status of watercourses and determination of whether they are confined or unconfined
- Regulated habitat with respect to the Endangered Species Act

As such, at this time Regional staff are unable to provide support for the application, as the outstanding issues have a overriding impact on whether the proposal meets the objectives and evaluation criteria of the North Aldershot Inter Agency Review.

Regional staff strongly encourage the applicant to work and cooperate with the City of Burlington, Region of Halton and other technical agencies involved in the review of the development proposal to resolve the issues so that a proposal which respects NAIR can be achieved.

- ***Sustainable Halton (ROPA 38):***

  On December 16, 2009, Regional Council adopted ROPA 38 which has received Ministerial approval, however, is the subject of various appeals which have yet to be concluded. ROPA 38 designates the subject lands as Regional Natural Heritage System and North Aldershot Policy Area, further identified as Area Eligible for Urban Servicing .

CIRCULATION COMMENTS:

Servicing – John Kisneris, Development Project Manager:

The owner's draft plan (Paletta) proposes 171 single detached residential units, 20 single family condominium units and 624 cluster housing block units on existing, new and municipal right-of-ways. The owner's draft plan (Taylor) proposed 31 single detached residential units and 24 cluster housing block units on existing, new and municipal right-of-ways.

There is a 250mm diameter watermain on Waterdown Road adjacent to the proposed subdivision. There is a 150mm diameter watermain on Flatt Road adjacent to the proposed subdivision. There is no watermain on Flatt Road Extension. There is a 150mm diameter watermain on Ireson Road adjacent to the proposed subdivision. There is no watermain on Horning Road. There is a 150mm diameter watermain on Craven Avenue. There is a 150mm diameter watermain on a small portion of Nevarc Drive. There is a 300mm diameter watermain on the southerly portion of Panin Road.

There is a 300mm diameter wastewater main on Waterdown Road at Craven Avenue, just south and east of the proposed subdivision. The proposed development does not abut a Regional Road.

The Region has reviewed the Functional Servicing Report for the above noted plans of subdivision and has the following comments:

1. The Functional Servicing Report should state the number of units approved by the Ontario Municipal Board in 1996 (being 409 units).

2. The Report, Section 7.1, should be revised to read, "The South Halton Water and Wastewater Master Plan Update June 2008 and the Sustainable Halton Water and Wastewater Master Plan (30 day review period completed November 14, 2011) includes the water and wastewater servicing for the areas of North Aldershot that is approved for urban servicing". "The implementation of the Master Plan preferred servicing strategy will ensure that adequate water and wastewater treatment capacity is available for development on the Eagle Heights and Taylor properties".

3. The Report, Section 7.2, should be revised to read, "In 2010 the area of Panin Road and a few properties on Waterdown Road north of Highway 403 were incorporated into the zone 2 water pressure zone of Burlington". The developer's engineering consultant should revise their plans to show the new section of 300mm watermain on Waterdown Road and the interconnections across Waterdown Road to the east side. The watermain distribution drawing should be revised to show the 100mm system water meter that is located in a water chamber approximately 190 metres north of Horning Road. The water meter is located on a 100 mm diameter watermain by-pass off the 250mm watermain on Waterdown Road.

4. Page 42. There is currently no PRV reducing pressures on Flatt Road. Hydrant readings on Flatt Road identify static pressures of 160 psi. A pressure reducing valve exists south of the existing Waterdown Road reservoir for a small area of homes located south of the reservoir and north of the North Service Road.

5. Page 43. Suggested zone contours to maintain static pressures between 45 and 100 psi are as follows:
    - Zone 2, Ground Elevations 97.5 - 134.3
    - Zone 3, Ground Elevations 132.9 - 169.6
    - Zone 4, Ground Elevations 165.8 - 202.3

6. Page 43. Section 7.4 indicates major facilities for Zone 2 are in place. It should be noted that in addition, Halton is proposing to construct Zone 2 pumps at the Waterdown Road Reservoir as part of North Aldershot servicing.

7. Page 44. Option C is not the system proposed in the 2008 Master Plan. The 2008 Master Plan identifies a Zone 3 reservoir and pumping for Zones 2, 3 & 5 at the Waterdown Road Reservoir. Zone 4 would be fed from Zone 5 via PRVs. A connection would be maintained to the Hamilton water supply for emergency purposes.

8. Page 45. Converting the existing Waterdown Road watermain to Zone 4 would deal with servicing this subdivision, but would leave Halton without the ability to service lands in Zone 5 (above 202.3 metres). It would be better for Halton to continue to pump to Zone 5 and feed Zone 4 via a PRV.

9. Page 45. Since Halton is only able to negotiate for Hamilton water ten years at a time, provision must be made in this report for a "Halton only" solution.

10. The Region notes that the requirements of the Class Environmental Assessment for the reservoir, including determination of its locations and type have not been satisfied through the Sustainable Halton Water and Wastewater Master Plan. The FSR and other documentation provided by your client and its consultant will provide a useful input to the Region's Class EA Study for the reservoir to be carried out in the future. In particular, information regarding the mature state of the service area noted in the FSR would need to be finalized in the FSR. Through the future Class Environmental Assessment study, detailed feedback from applicable review agencies and key stakeholders will be required to determine what is acceptable as the preferred reservoir location and type. Halton Region is already aware that the Niagara Escarpment Commission has specific concerns regarding an elevated water tower.

11. The servicing report should incorporate lands external to Eagle Heights/Taylor properties as these developments may have impacts on the servicing of lands external to the proposed subdivisions.

12. Hydraulic modeling for the water system should be included as part of the Functional Servicing Report.

13. Within Section 7.5 of the Report, the owner should be advised that no local watermain or water service connections will not be permitted to come off of the 400 mm reservoir watermain feed.

14. The Servicing Report should mention of Halton's Master Plan water capital projects for this area, which will include;
    - ID 3698, Waterdown Road Pump Station Expansion (Zones 2, 3 & 5), $5.625M
    - ID 3699, North Aldershot Reservoir (Zone 3), $5.072 M
    - ID 3700, 400 mm WM from Waterdown Road Pump Station to North Aldershot Reservoir, $2.279M
    - ID 5881, 400 mm WM on North Service Road from King Road to Waterdown Pump Station (Zone 2), $6.589M
    - Please note that these costs are preliminary and subject to change with approval of the Sustainable Halton Master Plan and Development Charges Technical Report.

    Options for providing a second feed to Street A should be reviewed in order to eliminate the long dead end.

15. Allowance should be made within the Taylor draft plan of subdivision for a future watermain from Street X to future development properties to the west. This is for the purposes of watermain looping or sanitary servicing should it be required. Possibly it may be accomplished with a servicing easement through Block F. Some further review should be done by the developer's consultant to confirm that this is possible.

16. Based on tributary areas and population figures indicated on sanitary drainage areas plan (Fig.7.2), the overall arithmetic calculations in the design sheet seem to be okay, except for some errors in the total population column. The errors have given rise to an overestimation of the overall total population by 75 persons which, in turn, overestimates the total peak flow by 1.2 L/s (negligible).

17. At the bottom of the twin columns on the design sheet for residential units, the total of the Single Family Housing Units is 484 (88 units existing and 376 proposed), while that of the Cluster Housing Units is 648. The subdivision

phasing plan (Fig.2.3), on the other hand, gives these totals to be 202 and 648, respectively. The total of the cluster housing units thus matches that obtained from the design sheet (based on Fig.7.2). However, the total of the single family housing units from this plan is lower than that from the design sheet by 174 units (376-202=174).

18. The 20 condominium units listed under phase 2 on phasing plan (Fig.2.3) does not seem to have been accounted for independently in the design sheet. However, there are 20 units listed under SF dwellings that are supposed to be from catchment area # 5. If that's so, SF dwelling population density has been used for the condo units and their tributary area has been that of the cluster units belonging to the same catchment area.

19. The non-residential population density used in the calculations is 90 persons per Hectare, which is also the same as that specified by the Region's Design Criteria. However, their population densities work out to be 15.21 persons/ha for Single Family Housing and 72.32 persons/ha for the Cluster Housing. These values are substantially lower than the values specified by the DC, which are 55 and 135, respectively.

20. Flow velocities along street B (N-O), street A (P-S), Flatt road (S-M) and Panin road (ZZ-Z) are lower than the minimum specified by the Design Criteria (0.6 m/s). It is recommended that the slope of the pipes be increased or re-evaluated in order to realize higher velocities (lower depths), improve conveyance efficiency of the sewers, and prevent sediment deposition.

21. Staff Report PPW90-08 – "Monitoring of Development within the Skyway Wastewater Treatment Plant Catchment Area" stated that the development within Skyway WWTP drainage area should be monitored closely until the expansion is completed.

22. Proposed developments such as Eagle Heights must be monitored closely until the time the plant is expanded.

23. The Skyway WWTP is currently undergoing an expansion and is anticipated to be complete in 2014.

24. Development may be considered if construction and occupancy is phased out until anticipated completion of Skyway WWTP expansion. However, sanitary sewer design sheet included in FSR from Metropolitan Consulting does not calculate or follow proposed Phasing scheme outlined in Fig. 2-3 Eagle Heights Phasing Plan. It is recommended that a sanitary sewer design sheet that matches the proposed phasing sequence be resubmitted to allow for better determination of maximum flow from the development.

25. We recommend that the sewer from Street X cross under Tributary 4 to the Bethel Church property and follow Nevarc Ave. & Craven Ave. to the existing sewer on Waterdown Road – Alt. 2B.

26. The wastewater main (and possible watermain) crossing tributary four should be located within a separate City of Burlington parcel and not an easement. This could be a walkway block from Street X to Nevarc Drive. The draft plan should be amended to show this block. The block should be of sufficient size to accommodate all the services, their separation distances, maintenance vehicle access, etc.

27. The next phase of the sanitary sewer construction should take into account all the existing homes on Craven Avenue and Nevarc Drive, and the rear of some Waterdown Road lots, to ensure the orderly development of sanitary sewers in the area.

28. Wastewater service laterals should be constructed to the existing properties on Craven Avenue, Nevarc Drive, Flatt Road and Flatt Road Extension, Horning Road and Waterdown Road.

29. We note that the Region has previously commented on temporary servicing for the church to be located on the institutional block.

30. The wastewater main on Street E should be constructed up to the Waterdown Road right-of-way in the vicinity of the south side of the institutional block, and up Waterdown Road to the north side of the institutional block.

31. The wastewater main on Street D should be constructed up Waterdown Road to the northerly limits of the development, approximately 25 metres.

32. The wastewater main on Flatt Road should be constructed to Waterdown Road, with a stub extending north outside of the intersection.

33. Halton Region development charges projects cannot proceed to the design stage are not considered funded until all the Class Environmental Assessment requirements are in place and there is an approved financial plan. The financial arrangement discussions must be initiated by the owner with the Region.

34. The Report states that the developer is proposing rural cross sections of the proposed subdivision roads. The City, under these developments, may be requesting some roads to have an urban cross section. The owner should undertake to have this worked out and then update the Report accordingly.

35. The Report would benefit by stating that some of the stormwater management controls like soakaway pits, infiltration trenches, grassed swales and rainwater gardens may have an impact on Regional servicing, and that wastewater mains or wastewater service laterals located in the vicinity of these features may require increased protection from infiltration. This will be discussed further at the detail engineering design stage.

36. The Report suggests that there may be servicing easements through valley lands. From an engineering perspective this may require construction utilizing casings and spacers. The suitability of such servicing and environmental impacts needs to be addressed.

37. Given the above information, the Report should look more closely at phasing and constructability of the two subdivisions, and revise the proposal for phasing accordingly.

38. Stormwater related to the Waterdown Road right-of-way, pre and post re-construction of Waterdown Road, should be confirmed as having all the necessary outlets for the treatment of stormwater for quality and quantity. If needed the owners shall make the appropriate allowances within their draft plans of subdivision.

Based on the above comments, the applicant is required to provide additional information and analysis with respect to servicing.

Environmental Impact Assessment (2010, Savanta) – Mirek Sharp, North South Environmental:

General Comments

Background
It is recognized that there is an existing approved draft plan for the property that resulted from an OMB hearing in the mid-1990s. The use of older information is supported to the extent to which it contributes to a fuller understanding of the site and its surrounding area; however the EIA requires further amendments and refinements for the reasons set out below.

Regional EIA Guidelines
The EIA should adhere to the Regional EIA Guidelines. The Guidelines have not been referred to in the Savanta EIA, and some of the requirements (e.g., refinement of ESA boundaries, and therefore Greenlands boundaries) have not been addressed. Normally, an applicant would prepare a Terms of Reference for an EIA and circulate it to the approving authority for comment, but we see no reference to one. It is strongly suggested that the applicant consult with the approving agencies to determine the appropriate content of further revisions to the EIA.

Completeness of the EIA
An EIA that supports the current (2010) plan should be a complete and stand alone document, with complete methods, inventory, analysis of significance, impact analysis (direct and indirect), recommendations for mitigation and demonstration of conformity with relevant policies. The Introduction to the EIA indicates it is an update study and omits a lot of the data and methods from earlier studies, even though the analysis relies on it. The update approach is acceptable as long as it provides all the previous data and any older analyses that are still relevant, so the reader can evaluate the conclusions with the benefit of the supporting information and the methods used to collect the data.

Policy Conformity
The EIA recognizes the 2010 Draft Plan as a "new application". Therefore, the current policy in the relevant Regional and Provincial Plans, as well as policies of the Conservation Authority, need to be addressed. The information and analysis provided in this "update" EIA is not sufficient to demonstrate conformity with these policy documents, nor does the EIA fulfill the requirements of the Regional EIA guidelines.

Field Methods
The methods used to collect field data are unclear in some cases and inappropriate in others (e.g., breeding bird surveys in August, both recent floral surveys in August). Methods from the earlier environmental reports are not provided.

Figures
The Figures need to be provided at a scale which is readable. In addition, there is critical information that needs to be provided in the figures, including:

- an inventory figure which just shows the results of the biological inventory (ELC, location of any significant species, etc.);
- the principal features that have policy implication (e.g., woodlands, valleylands, watercourses, etc.) should be mapped separate from inventory and policy designations;
- feature boundaries shown on figures should be staked and approved by the review agencies (e.g., at present, the Region are not sure if buffers on Figure 4 are from valleylands based on approved stable top of bank or from the physical top of bank, or from the woodland edge where it is coincident with the valley edge);
- a separate figure should provide the relevant policy mapping; this should include the existing designations (ESAs, ANSIs, Greenlands A and B, etc.);
- while the Figure that overlays the proposed development on natural features is appreciated (this is often missing from EIAs), it is suggested that a constraint boundary based on features (woodland, valleylands, wetlands, etc.) be developed first, and then the development plan over-laid as to clearly identify where the proposed development avoids constraints, and where it encroaches. The encroachments can then be specifically addressed in the text with respect to why they are acceptable and the degree to which they constitute impacts (if any); and
- the stormwater figure is illegible owing to the scale and amount of information on it, and this should be provided as a larger figure.

Species Status
The status (provincial, regional and local) of various species needs to be updated, and the appropriate references used (e.g., the Halton Natural Areas Inventory). In particular, several species recently designated as "threatened", and thus subject to the Endangered Species Act, must be addressed.

Delineation of Feature Boundaries
It is highly recommended that feature boundaries be delineated in the field with the review agencies, with the limits surveyed for incorporation onto Figures. This will facilitate agreement and acceptance of the actual limits of the "development pods", which is essential for the application.

Significant Woodlands
We do not agree with the approach for identifying significant woodlands. The Region has developed criteria for determining significant woodlands and these should be applied to the site.

Ecological Connectivity
The ecological function of the site with respect to other nearby features (e.g., the Escarpment and other ESAs) has not been evaluated. This should be undertaken with recognition of the high degree of connectivity that currently exists within the local landscape.

Impact Analysis
As noted in the comment on the Figures, areas that are constrained by policy must be clearly mapped and overlaid with the proposed development to identify where there are direct impacts to features.

In general, the indirect impacts are not adequately addressed. The major change in lands use from rural/agricultural to urban will introduce new stresses to the local landscape that have not been addressed. Most indirect impacts are density dependant, thus the proposed increased units from the original approved draft plan can be expected to have an impact on natural features, and this is not recognized or discussed in the text.

The impact analysis frequently uses the term "effect" rather than "impact". It is not clear if "effect" is being used synonymously with "impact", or if it is intended to mean something else. Given that the impact analysis is relevant to determining policy conformity, and that the language of policy uses the term "impact", its use in the EIA should be clarified. In our opinion, most, if not all, instances where the word "effect" is used represent environmental impacts.

Incorporation of Recommendations from Hearing
Section 5 discusses the 1994 EIA recommendations, many of which were adopted as part of the OMB hearing. It is not clear which recommendations were adopted during the hearing, and no explanation is provided as to why all of the recommendations from the 1994 EIA were not adopted.

Site Visits

The Region requests that the applicants agree that the Region may have access to the site as may be required.

Conclusions
We are not sure what is being implied, or what the importance is, of the conclusion that "The Plans of Subdivision are very similar to the Approved Plan ..." Given the number of units has approximately doubled, and the internal road and lotting layout have changed, we do not perceive them as very similar with respect to potential impacts to the adjacent natural features.

The EIA does not conclude that the draft plan is acceptable. Specifically, it does not conclude that the potential impacts of the proposed development are acceptable with regard to existing planning policies, and only makes a statement regarding the protection of the ANSI. By stating that it is similar to the approved plan, it seems to imply that the acceptability of the earlier plan is conferred on this new 2010 plan, however it does not clearly conclude this and the supporting argument for them being similar is not convincing.

Waste - Andrew Suprun, Waste Collection Customer Service Technician:

Region waste will service once 90% completed and waste collection trucks can safely access the street for collection to commence. Collection will take place in front of the individual units curb side. Please have developer contact my self once development is ready for collection.

Health –Nadia McLennan, Health Protection Services and Fabio Cabarcas, Community Health Services:

The Healthy Environments Team requests that the developer must undertake a well monitoring program of neighbouring homes within 500m of the proposed development to address any off site well water quality/quantity concerns arising from the proposed development prior to the commencement of on-site construction/grading.

The developer must also decommission any existing wells on the subject property that will not be used as a potable water source in accordance with the Ontario Water Resources Act R.S.O. 1990, Chapter O.40.

Thank you for providing the Walkable and Transit Supportive Communities Section with the opportunity to review this subdivision application. To ensure walkability and active transportation, we have the following suggestion: Consider adding additional pathways and trails between residential blocks to enhance connectivity to the surrounding area and adjacent streets. To encourage walkability, streets should be designed on the basis of medium to short block lengths with a recommended maximum block perimeter that does not exceed 250 metres. Where block perimeter exceeds 250 metres, the provision of a block pedestrian linkage is suggested. Neighbourhoods built on a cul-de-sac street pattern system should connect to other roads and surrounding areas by looking for direct pathways. For instance, the proposed pathway on street E increases connectivity. Consider adding additional pathways and trails to create direct pedestrian connectivity between the streets and to the surrounding areas.

Transportation – Matt Krusto, Transportation Services Coordinator

Halton Region's Transportation Services Section has reviewed the above applications from a Regional perspective and has no comments.

Finance – Katherine Fleet, Intermediate Financial Analyst, Development

Please include the below note to the comments. This note is being added on the assumption that these sites will be on full Regional services.

NOTE: Regional development charges are payable in accordance with the applicable Regional Development Charge By-law and are required at the following stages: Subdivision Agreement Stage: Water, wastewater, and road (including any blocks intended for future development at the maximum density permitted under the applicable zoning by-law); Building Permit Issuance: All remaining Region-Wide Development Charges in effect on the date of issuance. Note: Any building permits which are additional to the maximum unit yield which is specified by the Subdivision Agreement are subject to all Regional Development Charges (including water, wastewater, and road not collected at subdivision agreement) prior to the issuance of the building permit, at the rate in effect on the date of issuance. It should be noted that a development charge agreement may be required to collect Regional development charges in advance of these two stages.

Conclusion

Based on the comments above, Halton Region planning staff cannot support the 2010 amended applications for 870 units as submitted. There are significant updates and supplementary information required for the Region to be able to adequately evaluate the proposal against the evaluation criteria of NAIR and the principles of good planning among other relevant documents. The applications are not supported by sufficient information addressing the natural heritage features and functions, the ability to adequately service the lands, archaeological and contamination investigations. Regional staff require additional information prior to providing additional comments or a recommendation.

Halton Region encourages the applicants to submit the requested information. Doing so will allow the Region to conduct a complete and thorough analysis of the proposal and provide a formal position on the applications.

I trust these comments are of assistance to you. Should you wish to discuss any of the contents of this letter in detail, please do not hesitate to contact me directly.

Sincerely,

Laurielle Brooks, BES, MCIP, RPP
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c. Ron Glenn, Director of Planning Services, Halton Region via email @ ron.glenn@halton.ca
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Margaret Charles, Conservation Halton via email @ mcharles@hrc.on.ca