35, 40 & 55 Silvercreek Parkway South

City of Guelph, Ontario

Scoped Environmental Impact Study

Prepared for:

Silvercreek Guelph Developments Limited

Project Number:

AA16-190B

Date:

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1.0 Introduction

Aboud & Associates Incorporated (AA) was retained by Silvercreek Guelph Developments Limited to complete a Scoped Environmental Impact Study (EIS). This Scoped EIS has been completed to address the comments provided by City of Guelph Environmental Planning staff on May 27, 2019 and the Grand River Conservation Authority (GRCA) as a result of the Development Review Committee Meeting on May 1, 2019 in addition to the comments from the technical review which were provided by the city on July 7, 2020. In preparing this Scoped EIS, the following documents were reviewed.

- Environmental Impact Study for the Lafarge Property (North-South Environmental, 2005)
- Lafarge Property Addendum to the Environmental and Servicing Reports (North-South Environmental, 2006)
- Environmental Impact Study for the Lafarge Property Addendum II: Impacts of Revised Design and Tree Conservation Plan (North-South Environmental, 2007)
- Addendum III: Response to EAC Comments April 9th, 2008 (North-South Environmental, 2008)
- Addendum IV: 35 & 40 Silvercreek Parkway South Scoped Environmental Impact Study Addendum (R4) (Aboud & Associates Inc., 2019)
- Silvercreek Junction Addendum IV. Revised Impact Assessment Associated with Revised Storm Water Management Plan, August 2008 (North-South Environmental, 2008)
- Application to Permit the Injury or Destruction of Trees, Tree Inventory, Preservation Plan and Compensation Planting Plan 35 & 40 Silvercreek Parkway South, City of Guelph (Aboud & Associates Inc., 2017)
- 35 & 40 Silvercreek Parkway South Active Bird Nest Inventories (Aboud & Associates Inc., 2017)
- Ontario Municipal Board- Minutes of Settlement (March 2009)
- Official Plan Amendment No. 42 Minutes of Settlement (February 11, 2013)
- Draft Plan of Subdivision Silvercreek Junction (Astrid J. Clos Planning Consultants, October 2020)
- Silvercreek Junction Functional Servicing and Stormwater Management Report (R.J. Burnside, 2019)

1.1 Existing Land Use and Study Area

Silvercreek Guelph Developments Limited is submitting a Draft Plan of Subdivision application to implement the existing Official Plan designations and zoning for the properties at 35, 40 and 55 Silvercreek Parkway South in the City of Guelph. The property is bound by railways and residential development to the north and south with the Hanlon Parkway to the west and Howitt Creek and a City stormwater management facility to the east (Figure 1). This stormwater management area was previously owned by Silvercreek Guelph Developments Limited and has been conveyed to the City of Guelph. The properties form an irregularly shaped parcel (178,253 m² measured electronically), approximately 450 metres by 615 metres at its deepest and widest points. The properties consist of a previous gravel pit and brownfield site which has had a Record of Site Condition filed with the Ministry of Environment (MOE). For the purposes of this Scoped EIS, the study area will consist of the lands within the boundaries of the properties and up to 120m from the Subject Lands on the adjacent lands.

1.2 Project Background & Context

Studies on the Subject Lands have been ongoing since 2005 when an Environmental Impact Study was conducted by North-South Environmental. This EIS described the proposed development concept, investigated the existing natural heritage features on the site and provided potential impacts of the development as well as mitigation recommendations. Studies conducted for the EIS classified the vegetation and vegetation communities observed on site as largely cultural, defined as "originating from, or maintained by, anthropogenic influences and cultural based disturbances; often containing a large proportion of non-native species (North-South Environmental, 2005). Most wildlife species observed using the site were common urban inhabitants, except for the Monarch Butterfly, a species of concern due to threats to its breeding and wintering habitats. An assessment of the fisheries resources within Howitt Creek was also conducted over the entire length of Howitt Creek from the mouth at the Speed River upstream to where the creek originates at a large storm sewer. The habitat assessment noted the presence of flash flows and instream concrete waste throughout the reach within the Subject Lands. As a result, fish habitat in Howitt Creek was found to be severely degraded due to the past land use practices throughout the watershed and possibly poor water quality. During the EIS investigations, it was noted that a perched twin culvert was present in the reach of Howitt Creek that flows through the site, and that this adversely influenced the natural morphology of the watercourse. The twin culverts have since been removed from the watercourse, with a new culvert that does not inhibit fish passage being installed approximately 90 metres downstream.

Following the EIS, North-South Environmental completed four addenda (2006-2008) to address comments from the City of Guelph, City of Guelph Environmental Advisory Committee and the GRCA.

In 2016, Silvercreek Guelph Developments Limited submitted an Application to Permit the Injury or Destruction of Trees for 35 & 40 Silvercreek Parkway South to the City of Guelph. Additional information was requested by the City of Guelph to supplement the application and was submitted in May 2017. The City of Guelph was satisfied with the additional information and granted a permit for the removal of on-site trees, which took place throughout July and August of 2017. Currently, no trees remain on the site apart from the Bur Oak (*Quercus macrocarpa*) which continues to be recommended for retention.

In 2019 an EIS addendum was submitted by Aboud and Associates that addressed the comments provided by City of Guelph Environmental Planning staff on October 17, 2017 and the Grand River Conservation Authority (GRCA) as a result of the Development Review Committee Meeting on September 20, 2017.

This Scoped EIS addresses the comments from the Development Review Committee Meeting on September May 27, 2019 and the City of Guelph technical review (April 14, 2020) of the complete application.

1.3 Proposed Development

Silvercreek Guelph Developments Limited is proposing to develop the properties to contain various uses including service commercial, corporate business, apartment blocks, community mixed-use and open space. The Draft Plan of Subdivision prepared by Astrid J. Clos (AJC) Planning Consultants (October 2, 2020) details the proposed plan for the lands and can be found in Appendix A. The plan includes 2.76 ha of apartments consisting of 297 units, 4.00 ha of townhouses consisting of 163 units, 2.30 ha of mixed use consisting of 293 units, 2.74 ha of roadways, 2.59 ha of parkland, 0.41 ha of open space areas and 1.72 ha for stormwater management. A total 16.52 ha is part of the development, all west of Howitt Creek.

1.4 Existing Regulations

1.4.1 Provincial Policy Statement

The *Provincial Policy Statement* ([PPS) (OMMHA 2014) provides policy direction on matters of provincial interest related to land use planning and development.

The PPS states that:

"Natural features and areas shall be protected for the long term".

And that:

"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."

Under the PPS, development and site alteration are not permitted in:

- a) significant wetlands;
- b) significant woodlands;
- c) significant valleylands;
- d) significant wildlife habitat;
- e) significant areas of natural and scientific interest; and
- f) coastal wetlands,

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The PPS (2014) also states that:

- 1. Development and site alteration is not permitted in fish habitat, habitat of endangered species and threatened species except in accordance with provincial and federal requirements.
- 2. Development and site alteration is not permitted on adjacent lands to the natural heritage features and areas identified above (Items a to f), 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.
- 3. Development and site alteration is restricted in or near sensitive surface water features and sensitive ground water features in order to protect the hydrologic functions of the feature. Mitigation and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions.

1.4.2 Endangered Species Act, 2007

The provincial Endangered Species Act, 2007 (ESA) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (MNRF 2015a). The habitat of species at risk is also generally protected under the ESA. Protected habitat is habitat identified as essential for life processes including breeding, rearing, feeding, hibernation, and migration.

The ESA (Subsection 9(1)) states that:

"No person shall,

- (a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
- (b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,
 - (i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,
 - (ii) any part of a living or dead member of a species referred to in subclause (i),
 - (iii) anything derived from a living or dead member of a species referred to in subclause (i); or
- (c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).

Clause 10(1)(a) of the ESA also states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species".

An authorization or permit between the proponent and the Minister of Natural Resources and Forestry is required to authorize activities that would otherwise be prohibited by subsection 9(1) and 10(1) of the ESA.

1.4.3 Grand River Conservation Authority

The Subject Lands are located within the jurisdiction of the Grand River Conservation Authority (GRCA). Portions of the proposed development are within the floodplain and the allowances adjacent to these features.

Section 8.1.1 of the GRCA's Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06, 2015) states that:

Development will not be permitted within the Riverine Flooding Hazard except in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and Sections 8.1.2-8.1.29 – Policies for One-Zone Policy Areas.

And

8.1.17 Recreational Uses such as passive parks, trails and river access points and other uses deemed appropriate by the GRCA, but not including new campgrounds, new golf courses or expansions to existing golf courses, marinas or permanent docks may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that:

a) there is no feasible alternative site outside the Riverine Flooding Hazard,

b) there is no loss of flood storage,

c) where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site, facility and/or landscape design and appropriate remedial measures will adequately restore and enhance features and functions, and

d) the risk of property damage is minimized through site and facility design and flood emergency plans.

Section 8.1.37 states:

"Development within Allowances associated with Flooding Hazards may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, provided that it can be demonstrated that there is no risk of structural failure due to potential hydrostatic/dynamic pressures"

Portions of the subject property are also within the GRCA Regulation Limit and are mapped as containing steep valley/erosion hazard slopes associated with the Speed River and its allowances. As part of the development process the GRCA will determine if the subject property is a "Erosion Hazard" or an "Other Valley Land".

For Erosion Hazards section 8.2.2 states:

"Development within the Riverine Erosion Hazard Allowance may be permitted in accordance with the policies in Section 7.1.2-7.1.3- General Policies, and where a sitespecific geotechnical or engineering assessment based on established provincial guidelines and an appropriate factor of safety against slope failure or slipping established a more precise Riverine Erosion Hazard limit, and where it can be demonstrated that:

a) There is no feasible alternative site outside the Regulated Area;

b) The proposed development is not subject to a Riverine Erosion Hazard or a Riverine Flooding Hazard;

c) There is no impact on existing and future slope stability;

d) The risk of creating new Riverine Erosion Hazards or aggravating existing Riverine Erosion Hazards as a result of the development is negligible;

e) The potential of increased loading forces on the top of the slope is addressed through appropriate structure design;

f) The potential for surficial erosion is addressed by a drainage plan;

g) Access into and through the valley for preventative actions or maintenance or during an emergency will not be prevented;

h) An appropriate setback from the Riverine Erosion Hazard, as established in Sections 8.2.3-8.2.10"

1.4.4 City of Guelph Official Plan

The Subject Lands are adjacent to natural heritage features identified in the City of Guelph's Official Plan. Section 4.1.1 states:

The City shall ensure the long-term protection of the Natural Heritage System and associated ecological and hydrologic functions.

And

Each of the Natural Heritage System components is subject to specific policies as set out in 4.1.3, 4.1.4 and 4.1.5.

1.4.4.1 Natural Heritage System

The OP provides permanent protection to Significant Natural Areas and their established buffers. The policies of the OP aim to strike a balance between protection of Natural Heritage areas and limited compatible development.

Development or site alteration may be permitted within the adjacent lands to Significant Natural Areas provided that it has been demonstrated through an EIS or EA that there will be no negative impacts to the protected natural heritage features and areas or their associated ecological functions.

Since the development is adjacent to the Howitt Creek and the Howitt Creek Flood Protection Facility, an EIS has been requested by the City to ensure no negative impacts to the Natural Heritage System.

1.4.4.2 General Permitted Uses

This section of the OP states development and site alteration will not be permitted within the Natural Heritage System or established buffers, except for specified uses.

The OP states that passive recreational activities are permitted within the natural heritage system. However, section 4.1.2 (2) states:

Notwithstanding the provisions of Section 4.1.2, an EIS may be required for the construction of trails and walkways, fish and wildlife management, and habitat conservation, where the proposed work has the potential to result in negative impacts to the Natural Heritage System.

1.4.4.2 Adjacent Lands and Buffers

Adjacent lands are lands contiguous to specific natural heritage areas where development has the potential to negatively impact the feature or area. An EIS is required where development or site alteration occurs within lands adjacent to the NHS.

Section 4.1.1.6 states

Development and site alteration on adjacent lands, within the minimum or established buffers are subject to the applicable Significant Natural Areas (Section 4.1.3) and Natural Areas (Section 4.1.4) policies.

Section 4.1.1.10 states

Minimum buffers where appropriate (as identified on Table 4.1), and established buffers where approved, are incorporated into Significant Natural Areas and Natural Areas as identified on the Schedules of this Plan.

Section 4.1.1.11 states:

Notwithstanding 4.1.1.9, minimum buffers have not been applied to lands containing existing development which may preclude achievement of the minimum buffer specified on Table 4.1. For any redevelopment of such lands, an EIS will be completed to the satisfaction of the City that evaluates the need for an established buffer and determines an appropriate width where a buffer is required.

Four Natural heritage features with established buffers and adjacent lands are identified in the study area. Each is discussed in detail below.

1.4.4.3 Surface Water and Fish Habitat

Under OP section 4.1.3.5 it indicates that development and site alteration are not permitted within surface water features and fish habitat, and their established buffers except for uses permitted by the General Permitted Uses of Section 4.1.2. Section 4.1.3.5 also states:

Permanent and intermittent streams, as identified by the City and/or the MNR/GRCA and a 15 metre minimum buffer.

AND

Cold and Cool Water Fish Habitat as identified by the MNR/GRCA and a 30 metre minimum buffer.

AND

Where fish habitat is undetermined, an EIS, EA or subwatershed plan, shall assess and determine, to the satisfaction of the City and the GRCA, the presence and type of fish habitat and the level of protection required.

In addition to the General Permitted Uses of Section 4.1.2, stormwater management facilities and structures, and their normal maintenance, may be permitted in the established buffers to Surface Water and Fish Habitat, where it has been demonstrated through an EIS or EA study, to the satisfaction of the City that there will be no negative impacts on the feature or its ecological and hydrologic function.

1.4.4.4 Restoration Areas

Restoration areas are listed in the OP as part of the Natural Heritage System and are considered as Significant Natural Areas. Under OP section 4.1.3.10 it indicates development and site alteration shall not be permitted within Restoration Areas except for the uses permitted by the General Permitted Uses of Section 4.1.2. It also states stormwater management facilities, and their normal maintenance are permitted subject to requirements of 4.1.2.7.

1.4.4.5 Significant Woodlands

Under the OP section 4.1.3.6 Development and site alteration shall not be permitted within Significant Woodlands and established buffers except for uses permitted by the General Permitted Uses of Section 4.1.2.

The OP also states in section 4.1.3.6 (5) that:

"All Significant Woodlands require a minimum buffer of 10 metres from the drip line of the trees at the woodland edge"

AND

"The established buffer is to be determined through an EIS and may be greater than the 10 metre minimum buffer".

1.4.4.6 Significant Valleylands

Under the OP section 4.1.3.7 Development and site alteration shall not be permitted within Significant Valleylands and established buffers except for uses permitted by the General Permitted Uses of Section 4.1.2.

The OP establishes criteria for designation as a significant valleylands and state Significant Valleylands should include:

Undeveloped areas within the regulatory floodplain areas, riverine flooding hazards, riverine erosion hazards, as identified by the GRCA"

The OP also states:

"Where the Significant Valleylands are disturbed, the City promotes the restoration/ naturalization of the Significant Valleylands aimed at improving water quality and quantity, ensuring bank and slope stabilization, and enhancing wildlife habitat"

1.4.4.7 Floodplains

Under the OP section 4.4.1 Development or redevelopment is not permitted within the regulatory floodplain because of inherent dangers such as loss of life, property damage and social disruption, should flooding occur.

The OP also states in section 4.4.1 (2) that:

"Lands adjacent to rivers and streams within the city may be subject to flooding conditions. The areas subject to flooding are defined by the Regulatory Flood and delineated by the Grand River Conservation Authority as identified One Zone, Two Zone and Special Policy flood plain areas on Schedule 3"

However, it also states in section 4.4.1 (12) that:

"The floodlines, that delimit the floodplains of this Plan, may be revised by amendment to this Plan where more current mapping becomes available or where flood control or other works alter or eliminate the flood prone area."

AND

"Notwithstanding policy 4.4.1.12, minor refinements to the regulator floodlines can be made without an amendment to this Plan".

2.0 Summary of Previous Findings

The following section details the findings for the EIS, and four addendums completed by North South Environmental as well as the Addendum submitted by AA. The recommendations from each study, their current relevance and how they are being met are summarized in Appendix B.

2.1 EIS for the Lafarge Property

2.1.1 Vegetation

The Environmental Impact Study for the Lafarge Property (2005) largely classified the vegetative communities as cultural, originating and maintained by anthropogenic influences. One hundred and ninety-seven plant species were identified in the EIS as being on the site, only 91 (46%) of these were native, lower than the proportion for many other urban natural areas in southern Ontario. The plant species identified in the EIS are typical of fields, cultural woodlands, and small wetland patches in south-central Ontario, and lack southern or western species that would indicate unusual microclimatic conditions or significant plant communities. No provincially significant plant species found on the site itself. There were also no species regionally significant in Wellington County. A Floristic Quality Index (FQI) was determined for the site. The native FQI of the Lafarge site overall was 25.6, with a native mean Coefficient of Conservatism (C) of 2.7, indicating that the native component of the communities is generally of low vegetation quality as a mean C under 4 indicates that the site is primarily vegetated with adaptable species that can withstand a variety of habitat changes.

The EIS noted the presence of a large Bur Oak measuring 101 cm diameter at breast height (DBH). The oak was situated on the western portion of the site. The EIS noted that while the tree is not a significant species it provides ecological, aesthetic and heritage functions.

The EIS made several recommendations in relation to vegetation:

- A Tree Saving Plan should be developed at the detailed design stage to show locations of individual trees within and at the edges of the development that are proposed for retention.
- The undisturbed space buffering the oak tree should be equivalent to the dripline plus at least 2 m.
- The riparian corridor, the large oak tree, and any other trees to be saved should be fenced or boarded outside the buffer limit prior to grading, to ensure that there is no construction activity near the roots of the tree in these areas, and to prevent impacts from construction activity.

2.1.2 Wildlife

Thirty-two species were noted on the site. The most diverse group of wildlife on the site is birds, with twenty-six species noted, 22 of which were possibly breeding. Mammal signs were those of common urban inhabitants including skunks, raccoons, and squirrels. White-tailed deer were seen mainly on the western portion of the site next to the Hanlon Parkway. One amphibian, the Leopard Frog, was seen on the site along the Howitt Creek corridor and no areas of standing water on the site large enough to afford breeding habitat for amphibians.

One Species at Risk in Canada, monarch butterfly (*Danaus plexippus*), was seen in cultural thicket/meadow on all parts of the site and five birds are listed in the list of significant species for Wellington County (Dougan & Associates, 2005).

The EIS made one recommendation for wildlife habitat stating cultural thicket/meadow habitat could be enhanced on some parts of the eastern part of the site, where the vegetation is in many places very sparse and disturbed.

2.1.3 Fisheries

Fish habitat was described in the original EIS. Habitat in Reach 4, which traverses the Subject Lands, consists of predominantly run, with some riffle and deep pools. Substrates were comprised of a mixture of sand, gravel, cobble, and some boulders. The pools provided good cover, along with overhanging shrubs, root structures and sporadic boulders. Riparian trees and shrubs also provided good canopy cover through most of the reach.

Only one fish species was caught within the reach, Creek Chub (*Semotilus atromaculatus*) and despite the creek being classified as a cool water stream, North-South concluded that the creek does not have the potential to support coolwater species due to the current urban state of the watershed upstream of the Subject Lands. Three recommendations were made to maintain ecological function of the creek.

- Maintain existing riparian vegetation to a distance of 15 metres from the centerline of the stream, to create a vegetated buffer strip totaling 30 metres in width;
- Prevent further degradation of water quality through a comprehensive stormwater management plan; and
- Undertake measures to prevent the entry of silt into the watercourse during construction.

2.1.4 Ecological Functions of the Site within the Landscape

The site was noted to function as a small area of thicket and cultural woodland habitat within an intensively developed urban setting, supporting common, adaptable plant and animal species. In addition to being a coolwater fish habitat, the EIS also noted the creek also serves a local linkage function within the landscape, providing linkage among the habitat on the site, the Speed River, and the cattail marsh off-site to the south.

There were no natural features found on the site that would be subject to the Provincial Policy Statement, including Significant Wetlands, Significant Valleylands, Significant Wildlife Habitat, Significant Woodlands, or Significant Portions of the Habitat of Threatened or Endangered Species.

Recommendations related to the landscape were regarding the loss of successional habitats. While noting the marginal nature of the habitats and their degraded nature the EIS did make three recommendations.

- The land east of Howitt Creek should be allowed to continue to naturalize
- Consideration should be given to sculpting depressions on the eastern part of the site, potentially creating suitable microhabitat where water could persist, and wetland conditions could develop over time.
- Native prairie species planted on the railway embankment could serve as a template for restoration efforts.

2.1.5 Construction

The EIS stated several short-term impacts that could arise due to construction including removing vegetation, grading, excavating, dewatering, installing services, use of large equipment. The EIS focused on aquatic impacts arising from siltation and erosion and listed several mitigation measures that should be implemented during construction activities including:

- A grading plan and erosion and sedimentation control plan should be submitted to the City for review and should contain specific details for preventing silt from entering Howitt Creek.
- Prior to the commencement of any construction activities (e.g., grading, servicing, vegetation removal, etc.) appropriate storm water management facilities (permanent or temporary) should be installed to mitigate sedimentation.
- Perimeter silt fencing, backed by paige wire fencing, should be installed adjacent to the west boundary of the riparian buffer along Howitt Creek.
- Constructed areas near the creek should be re-vegetated with native species as soon as possible after construction.

- Silt and erosion control measures should be monitored for performance throughout construction and especially following heavy rain events.
- Where feasible, potential impacts resulting from erosion and sediment deposition should be reduced by timing construction such that the high rainfall period of spring is avoided.
- Stockpiles of soil should be temporarily vegetated to prevent erosion.

2.2 Addendum I, (North South Environmental, 2006)

Addendum I was based on comments provided by the GRCA. The addendum acknowledged the flooding issues affecting Howitt Creek caused by the extensive upstream underground storm system. The addendum also indicated that the developer would dedicate the land to the east of Howitt Creek as a stormwater pond, the addendum also discussed the removal of old culverts that were acting as a fish barrier. Overland flow from north of the property was also investigated and the addendum concluded no overland flow was possible due to the elevated railbed and ditching on the north side of the property.

The addendum also discusses stormwater management for a proposed first phase of the project which consisted of 2.7 ha that the GRCA agreed could proceed as it did not affect floodplain issues. At the time the proposed stormwater system consisted of roof drains, loading dock storage systems and parking lot storage systems. The stormwater would then be routed through an Oil Grit separator that removes up to 70% TSS. The water would then be routed underground to a dry pond and then to a culvert under the Hanlon Expressway. The concept also included rainwater being directed from the roof to recharge galleries that would be used to recharge the creek.

Addendum I also described the fisheries habitat in greater detail. The addendum agreed with the findings from the original EIS that Howitt Creek was a coolwater system primarily because of upstream stormwater system and not a function of local groundwater discharge. While the addendum recognized that the GRCA recommends a 30 metre buffer for both coolwater and coldwater systems, the addendum recommended a reduced buffer with an average of 24 metres in width, with a maximum width of 32.4 metres and a minimum width of 16.5 metres. The addendum justified the reduced buffer based on that Howitt Creek is a highly altered, highly degraded watercourse, that has been moved in the past, only supports one species (Creek Chub), and has numerous barriers and restrictions downstream.

The addendum rationalizes the reduced buffers through a series of enhancements that make up a Riparian Restoration Plan. The plan described how the enhancements to the riparian area around Howitt Creek would meet the following functions:

- To attenuate nutrients, contaminants, and sediment in runoff the addendum recommends that a stratified buffer with an outer layer of dense, herbaceous vegetation as well as additional shrubs and trees within the existing riparian corridor be installed

- To provide detritus to the watercourse and provide root mass and large organic debris for cover the addendum recommends that a variety of large trees and large shrubs with differential growth rates and longevity be planted.

- To maintain the shading provided by the riparian vegetation along the creek corridor and to maintain water temperature within the creek the addendum recommends the same trees as the previous point with additional coniferous species to provide shade when the sun is at low angles and act as windbreak

- The addendum looks to enhancing biodiversity within the creek corridor (both in a terrestrial and a fisheries context) providing adjunct habitat, providing linkage by using a diversity of planted vegetation, in both a structural context and a species context. Twenty-four species of threes and fourteen species of shrubs were recommended.

2.3 Addendum II (North South Environmental, 2007)

Addendum II was written to address the revised site plan and had four main components. The addendum noted the finding of a provincially significant plant species, biennial gaura (*Gaura biennis*). The study noted the plant is probably of non-native origin as it is growing on an area where soils were removed and where no remnant native habitat is extant. Despite its non-native status the addendum recommended that the plant location be flagged prior to grading and the rosettes be transplanted and seeds collected and spread within Junction park on the east side of Howitt Creek.

The addendum also discussed the original floodline which crossed the property and flowed off the property at Hanlon Creek and the revised floodline based on the construction of Silver Creek Junction Park to the east of Howitt Creek. The park included a storage area with enough capacity for all flows that enter Howitt Creek, including those from the eastern area of the site and the urban area north of the site. The design on the west side of the property showed water would be directed into swales for infiltration or directed to the existing culvert under the Hanlon Expressway. The addendum proposed the culvert would be dredged to improve flow under the Hanlon Expressway.

The plan for the park included importing soils from the western portion of the property to create topographic variation in the substrate. The design also included the addition of some soil to increase diversity of substrate and the planting of 2000 trees. The storage area was designed to almost always be dry, or with minimal amounts of pooled water, except in extreme flooding events. The addendum reiterated several recommendations for the park:

- Importation of soils to vary topography in the substrate
- Plantings on the terrestrial part of the site should be native species suited to the droughty conditions

The largest section of the addendum dealt with the tree survey, tree protection and compensation plan. The tree survey took place in two phases with part of the property surveyed in September and October 2006 and the remaining portion surveyed in August 2007. The survey found 1138 trees, 422 of which were described as native tree species. The survey described almost all trees on the site as either non-native, or native but relatively short-lived pioneer tree species unsuitable for retention within the development. The addendum describes how almost all trees will be removed based on their position in the development footprint or regrading near the railways. For the few trees that were scheduled to be retained the addendum makes several recommendations.

- Trees recommended for protection should be flagged prior to grading.
- Individual trees which can be preserved within these areas should be fenced off
 1 m past the edge of the dripline.
- The health of the Bur Oak should be monitored during construction with watering or water diversion taking place, as necessary.

The addendum proposed compensation plantings along the creek, and on the eastern part of

the Lafarge property, east of the creek, as well as a few opportunities within the site: along the

southern and northern railway embankments. In total the addendum called of approximately 2600 trees to be planted along the creek and on the east side of the property. The addendum also describes the use of plantings near the Hanlon Expressway to enhance linkage through the culvert under the Hanlon Expressway to properties to the west. Additionally, planting recommendations included:

- Proposed tree plantings should consist of long-lived, native forest tree species to add to the long-term ecological sustainability of the site
- Tree compensation should be focused in areas where they could bring the greatest ecological benefit.

- The planting should focus on young trees but should also include shrubs and herbaceous cover that will initially (while trees are small) enhance the function of the creek.
- On slopes at the greatest risk of erosion, it is recommended that grasses and herbs be planted to stabilize the soils.

2.4 Addendum III (North South Environmental, 2008)

Addendum III addresses the comments by Guelph EAC and dealt with Significant Species and Flora identified in earlier addendums and the EIS. Specifically, Addendum III identifies the location for Biennial Gaura on the development lands. However, while Addendum II proposed relocation of the species, based on comments from Mike Oldham, the botanist at the Natural Heritage Information Centre of the Ministry of Natural Resources, this species is likely to be non-native as it was located within the non-native plant assemblage found on the former Lafarge property. The addendum also discussed two other rare species that were noted in Environmental Action Committee (EAC) comments. The addendum notes these species were not found on the Subject Lands and requests further information to determine potential impacts from development. Based on the lack of mapping in subsequent addendums information was not forthcoming.

The addendum also discussed the design of the community park on the eastern side of Howitt Creek and clears up misconceptions on the proposed use of fill within the park. The use of fill was proposed to create topographic variability and favour drought tolerant species and not serve as a manicured park of turf.

The setback from Howitt Creek was also recalculated based on bank full measurements taken during the fisheries surveys reported in the original EIS. The setback was calculated using the maximum observed bankfull distance from the centre line of the stream. Based on discussions with the GRCA the addendum proposed a buffer with a minimum distance 12.9m, a maximum of 24, and an average of 18.9m from the west side of the stream. The addendum also discussed refining the buffer with future mapping of bankfull width.

Tree conservation, preservation and compensation were discussed the total number of trees to be removed on the site calculated as 1138, the same number given in Addendum II. The addendum explained the lack of location mapping for tree removals because of the superfluous nature of this information since all trees within the development limit (except the Bur Oak) would be removed. The addendum stated this approach was agreed to in discussions with Carrie Musselman, City of Guelph, and Nancy Falkenberg (NSE) in July of 2006 prior to the first tree inventory. The addendum

also clarified that the linkage under the Hanlon Expressway discussed in the previous addendum was a linkage for small vertebrates such as amphibians, reptiles and small mammals that can easily pass through the culvert and not larger mammals.

The final topic addressed in the Addendum was stormwater management. The addendum addresses preliminary design of the stormwater facility on the east side of Howitt Creek and anticipated no impacts to downstream terrestrial or aquatic environments based on the stormwater facility resulting in negligible increases in creek flow. The addendum also stated the general design of stormwater management in the development area would include infiltration galleries with the remaining flows will be directed to the culvert under the Hanlon Parkway, details were proposed to be discussed in an EIR.

2.5 Addendum IV (North South Environmental, 2008b)

This Addendum addressed the redesigned stormwater facility east of Howitt Creek based on revised stormwater calculations and a letter from the GRCA that asked an assessment of impacts to channel morphology and erosion rates.

Erosion estimates were examined in all four reaches described in the original EIS. Reach 4, which crosses the study area is described as a glaciofluvial outwash plain composed of gravelly sand with cobbles and clayey silt. The sandy banks are eroded through undercutting and during storm events nearly all grains are susceptible to movement. The addendum concluded the stormwater facility would not affect channel morphology and likely reduce erosion rates due to reduced flows. The addendum made four recommendations in terms of erosion.

- Orient the trajectory of the twin culverts along the channel centreline to inhibit bank erosion
- Incorporate a scour pool at the outlet of the culverts to combat relatively high outflow velocities and avoid a perched condition
- Consider naturalizing channelized sections of reaches to better accommodate storm flows
- Consider installing erosion pins into cutbanks along reach 4 as a basis for monitoring erosion rates

The addendum also discusses the potential impacts on fish habitat during the construction of the stormwater facility and in the long term. The addendum states the short-term affects can be mitigated with standard construction mitigation techniques; these include:

- A detailed erosion and sediment plan, the plan should include details on controlling deleterious substances
- Spawning periods should be avoided for species known to inhabit creek
- The construction area should be isolated and fished removed from the work area
- Disruption of habitat should be kept to a minimum and in0stream habitat should be restored following construction

Long-term effects would also be mitigated by following standard construction mitigation techniques. The addendum also stated compensation for lost fish habitat was required and recommended removal of the existing culverts and a series of in-stream enhancements including, the creation of instream cover, removal of refuse and reconstruction of the existing channel to a more natural state.

The addendum also looked at three impacts associated with vegetation removal, the removal of 30 m of riparian vegetation in the area around the outlet of the detention facility, removal of 25 m of riparian vegetation adjacent to the twin culverts and reconfiguration of the creek channel in the vicinity of the twin culverts associated with their removal. The vegetation removal could affect both the terrestrial and aquatic environment, with the addendum mentioning loss of plant diversity, thermal changes, and wildlife habitat. The addendum follows the general recommendations made in Addendum I (North South Environmental, 2006) and makes several recommendations in terms of planting in these areas including.

- Planting tree species that will develop an overhang canopy in drier areas
- Replant areas as quickly as possible with large caliper trees
- Plantings should be specific to soil conditions that vary according to frequency of flooding
- Any bank vegetation removed should be replaced with suitable native species.
- Planting Sandbar Willow, Balsam Poplar and Easter White Cedar in the flood facility as their roots are efficient at binding loose substrates

2.6 Scoped Environmental Impact Study Addendum (Aboud and Associates, 2019)

This Addendum addressed the comments from the provided by City of Guelph Environmental Planning staff on October 17, 2017 and the Grand River Conservation Authority (GRCA) as a result of the Development Review Committee Meeting on September 20, 2017. The addendum examined Low Impact Development (LID) measures that are proposed for the development. The addendum also discussed the water balance and the proposed infiltration measures that included:

- Infiltration galleries within the apartment and mixed-use blocks will be provided to infiltrate runoff from rooftops only.
- Bioswales/infiltration galleries in the park block will be provided to infiltrate runoff from the rear roofs and rear yards that back onto the park block.
- A centralized infiltration basin, located downstream of the wet pond, will accommodate the remaining required recharge volume.

The need for a stormwater pond was discussed as the City of Guelph's design requirements for municipal roads regarding infiltration, stormwater management for the site now requires the construction of a stormwater pond.

The addendum also discussed how recommendations from previous addendums had been incorporated into the protection and enhancement of the Howitt Creek corridor through the Compensation Plan. The addendum detailed how the Compensation Plan had incorporated native species into the plan that will protecting the corridor and enhance its ecological functions. The addendum also discussed the protection of the Bur Oak on the west side of Silvercreek Parkway and how grading around the Bur Oak will be kept beyond 7.5 m, which is greater the recommended Minimum Tree Protection Zone.

The addendum also did a species at risk screening. Based on a request for information sent to the Ministry of Natural Resources and Forestry (MNRF) on March 16, 2018 a habitat screening for Barn Swallow (*Hirundo rustica*) and Eastern Meadowlark (*Sturnella magna*) was conducted. The addendum noted there was no habitat matching the criteria for Eastern Meadow lark in the study area. Suitable candidate habitat for Barn Swallow, which may nest in culverts, was previously identified in the study area. However, the addendum noted it was not observed during breeding bird surveys or has been confirmed to occur in the area.

The addendum also assessed if there was suitable habitat for Blanding's Turtle (*Emydoidea blandingii*) based on comments received from GRCA staff that the site also has a 1989 record (EO_ID 3242) for Blanding's Turtle. The addendum noted that there was no habitat matching the criteria within the study area

3.0 Existing Conditions

3.1 Natural Heritage Features

Based on field surveys and background information four classes of natural heritage features, as defined in the City of Guelph Official Plan (OP), are found on or adjacent to the Subject Lands and shown on Figure 1. The four classes of features are:

- Significant Woodlands
- Significant Valleylands
- Restoration Lands
- Surface Water Features and Fish Habitat

3.1.1 Significant Woodland

One significant woodland is found to the south of the property. Delineation of the woodland dripline was not conducted as the woodland is separated from the property by the southern rail corridor which is wider than the prescribed 10 m minimum woodland buffer. No negative impacts are expected on the woodland as the root zones of the trees in the feature would not extend past the rail corridor, and the rail line acts as barrier between the woodland and development

3.1.2 Significant Valleylands

Both types of natural features associated with significant valleylands are found both on and adjacent to the Subject Lands. Riverine erosion hazards are found bordering Howitt Creek on both the east and west bank resulting from undercutting of the sandy banks. One additional erosion hazard is found farther away from Howitt Creek and has been determined to be anthropogenic in origin and will be removed during site grading, details on this determination can be found in section 3.2.2. For the remaining erosion hazards, the erosion hazard areas are all outside the Subject Lands except one at the south end of Howitt Creek. Here a Toe Erosion Allowance extends onto the Subject Lands. The development footprint, as shown on the draft plan of the subdivision (Appendix A), has two blocks in this area, the neighbourhood park block and a townhouse block, in both cases the development will not be constructing buildings or structures within the allowance as it only extends approximately 2 m onto the Subject Lands. Additionally, the Toe Erosion Allowance is the distance calculated from the toe of slope by multiplying the average annual recession rate. As stated in Addendum IV the construction of the stormwater facility has likely reduced erosion rates downstream of the facility, this would suggest that the Toe Erosion Allowance is likely larger than would be required based on the new rate and the development should have no negative impacts on the erosion hazard and the associated watercourse.

Riverine flooding hazards are the other Significant Valleyland features found adjacent to the Subject Lands. The stormwater management facility to the east of Howitt Creek and the banks of Howitt Creek are adjacent to the eastern boundary of the Subject Lands. The flood hazard limit does not enter the Subject Lands only the associated 15 m hazard allowance. Development is allowed within the allowance where there are no adverse impacts are anticipated. AA does not envision any negative impacts on the flood hazard from the project. The construction of the stormwater facility has reduced flooding on the western side of Howitt Creek, reducing the chance of floodwaters entering the Subject Lands and causing any structural damage. Additionally grading, as proposed in the development plan, will direct all precipitation into stormwater management facilities that will eventually outlet on the western side of the property, only water that falls in the riparian areas will enter Howitt Creek. Overall AA does not envision floodwaters from Howitt Creek entering the Subject Lands. One item, the connecting east-west trail that joins the Howitt Creek Flood Protection Facility trail, will be located within the riverine flooding hazard. However, recreational uses are allowed within the hazard where it is unavoidable, and impacts are minimized. AA does not envision impacts on the flood hazard by the trail, this will be discussed in detail in Section 5.0.

A second riverine flooding hazard may also be located on the west side of the property where stormwater currently drains under the Hanlon Expressway. This area is not indicated on Schedule 4D in the City of Guelph Official Plan however it is indicated on GRCA mapping as being part of a spill zone and marked as part of the floodplain. Based on the floodplain mapping conducted in Addendum II (North South Environmental, 2006) and shown in Figure 1 of the Addendum, floodwaters from Howitt Creek used to pool near this outlet and currently overland flow from the western half of the Subject Lands still pools and drains through the outlet. Based on this information, it is the opinion of AA that this floodplain area is a result of imperfect drainage through the culvert that can be classified as "ineffective flow" and does not contribute to the flow regime within that channel. It is also likely of anthropogenic origin resulting from contouring done during gravel pit operation. This area is proposed to be graded out during development removing the flood hazard, proposed grading can be seen on the grading plan provided under separate cover.

The official plan does not show the area as part of the regulatory floodplain and grading out of the "ineffective flow" area will occur during site preparation. In addition, the hydrogeological assessment (WSP, November 2020) calculated that the stormwater management infrastructure and LIDs will increase infiltration and reduce the post-construction runoff from a 694% increase to an 80% increase over pre-development.

The City of Guelph has set the required flowrate target of 0.061 m3/s/ha and it is likely more conservative than the existing flow rates to the creek during storm events, however as no pre-development scenario modeling was completed quantitative effects on peak flows and volumes cannot be determined.

Based on these AA does not view that the mapped floodplain should be an impediment to development in the area. The GRCA is also aware of the floodplain zone and has not previously objected to the developments proposal to reduce the floodplain area through grading and stormwater control measures (Appendix C).

3.1.3 Surface Water Features and Fish Habitat

Two surface water features are located adjacent to the Subject Lands. On the west side, West Willow Creek (Silver Creek) is located on the other side of the Hanlon Expressway. The creek is described as warmwater fish habitat in the City of Guelph's Official Plan and in the MNRF Aquatic Resource Database. As a warmwater watercourse the required buffer is a minimum of 15 m. This buffer, as shown in Schedule 4b of the City of Guelph Official Plan, does not enter the Subject Lands. Impacts from the development on West Willow Creek would be related to overland flow and impacts from the stormwater system as a culvert under the Hanlon Expressway connects the Subject Lands to the creek. As stated in section 3.1.2 overland flow is expected to have negative effects on West Willow Creek as the flows will be controlled and discharged gradually to reduce any chance of flooding to the watercourse. Flow through the culvert only occurs during storm events, a controlled discharge would be expected to reduce flooding and erosion impacts downstream. No modifications to the existing outlet are anticipated at this juncture.

Thermally negligible impact would be expected on West Willow Creek. The SWM pond will release water into the creek during storm events. This water may be elevated in temperature as wet ponds can function as a heat sink between storm events. However, this thermal difference will be offset by combining with overland flows from uncontrolled areas. Additionally, the creek is classified as warmwater fish habitat. While discharge from SWM ponds is known to adversely affect the habitats of cold-water fish species, such as trout, warm water fish habitat is less likely to be adversely affected as warm water species are more adaptable to temperature spikes. Overall AA does not anticipate any adverse effects on West Willow Creek.

On the east side of the Subject Lands. The creek is described as undetermined fish habitat in the City of Guelph's Official Plan and as a coolwater habitat in the original EIS (North South Environmental, 2005) and in the MNRF Aquatic Resource Database. As a

coolwater system the required buffer is a minimum of 30 m. However, the development has previously made the request for a variable in recognition of the anthropogenic nature of the stream course and its degraded nature, details for this can be found in section 2.2, 2.4 of this report as well as in Addendum I (North South Environmental, 2006) and Addendum III (North South Environmental, 2008).

Unlike the buffers proposed in previous reports, the buffer area in the current Draft Plan of Subdivision is set as a consistent 30 m buffer (Figure 1). The buffer areas inside the Subject Lands, demarcated as Open Space Blocks on the Draft Plan of Subdivision, would be planted as part of the compensation planting (See section 4.2). Addendum I also detailed a restoration plan that would provide enhancement of the Howitt Creek Riparian Corridor, these recommendations have been outlined in section 2.2 and were followed in the creation of the Compensation Plan (AA, 2020) which has been provided under separate cover and discussed in section 4.2

3.1.4 Restoration Areas

The area designated as restoration areas consists of the floodplain and other areas of the Howitt Creek Flood Protection Facility. This area underwent naturalization in 2013 and is managed by the City of Guelph. The Subject Lands are not part of the restoration area and no additional buffer area is recommended by AA as the restoration area is buffered by the required buffers for the watercourse and valleylands.

3.2 Feature Boundary Delineation

3.2.1 Boundary Survey

Following consultation with the City of Guelph the bankfull location for the west side of Howitt Creek was staked by Aboud & Associates on August 16, 2020. Only the west bank of the creek was staked as the no development is proposed on the eastern side of Howitt Creek. The bankfull location was then surveyed by Van Harten Surveying Inc. on August 28, 2020 (Figure 2).

3.2.2 Slope Erosion Hazard

The Slope Erosion Hazards mapped by the GRCA and denoted within the City of Guelph Official Plan on Schedule 4D are shown in Figure 1. The Slope Erosion Hazard denoted in yellow was investigated to determine its origin. Based on the history of the site as a gravel pit and using historical aerial photography, the slope in question was determined to be anthropogenic in origin. The GRCA was contacted on July 31, 2020 with this information and asked to confirm the slope hazards anthropogenic origin and allow the proponent to grade out the slope so it would not be a constraint on development. On August 5, 2020 Fred Natolochny of the GRCA confirmed that the

GRCA agreed the slope hazard shown on their mapping is not a natural hazard and that the GRCA would not object to grading the slope. The GRCA mapping and up to date correspondence are provided in Appendix D.

3.3 Blanding's Turtle Record

The potential of Blanding's Turtle in the vicinity of the development was indicated in the April 18, 2018 comments on the Terms of Reference for Addendum IV (Aboud & Associates, 2019) which are included in Appendix E. Jason Wagler of the GRCA indicated that the site had an 1989 record (EO_ID 3242) for Blanding's Turtle and the proposed development should include a screening for this species.

In the last addendum (AA, 2019) they noted that Suitable habitat for Blanding's Turtle was assessed in the Species at Risk Habitat Assessment submitted as part of the Application to Permit the Injury or Destruction of Trees Tree Inventory, Preservation Plan and Compensation Planting Plan 35 & 40 Silvercreek Parkway South, City of Guelph (Aboud & Associates, 2017). Blanding's Turtles are known to use a variety of eutrophic wetland types and typically perform terrestrial movements up to 2.5km through wooded coniferous or mixed forest habitat to reach nesting and overwintering areas (COSEWIC, 2005). Based on the habitat assessment found in the Application to Permit the Injury or Destruction of Trees Tree Inventory it was noted in the addendum that no habitat matching the criteria was within the study area.

The current study also followed up on the Blanding's Turtle record. A request for information was sent to Ashley Rye at the GRCA on February 13, 2020 to ascertain how closed the record of the Blanding Turtle was to the study area. On February 13, 2020 Ashley responded that the GRCA did not have any record of occurrence for a Blanding's Turtle in the vicinity of the project. The GRCA response in its entirety can be found in Appendix E.

The Natural Heritage Information Centre (NHIC) was also contacted regarding the record, with a request for information sent to the NHIC on February 13, 2020. On February 13, 2020 Martina Furrer responded that the record EO_ID 3242 was not for a Blanding's Turtle but was for a Thread-like Naiad (*Najas gracillima*) from the Long Point Bioreserve. Additionally, the NHIC has no element occurrences for Blanding's Turtle from within the City of Guelph. The NHIC response in its entirety can be found in Appendix E.

Based on this information we suggest that the Blanding's Turtle does not occur in the vicinity of the Study Area and an error had been made.

4.0 Restoration Work and Compensation Plan

4.1 Completed Work

The restoration work in the Howitt Creek corridor was agreed to as part of the tree permit agreement signed issued on July 18, 2017. In the agreement the proponent agreed to carryout compensation plans on Silvercreek lands in accordance with the Compensation Plan (AA, 2017) that was submitted as part of the Application to Permit the Injury or Destruction of Trees. As of October 9, 2020, compensation plantings have taken place in the Howitt Creek Corridor as illustrated on the Compensation Plan. Compensation plantings took place in Fall 2017 and totaled 1350 shrubs and eleven trees. The compensation plantings were maintained during 2018-2019 and a warranty inspection of the Silvercreek Junction Restoration Plantings was conducted on June 1, 2020 by Marc Garon-Nielsen (Aboud & Associates), April Nix (City of Guelph) and Rory Templeton (City of Guelph). The inspection noted a few minor deficiencies regarding dead plants. The deficiencies were corrected, and evidence was provided to the City of Guelph on June 29, 2020. A letter was received July 6, 2020 from the City of Guelph acknowledging the completion of the warranty period for these plantings. The letter is available in Appendix F.

4.2 Outstanding Work

"With respect to the more than 2100 outstanding compensation plantings that were agreed to through the 2017 tree permit that are to be accommodated on the Subject Lands. Staff note that these plantings were specifically shown adjacent to the northern rail corridor in the compensation plans approved through the tree permit. Based on the new application, a safety crash wall for the railway is now proposed within the compensation area, and roadways are proposed along the base of slope. The EIS should assess the amount of space required to fulfill the outstanding compensation and review the available plantable space, recognizing the requirements of Metrolinx for the rail corridor, and provide recommendations for alternative areas where the compensation plantings could be accommodated, assuming that the crash wall and associated safety measures have resulted in a reduction of plantable space. This assessment to should also recognise that normal landscaping requirements for the subdivision (e.g. stormwater plantings and street trees) will not comprise part of the compensation plantings. Detailed plantings plans will be required through a future EIR to address the specific updated details for the plantings"

Outstanding compensation plantings are detailed in the Compensation Plan (AA, 2020) that was submitted under separated cover. The original compensation plan (AA, 2017) proposed compensation plantings along the Howitt Creek corridor, which have been

completed and along the northern rail corridor. Based on changes to the Draft Plan of Subdivision and the requirements outlined in the Metrolink Vegetation Guidelines (Morrison Hershfield, 2020) which require clearing of all vegetation within 2.5 m of electrical components and structures, along with additional zones of low and medium growth height restrictions, changes were required to planting locations.

Detailed species lists and locations of these plantings can be found in the updated Compensation Plan (AA, 2020). The following lists the general locations of these plantings based on the Draft Plan of Subdivision.

- North Rail Berm: 52 Trees and 1122 Shrubs.
- South Rail Berm: 73 Trees and 653 Shrubs.
- Open Space Block 23: 22 Trees and 70 Shrubs.
- Open Space Block 20: 50 Trees and 91 Shrubs.

Tree numbers in the North Rail Berm have been reduced to meet the required vegetation planting recommendation setbacks from the rail corridor in the Metrolinx Vegetation Guideline (Morrison Hershfield, 2020), however, the tree and shrub quantities proposed in the current Compensation Plan match the remaining compensation quantities to be planted in the previously approved 2017 tree permit plans.

Additionally, 28 new compensation trees are proposed in the current submission. Silvercreek Guelph Developments Limited acquired additional lands after city approval of the 2017 tree permit. These additional lands are comprised of the southern portions of Apartment Block 2 and Stormwater Management Block 24. The aggregated size of trees to be removed and require compensation is 125cm. Compensation for the removal of these additional trees is calculated in accordance with the aggregate caliper formula in the City of Guelph Tree Technical Manual. The calculation is provided in the tree data table on drawing TP4. Proposed compensation trees are 60mm caliper in size as indicated on drawings CP1 - CP3.

4.3 Updated Tree Protection Plan

"An assessment of the existing condition and function of the previously installed tree protection fencing and recommendations for repairs should be included within the EIS"

"In order to complete the proposed grading and related works are any further tree removals required? An updated TIPP should be provided if this is the case"

The Tree Protection Plan (TPP) submitted in 2017 in support of the application to Permit the Injury or Destruction of Trees has been updated. This update addresses trees

located on additional lands acquired by Silvercreek Guelph Developments Limited comprised of the southern portions of Apartment Block 2 and Stormwater Management Block 24. The TPP will continue to be refined at the Bur Oak as detailed design continues and the Environmental Implementation Report is prepared.

A visual assessment of the tree protection fencing was done in conjunction with the restoration warranty walkthrough conducted on June 1, 2020. At the time it was noted that tree protection fencing was down and in general disrepair. AA recommends the following prior to any earthworks commencing on site:

- Assess existing tree protection fencing, identify where repairs/replacement are required.
- Adjust the location of the fencing where required to comply with current Tree Inventory and Preservation Plans.
- Where fence has been damaged, repair to Guelph Tree Technical Manual standards.
- Ensure signage is replaced where required to Guelph Tree Technical Manual standards.

4.4 Protection of the Bur Oak

"Section 2.3 protection of the Bur Oak speaks to a tree protection zone (TPZ) as recommended through the previous tree permit. That limit was accepted for a tree permit which was not considering grading or drainage implications over the longer term. While the EIS notes that no grading is proposed within the TPZ, it does not speak to the potential impacts of grading/drainage changes and the potential impacts to the tree or how the approach (including the proposed retaining wall) is appropriate. In addition, an update tree protection plan should be included for the oak and/or these details should be incorporated onto the grading plans".

As stated in the previous addendum and reiterated here the most current Draft Plan of Subdivision (AJC Planning Consultants, 2020) respects the tree preservation comments in the EIS (2005) and the Application to Permit the Injury or Destruction of Trees, Tree Inventory, Preservation Plan and Compensation Planting Plan by providing the large Bur Oak tree ample space within a 0.59 ha (hectare) urban square park.

Detailed engineering plans included with this application have been reviewed with consideration of potential impacts to the bur oak (Appendix G). A tree protection zone at the limit of the tree's dripline should provide sufficient protection from the construction impacts. The proposed retaining wall along Silvercreek Parkway will be sufficiently far enough away from the tree that the protection zone will not be encroached within during its construction. There is also a catch basin and storm drain proposed approximately 2m

from the western dripline. Installing this and the associated storm sewer will not impact the tree as long as some vertical shoring is used, which will avoid having to cut into the dripline to achieve a safe working condition for the workers installing these structures.

In terms of drainage changes, there is potential for more water to collect around the tree. The design of the wall shows a significant amount of fill between the wall and the dripline, but the proposed grading on this side of the dripline appears to form a swale outside the dripline, which will attenuate some of the greater-than-normal water within the dripline. Any overflow that cannot be contained by the permeable surface under the tree's dripline can be caught by the installed catch basin on the west side of the tree.

5.0 City of Guelph Multi-purpose Trail

"Section 2.2.3 and regarding the trail route, during DRC city staff provide feedback regarding the EIS addressing the trail alignment, pedestrian connections and providing recommendations for related design considerations, this information should be included in the EIS and supported by a map. This should also be considered through the impact analysis".

The City of Guelph has indicated that Schedule 6 of the City of Guelph Official Plan as well as the Guelph Trail Master Plan show a planned multi-purpose trail route running north-south through the subject site, and a secondary trail/maintenance access route from the primary trail/ Silvercreek Parkway to the Howitt Creek Flood Protection Facility trail. The design for the proposed trail has not been finalized but will match the trail design in the Howitt Creek Flood Protection Facility, being 3m wide and having an asphalt surface. Detailed design of the pedestrian trail will be discussed in an upcoming EIR.

The proposed Trail as shown on Figure 2, will follow the existing trail route to minimize any disturbance as minimal vegetation removal will be required, with any vegetation removed consisting of common generalist species. The north-trail alignment is also at the eastern edge of Subject Lands which will not disturb any existing restoration plantings and maximizes the distance between the trail and the watercourse which minimizes impacts on riparian vegetation and wildlife habitat. Furthermore, on-site plantings have not been completed yet and can be shifted to better fit the placement and alignment of the trail. Additional recommendations include:

- The trail should include signage indicating that dumping of refuse is prohibited within natural areas to discourage encroachment impacts from the development.
- A garbage receptacle should also be installed where the trail turns east and enters the riparian area.
- Recurrent inspections of the trail buffer and adjacent natural features should be completed to assess and mitigate any human use impacts.

Trail construction actives have the potential to impact the riparian areas and the associated watercourse. The recommendations to minimize impacts match those discussed in the construction section of Table 1 found in Section 7.1. In addition to these general recommendations AA makes the following specific recommendations to construction for the trail system:

- Designated areas for construction lay-down and material should be located entirely outside of established buffers.
- Clearly demarcate the limits of trail construction to prevent unnecessary encroachment into the surrounding natural features. Silt and snow fencing should be used where appropriate.

6.0 Stormwater

6.1 LID Elements

"Section 2.1 Low impact development (LID)— for the LID elements it would be helpful if the EIS included a map showing where these elements are being proposed. It should also be clarified which elements would be developed at the subdivision stage and which are parts of blocks that will be designed through site plan. Please clarify".

As discussed in the Silvercreek Junction Functional Servicing and Stormwater Management Report (R.J. Burnside and Associates Ltd, November 2020), LID development measures incorporated into the current design include:

- For each Apartment/Mixed use block stormwater will be infiltrated using LID approaches such as bioswales, infiltration trenches or other methods. The required annual volumes required to be recharge in each individual Apartment and Mixed-Unit Block can be seen in Figure 4.5 of the updated Functional Servicing and Stormwater Management Report. The Figure does not show block level details of where each LID approach is used as they will be designed at Site Plan stage. Block level details of LID measures will be discussed as part of an upcoming EIR.
- The remainder of the required infiltration volume required from the developable area (townhouse blocks, park block, urban square and SWM block) will be provided in a downstream centralized infiltration basin. Figure 4.1 and 4.5 in Appendix A shows the design and location of the infiltration basin and stormwater management pond.

6.2 Central infiltration Basin

"Section 2.1.1 speaks to a centralized infiltration basin downstream of the wet pond to accommodate required recharge volumes. How does this reflect LID measures when it appears to be an end of pipe solution (in place of lot level controls), and include the infiltration of road runoff"

AA understands that the centralized infiltration basin is an end-of-pipe measure, however, it will provide additional recharge to reduce the overall runoff volume leaving the site. The requirement for a stormwater pond resulted from discussions with the City of Guelph where all roads within the development will now be municipal roads. Due to the City of Guelph's design requirements for municipal roads regarding infiltration, stormwater management for the site will now require the construction of a stormwater pond and infiltration basin.
The wet SWM facility will provide quality, quantity and extended detention control per City requirements and will be placed upstream of the infiltration basin to ensure clean stormwater is infiltrated.

6.3 Water balance

"The water balance should acknowledge the potential receiving water course and associated stormwater management treatment train approach for the proposal"

WSP was retained to complete a hydrogeological and water balance analysis along with a geotechnical investigation and a summary of previous geotechnical studies (WSP, 2018). This has been updated and submitted in a letter that has been provided under separate cover.

The predevelopment water budget has identified precipitation on the Subject Lands distributed as 59.6% Evapotranspiration, 34.4% Infiltration and 8.6% runoff. The study concluded that without mitigation the proposed development would result in a 78% decrease in infiltration due to an increase in impervious surfaces, which would increase runoff from the Site 694%.

Mitigation methods, discussed in sections 6.1 and 6.2 in this report, as well as the Silvercreek Junction Functional Servicing and Stormwater Management Report (R.J. Burnside and Associates Ltd, 2020) are expected to increase infiltration and decrease runoff to the southwest outlet and West Willow Creek, including the treatment train approach of lot level controls, conveyance controls, and end-of-pine stormwater management using a central infiltration basin. Mitigation methods will reduce runoff volume by over 600% compared to unmitigated conditions. However, it is still expected to increase by 80% compared to pre-existing conditions, from 13,450 m3/yr. to 24,209m3/yr. While the runoff volume has increased, the controlled flows will be discharged gradually so as not to flood the downstream watercourse. How this will affect West Willow Creek thermally and in terms of flooding and erosion impacts was discussed in Section 3.1.3 of this report.

7.0 Impact Analysis, Mitigation and Enhancement

7.1 Generalized Impact Assessment and Mitigation

The proposed development may result in impacts to the existing natural features. An assessment of the generalized impacts of the development (potential and actual) and mitigation measures are provided in Table 1. A Glossary of terms and impact ratings are found in Appendix H.

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing	Vegetation Removal – clearing & grubbing upland areas	 Loss of vegetation and wildlife habitat 	ST	Р	SA	0	D	Н	N	Moderate- Minor	 Avoid significant wildlife habitat Modify design to avoid or minimize loss of vegetation and habitat Revegetate areas with native species after site preparation Establish and maintain buffers around significant features 	Minor	
		 Loss of successional habitat 	ST	Ρ	SA	0	D	Н	N	Moderate- Minor	 Implement Restoration plan to restore high edge to interior ratio 	Minor	

 Table 1. Impact Assessment and Mitigation Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing (cont.)		Impacts to Nesting Birds Protected under the Migratory Bird Convention Act	ST	Ρ	SA	0	D	M	N	Moderate	 complete all site preparation outside the breeding bird window (April 1-August 31). Where the above is not possible, conduct a nest survey to determine locations of active nests prior to construction works including installation of Erosion Sediment Control (ESC) fence and any site clearing Create nest protection zones where active bird nests are found. 	Minor- None	monitor nests (as needed, e.g. weekly) until inactive.
		 Disturbance of wildlife species 	ST	Ρ	SA	0	D	L	N	Minor	 Time activities to avoid wildlife disturbance during important life stages 	None	

Table 1. Impact Assessment and Mitigation Recommendations

Table 1	. Impac	t Asses	sment a	and	Mitigati	on	Red	com	me	nda	tion	S	
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PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Veg rem Cle gru shc Site ripa Preparation Veg and servicing rem (cont.) Cle gru shc ripa	Vegetation removal – Clearing & grubbing shoreline/ riparian areas Vegetation removal – Clearing & grubbing charalize/	 Bank erosion and sedimentation during rainfall events 	ST	Ρ	SA	0	D	L	Ν		 Implement ESC plan Stabilize banks where necessary, prior to construction 		
		 Reduced vegetation and insect inputs to waterbody 									 Plant appropriate native species, using local stock 		
	shoreline/ riparian areas	 Disturbance to riparian species 									 Avoid vegetation removal on sensitive landforms 		
	Grading	 Increased erosion, sedimentation, and turbidity 	ST	Ρ	AA	0	D	L	Y	Minor	 Maintain or restore vegetative buffers 	None	 Monitor ESC fence weekly, and after a major storm event for any breaks, and repair

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
		 Increase nutrient inputs and contaminants to waterbodies 	ST	Ρ	AA	0	D	L	Y	Moderate	 Develop & implement ESC plan Designate areas for equipment storage 	Minor- None	 Monitor ESC fence weekly, and after a major storm event for any breaks, and repair
Site		 Increased soil compaction 	LT	Ρ	SA	0	D	Н	N	Moderate	 Control access and movement of equipment and people 	Minor	
Preparation and servicing (cont.)	Grading (cont.)	 Changes to drainage Changes to surface runoff 	LT	Ρ	SA	0	D	Н	Y	Major	 Schedule grading to avoid high runoff volumes Minimize changes to land contours and natural drainage Maintain streams and timing, quantity of flows 	Moderate -minor	 Evaluate pre and post construction site hydrology

Table 1. Impact Assessment and Mitigation Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
		 Disturbance to wildlife Alteration or destruction of wildlife Habitat 	ST	R	SA	0	D	М	Ν	Moderate	 Time activities to avoid sensitive periods (Breeding birds, bats) Identify sensitive species prior to work and design grading to avoid disturbing sensitive species Conduct work outside timing windows of sensitive species 	Minor	
Site		 Wildlife Entering Construction Areas 	ST	R	SA	0	D	L	N	Minor	 Develop & implement ESC plan to exclude wildlife 	None	 Silt fence to be inspected weekly during site preparation
Preparation and servicing (cont.)	Grading (cont.)	Changes in soil moisture, tree cover and vegetation	LT	Р	SA	0	D	Η	Y	Moderate	Minimize the area and duration of soil exposure	Minor- None	

Table 1. Impact Assessment and Mitigation Recommendations

Table 1. Im	pact Assessment	and Mitigation	Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
	Installation of Services and utilities (sewer, hydro, infrastructure,	 Increased erosion, sedimentation, and turbidity 	ST	Ρ	AA	0	D	Μ	Y	Moderate	 Maintain vegetated buffers Develop sediment and erosion control plan 	Minor- None	 Monitor ESC fence weekly, and after a major storm event for breaks, and repair
infrastructure, stormwater management facilities)	 Increased nutrient and contaminant inputs to waterbodies 	ST	Ρ	AA	0	D	М	Y	Moderate	 Re-establish vegetation as soon as possible 	Minor		
		 Disposal of water from dewatering activities 	ST	R	SA	0	D	L	N	Minor	 Install water infiltration basins (temporary or permanent) 	None	 Evaluate pre and post construction site hydrology
		Disturbance to wildlife including sensitive species	ST	Ρ	SA	0	D	L	N	Minor	 Conduct work outside timing windows of sensitive species 	None	
		Hydrological changes	LT	Ρ	AA	С	D	L	Y	Moderate	 Conduct appropriate studies to determine how to maintain existing hydrology Design underground facilities to minimize impacts to groundwater 	Minor- None	

Table 1	. Impact	Assess	ment and	Mitigation	Red	comr	ner	nda	tion	s	
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PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
	Installation of Services and utilities (sewer, hydro, infrastructure, stormwater management facilities) (cont.)	 Wildlife Entering Construction Areas 	ST	R	SA	0	D	L	N	Minor	 Develop & implement ESC plan to exclude wildlife 	None	 Monitor ESC fence weekly, and after a major storm event for breaks, and repair
Construction	Building Construction (including Accessory uses and amenities)	 Increased erosion, sedimentation, and turbidity 	ST	Ρ	AA	0	D	М	Y	Moderate	 Maintain vegetated buffers Develop sediment and erosion control plan 	Minor- None	
		Water contamination by oils, gasoline, grease, and other materials	LT	Ρ	AA	0	D	М	Y	Moderate	 Control water contamination through good housekeeping practices 	Minor- None	

Table 1. Im	pact Assessment	and Mitigation	Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
		 Increased impervious surfaces causing, Increased runoff, reduced infiltration, and groundwater discharge 	LT	Ρ	AA	C	D	H	Y	Moderate	 Maintain or provide vegetative buffers Implement infiltration techniques Control quantity and quality of stormwater discharge 	Minor	
Construction (cont.)	Building Construction (including Accessory uses and amenities) (cont.)	 Barriers to animal and plant movement 	ST	Ρ	SA	0	D	Н	N	Moderate	 Cluster multiple housing units to avoid fragmentation Ensure wildlife corridors are maintained 	Minor- None	
		 Disturbance to Wildlife from sounds and activity associated with occupancy 	LT	Ρ	SA	С	D	Н	N	Moderate	 Restrict access and buffer natural areas to discourage landowner encroachment and improper use Provide homeowners manual to encourage stewardship 	Minor- None	

ABOUD & ASSOCIATES INC.

Table 1. Im	pact Assessment an	d Mitigation	Recommendations

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
		 Loss of wildlife (mortality) due to collisions with buildings 	LT	Ρ	SA	С	D	М	N	Minor	 Design buildings to minimize/prevent mortality 	None	
	Roads – Paving	 Increased impervious surfaces 	LT	Ρ	AA	С	D	М	Y	Moderate	 Minimize areas of paved surfaces 	Minor- none	
Construction (cont.)	Roads – Paving	 Increased runoff 	LT	Ρ	AA	С	D	М	Y	Moderate	 Control quantity and quality of stormwater using best management practices 	None	
		 Reduced infiltration Increased nutrient and contaminant inputs 	LT	Ρ	AA	С	D	Μ	Y	Moderate	 Design roads without curbs, gutters, and sidewalks to promote infiltration galleries and other infiltration devices 	Minor- none	

Table 1	. Impact	Asses	sment	and	Mitigati	on	Red	com	me	nda	tion	S	

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
		 Increased erosion, sedimentation, and turbidity Increased water temperatures 	ST	R	SA	0	D	Μ	Y	Minor- moderate	 Maintain or provide vegetative buffers 	Minor- none	
Post- Construction	Human Occupation	 Increased nutrient and contaminant inputs to waterbodies, wetlands from fertilizers, pesticides etc. 	LT	Ρ	AA	S	D	Μ	Y	Moderate	 Avoid installing near sensitive vegetation and landforms 	Minor- None	
		 Vegetation and soil compaction 	LT	Ρ	SA	0	D	Μ	N	Minor	 Minimize erosion by using gravel, stones, or wood on paths 	None	

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PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Post- Construction (Cont.)	Human Occupation	 Noise and light pollution from pets and residents Predation on wildlife by pets Non-native species introductions, increased competition, predators, and parasites increased erosion and sedimentation from dumping of debris and compost in natural areas 	LT	Ρ	SA	S	D	Μ	Y	Moderate	 Provide homeowners manual to promote stewardship Fence off boundary to prevent access to natural feature, no gates allowed. 	Minor- None	
		Tree and vegetation removals, changes to vegetation structure and composition	LT	R	SA	0	D	L	N	Minor	 Maintain or provide vegetative buffers 	None	

Table 1. Impact Assessment and Mitigation Recommendations

Table 1	. Impact	Assess	ment and	Mitigation	Red	comr	ner	nda	tion	s	
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PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING ¹	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL ² IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
	Recreation activities (e.g. walking, fishing, swimming)	 Trampling of vegetation and chasing of wildlife by off-leash dogs 	ST	R	SA	0	PD	Μ	N	Minor	 Enforce proper trail use Provide off-leash areas, and enforce leash laws in sensitive areas 	Minor- none	
Post- Construction (Cont.)	Recreation activities (e.g. walking, fishing, swimming) (cont.)	 Trail development impacts including vegetation trampling, damage to root mat, soil disturbance 	LT	Ρ	SA	0	PD	Μ	N	Minor	 Choose designs and materials that will minimize impacts Develop trails for walking and cycling that avoid sensitive habitat 	Minor- none	
		Introduction of invasive & non- native plant species	LT	Ρ	SA	0	PD	Μ	N	Moderate	 Provide opportunities for people to report on natural areas Educate the public through signage 	Minor	

8.0 Legislation and Policy Compliance

8.1 City of Guelph Official Plan

8.1.1 Natural Heritage System

Development or site alteration within the adjacent lands to the Natural Heritage System may be permissible, provided that it has been demonstrated through an EIS that no negative impacts to the protected natural heritage features and areas or their associated ecological functions.

Through the provision of this EIS, the proposed development complies with the general policies identified in the City of Guelph OP related to the Natural Heritage System, general permitted uses. Each Natural Heritage feature and compliance with individual policies is described below in detail.

8.1.2 Significant Woodlands

Under the OP section 4.1.3.6 development and site alteration are not permitted within Significant Woodlands and established buffers except for uses permitted by the General Permitted Uses of Section 4.1.2.

The proposed development is identified as occurring far from the significant woodland boundary as possible and is entirely outside the minimum 10m buffer to the woodland dripline. Areas of the proposed development are within 50 m of the woodland and therefore can be considered adjacent lands, however the development is separated from the woodland by an existing railway which would separate the rootzone from the development and acts as a barrier.

The environmental impacts of the proposed development and stormwater management facility have been assessed, evaluated and mitigation recommended for Significant Woodlands. As such, the development meets the policy requirements for Significant Woodlands.

8.1.3 Significant Valleylands

Under the OP section 4.1.3.7 Development and site alteration shall not be permitted within Significant Valleylands and established buffers except for uses permitted by the General Permitted Uses of Section 4.1.2. Where Significant Valleylands are disturbed, the City promotes restoration and/or naturalization to improve water quality and quantity, ensure bank and slope stabilization, and to enhance wildlife habitat.

Both Riverine flooding and Erosion Hazards East of the Subject Lands have been restored and naturalized through compensation plantings and the construction of the Howitt Creek Flood Protection Facility. The Flood facility has also lowered the extent of flooding and rate of erosion. All proposed development on the west side of Howitt Creek are outside of any Significant Valleylands shown on Schedule 4D except for an Erosion Hazard shown in yellow on Figure 2. This erosion hazard was determined to be of anthropogenic origin and a request to remove it from GRCA and City of Guelph mapping. The GRCA reviewed the hazard and on August 5, 2020 the GRCA confirmed that the slope hazard was not a natural hazard and they would not object to grading out the slope.

The development does propose a pedestrian trail to connect with the trail system on the east side of Howitt Creek. The creation of trails is permitted within Significant Valleylands by the City of Guelph OP. For the trail section that connects to the existing trail system, areas disturbed within the Significant Valleylands will be kept to a minimum and restored through a comprehensive restoration plan as part of detailed design.

While not shown on City of Guelph Schedule 4D a Riverine Flooding Hazard is shown on GRCA mapping. This flood hazard is the remains of a formerly larger floodplain associated with flooding prior to construction of the Howitt Creek Flood Protection Facility and ineffective flow through the culvert. The City of Guelph does allow refinement of floodlines where flood control or other works alter or eliminate the flood prone area. The development has proposed to eliminate this area by reducing overland flow though stormwater infiltration techniques and grading in the area. The GRCA is aware of the developments design and has shown no objections. As such, the development meets the policy requirements for Significant Valleylands.

8.1.4 Surface Water and Fish Habitat

Under OP section 4.1.3.5 it indicates that development and site alteration are not permitted within surface water features and fish habitat, and their established buffers except for uses permitted by the General Permitted Uses of Section 4.1.2. All proposed development is generally occurring well outside the limits to Surface Water and Fish Habitat. Development on the west side near West Willow Creek (Silvercreek) is separated by the Hanlon Expressway and well beyond the 15 m buffer, it is connected by a culvert which occurs within 120 m of the watercourse. All development on the border of Howitt Creek is located beyond the recommended buffer of 30 m to cool surface water and fish habitat. Development and site alteration may be permitted on adjacent lands to Surface Water and Fish Habitat where it has been established through an EIS or EA that there will be no negative impacts to the habitat or its ecological function.

The environmental impacts of the proposed development and stormwater management facility have been assessed, evaluated and mitigations recommended for Surface Water and Fish Habitat. As such, the development meets the policy requirements for Surface Water and Fish Habitat.

8.1.5 Restoration Areas

Restoration areas are listed in the OP as part of the Natural Heritage System and are considered as Significant Natural Areas. Under OP section 4.1.3.10 it indicates development and site alteration shall not be permitted within Restoration Areas except for the uses permitted by the General Permitted Uses of Section 4.1.2. The restoration area is located on the east side of Howitt Creek outside of the Subject Lands. No buffer is associated with restoration areas and the proposed development will not negatively affect the restoration area as it is contained within other natural features and buffers which are protected by mitigative measures associated with the project.

8.2 Provincial Policy Statement

Based on the City of Guelph policy in Section 5.1 of this EIS, the proposed development does not contravene the policies of the PPS because the development of 35, 40 and 55 Silvercreek, with the provided mitigation, restoration and management, would result in no negative impacts to the Significant Woodland, Significant Valleylands, Surface Water and Fish Habitat, Restoration Areas or adjacent lands to these features. Therefore, the proposed developments will not negatively impact the wider *Natural Heritage Systems* identified or their ecological function.

8.3 GRCA Policies

The proposed development can occur in accordance with GRCA's Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06, 2015) because it has been demonstrated that there will be no negative impacts to the natural heritage features on the Subject Lands or adjacent lands to the development.

The Subject Lands are within the GRCA regulated area near both near Howitt Creek and near the culvert that drains into West Willow Creek. Near Howitt Creek the Subject Lands are not within the regulatory floodplain except for a small area where Howitt Creek crosses under the railway on the southern boundary, other areas on the eastern border of the Subject Lands are within the flood allowance (Figure 1). Development within allowances associated with Flooding Hazards may be permitted if it can be demonstrated that there is no risk of structural failure. Based on the development

ABOUD & ASSOCIATES INC.

footprint no structures would be built within the regulated area. Based on the Draft Plan of Subdivision the area of the Subject Lands within the regulatory floodplain is designated as an Open Space Block or as part of the Rail Berm, no structures are associated with these areas.

GRCA policy does allow for recreational uses such as passive parks and trails within the Riverine Flooding Hazard. The trail is required to cross Howitt Creek and connect to the trail system within the Howitt Creek Flood Protection Facility. The trail will be constructed with best management practices, including following the existing trail route to minimize any new disturbance. In addition to the developments compliance with these policies, the construction of the Howitt Creek Flood Protection Facility has lowered the risk of flooding and erosional forces around Howitt Creek.

The regulatory floodplain near the culvert that drains in West Willow (Silver) Creek are classified as spill by the GRCA and are areas of ineffective flow that do not convey water from the Subject Lands. This area likely resulted from activities following gravel extraction and construction of the culvert under the Hanlon Expressway. The development has proposed to eliminate this area by regrading during site preparation and controlling flow rates from the stormwater pond to the outlet at a target of 61 L/s/ha, as required by the City of Guelph.

As the GRCA has not opposed the removal of the floodplain around the outlet to West Willow Creek and no structures will be constructed in the floodplain or allowances around Howitt Creek, outside of the allowable trail system, the proposed development can occur in accordance with GRCA's Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06, 2013).

9.0 Summary & Conclusion

The above responses are intended to satisfy the City of Guelph Environmental Planning comments released July 7, 2020, as well as the City of Guelph and GRCA comments stemming from the Development Review Committee Meeting on May 1, 2019. Based on the proposed Draft Plan and grading plan in conjunction with the completed restoration of the Howitt Creek corridor, AA is of the opinion that the Natural Heritage Features will not be negatively impacted by the potential development.

Report prepared by:

ABOUD & ASSOCIATES INC.

Gerff Sol

Geoff Sherman Wildlife Ecologist OMNR Certified Ecological Land Classification TRCA Certified Ontario Stream Assessment

Reviewed by:

My Ame from

Cheryl-Anne Ross, B. Sc., Ecology Lead & Wildlife Ecologist OMNR Certified Ecological Land Classification OMNR Certified Wetland Evaluation ISA Certified Arborist ON-2017A

10.0 References

Aboud & Associates Incorporated. 2017. Application to Permit the Injury or Destruction of Trees Tree Inventory, Preservation Plan and Compensation Planting Plan 35 & 40 Silvercreek Parkway South, City of Guelph. May 2017. 12 pp + appendices.

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ABOUD & ASSOCIATES INC.

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Authority Correspondence

April Nix. 2020. Environmental Planner. City of Guelph. Email Correspondence.

- Ashley Rye. 2020. Resource Planner, Grand River Conservation Authority. Email Correspondence.
- Martina Furrer. 2020. Information Biologist. The Natural Heritage Information Centre. Email Correspondence.

FIGURES



LEGEND

- SUBJECT LANDS
- ------ WATERCOURSE
- REGULATION LIMIT
- **RESTORATION AREA** . . .
- WOODLAND BUFFER

SIGNIFICANT WOODLAND

- HOWITT CREEK BUFFER

- Information Sources:.
- 1. Regulatory Floodplan, Slope Erosion Hazard and Watercourses provided by GRCA, October 2020
- 2. Creek Buffer provided by VanHarten Surveying Inc., September 2020 3. Woodlands from MNRF
- SLOPE EROSION HAZARD Land Information Ontario **REMOVED EROSION HAZARD**

REGULATORY FLOODPLAIN

4. Orthophotography provided by First Base Solutions Accessed September 2020

NATURAL FEATURES AND
ASSOCIATED BUFFERS

Project: 35, 40 & 55 SILVERCREEK PARKWAY GUELPH, ON



Scale: 1:3000



Figure No:



	Information Sources:.
LEGEND	1. Orthophotography provided by First Base Solutions, Accessed September 2020
SUBJECT LANDS EXISTING CITY TRAILS	 Creek Buffer provided by VanHarten Surveying Inc., September 2020
	3. Existing Trails provided by City of Guelph, September 2020
BANKFULL	

PEDESTRIAN TRAIL AND ASSOCIATED BUFFERS

Project: 35, 40 & 55 SILVERCREEK PARKWAY GUELPH, ON





Figure No: 2

APPENDIX A: Draft Plan Subdivision

ABOUD & ASSOCIATES INC.



APPENDIX B: Summary Recommendation Table

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
EIS for the Lafarge Property (2005)	Fish Habitat	• Maintaining existing riparian vegetation to 15 metres from the centerline of the stream, to create a vegetated buffer strip totaling 30 metres in width	Still Applicable	A 30-metre buffer will be implemented around Howitt Creek. This buffer will be from top of bankfull and extend 30 m from the stream. All existing vegetation within this buffer will be maintained and enhanced with plantings.
		• Preventing further degradation of water quality through a comprehensive storm-water management plan	Still Applicable	A Stormwater Management and Storm Servicing Report has been created by Burnside, the plan will be refined during detailed design and discussed in an upcoming addendum.
		• Undertake measures to prevent the entry of silt into the watercourse during construction.	Still Applicable	An Erosion Sediment Control Plan will be created, details will be discussed in an upcoming addendum.
	Vegetation	• A Tree Saving Plan should be developed at the detailed design stage to show locations of individual trees within and at the edges of the development that are proposed for retention.	Still Applicable	A TPP was developed and will be updated based on the development area
		• The undisturbed space buffering the oak tree should be equivalent to the dripline plus at least 2 m.	Still Applicable	The Bur Oak is included in the TPP and the TPP will be updated if needed to protect the oak.
		• The riparian corridor, the large oak tree, and any other trees to be saved should be fenced or boarded outside the buffer limit prior to grading, to ensure that there is no construction activity near the roots of the tree in these areas, and to prevent impacts from construction activity.	Still Applicable	A TPP was developed and will be updated based on the development area

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
EIS for the Lafarge Property (2005)	Wildlife	• The cultural thicket/meadow habitat could be enhanced on some parts of the eastern part of the site, where the vegetation is in many places very sparse and disturbed.	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. The project was implemented by the City of Guelph and questions related to conformity with recommendations should be directed towards the City of Guelph.
	Functions • The land east of Howitt Creek should be allowed to continue to naturalize • Consideration should be given to sculpting depressions on the eastern part of the site, potentially creating suitable microhabitat where water could persist and wetland conditions could develop over time.		Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. The project was implemented by the City of Guelph and questions related to conformity with recommendations should be directed towards the City of Guelph.
	Construction	• Native prairie species planted on the railway embankment could serve as a template for restoration efforts.	Not Applicable	Species used in the restoration efforts have been approved as part of the Compensation Plan

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
EIS for the	Construction	Aquatic mitigation methods:	Still	A Sediment and Erosion Control plan will be designed that
Lafarge Property		 Prior to the commencement of any 	Applicable	meets all requirements and submitted to the City for
(2005)		construction activities (e.g., grading,		Review. Details will be discussed in a future EIR.
		servicing, vegetation removal, etc.)		
		appropriate storm water management		
		facilities (permanent or temporary)		
		should be installed to mitigate		
		sedimentation.		
		 Perimeter silt fencing, backed by 		
		paige wire fencing, should be installed		
		adjacent to the west boundary of the		
		riparian buffer along Howitt Creek.		
		 Constructed areas near the creek 		
		should be re-vegetated with native		
		species as soon as possible after		
		construction.		
		 Silt and erosion control measures 		
		should be monitored for performance		
		throughout construction and especially		
		following heavy rain events.		
		 Where feasible, potential impacts 		
		resulting from erosion and sediment		
		deposition should be reduced by		
		timing construction such that the high		
		rainfall period of spring is avoided.		
		 Stockpiles of soil should be 		
		temporarily vegetated to prevent		
		erosion		

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
Addendum I - (North South Environmental, 2006)	Riparian Restoration Plan	 The addendum recommends that a stratified buffer with an outer layer of dense, herbaceous vegetation as well as additional shrubs and trees within the existing riparian corridor be installed The addendum recommends that a variety of large trees and large shrubs with differential growth rates and longevity be planted. The addendum recommends the same trees as the previous point with additional coniferous species to provide shade when the sun is at low angles and act as windbreak The addendum looks to enhancing biodiversity within the creek corridor (both in a terrestrial and a fisheries context) providing adjunct habitat, providing linkage by using a diversity of planted vegetation, in both a structural context and a species context. Twenty-four species of threes and fourteen species of shrubs were recommended. 	Still applicable	The recommendations were incorporated into the original Compensation Plan (AA, 2017) and continue to be observed in the updated Compensation Plan (AA, 2020). The plantings that occurred in the Howitt Creek riparian area in 2017 followed the Compensation Plan and have completed the warranty period (See Appendix D).
Addendum II- (North South Environmental, 2007)	Vegetation	• Biennial gaura: It is recommended that the plant be re-located to Junction Park east of Howitt Creek to conserve it, even though the plant is not native to the site. This should be done to preserve the plant's genetic material and heritage significance.	Potentially Applicable	Area where the plant occurred was likely cleared of trees, status currently unknown. Location mapping not provided.

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
Addendum II- (North South Environmental, 2007)	Howitt Creek Flood Protection Facility	 Importation of soils to vary topography in the substrate Plantings on the terrestrial part of the site should be native species suited to the droughty conditions. 	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. As design and implementation of the Howitt Creek flood protection facility was undertaken by the City of Guelph and not the Silvercreek Developments questions related to conformity with recommendations should be directed towards the City of Guelph.
	Tree Protection	 Trees recommended for protection should be flagged prior to grading. Individual trees which can be preserved within these areas should be fenced off 1 m past the edge of the drip-line. The health of the Bur Oak should be monitored during construction with watering or water diversion taking place as necessary. 	Still Applicable	A Tree Protection Plan was created by AA in 2017 and will be at Detailed Design. The TPP meets the requirements stated in the Guelph Tree Technical Manual.

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
Addendum II- (North South Environmental, 2007)	Compensation Plantings	 Proposed tree plantings should consist of long-lived, native forest tree species to add to the long-term ecological sustainability of the site Tree compensation should be focused in areas where they could bring the greatest ecological benefit. The planting should focus on young trees, but should also include shrubs and herbaceous cover that will initially (while trees are small) enhance the function of the creek. On slopes at the greatest risk of erosion, it is recommended that grasses and herbs be planted to stabilize the soils. 	Still Applicable	The Compensation Plan created by AA in 2017, and accepted by the City of Guelph, followed the recommendations of the Riparian Restoration Plan found in Addendum I (North South Environmental, 2006). The more general recommendations found in this addendum are reflective of the recommendations found in Addendum I.
Addendum III - (North South Environmental, 2008)	Howitt Creek Flood Protection Facility	• We do not recommend topsoil be placed on the site to the minimum required for City parklands.	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. As design and implementation of the Howitt Creek flood protection facility was undertaken by the City of Guelph and not the Silvercreek Developments, questions related to conformity with recommendations should be directed towards the City of Guelph.
	Howitt Creek Buffer	• The Recommended buffer width was proposed to be an average of 18.8 m with a minimum of 19.9 and a maximum of 24 m	Potentially Applicable	The buffers proposed in the EIS were less than the minimum 30 m buffer but were accepted by the GRCA. The buffers proposed in the current proposal are 30 m.
	Vegetation	• Biennial gaura: Confirms location of plant and recommends transplantation methods and locations as detailed in Addendum II.	Potentially Applicable	Area where the plant occurred was likely cleared of trees, status currently unknown. Location mapping not provided.

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
Addendum IV- (North South Environmental, 2008)	Erosion and Channel Morphology	 Orient the trajectory of the twin culverts along the channel centreline to inhibit bank erosion Incorporate a scour pool at the outlet of the culverts to combat relatively high outflow velocities and avoid a perched condition. Consider naturalizing channelized sections of reaches to better accommodate storm flows. Consider installing erosion pins into cutbanks along reach 4 as a basis for monitoring erosion rates 	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. As design and implementation of the Howitt Creek flood protection facility was undertaken by the City of Guelph and not the Silvercreek Developments questions related to conformity with recommendations should be directed towards the City of Guelph.
	Fish Habitat	 Short-Term impacts: A detailed erosion and sediment plan, the plan should include details on controlling deleterious substances Spawning periods should be avoided for species known to inhabit creek The construction area should be isolated and fished removed from the work area Disruption of habitat should be kept to a minimum and in0stream habitat should be restored following construction 	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. As design and implementation of the Howitt Creek flood protection facility was undertaken by the City of Guelph and not the Silvercreek Developments questions related to conformity with recommendations should be directed towards the City of Guelph.
	Fish Habitat	Long-term Impacts: • Removal of the existing culverts as compensation • the creation of instream cover • Removal of refuse from stream channel • Reconstruction of the existing channel to a more natural state	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. As design and implementation of the Howitt Creek flood protection facility was undertaken by the City of Guelph and not the Silvercreek Developments questions related to conformity with recommendations should be directed towards the City of Guelph.

Study	Section	Recommendation	Relevance	Process to Meet Recommendation
Addendum IV- (North South Environmental, 2008)	Revegetation of stormwater facility and associated riparian areas	 Planting tree species that will develop an overhang canopy in drier areas Replant areas as quickly as possible with large caliper trees Plantings should be specific to soil conditions that vary according to frequency of flooding Any bank vegetation removed should be replaced with suitable native species. Planting Sandbar Willow, Balsam Poplar and Easter White Cedar in the flood facility as their roots are efficient at binding loose substrates 	Not Applicable	The construction and restoration of the Howitt Creek flood protection facility and naturalization of the creek was completed in 2013. Additionally design and implementation of the Howitt Creek flood protection facility and its revegetation was undertaken by the City of Guelph and not the proponent. Questions related to conformity with recommendations should be directed towards the City of Guelph.

APPENDIX C: GRCA Comments on Draft Plan

ABOUD & ASSOCIATES INC.




Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

March 6, 2019

Katie Nasswetter Planning Services, Infrastructure, Development and Enterprise City of Guelph 1 Carden Street, Guelph, N1H 3A1

Dear Ms. Nasswetter:

Re: File OZS19-016 35, 40 & 55 Silvercreek Parkway South

The Grand River Conservation Authority (GRCA) has no objection to the proposed Zoning Bylaw Amendment, or the Official Plan Amendment for the subject property. The subject lands contain a small portion of floodplain and the regulated allowance associated with this feature, as such a portion of the property is regulated by the GRCA under Ontario Regulation 150/06.

We have reviewed:

- November 2019, 35 & 40 Silvercreek Parkway South, City of Guelph, Scoped Environmental Impact Study Addendum (R4). Prepared by Aboud & Associates Inc.
- October 25, 2019, Silvercreek- Guelph Site Plan. Prepared by mbtw wai
- November 18, 2019, Draft Plan of Subdivision Silvercreek Junction. Prepared by Jeffrey Buisman of Van Harten Surveying Inc.
- November 2019, Silvercreek Junction Functional Servicing and Stormwater Management Report. Prepared by R.J. Burnside & Associates Limited
- December 3, 2019, 35 & 40 Silvercreek Parkway South, Guelph Hydrogeological Assessment. Prepared by WSP
- March 9, 2018. Report on Additional Geotechnical Investigation and Summary of Previous Geotechnical Investigation Work- Silvercreek Junction, Guelph Ontario. Prepared by WSP

Prior to considering the Draft Plan of Subdivision, we recommend that the following comments be addressed:

- 1. Please provide seasonally high groundwater elevations to confirm suitability of infiltration gallery and bioswale locations and design.
- 2. In regards to TSS Removal Efficiency only the developed areas should be used in calculating the overall TSS removal efficiency. Catchments that are considered "clean" should not be included in the overall TSS Removal Percent determination. It appears

that the actual designed overall TSS removal efficiency is less than the required 80% TSS removal.

- 3. Please provide a table for the hydrologic model parameters for each subcatchment.
- 4. Please provide the digital hydrologic modelling files.

The advisory comments below may be addressed through detailed design or the permitting process.

Advisory:

- 5. Due to the City of Guelph requirements for quantity control at the outlet to municipal infrastructure, GRCA will defer review of the Stormwater Management Quantity Control requirements to the City of Guelph.
- 6. Please clarify the discrepancy between the Percent Impervious listed in Table 1: Drainage Catchment Characteristics and the runoff coefficients in Figure 4.1.

This application has a plan review fee of \$22036.40 under the GRCA's 2020 fee schedule for subdivisions. At this time the applicant will be invoiced for \$15425.48 and the remainder of the fee in the amount of \$6610.92 will be due prior to the issuance of Draft Plan Conditions.

We trust these comments are helpful as you continue your review of these applications. If you have any questions, please contact me.

Yours truly,

Ashley Rye, Resource Planner Grand River Conservation Authority

c.c. Astrid J. Clos Planning Consultants (via email)

APPENDIX D: GRCA Correspondence on Slope Hazard

Geoff Sherman

From:	Fred Natolochny <fnatolochny@grandriver.ca></fnatolochny@grandriver.ca>
Sent:	August-05-20 10:03 AM
То:	Geoff Sherman; Astrid Clos; April Nix; Cheryl-Anne Ross; 'Carlo Stefanutti'
Subject:	FW: Erosion Slope Hazard at 40 Silvercreek Parkway South.
Attachments:	Silvercreek - slope.jpg; Man made hazard map.pdf

I have reviewed the mapping relating to the slope hazard shown on our mapping on the west side of the berm/trail and can advise that it is not a natural hazard, but has been created through the former use of the site as a gravel pit, along with the creation of a berm which is part of the regional storm water management facility immediately to the east of this site. As such the GRCA would have no objection to grading, but would defer comment to the municipality.

From: Geoff Sherman <<u>GSherman@aboudtng.com</u>>
Sent: July 31, 2020 9:47 AM
To: Nathan Garland
Cc: Astrid Clos; Cheryl-Anne Ross; 'Carlo Stefanutti'; April Nix
Subject: Erosion Slope Hazard at 40 Silvercreek Parkway South.

Hello Nathan,

With Ashley off I am hoping you can help me. At a project we are working on at 40 Silvercreek Parkway South in Guelph the GRCA mapping shows a crescent shaped steep slope hazard away from the edge of Howitt Creek, I've attached a image showing the one in question.

Based on our review of the site and of old aerial imagery the slope was constructed of fill material from the old pit operations that were previously on site. The project is proposing to grade out the slope so it is not a constraint on development, however as it is shown as slope erosion hazard on GRCA mapping, the GRCA would have to agree on this approach.

If you can direct me to the staff member that would be able to assess this approach or if you require any further information please let me know.

Regards, Geoff

Geoff Sherman M.Sc., B.Sc. Wildlife Ecologist MNRF Certified Ecological Land Classification, Ontario Stream Assessment Protocol Certified ABOUD & ASSOCIATES INC. 190 Nicklin Road . Guelph . Ontario . N1H 7L5 T:519.822.6839 x 5 . C : 519.829.0347 . <u>www.aboudtng.com</u> gsherman@aboudtng.com

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APPENDIX E: Correspondence on Blanding's Turtle

Geoff Sherman

From:Ashley RyeSent:February-1To:Geoff SherSubject:RE: Blanding

Ashley Rye <arye@grandriver.ca> February-13-20 1:27 PM Geoff Sherman RE: Blandings Turtle Observation

Hi Geoff,

I have checked with our Ecologist and there we do not have any specific information on that record of occurrence. Perhaps MNRF or MECP would have some detailed information.

Thank you, Ashley

Ashley Rye Resource Planner Grand River Conservation Authority 400 Clyde Road Cambridge, ON N1R5W6 P: (519) 621-2763 Ext. 2238 F: (519) 621-4844 W: <u>www.grandriver.ca</u>

From: Geoff Sherman <GSherman@aboudtng.com> Sent: Thursday, February 13, 2020 12:01 PM To: Ashley Rye <arye@grandriver.ca> Subject: Blandings Turtle Observation

Hello Ashley,

I'm contacting the GRCA in regards to a Blanding's Turtle Record in Guelph from 1989. I'm working on a project at Silvercreek Junction adjacent to Howett Creek south of Paisley. I was wondering if you could provide me any more information in regards to the location of this record as the City of Guelph has only indicated it was in the vicinity of Silver Creek junction. Any information would be appreciated.

Regards, Geoff

Geoff Sherman M.Sc., B.Sc. Wildlife Ecologist MNRF Certified Ecological Land Classification, Ontario Stream Assessment Protocol Certified ABOUD & ASSOCIATES INC. 190 Nicklin Road . Guelph . Ontario . N1H 7L5 T:519.822.6839 x 5 . C : 519.829.0347 . www.aboudtng.com gsherman@aboudtng.com

Geoff Sherman

From: Sent: To: Cc: Subject: NHIC-Requests (MNRF) <nhicrequests@ontario.ca> February-13-20 3:50 PM Geoff Sherman NHIC-Requests (MNRF) RE: Record EO ID 3242

Hello Geoff,

Thank you for contacting us.

Did you get the EO_ID from <u>Make A Map</u>? If yes, could you possible give me the address or UTM square ID for the area you searched?

I queried our database and EO_ID 3242 is a element occurrence for Thread-like Naiad (Najas gracillima) from the Long Point Bioreserve. So it looks like there might be an error. I would like to fix it but am not sure if the problem is in our internal database or with our dataset on Make A Map.

We don't appear to have any element occurrences for Blanding's Turtle from within the City of Guelph. We have one observation record from "near Guelph" from 1976 that didn't meet the requirements to inform an element occurrence so we didn't link it to an element occurrence. This record doesn't show up on make a map. Only our element occurrence data are displayed on Make-a-Map.]

Sorry about the error. If you provide me with more details about the location I'll investigate further and let you know if we have any additional information.

Best regards, Martina



Martina Furrer

Biodiversity Information Biologist Ontario Natural Heritage Information Centre Ontario Ministry of Natural Resources and Forestry 300 Water St, Peterborough, ON, K9J 3C7 705.755.2192 | martina.furrer@ontario.ca

http://www.ontario.ca/environment-and-energy/natural-heritage-information-centre

Please note: As part of providing <u>accessible customer service</u>, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Geoff Sherman <GSherman@aboudtng.com> Sent: February 13, 2020 1:56 PM To: NHIC-Requests (MNRF) <nhicrequests@ontario.ca> Subject: Record EO_ID_3242

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello I am interested in any information available about the blandings turtle record, NHIC_EO_ID 3242, in order to ensure that a proposed development in guelph is not impacting SAR habitat.

Regards, Geoff

Geoff Sherman M.Sc., B.Sc. Wildlife Ecologist MNRF Certified Ecological Land Classification, Ontario Stream Assessment Protocol Certified ABOUD & ASSOCIATES INC. 190 Nicklin Road . Guelph . Ontario . N1H 7L5 T:519.822.6839 x 5 . C : 519.829.0347 . www.aboudtng.com gsherman@aboudtng.com

APPENDIX F: Restoration Planting Warranty Letter



July 6, 2020

ATTEN: Asa Artman Project Manager Fieldgate Developments 5400 Yonge Street, 5th Floor Toronto ON M2N 5R5

RE: Silvercreek Junction Restoration Planting Warranty

Mr. Artman,

A warranty inspection of the Silvercreek Junction Restoration Planting was conducted on June 1, 2020 by Marc Neilson (Aboud & Associates), April Nix (City of Guelph) and myself. A few minor deficiencies were noted regarding dead plants. Written and photographic evidence provided by Mr. Neilson on June 29, 2020, confirmed deficiencies were completed.

Please accept this letter as confirmation that Planning Services, City of Guelph, acknowledge the completion of the two year warranty period for plants installed and reviewed as part of the Silvercreek Junction Restoration Planting Project.

Regards,

Rory Barr Templeton Landscape Planner Planning, Urban Design and Building Services Location: 1 Carden Street, 3rd Floor

T 519-822-1260 x 2436 E rory.templeton@guelph.ca

cc. Marc Neilson (Aboud & Associates)

City Hall 1 Carden St Guelph, ON Canada N1H 3A1

T 519-822-1260 TTY 519-826-9771

APPENDIX G: Grading Plan Near Bur Oak



0 10 20 40 60
Client Client
Figure Title SILVERCREEK
CROSS SECTION THROUGH PARK
Drawn Checked Date Figure No. BF DN 20/09/25
Scale Project No. FIG

APPENDIX H: Glossary of Terms and Impact Ratings

APPENDIX H: Water Balance Model

ABOUD & ASSOCIATES INC.

TABLE A-1 CLIMATE NORMALS 1981-2010 (Fergus Shand Dam)

Silvercreek Junction, Guelph, ON

	Thornthwaite (1948)										
Month	Mean Temperature (°C)	Heat Index	Potential Evapotranspiration (mm)	Daylight Correction Value	Adjusted Potential Evapotranspiration (mm)	Total Precipitation (mm)					
January	-7.4	0.0	0.0	0.78	0.0	67.9					
February	-6.3	0.0	0.0	0.88	0.0	55.9					
March	-1.9	0.0	0.0	0.99	0.0	59.6					
April	5.7	1.2	26.7	1.12	29.9	74.1					
May	12.2	3.9	59.4	1.22	72.4	86.9					
June	17.5	6.7	86.8	1.28	111.1	83.8					
July	20	8.2	99.9	1.25	124.8	89.2					
August	19	7.5	94.6	1.15	108.8	96.6					
September	14.9	5.2	73.3	1.04	76.2	93.1					
October	8.3	2.2	39.6	0.92	36.4	77.2					
November	2.1	0.3	9.3	0.8	7.5	93.0					
December	-3.9	0.0	0.0	0.76	0.0	68.6					
TOTALS		35.1	489.4		567.0	945.9					

NOTES:

1) Water budget adjusted for latitude and daylight.

2) (°C) – Represents calculated mean of avarage daily temperatures for the month.

3) Precipitation and Temperature data is from Fergus Shand Dam Climate Station located at latitude 43°44'05.088" N, longitude 80°19'49.098" W, elevation 417.60 m.

4) The Fergus Shand Dam is a Class A Station, meaning no more than 3 consecutive or 5 total missing years between 1981 to 2010.

5) Total Water Surplus (Thornthwaite, 1948) is calculated as a total precipitation minus adjusted potential evapotranspiration.

6) Total Moisture Surplus (Thornthwaite and Mather, 1957) is calculated as total precipitation minus actual evapotranspiration.

vsp

TABLE A-2 Hydrologic Cycle Component Values Silvercreek Junction, Guelph, ON

			Month								Total				
			March	April	May	June	July	August	September	October	November	December	January	February	TOLAI
PET - Adjusted	Potential Evapotranspira	ation (mm)	0.0	29.9	72.4	111.1	124.8	108.8	76.2	36.4	7.5	0.0	0.0	0.0	567.0
P - Total Precip	itation (mm)		59.6	74.1	86.9	83.8	89.2	96.6	93.1	77.2	93.0	68.6	67.9	55.9	945.9
P-PET (mm)			59.6	44.2	14.5	-27.3	-35.6	-12.2	16.9	40.8	85.5	68.6	67.9	55.9	-
Soil Moisture D	eficit (mm)		0.0	0.0	0.0	-27.3	-62.9	-75.1	-58.2	-17.4	0.0	0.0	0.0	0.0	-
ied ts,	Fine Sand	Δ ST (mm)	50.0	50.0	50.0	22.7	0.0	0.0	16.9	57.7	50.0	50.0	50.0	50.0	-
Root		AET (mm)	0.0	29.9	72.4	103.6	97.3	96.6	76.2	36.4	7.5	0.0	0.0	0.0	519.9
ow F ans,	Fire Cardedeau Class	Δ ST (mm)	75.0	75.0	75.0	47.7	12.1	0.0	16.9	57.7	75.0	75.0	75.0	75.0	-
hall bea	Fine Sandy Loam, Clay	AET (mm)	0.0	29.9	72.4	106.1	103.4	97.6	76.2	36.4	7.5	0.0	0.0	0.0	529.4
ach, s		Δ ST (mm)	125.0	125.0	125.0	97.7	62.1	49.9	66.8	107.6	125.0	125.0	125.0	125.0	-
Urban Lawr Crops (spin	Silt Loam	AET (mm)	0.0	29.9	72.4	108.1	112.0	102.1	76.2	36.4	7.5	0.0	0.0	0.0	544.5
		Δ ST (mm)	100.0	100.0	100.0	72.7	37.1	24.9	41.8	82.6	100.0	100.0	100.0	100.0	-
	Clay Loam	AET (mm)	0.0	29.9	72.4	107.3	108.8	100.4	76.2	36.4	7.5	0.0	0.0	0.0	538.8
oderately Rooted Crops (corn and cereal grains)	Fine Cand	Δ ST (mm)	75.0	75.0	75.0	47.7	12.1	0.0	16.9	57.7	75.0	75.0	75.0	75.0	-
	Fine Sano	AET (mm)	0.0	29.9	72.4	106.1	103.4	97.6	76.2	36.4	7.5	0.0	0.0	0.0	529.4
	Fine Sandy Loam, Clay	Δ ST (mm)	150.0	150.0	150.0	122.7	87.1	74.9	91.8	132.6	150.0	150.0	150.0	150.0	-
		AET (mm)	0.0	29.9	72.4	108.6	114.1	103.2	76.2	36.4	7.5	0.0	0.0	0.0	548.2
	Silt Loam. Clav Loam	Δ ST (mm)	200.0	200.0	200.0	172.7	137.1	124.9	141.8	182.6	200.0	200.0	200.0	200.0	-
Σ		AET (mm)	0.0	29.9	72.4	109.2	116.8	104.6	76.2	36.4	7.5	0.0	0.0	0.0	552.9
	Fine Sand	Δ ST (mm)	100.0	100.0	100.0	72.7	37.1	24.9	41.8	82.6	100.0	100.0	100.0	100.0	-
ş		AET (mm)	0.0	29.9	72.4	107.3	108.8	100.4	76.2	36.4	7.5	0.0	0.0	0.0	538.8
hru	Eino Sandy Loam	Δ ST (mm)	150.0	150.0	150.0	122.7	87.1	74.9	91.8	132.6	150.0	150.0	150.0	150.0	-
s pu	The Sandy Loan	AET (mm)	0.0	29.9	72.4	108.6	114.1	103.2	76.2	36.4	7.5	0.0	0.0	0.0	548.2
re ai	Silt Loom Clau Loom	Δ ST (mm)	250.0	250.0	250.0	222.7	187.1	174.9	191.8	232.6	250.0	250.0	250.0	250.0	-
astu	Silt Loam, Clay Loam	AET (mm)	0.0	29.9	72.4	109.6	118.4	105.4	76.2	36.4	7.5	0.0	0.0	0.0	555.7
å	Char	Δ ST (mm)	200.0	200.0	200.0	172.7	137.1	124.9	141.8	182.6	200.0	200.0	200.0	200.0	-
	Сіаў	AET (mm)	0.0	29.9	72.4	109.2	116.8	104.6	76.2	36.4	7.5	0.0	0.0	0.0	552.9
	Fine Cond	Δ ST (mm)	250.0	250.0	250.0	222.7	187.1	174.9	191.8	232.6	250.0	250.0	250.0	250.0	-
	Fine Sano	AET (mm)	0.0	29.9	72.4	109.6	118.4	105.4	76.2	36.4	7.5	0.0	0.0	0.0	555.7
rest	Fine Sandy Loam	Δ ST (mm)	300.0	300.0	300.0	272.7	237.1	224.9	241.8	282.6	300.0	300.0	300.0	300.0	-
E E	The Sandy Loan	AET (mm)	0.0	29.9	72.4	109.8	119.5	106.0	76.2	36.4	7.5	0.0	0.0	0.0	557.6
ture	Silt Loam, Clay Loam	Δ ST (mm)	400.0	400.0	400.0	372.7	337.1	324.9	341.8	382.6	400.0	400.0	400.0	400.0	-
Ma		AET (mm)	0.0	29.9	72.4	110.1	120.8	106.7	76.2	36.4	7.5	0.0	0.0	0.0	560.0
	Clay	Δ ST (mm)	350.0	350.0	350.0	322.7	287.1	274.9	291.8	332.6	350.0	350.0	350.0	350.0	-
city y	AET (mm)	0.0	29.9	72.4	110.0	120.2	106.4	76.2	36.4	7.5	0.0	0.0	0.0	559.0	

NOTES:

1) PET and P Taken from Table 1

Soil Moisture Deficit (mm) is a function of the accumulation of P-Pet once there is a shortage of P to satisfy PET and terminated once the defficit is eliminated
 Water Holding Capacity (mm) of soils types taken from Table 3.1, SWM Planning & Design Manual (MOE, March 2003) and applied to March

4) Actual Evapotranspiration (AET) is a function of Adjusted Potential Evapotranspiration (PET) and change in Groundwater Storage (Δ ST) for a given soil type as shown in Table 2

TABLE A-3 WATER BUDGET - PRE-DEVELOPMENT (Existing) CONDITIONS Silvercreek Junction, Guelph, ON

	Site					
Catchment Designation	Open Spaces	Totals				
Area (m ²)	165,200	165,200				
Pervious Area (m ²)	165,200	165,200				
Impervious Area (m ²)	0	0				
Infilt	tration Factors					
Topography Infiltration Factor	0.25					
Soil Infiltration Factor	0.40					
Land Cover Infiltration Factor	0.15					
MOECC Infiltration Factor	0.80					
Actual Infiltration Factor	0.80					
Run-Off Coefficient	0.20					
Run-Off from Impervious Surfaces*	0.85					
Inputs	s (per Unit Area)					
Precipitation (mm/yr)	946					
Run-On (mm/yr)	0					
Other Inputs (mm/yr)	0					
Output	ts (per Unit Area)					
Precipitation Surplus for Pervious Areas (mm/yr)	407					
Net Surplus (mm/yr)	407					
Actual Evapotranspiration (mm/yr)	539					
Evaporation (mm/yr)	142					
Infiltration (mm/yr)	326					
Runoff Pervious Areas	81					
Runoff Impervious Areas	804					
Inp	uts (Volumes)					
Precipitation (m ³ /yr)	156,263	156,263				
Run-On (m³/yr)	0	0				
Other Inputs (m ³ /yr)	0	0				
Total Inputs (m ³ /yr)	156,263	156,263				
Outr	outs (Volumes)					
Precipitation Surplus (m³/yr)	67,249	67,249				
Net Surplus (m³/yr)	67,249	67,249				
Actual Evapotranspiration (m ³ /yr)	89,014	89,014				
Evaporation (mm/yr)	0	0				
Infiltration (m [°] /yr)	53,799	53,799				
Total Infiltration (m [°] /yr)	53,799	53,799				
Runott Pervious Areas (m ⁷ /yr)	13,450	13,450				
Runott Impervious Areas (m [°] /yr)	0	0				
Total Runoff (m ⁻ /yr)	13,450	13,450				
Total Outputs (m ² /yr)	156,263	156,263				
Difference (Inputs - Outputs)	0	0				

NOTES:

Evaporation from impervious areas are assumed to be 15% of precipitation for flat roofs and paved surfaces, 10% for sloped roofs
 Infiltration Factors taken from Table 3.1, SWM Planning & Design Manual (MOE, March 2003)

3) Total outputs is equal to the sum of evapotranspiration, evaporation, total infiltration, and total runoff

TABLE A-4

WATER BUDGET - POST-DEVELOPMENT CONDITIONS WITHOUT MITIGATION Silvercreek Junction, Guelph, ON

Catchment Designation	Apartment Blocks (Blocks 1-3)	Townhouse Blocks (Blocks 4-15)	Mixed Use Blocks (Blocks 16-17)	Urban Square Block (Block 18)	Neighbourhood Park + Open Space (Block 19)	Storm Water Management Block (Block 20)	Roads and Lanes	Totals			
Area (m²)	27,600	40,000	23,000	5,900	24,100	17,200	27,400	165,200			
Impervious Coefficient	0.80	0.80	1.00	1.00	0.43	0.50	0.80	-			
Pervious Area (m ²)	5,520	8,000	0	0	13,737	8,600	5,480	41,337			
Impervious Area (m ²)	22,080	32,000	23,000	5,900	10,363	8,600	21,920	123,863			
	•	•	Infiltrat	tion Factors	•		•				
Topography Infiltration Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25				
Soil Infiltration Factor	0.40	0.40	0.40	0.40	0.40	0.40	0.40				
Land Cover Infiltration Factor	0.10	0.10	0.10	0.10	0.10	0.10	0.10				
MOE Infiltration Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75				
Actual Infiltration Factor**	0.68	0.68	0.68	0.68	0.68	0.68	0.68				
Run-Off Coefficient	0.33	0.33	0.33	0.33	0.33	0.33	0.33	1			
Run-Off from Impervious Surfaces***	0.85	0.90	0.85	0.85	0.85	0.85	0.85				
	-	1	Inputs (p	er Unit Area)			1	1			
Precipitation (mm/yr)	946	946	946	946	946	946	946				
Run-On (mm/yr)	0	0	0	0	0	0	0	4			
Other Inputs (mm/yr)	0	0	0	0	0	0	0				
			Outputs (per Unit Area)			L	1			
Precipitation Surplus for Pervious Areas (mm/yr)	426	426	426	426	426	426	426	4			
Net Surplus (mm/yr)	426	426	426	426	426	426	426	4			
Actual Evapotranspiration (mm/yr)	520	520	520	520	520	520	520	4			
Evaporation (mm/yr)	142	95	142	142	142	142	142	-			
Infiltration (mm/yr)	288	288	288	288	288	288	288	4			
Runoff Pervious Areas	138	138	138	138	138	138	138	4			
Runoff Impervious Areas	804	851	804	804	804	804	804				
$Provinitation (m^3/m)$	26 107	27 926	21 756	5 591	22 706	16 260	25.019	156 262			
Precipitation (m/yr) $P_{\rm vir} O_{\rm r} (m^3 (w))$	20,107	0	21,750	5,581	0	10,209	23,918	150,205			
Run-On (m /yr) Othor Inputs $(m^3(w))$	0	0	0	0	0	0	0	0			
Total Innuts (m /yr)	26 107	27 926	21 756	С Б 591	22 796	16 269	25.019	156 262			
	20,107	57,850	Output	s (Volumes)	22,750	10,205	25,510	130,203			
Precipitation Surplus (m ³ /vr)	20.104	30.650	18,492	4,744	14,185	10.578	19,959	118.712			
Net Surplus (m ³ /yr)	20,104	30,650	18,492	4,744	14,185	10,578	19,959	118.712			
Actual Evanotranspiration (m ³ /vr)	2,870	4,159	0	0	7,141	4,471	2.849	21,489			
Evaporation (m^3/yr)	3.133	3.027	3.263	837	1.470	1.220	3.110	16.061			
Infiltration (m^3/vr)	1,587	2,301	0	0	3,950	2,473	1,576	11,888			
Total Infiltration (m ³ /vr)	1,587	2,301	0	0	3,950	2,473	1,576	11,888			
Runoff Pervious Areas (m ³ /vr)	764	1,108	0	0	1,902	1,191	759	5,724			
Runoff Impervious Areas (m ³ /vr)	17,753	27,242	18,492	4,744	8,332	6,915	17,624	101,101			
Total Runoff (m ³ /yr)	18,517	28,350	18,492	4,744	10,234	8,105	18,383	106,825			
Total Outputs (m ³ /yr)	26,107	37,836	21,756	5,581	22,796	16,269	25,918	156,263			
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0			

NOTES:
 Evaporation from impervious areas are assumed to be 15% of precipitation for flat and paved surfaces, 10% for sloped roofs
 Post-development infiltration is reduced by 5% due to soil compaction from construction
 Infiltration Factors taken from Table 3.1, SWM Planning & Design Manual (MOE, March 2003)
 Total outputs is equal to the sum of evapotransporation, evaporation, total infiltration, and total runoff
 Impervious coefficients are taken from the City of Guelph Development Engineering Manual (January 2019).

vsp

TABLE A-5 WATER BUDGET - POST-DEVELOPMENT CONDITIONS WITH MITIGATION Silvercreek Junction, Guelph, ON

Catchment Designation	Apartment Blocks	Townhouse Blocks	Mixed Use Blocks	Urban Square Block	Neighbourhood Park	Storm Water		Tatala
	(Blocks 1-3)	(Blocks 4-16)	(Blocks 17-19)	(Block 21)	+ Open Space	Management Block	Roads and Lanes	Totals
					(DIOCK 20, 22, 23)	(BIOCK 24)		
Area (m²)	27.600	40.000	23.000	5.900	24.100	17.200	27.400	165.200
Percentage Impervious	0.80	0.80	1.00	1.00	0.43	0.50	0.80	-
Pervious Area (m ²)	5,520	8,000	0	0	13,737	8,600	5,480	41,337
Impervious Area (m ²)	22,080	32,000	23,000	5,900	10,363	8,600	21,920	123,863
			Infiltration	Factors				
Topography Infiltration Factor	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
Soil Infiltration Factor	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
Land Cover Infiltration Factor	0.10	0.10	0.10	0.10	0.10	0.10	0.10	
MOE Infiltration Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Actual Infiltration Factor**	0.68	0.68	0.68	0.68	0.68	0.68	0.68	
Run-Off Coefficient	0.33	0.33	0.33	0.33	0.33	0.33	0.33	
Kull-Off from impervious surfaces and	0.85	0.90	0.85	Jnit Area)	0.85	0.85	0.85	
Precipitation (mm/vr)	946	946	946	946	946	946	946	
Run-On (mm/yr)	0	0	0	0	0	0	0	
Other Inputs (mm/yr)	0	0	0	0	0	0	0	
			Outputs (per	Unit Area)				
Precipitation Surplus for Pervious Areas (mm/yr)	426	426	426	426	426	426	426	
Net Surplus (mm/yr)	426	426	426	426	426	426	426	
Actual Evapotranspiration (mm/yr)	520	520	520	520	520	520	520	
Evaporation (mm/yr)	142	95	142	142	142	142	142	
Infiltration (mm/yr)	288	288	288	288	288	288	288	
Infiltration from Infiltration Gallery (mm/yr)	394	0	394	0	0	0	0	
Inflitration from Inflitration Basin (mm/yr)	128	851	138	804	804	804	804	
Runoff Impervious Areas (mm/yr)	804	851	804	138	804	804	804	
Runoff Directed to Infiltration Gallery (mm/yr)	394	0	394	0	0	0	0	
Runoff Directed to Infiltration Basin (mm/yr)	0	851	0	804	804	804	804	
			Inputs (Vo	olumes)				
Precipitation (m ³ /yr)	26,107	37,836	21,756	5,581	22,796	16,269	25,918	156,263
Run-On (m ³ /yr)	0	0	0	0	0	0	0	0
Other Inputs (m ³ /yr)	0	0	0	0	0	0	0	0
Total Inputs (m³/yr)	26,107	37,836	21,756	5,581	22,796	16,269	25,918	156,263
2			Outputs (V	olumes)				
Precipitation Surplus (m³/yr)	20,104	30,650	18,492	4,744	14,185	10,578	19,959	118,712
Net Surplus (m ² /yr)	20,104	30,650	18,492	4,744	14,185	10,578	19,959	118,/12
Actual Evapotranspiration (m ⁻ /yr)	2,870	4,159	2 262	0	1,141	4,471	2,849	21,489
Evaporation (m /yr)	1 587	2 301	0	0	3,950	2 473	1 576	11 888
Infiltration from Infiltration Gallery (m ³ /yr)	8.699	0	9.061	0	0	0	0	17.760
Infiltration from runoff directed to Infiltration Basin	0,000		5,001		v	v		2.,.00
(m ³ /yr)	0	0	0	0	0	64,856	0	64,856
Total Infiltration (m ³ /yr)	10,286	2,301	9,061	0	3,950	67,329	1,576	94,504
Runoff Pervious Areas (m ³ /yr)	764	1,108	0	0	1,902	1,191	759	5,724
Runoff Impervious Areas (m ³ /yr)	9,054	0	9,431	0	0	0	0	18,485
Total Runoff (m ³ /yr)	9,818	1,108	9,431	0	1,902	1,191	759	24,209
Total Outputs (m³/yr)	26,107	10,594	21,756	837	14,464	74,211	8,294	156,263
Difference (Inputs - Outputs)	0	27,242	0	4,744	8,332	-57,942	17,624	0

NOTES: 1) Evaporation from impervious areas are assumed to be 15% of precipitation for flat and paved surfaces, 10% for sloped roofs

- a) Infiltration Factors taken from Table 3.1, SVM Planning & Design Manual (MOE, March 2003)
 3) Total outputs is equal to the sum of evapotransporation, evaporation, total infiltration, and total runoff
 4) Impervious coefficients are taken from the City of Guelph Development Engineering Manual (January 2019).
 5) Mitigative Measures: Infiltrationn galleries will be installed within the mixed use blocks and apartment blocks to infiltrate roof runoff, an infiltration basin within the storm water management block will retain and infiltrate site runoff

TABLE A-6 WATER BUDGET SUMMARY

Silvercreek Junction, Guelph, ON

		Site											
Characteristic	Pre-Development	Post- Development	Change % Change (Pre- to Post-) (Pre- to Post-)		Post- Development with Mitigation	Change (Pre- to Post- with Mitigation)	% Change (Pre- to Post- with Mitigation)						
	In	puts (Volumes)											
Precipitation (m ³ /yr)	156,263	156,263	0	0%	156,263	0	0%						
Run-On (m ³ /yr)	0	0	0	0%	0	0	0%						
Other Inputs (m ³ /yr)	0	0	0	0%	0	0	0%						
Total Inputs (m ³ /yr)	156,263	156,263	0	0%	156,263	0	0%						
	Ou	tputs (Volumes)											
Precipitation Surplus (m ³ /yr)	67,249	118,712	51,463	77%	118,712	51,463	77%						
Net Surplus (m ³ /yr)	67,249	118,712	51,463	77%	118,712	51,463	77%						
Actual Evapotranspiration (m ³ /yr)	89,014	21,489	-67,524	-76%	21,489	-67,524	-76%						
Evaporation (m ³ /yr)	0	16,061	16,061	>100%	16,061	16,061	>100%						
Infiltration (m ³ /yr)	53,799	11,888	-41,912	-78%	11,888	-41,912	-78%						
Infiltration from roof runoff (m ³ /yr)	0	0	0	0%	17,760	17,760	>100%						
Infiltration from Infiltration Basin (m ³ /yr)	0	0	0	0%	64,856	64,856	>100%						
Total Infiltration (m ³ /yr)	53,799	11,888	-41,912	-78%	94,504	40,705	76%						
Runoff Pervious Areas (m ³ /yr)	13,450	5,724	-7,726	-57%	5,724	-7,726	-57%						
Runoff Impervious Areas (m ³ /yr)	0	101,101	101,101	>100%	18,485	18,485	>100%						
Total Runoff (m ³ /yr)	13,450	106,825	93,375	694%	24,209	10,759	80%						
Total Outputs (m ³ /yr)	156,263	156,263	0	0%	156,263	0	0%						

NOTES: 1) Total Outputs is equal to the sum of evapotranspiration, evaporation, total infiltration, and total runoff

APPENDIX I: Glossary of Terms and Impact Ratings

ABOUD & ASSOCIATES INC.

Duration of Impact

ST – Short-term (define based on project) LT- Long-term (define based on project)

<u>Reversibility</u>

R- Reversible

P – Permanent

Geographic Extent of Influence

SA– Subject Area (physical disturbance area) AA- Assessment Area (120m zone of influence) LA – Landscape Area (Area outside AA that may be affected)

Frequency of Disturbance

O - Occurs once.

S - Occurs sporadically at irregular intervals. R - Occurs on a regular basis and at regular intervals.

C – Continuous, ongoing and all the time.

Existing Ecological Site Context

U - Undisturbed: Area relatively or not adversely affected by human activity.

PD – Past Disturbance: Area Adversely affected by human activity in recent past, but regeneration has occurred.

D -Disturbed: Area has been substantially previously disturbed by human development or human development is still present.

Likelihood of impact occurring

If the Proposed activity occurs, the likelihood of the impact occurring is:

L: Low probability of occurrence.

M: Medium probability of occurrence.

H: High probability of occurrence.

Cumulative Environmental Effects

Will the proposed activity interact with other impacts?

Y: Potential for environmental effect to interact with the environmental effects of other past, present or foreseeable future activities

N: Environmental effect will not or is not likely to interact with the environmental effects of other past, present or foreseeable future activities.

Impact Rating

None: An event that, if it occurs, will cause no foreseeable impact.

Minor: An event that, if it occurs, will cause small, reversible and geographically localized impact that can be easily mitigated.

Moderate: Significant but reversible, OR irreversible and geographically localized, impact that requires significant mitigation.

Severe: Significant AND irreversible impact on the environment, impacts cannot be fully mitigated.

Potential vs. Actual impact

¹ *Potential Impact* is a relative rating of the expected impact to occur in the absence of any mitigation measures.

² Actual Impact is the expected impact in consideration of implementation of mitigation measures or where potential impact may cause little to no actual impact.

- Urban Forestry •
- **Ecological Restoration**
- Landscape Architecture
- **Environmental Studies**

Evnart Oninian

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