Hart Village
Environmental Impact Study
Addendum

Prepared for:
Carrington Farm Trust
45 Speedvale Avenue East, Unit #5
Guelph, ON N1H 1J2

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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Hart Village
Environmental Impact Study
Addendum

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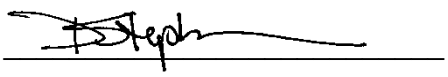

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TABLE OF CONTENTS

Introduction 1

1.0 Seeps and Shallow Groundwater Functions (Using Data Loggers to Collect Additional Consistent Baseline Data) 3

2.0 Fish Habitat 5

3.0 Comprehensive Vascular Plant Inventory (Particularly Summer Flora) as per the TOR 6

4.0 Barn Swallow Constructed Habitat 7

5.0 Lakes and Rivers Improvement Act (LRIA) Authorization 8

6.0 Bat Species at Risk 9

7.0 Deer Movement Corridors 10

8.0 Significant Wildlife Habitat (Mapping) 11

9.0 Natural Hazards (Floodplain) Mapping 12

10.0 Tree Inventory, Preservation and Compensation Plan 13

11.0 Wetland Water Balance / SWM Potential Impacts and Mitigation Plans 14

12.0 Buffer Analysis as it Relates to Encroachment, Noise, Barn Swallow Habitat, Water Quality, Fencing, Impacts of Slope to the Function of the Buffer 19

13.0 Assessment of Potential Impacts (i.e., Salt) to Wetland From Runoff and Infiltration to Stormwater Ponds 22

14.0 Information on Access for Construction Equipment to the Site 23

15.0 A Discussion of the Alternatives That Could Enhance Conveyance Under Harts Lane (i.e., Reducing Damming Effects) 24

16.0 Additional Discussion within the Pre- and Post-Construction Monitoring Plan . 26

17.0 Trail Alignment Options – Impact Analysis 27

18.0 Environmental Implementation Report (EIR) 32

References 33

List of Tables

Table 1. Trail Alignment Impact Analysis and Mitigation.....29

List of Maps

Map 1. Vegetation Communities

Map 2. Wildlife Observations

Map 3. Significant Wildlife Habitat

Map 4. Natural Hazards

Map 5. Proposed Trails and Development Plan

List of Appendices

Appendix I Plant Species Observed in and Adjacent to the Subject Property

Appendix II Field Survey Dates

Appendix III Tree Preservation Plan

Introduction

Natural Resource Solutions Inc. (NRSI) prepared an Environmental Impact Study (EIS) for Carrington Farm Trust for a proposed residential development at 132 Harts Lane, in Guelph, Ontario. The EIS, submitted in April 2014, was reviewed by the City of Guelph (Planning Services; Parks and Recreation; and Engineering Services), the Guelph Environmental Advisory Committee (EAC), the Grand River Conservation Authority (GRCA), and Dr. H. R. Whiteley. Comments were also received on the hydrogeological study (GM BluePlan 2014) and the preliminary servicing and stormwater management (SWM) report (GM BluePlan 2014). An EIS addendum, revised SWM and hydrogeological reports were submitted in June 2015 to address these comments. This Addendum was discussed on September 9, 2015 EAC meeting. In December 2015, the City of Guelph Parks, Engineering and Environmental staff provided formal comments which are also addressed in this revised EIS addendum. This EIS addendum supersedes the June 2015 version.

Comments on the hydrogeological study and the preliminary servicing and stormwater management report are addressed by GM BluePlan in an updated addendum letter (December 21 2015). As a result of discussions with City staff the proposed stormwater management approach has been enhanced with additional infiltration as requested by EAC and others. An updated discussion of water balance is provided in Section 11 of this report.

New sections discussing City comments related to Barn Swallow (*Hirundo rustica*), *Lakes and Rivers Improvement Act* (LRIA) Authorization, and trail alignment options have been added to this EIS addendum. Mapping provided in this EIS Addendum has been updated to reflect revisions to the development plan and address City comments.

NRSI confirms that the detailed design of the apartment block will ensure that groundwater flows are maintained. GMBluePlan has confirmed that a single spreader feature is now proposed that is in the outer 15m of the wetland buffer south of the Hart farm house.

A number of the comments from the City of Guelph; April Nix (Environmental Planner) and Helen White (Parks and Recreation,) lead to a revised list of topics to be included in the Environmental Implementation Report (EIR). As such an expanded list is included in this Addendum in Section 18.

1.0 Seeps and Shallow Groundwater Functions (Using Data Loggers to Collect Additional Consistent Baseline Data)

GM BluePlan prepared an updated hydrogeological study (dated May 22, 2015), and in that report, groundwater, and in particular a seepage, is described. This seepage is the result of a previous excavation coming in contact with the water table. Based on the addendum letter provided by GMBluePlan (December 21, 2015), the conclusions of the May 2015 hydrogeological study remain unchanged. The following is based on the key findings from the 2015 hydrogeological report. The reader is referred to the full report for additional details.

Overview of Groundwater Functions

The major portion of the site is generally considered to be a “recharge” area with downward gradients. However, the overburden soils identified at depth through the drilling program were found to have low permeability soils that limit groundwater movement and infiltration. The relatively thick occurrence of these soils is considered to act as an “aquitard”. Based on the occurrence of relatively higher permeability silty sand or silt and sandy soils located above these low permeability soils, movement of shallow groundwater (interflow) is considered to be horizontal towards the wetland unit. Precipitation is considered to be subject to run-off or storage in the upper soils for evapotranspiration, with the remaining is subject to limited infiltration. Based on the groundwater conditions encountered during drilling, the shallow groundwater formed by infiltration appears to be primarily directed to the wetland feature to the northeast.

However, there does not appear to be any significant preferential groundwater discharge areas to the adjacent wetland. No specific surface water features, or major distinct, free flowing groundwater discharge features were identified on-site.

Seepage Feature East of Residence

The most prominent seepage feature was identified to the northeast of the existing residence on-site. The staked wetland boundary is located to the east, and as such this seepage is within 15m of the wetland boundary. This area appears to have been a former excavated pond (inferred to be associated with cattle watering).

The analysis of significant wildlife habitat detailed in the EIS, concluded that this feature was not a significant ecological feature.

This feature occurs within 15m of the wetland boundary and is not proposed to be altered. The stormwater system has been designed to maintain the flow regime at this point, and as such the current hydrogeological and ecological functions that it currently provides will be maintained post-development.

2.0 Fish Habitat

The Hanlon Creek Watershed Plan (1993) and the Hanlon Creek State-of-the-Watershed Study (2004) do not clearly classify specific reaches of the Hanlon Creek system as coldwater, coolwater, or warmwater. Studies conducted as part of these reports provide some information on the thermal regime of the Hanlon Creek system. Both the Watershed Plan and the State-of-the-Watershed Study suggest that reaches upstream of the Hanlon Parkway are broadly considered to be coldwater.

NRSI biologists have collected water temperature measurements near the Hart Village property in conjunction with aquatic monitoring and amphibian surveys in 2013 and 2015. These measurements indicate that the reach of the stream nearest to the Harts Lane property may be coolwater (Chu et al. 2009).

The proposed approach to stormwater management for the development applies the appropriate mitigation measures to minimize any thermal impacts from the proposed development on the receiving wetland and watercourse. Firstly, the stormwater management facility will consist of a relatively small pond with a low surface area to volume ratio. This will reduce the warming experienced by the stormwater by decreasing the amount of water exposed to direct sunlight. The stormwater management pond will be designed to provide a 24-hour residence time. This relatively short residence time will limit the amount of time the water is stationary and warming up. In addition, the facility will discharge through a bottom-draw structure, releasing cooler water from the bottom of the pond. Volumes of water exiting the SWM pond will enter the spreader facility and infiltrate into the soil where additional cooling will occur.

Potential thermal impacts would occur during the hottest months of the year (July and August). However, the volumes of stormwater reaching the wetland during these months are anticipated to be negligible due to substantial evaporation from the SWM pond as well as increased evapotranspiration from the spreader swale and buffer plantings, as well as infiltration and soil pore influences. As such, thermal impacts to the receivers are not anticipated.

3.0 Comprehensive Vascular Plant Inventory (Particularly Summer Flora) as per the TOR

An additional vegetation inventory was completed August 18, 2014 to meet the requirements of a summer plant inventory. The inventory included the subject property and extended 200m into the wetland. The complete list of species observed is in Appendix I. In total, 166 species have been recorded from the subject area. Specific vegetation inventories were completed on June 19, August 14, and October 11, 2013, and August 18, 2014. Ecological Land Classification, which includes vegetation lists, was completed on December 12 and 14, 2012, June 19, 2013, and January 23, 2014. A summary of field survey dates is included in Appendix II.

4.0 Barn Swallow Constructed Habitat

The Barn Swallow nesting structure was monitored in accordance with the Endangered Species Act regulations for Barn Swallow. This included a 10-minute point counts, as well as inspecting each artificial nest cup using a mirror on a pole in order to view inside the cup. The structure was also monitored frequently in 2013. In 2013, 6 of the artificial nest structures exhibited evidence of nest construction and use. Although some evidence of nesting was observed in 9 artificial nest cups in 2014 (including some mud or grass).

The Barn Swallow nesting structure will be moved to a permanent location within the Common Amenity Area in Block 121 during construction. This location is close to the old barn location, and the neighbouring open marsh wetland provides excellent foraging habitat.

During the September 9, 2015 EAC meeting, it was recommended that NRSI contact the MNRF to discuss post-construction monitoring requirements and whether additional ESA requirements would result from the relocation of the nest structure. Based on correspondence with Graham Buck, Management Biologist with the MNRF (Guelph District) (Buck pers. comm. 2015), the relocation of the barn swallow nesting structures to their permanent location will not trigger the need for any additional monitoring. Additional monitoring is also not required based on discussions with City staff.

No additional monitoring will be carried out at the new location of the Barn Swallow nesting structure.

5.0 Lakes and Rivers Improvement Act (LRIA) Authorization

During the September 9, 2015 EAC meeting and additional City comments on the June 2015 EIS submission, it was mentioned that a *Lakes and Rivers Improvement Act* authorization from the MNRF may be required to redesign Harts Village.

NRSI contacted the MNRF (Guelph District) to determine if the Harts Village project will require approval under the LRIA. It was determined by Dave Marriott, District Planner, on October 26, 2015, that approval under the LRIA will not be required (Marriott pers. comm. 2015).

6.0 Bat Species at Risk

A cavity assessment was completed January 23, 2014. Two trees (#1965 and #1968) were identified as potentially providing suitable habitat for bats. Map 2 shows the location of these 2 trees. Based on recent MNRF guidance, exit surveys for SAR bats have to be conducted on cavity trees if they are to be removed.

However, based on the proposed plans for the subdivision, the two cavity trees are not required to be removed, and as such no further action is required.

7.0 Deer Movement Corridors

As stated in the EIS, deer movement was documented within the Hanlon Creek PSW (Provincially Significant Wetland) north of Harts Lane. The Hanlon Creek PSW provides a corridor for deer movement to overwintering habitat identified several kilometers south of the subject property. Due to the presence of roads and residential areas, this corridor does not meet the criterion for significance according to the Significant Wildlife Habitat 6E Ecoregion Criterion Schedule (OMNR 2012). The City of Guelph, however, considers the deer corridor significant within the City.

The EIS addresses impacts to the deer corridor in Sections 6.4.3.1, 7.2, 7.4, and 8.1. A main deer trail is located through the wetland (as shown on Map 1), but the movements of this species are diffuse and tracks crossing the length of the lane were observed.

The movement corridor for deer will be maintained and protected through the protection of the PSW and the added 30m buffer. Additionally, Harts Lane will be reconfigured as a trail, and not a road, thereby having no impact on the north-south deer movement corridor.

8.0 Significant Wildlife Habitat (Mapping)

The EIS concluded that Significant Wildlife Habitats (SWH) for terrestrial crayfish and woodland amphibian breeding. Each is discussed below.

Terrestrial Crayfish

Significant Wildlife Habitat for Terrestrial Crayfish was confirmed within the Reed-Canary Grass Graminoid Organic Meadow Marsh located east of the proposed development area as shown on Map 3. The EIS found a total of 6 chimneys within three locations of the marsh community. These locations were shown on Map 5 of the EIS, and also shown on the attached Map 3. Habitat for this species was not identified within the area proposed for development.

As these habitats are associated with the wetlands and/or buffers, the analysis of wetland impacts addresses potential impacts to these habitats.

Breeding Amphibians (Woodland)

No frog species were heard during evening amphibian call surveys completed for the EIS. However, gray treefrog (*Hyla versicolor*) and spring peeper (*Pseudacris crucifer*) were heard from the portion of the Hanlon Creek PSW located south of Harts Lane during other surveys (choruses were heard approximately 100m south of Harts Village). Specialized Wildlife Habitat for breeding amphibians (Woodland) was anticipated to occur within the portion of the Hanlon Creek PSW that is located south of Harts Lane as 2 indicator species, gray treefrog and spring peeper were recorded calling in abundance from approximately 100m south of Harts Village.

Woodland amphibian breeding habitat was reviewed during the preparation of this Addendum. The SWH criteria tables state that this type of SWH is the woodland (ELC polygons) and wetland (ELC polygons) combined with a travel corridor connecting the woodland and wetland polygons if they are not contiguous. There is a single small woodland consisting of Dry-Fresh Poplar Deciduous Forest (FODM3-1) that is located over 75m south of the property. Based on this, it was concluded that there is no significant amphibian woodland breeding habitat in the area.

9.0 Natural Hazards (Floodplain) Mapping

The floodplain, as mapped by the Grand River Conservation Authority (GRCA) has been shown on Map 4.

10.0 Tree Inventory, Preservation and Compensation Plan

A total of 70 trees in excellent to fair condition are to be removed for the proposed development. At a compensation ratio of 3:1, a total of 210 compensation trees will be planted within Hart Village. A tree farm on the Hart Village property currently includes 80 trees. A detailed Tree Protection Plan is included in Appendix III.

11.0 Wetland Water Balance / SWM Potential Impacts and Mitigation Plans

In addition to the May 22, 2015 hydrogeological and stormwater management reports, GM BluePlan has prepared an addendum letter (December 21, 2015) to address City engineering comments related to water blanace. The revised water balance data provided by GM BluePlan shows that the enhanced infiltration achieves post-development infiltration that is 16.0% higher than pre-development conditions. The runoff component of the water budget indicates an increase in volumes post-development. The revised SWM/hydrogeological data provided by GM BluePlan (December 21, 2015) includes a series of tabular analyses that detail the monthly comparison of pre versus post conditions. The stormwater system consists of:

- A stormwater management facility in the southeast corner of the property which discharges via a spreader swale/pipe to the wetland.
- An infiltration pipe that is 127.5m in length located north of Harts Lane that is located just inside the 30m wetland buffer. This infiltration pipe receives stormwater from the central portion of the development area.
- An infiltration pipe that is 135m in length located north of Harts Lane that is located just inside the 30m wetland buffer. This infiltration pipe receives stormwater from the central portion of the development area.
- An infiltration pipe will also be located on the townhouse block on the west side of the development

In addition, lot level infiltration opportunities have been investigated and incorporated where feasible, for example adjacent to the trail along the west side of the park.

The northern portion of the Park Block 122 will continue to be directed towards the GRCA owned wetlands to the northeast of the subject lands. This flow will emulate existing drainage patterns. Due to the shallow slope in the park block (1-2%), much of this clean water is anticipated to infiltrate into soil or evaporate/evapotranspirate. Otherwise, the upland vegetation in the triangle of GRCA-owned lands will receive the dispersed flows and allow for plant and soil uptake. As such, no impact to the wetlands will occur.

The following is a discussion of water balance implications of the stormwater management approach south, and north of Harts Lane.

Summary of Stormwater Management Pond Discharge South of Harts Lane

For the wetland south of Harts Lane, pre to post development variation in runoff volumes is larger, than for areas to the north, but based on a volumetric analysis per rain event is still relatively minimal. The greatest change in volume occurs during the months of May through August when volumes increase by 3,097m^3 to 6,019m^3 (average 4,156m^3). These values are monthly totals, and using a typical rain event frequency of 10 events per month, the result is an average increased runoff volume per rain event of 415.6m^3.

The calculated runoff volumes presented in the GM BluePlan report do not consider the various storage possibilities, infiltration, or evapotranspiration that would influence the fate of water discharging from the stormwater management pond. By utilizing these mitigation measures, volumes reaching the wetlands are anticipated to be similar to pre-construction levels. The following is a discussion of these components:

- Additional storage and infiltration provided by the spreader swale/pipe and infiltration pipes
- Soil pore storage and infiltration between the spreader and the wetland
- Vegetation up-take between the spreader and the wetland

Spreader Swale

To spread and cool water, the stormwater management system includes a spreader swale/pipe at the southeast corner of the subject property in SWM Block 124. This swale is to be 100m in length, 1.0m in width and depth and captures a volume of 100m^3.

The construction of the swale feature will allow for infiltration of some of the water that flows into them, especially during drier summer months when pond discharge volumes may be greater. This is increased by the lengthened period of discharge resulting from the design of the pond (at an average of about 24hr for drawdown).

Soils Between the Swales/Pipe and Wetland

The water that flows out of the swale in the southeast corner will flow through the soils and vegetation between the swale and the wetland. The capacity of soils between this feature and the wetland boundary will be greater during the summer months when some of the higher runoff volumes are anticipated. As well, the extended discharge compared to a typical rain event increases the opportunity for filling of soil pore space. Much of the land between the swale/infiltration pipes and wetlands is relatively flat, and flows will be further slowed to allow for downward infiltration (when water tables are approximately 1m below surface), and evapotranspiration (see below).

The distance of this dissipation structure from the wetland and the breadth of the flow-front were used to estimate the area of soil that water discharging from the swale and infiltration pipes would flow through. Soil inspections completed in these areas as part of the ELC surveys found approximately 30cm of topsoil. During the summer months when runoff volumes are predicted to be higher, it is reasonable to assume a soil saturation of 50% and also evapotranspiration in these areas.

Since the flows will be extended over 24hrs compared to current rain events, there is a greater chance of soil pore influences on the flows.

Further enhancements to the soil pore space will result from the proposed landscaping in the area between the swale and wetland. Installation of plant material, increased topsoil will have a considerable influence on soil capacity. Since topsoil was found to be approximately 30cm deep, installation of trees would increase this depth to at least 45cm. This would result in a 50% increase in soil capacity.

An analysis of soil pore capacity has been completed to assess potential storage. This is considered somewhat conservative since it doesn't account for actual water movement through the system, which would provide volumes greater than those presented herein. An average pore volume in topsoil would be approximately 30%. Based on this, the soils between a 100m long swale/infiltration pipe and the wetland

would consist of 225m^3 of pore space. Surface flows that move through the surficial soil layers and vegetation between the swale and the wetland will also be further cooled.

Vegetation Between the Swale and Wetland

Similar to the discussion above regarding soil capacity, the vegetation that will be installed between the swale and wetland will have a much greater capacity to absorb water. Compared to the mown grass in the buffer areas, woody plants including trees and shrubs have much deeper root system that will increase the interaction with soil water. Although grasses have a thick root system, the roots are shallow compared to those of woody species. As such, the planted woody species will increase the amount of root tissue as well as vertical distribution by as much as 10x. As such, these plantings will provide for a greater uptake of water.

Similarly the plantings will increase evapotranspiration (which also occurs from soils).

Infiltration Pipes North of Harts Lane

For the wetland north of Harts Lane, pre to post development variation in runoff volumes is relatively small and is always much lower than between month variations. The greatest change in volume occurs during the months of April to June when volumes decrease by 289m^3 to 694m^3 (average 439m^3). These values are monthly totals, and using a typical rain event frequency of 10 events per month, the result is an average decreased runoff volume per rain event of only 43.9m^3.

The proposed infiltration facilities consist of two 900mm diameter perforated pipe covered in filter fabric within a 1.2m wide and 1.2m deep gallery filled with clear stone. The pipes are proposed to be installed along the outer extent of the 30m wetland buffer both in Open Space Block 126 and SWM Block 123. The pipes will be located at depths of 1.5 to 2.0m below the proposed grade, but above the water table. The pipe within Open Space Block 126 (adjacent to apartment block) is 127.5m in length and has a volume of approximately 115m^3 while the pipe within SWM Block 123 is 135m in length and holds a volume of approximately 122m^3. These infiltration pipes will receive runoff from residential blocks to the west and south and flows will be directed into the soil along the edge of the buffer.

Lands in these areas are sloped towards the wetland. To promote infiltration in this area, a sandy soil will be used within the slope. To prevent break out of water at the bank bottom, the surface soils will be backfilled with low permeability silt or clayey soils. An overflow system will direct water to the SWM facility.

Based on their analyses, GM BluePlan concluded that the discharge from the proposed facility to the wetlands, would be located in the same pattern as occurs currently and was predicted to occur under the lot-level infiltration scenario.

As noted above for the stormwater pond swale, the infiltration facilities will discharge water across a broad front that will travel through the soils to the wetland boundary. This will represent a very dispersed groundwater contribution to the wetland. There are a range of buffer enhancements proposed within the buffer lands such as deepened soils and plantings that will enhance evapotranspiration, plant uptake, soil pore space, etc. in such a way as to enhance flows to the wetlands.

12.0 Buffer Analysis as it Relates to Encroachment, Noise, Barn Swallow Habitat, Water Quality, Fencing, Impacts of Slope to the Function of the Buffer

The EIS recommended a buffer of 30m from the Provincially Significant Wetland, and incorporates buffers from trees, woodlands, Significant Wildlife Habitat, and the deer movement corridor and is consistent with the Official Plan. The following discussion is divided into discussions of Harts Lane, the PSW, wildlife habitats, and trees/woodlands.

Harts Lane

The preferred alternative for Harts Lane is a walking trail with subsurface utilities. Unlike road construction featured in the other alternatives, the construction of the trail will result in substantially reduced potential for impacts. The trail construction will occur within the wetland buffer, and in fairly close proximity to the staked wetland boundaries. As such, care will be required during construction to avoid impacts, such as runoff into the wetlands.

The details of the design will be developed as part of the EIR, but at this time it is understood that the walkway will be approximately 3m in width with maintenance areas on both sides. Sediment barriers are anticipated to be used along the sides of the work zone to prevent runoff etc. into the wetlands. Construction timing relative to seasonality of high water levels and wet soils are also considerations to be detailed in the EIR.

Wetlands

For much of the past the wetland was bordered by active agriculture. This included pasture as well as tilled lands well within the buffer, and in portions north of the lane, actual grazing in the wetland.

In recent years this has ceased. The approach to wetland conservation for this undertaking focuses on enhancement of the wetland and its buffer. This will include naturalization of the buffer lands with native plantings etc. These will also be detailed as part of the EIR. Grading within the wetland is only anticipated at the outer extent of the 30m buffer in relation to the infiltration pipes as well as within the location of the proposed SWM pond in the southeast corner. Considerable review of the site grading

and drainage relative to the pond location has been completed as part of the servicing studies. The location is required for the pond as it allows for drainage of the lands (being the low point). The lands along the edge of the property south of the lane has been tilled for years. The trees in this area were reviewed in detail as part of the updated tree inventory and protection plan. The trees were not found to represent a continuous woodland edge, but rather are scattered smaller trees and/or trees in poor condition. Many will require removal with the trail proposed along the top of the stormwater berm.

It is unlikely that the root zones of the trees that are to be retained located adjacent to the stormwater pond extend onto the site. As such earthworks associated with the storm pond will not impact existing root zones. The runoff that currently occurs, into the wetlands through the successional uplands will be controlled during construction with the use of sediment control measures, and will cease post-construction as the lands are stabilized though plantings.

Wildlife Habitats

As noted above, the existing wildlife habitats in the area are associated with the wetlands, but some use of ground cover that has established in the tilled areas, as well as individual trees is noted. Protection of the wetland feature and functions is anticipated to also protect wildlife habitats.

Noise or other disturbance impacts from residential development are discussed in the EIS. Buffers are typically less effective in this regard and more effective mitigation can occur through timing of construction activities, provision of formal trails, and education of landowners.

The final location of the Barn Swallow nesting structure is proposed to be located within the Common Amenity Area in Block 121 adjacent to the wetland 30m buffer. According to Endangered Species Act regulations, the structure should be located within 1km from the original barn (anywhere on the subject property falls within this distance), and within 200m of suitable foraging habitat, which includes open areas that provide good sources of flying insects such as waterbodies and woodland edges. This area is a suitable

location for the Barn Swallow nesting structure as it provides access to the buffer area were foraging will likely occur as well as the wetland. Access to the nesting structure by people should be discouraged. There are currently no guidelines with regards to buffer distances to these nesting structures, but the proposed location will provide approximately 10m buffer to nearby development. This is twice the distance provided in the general habitat description for Barn Swallow of the area defended by male Barn Swallows during the breeding season.

Woodlands & Trees

The updated Tree Preservation Plan details which trees can be retained, and the extent of tree protection zone is proposed. Woodlands in the vicinity are limited to off-site stands of early successional species such as aspen with an abundance of buckthorn. As discussed above, the on-site lands up to, and in some cases under, the driplines of these off-site trees has been actively tilled or pastured. Limited buffers are required to protect these stands. In both cases, these stands do not meet the definition of significant woodland.

As discussed above, the proposed stormwater management facilities are to be situated along the eastern edge of the subject property. Post development, the stormwater management facilities will complement the retained upland and wetland areas, thereby increasing the separation between the existing natural features and the proposed residences. The stormwater management pond will provide an effective deterrent to encroachment, dumping, and access to the natural features. In addition, it is recommended that a chain link fence be installed along the rear property line of the proposed homes and apartment building, which will curtail encroachment, as well as stop litter from blowing into the natural areas.

13.0 Assessment of Potential Impacts (i.e., Salt) to Wetland From Runoff and Infiltration to Stormwater Ponds

Stormwater and hydrogeological impacts are discussed in the May 22, 2015 hydrogeological and stormwater management reports as well as in the addendum letter prepared by GM BluePlan (December 21, 2015). Stormwater will be released to the wetland adjacent to the subject property, once it has been treated in the stormwater management facility. This facility is to function as a wetland and will provide enhanced level quality control through the use of oil/grit separators, forebay, stilling basin, and wetland vegetation.

As the EIS stated (Section 6.4.2), alternatives to the use of road salt application in winter months should be implemented as well as 'smart' use of salts, to reduce the potential for impacts to water quality within the wetland. It has been agreed and supported by the City's engineering department, the development of Harts Lane will be a gravel walking trail. As such, impacts that would have stemmed from developing this lane into a fully functional road, will not occur

The Preliminary Servicing and Stormwater Management Report, provides an overview of post-development water quality, and concluded that water quality impacts would be minimal.

Discharge locations have been designed to cool and spread the runoff over a wide area, eliminating a point source discharge. This will also provide a final polishing mechanism, filtering out any fine suspended solids from the runoff prior to it being discharged to the respective buffer area for conveyance to the wetland

The hydrogeological study assessed the potential for water quality impacts to groundwater resources, and found that impacts would be limited.

14.0 Information on Access for Construction Equipment to the Site

Construction access will be gained through Rogers Road off of Rickson Avenue or Carrington Place. No construction vehicles will use Harts Lane.

The details of site access will be shown on Site Alteration Permits at a later point in the process.

15.0 A Discussion of the Alternatives That Could Enhance Conveyance Under Harts Lane (i.e., Reducing Damming Effects)

In order to maintain the water balance that currently exists (i.e. pre-construction), the damming effect of Harts Lane will not be altered. As Option 1 will be pursued, Harts Lane will be developed as a trail connection, which can be completed without impact to the footprint of the existing lane or changes to the existing culverts. As stated in the EIS (Section 5.1),

> *... it appears that although the existence of the wetland is controlled by the intersection of the topography with the more regional water table, the surface water flow regime of the wetland north of Harts Lane is dominated by surface water inputs (with some limited groundwater), with a dominant 'ponding' of flows as a result of the damming from Harts Lane. Similarly, it is concluded that the water regime in the south portion of wetland is also dominated by surface water and heavily influenced by damming of flows at Edinburgh Road.*
>
> *Overall, the current conditions suggest that:*
> - *In order to maintain the current characteristics of the wetland to the north and south, the damming effect of the road bed will need to be maintained;*
> - *as such, it will be required to maintain the invert and flow characteristics of the existing culverts, while at the same time replacing the culverts due to its age/condition;*
> - *doing this will also maintain the characteristics of the fish habitats found both up and downstream of the lane;*
> - *The current wetland vegetation is now comprised of herbaceous and shrub species that have established in a fluctuating water regime that ranges from inundation to periods of desiccation as driven by stormwater management facilities, etc.*
>
> *Given the relatively small contribution of the subject lands to the wetlands, and the established developments with associated stormwater management facilities currently discharging into the wetlands, it is not feasible to mitigate the current fluctuating water regime through design of the proposed development. The design should, however, strive to preserve the role of the lane in the water regime and avoid any point discharges to the wetland.*

The elevation of the wetland surface upstream (north) of the lane is approximately 0.5m higher compared to elevations downstream (south) of the lane. Replacement of the culvert must consider this current difference in elevation and the implications both up and downstream of the lane. As the current culverts under the lane act as a dam,

lowering of the culvert to equalize the flows would have impacts to the wetlands. Lowering the elevation upstream of the lane would result in substantial changes to the extent of the wetland, especially since the grade of the ground in the wetland is fairly low (i.e., a 0.5m decrease in elevation, could result in substantial change in horizontal extent of the wetland). Similarly, additional flows to the downstream would alter the regime of the wetlands. This magnitude of change would negate the efforts being made through the stormwater management design to match pre-development water regime.

Preliminary input received from the GRCA as part of the discussion regarding Harts Lane alternatives, identified that the GRCA views changes to the wetland, including the culverts, an unacceptable impact to the PSW.

16.0 Additional Discussion within the Pre- and Post-Construction Monitoring Plan

Post construction monitoring is addressed in the EIS in Section 9.2.5 and recommends monitoring of the following:

- Water balance
- Water quality
- Vegetation monitoring in wetland edges
- Monitoring of restoration plantings

GM BluePlan's revised stormwater report provides recommendations for additional water balance and water quality monitoring.

The EIS (Section 9.2.5) outlined that vegetation monitoring within the wetland will be conducted for 5 years post-development, on alternating years (i.e. vegetation will be monitored on 3 years, i.e. years 1, 3, and 5). As stated in the EIS (Section 9.2.5),

> *… it is recommended that vegetation monitoring should be conducted post-construction within the wetland edges every other year for 5 years after construction to confirm.*
>
> *Annual monitoring of species and coverage within vegetation plots can be used along with photo inventories to determine any shifts in vegetation composition within the wetland adjacent to the proposed development. It is recommended that approximately 6 10m x10m plots be established using stratified random sampling within the wetland edge. At each plot, the species composition, percent cover and relative abundance should be recorded (additional 1m x1m subplots should be conducted within the plots for monitoring of herbaceous species).*

Typical 2 year warranty monitoring of all landscape plantings will be required and will be detailed as part of the landscape plants in the EIR.

In addition, it is recommended that biologists monitor the locations of crayfish chimneys within and adjacent to the subject property, as these have the potential to shift depending on changing water regimes. Monitoring will occur in conjunction with the vegetation monitoring and will consist of qualitative analysis of chimney abundance and location. Details of the monitoring plans will be included as part of the EIR.

17.0 Trail Alignment Options – Impact Analysis

A trail connection between Harts Lane and Kortright Road West may occur through the use of either roadside, off-road trails or a combination of the two. All 3 of these options include a trail along the existing Harts Lane as well as a trail along the eastern access road associated with the proposed SWM pond in Block 124 (note the trail will extend along the northeastern side of the SWM pond but will not continue around the back of the pond adjacent to lots 43-50). These options are all shown on Map 5 of this EIS Addendum:

- From Harts Lane, along Block 125 to the internal road system (Road A and B), then through a Walkway Block (127) along the west side of the Park Block to Kortright Road. Within the location of Harts Lane where it adjoins with Block 125, the presence of the slope adjacent to the wetland prevents grading necessary to meet the 5% required based on City Facility Accessibility Design Manual Standards (FADM 2015). In order to meet this standard, significant grading would be required well within the PSW. An 8% slope will be attained in this location.
- From Harts Lane, along the outer 15m of the wetland buffer (associated with the stormwater infiltration pipe access road for approximately 130m), and to the north property boundary through the small triangle of GRCA-owned lands to Kortright Road. The consideration of impacts from this trail alignment on the natural features takes into account direct tree removal for trail construction, as well as removal of high hazard trees adjacent to the trail. This option also takes the trail alignment through the outer 15m of the wetland buffer and would have a greater impact on the adjacent natural features than a roadside trail alignment (Table 4).
- From Harts Lane, along the outer 15m of the wetland buffer (associated with the stormwater infiltration pipe access road for approximately 130m), then either through the Common Amenity Block 121 north of the existing residence, or through the Apartment Block to the internal road system, then following the internal roads to the Walkway Block along the west side of the Park Block to Kortright Road. Steeper grades within the amenity area provide a challenge to meet the 5% grade required to satisfy City Facility Accessibility Design Manual Standards (FADM 2015) and substantial grading would likely be required to

accommodate a trail, resulting in the removal of several trees. However, many of the trees within the amenity area are in poor or very poor condition and are to be removed. An additional option is to direct the trail connection through the Apartment Block 121 in the area adjacent to the amenity area. However, an easement would be required in this location to accomplish this. Within SWM Block 123, a 4.5m wide flat grassed area will be provided where a trail could be accommodated, although this will not extend into Open Space Block 126, where additional grading would be required for a trail alignment in this area.

The trail within Harts Lane footprint is to be 3m wide as per recommendations provided by the City of Guelph Parks Department (December 2015). In addition, a 1m mowed strip is to be provided on either side of the trail as well as a 2% cross pitch.

A potential trail connection could be provided to the southeast of the subject property, but this would be determined in the future by the City through an appropriate EIS.

Potential direct, indirect and induced impacts from the various trail alignments are described and compared in Table 5 along with mitigations. The following is a description of the types of impacts discussed.

- **Direct impacts** to the natural features on the subject lands associated with disruption or displacement caused by the actual proposed 'footprint' of the undertaking;
- **Indirect impacts** associated with changes in site conditions such as noise, dust or lighting;
- **Induced impacts** associated with impacts after the trail is constructed such as subsequent demand on the resources created by increased habitation/use of the area and vicinity.

Table 1. Trail Alignment Impact Analysis and Mitigation

	Roadside Alignment	Off-road Alignment	Connection Trail	Mitigation Measures
Construction Impacts				
Direct				
Tree Removal	No healthy trees need to be removed for this alignment, except for a single tree within the existing footprint of Harts Lane, although several hazard trees in poor or very poor condition would be removed regardless.	This alignment involves the removal of 18 trees near Kortright Road West (in addition to trees within Harts Lane alignment).	The connection through the amenity area (Block 121) may not require the removal of trees if the trail can be navigated between existing trees while still meeting grades. If extensive grading was to be undertaken in this block to reach trail slope requirements, a maximum of 12 trees in fair or good health would be removed.	Each trail alignment is to be designed in order to avoid tree removal, although this is necessary in some areas to accommodate grading to maintain a 5% slope (where possible). Many of the trees to be removed are hazard trees adjacent to trails.
Indirect				
Noise	This alignment maintains the greatest distance from natural features and is likely to provide lower noise disturbance to the adjacent wetland than other options. Noise disturbance is anticipated to be short lived in duration (i.e. only during the construction phase)	This alignment is located within the 30m wetland buffer and may provide a short term noise disturbance that will temporarily displace wildlife from the immediate vicinity. Such impacts are anticipated to be minimal and only during the construction phase.	The connection trail through the amenity area follows the off-road alignment through part of SWM Block 123 adjacent to the wetland before continuing with the roadside alignment. Impacts from this trail are anticipated to be medium when compared to the other two options.	Noise impacts can be mitigated by restricting the daily timing of construction activities to between 7:00 am and 7:00 pm. The roadside trail alignment will provide the lowest noise related impacts during the construction phase of development. Selection of a roadside alignment will greatly reduce any temporary disturbance related to trail construction by keeping equipment and people further from the wetlands.

Dust	The roadside alignment provides a greater distance from the adjacent wetlands and dust produced during the construction of the trail is less likely to drift into the wetland when compared with other alignments. Impacts are anticipated to be minimal and short in duration if mitigation measures are followed.	The off-road alignment follows the wetland buffer across much of its length to Kortright Road. Although impacts of dust related to the trail construction are anticipated to be relatively low, the closer proximity of this alignment will result in a slightly higher amount of dust entering the wetland area. Such impacts will be short lived and can be reduced by following the mitigation measures recommended.	This alignment will likely result in intermediate impacts in comparison with the other two options.	Impacts due to dust should be mitigated for by moistening areas of bare, dry soil with water as needed during construction activities to reduce the amount of dust produced.
Lighting	Impacts of lighting based on the roadside alignment are anticipated to be minimal and short in duration if the mitigation measures are followed. This trail alignment is predominantly well away from the 30m wetland buffer for much of its length.	The off-road alignment is located close to the wetland, however, if mitigation measures are followed, any lighting impacts will be minimal and short in duration.	This alignment will likely result in intermediate impacts in comparison with the other two options.	Any lighting equipment associated with trail construction activities should be turned off following cessation of daily construction activities, or at least turned away from the adjacent natural features so as to prevent 'lightwash' of the wetland and natural areas.
Erosion/Sedimentation	Erosion and sedimentation impacts are anticipated to be minimal for all proposed alignments due to various mitigation measures.			Silt fencing will be installed along the edge of the wetland buffer to reduce sediment laden runoff from reaching the wetlands. Bare soil should be re-established with vegetation within 30 days of clearing to stabilize soils.
Post-construction Impacts				
Induced				

Trail Use	This trail alignment will direct human traffic away from the wetlands and buffers. Impacts from trail use by residents are anticipated to be very low if this alignment is selected.	This trail alignment directs human traffic along the edge of the wetland buffer and may result in increased encroachment into the buffers. If mitigation measures are followed, these impacts can be reduced substantially and significant impacts would not be anticipated.	This alignment will likely result in intermediate impacts in comparison with the other two options.	The roadside trail alignment requires minimal mitigation measures since human use is directed away from natural features. Mitigation measures such as dense shrub plantings are recommended in buffer areas to discourage human intrusion. Plantings of raspberries and blackberries (*Rubus* spp.) are particularly effective as deterrents. Signage indicating that humans and pets are not to disturb the natural areas and the need to stay on trails should also be installed adjacent to trails near the wetlands.

18.0 Environmental Implementation Report (EIR)

The following should be included in the EIR:

- The need and extent of monitoring with respect to water quality/quantity, flora and fauna is to be determined through the EIR
- The detailed design of the apartment block will confirm that groundwater flows will be maintained if underground parking or other components penetrate the water table
- A Salt Management Plan (for Apartment Block 121 and Condominium Block 120)
- Detailed design of the trail system on the subject property complete with locations of trails, grading and drainage plans as well as locations of signage, gates, boardwalks, bridges or other structures. Specifications for trails and trail features will be compliant with the Facility Accessibility Design Manual (FADM 2015).
- Preparation of Landscape Plans complete with details addressing demarcation and removal of hazard trees along the trail system and residential properties
- Restoration plans for areas including the wetland buffers
- Compensation and enhancement planting within buffers associated with the wetlands on the subject property and within terrestrial crayfish habitat
- Plans for addressing invasive species management
- Design of educational, interpretive and stewardship materials and appropriate signage

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Maps

Map 1

Hart Village

Vegetation Communities

Legend

- Subject Property
- Wetland Boundary (Van Harten) (confirmed by GRCA May 21,
- Stormwater Outlet
- Hazard Trees Removed
- Groundwater Observed
- Common Buckthorn/ Trees with High Risk for Structural Failure Removal Areas
- Ecological Land Classification (ELC)
- (AG)
- (CVR-4) Rural Property
- (FODM3-1) Dry-Fresh Poplar Deciduous Forest
- (MAMO1-3) Reed-Canary Grass Graminoid Organic Meadow Marsh
- (MEFM1) Dry-Fresh Forb Meadow Ecosite
- (MEMM4) Fresh-Moist Meadow Ecosite
- (OAO) Open
- (SWTO5) Organic Deciduous Thicket Swamp

563400 563600 563800 564000 564200

4818800 4818600 4818400 4818200

YEWHOLME DR, COLUMBUS CRES, KRON DR, KORTRIGHT RD W, KEATS CRES, KORTRIGHT RD W, MOSS PL, SIDNEY CRES, RODGERS RD, MOSS PL, RICKSON AVE, DARNELL RD, GEDDES CRES, CARRINGTON DR, TRUESDALE CRES, TRUESDALE CRES, EDINBURGH RD S, GORDON ST, BALFOUR CRT, BATHGATE DR, LANDSDOWN DR, HARTS LANE

SWTO5, MAMO1-3, MEMM4, FODM3-1, OAO, MAMO1-3, SWTO5, MAMO1-3, MAMO1-3, SWTO5, AG, CVR-4, Removed Barn, Removed Barn, MAMO1-3, SWTO5, OAO, FODM3-1, MEFM1, MAMO1-3, OAO

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374
Date: December 21, 2015

NAD83 - UTM Zone 17
Size: 11x17"
1:3,500

N

0 50 100 150 200 Metres

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Map 2

Hart Village

Wildlife Observations

Legend

- Subject Property
- Wetland Boundary (Van Harten) (confirmed by GRCA May 21, 2013)
- Main Deer Trail
- Potential Bat Maternity Roosting Habitat
- Terrestrial Crayfish Chimney
- American Toad
- Green Frog
- Leopard Frog
- Wood Frog

563400 563600 563800 564000

4818800 4818600 4818400 4818200

KRON DR
KEATS CRES
KORTRIGHT RD W
HARTS LANE
Removed Barn
Removed Barn
MOSS PL
SIDNEY CRES
RODGERS RD
RICKSON AVE
DARNELL RD
GEDDES CRES
CARRINGTON DR

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374
Date: December 21, 2015

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

N

0 50 100 150 Metres

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Map 3

Hart Village

Significant Wildlife Habitat

Legend

- Subject Property
- Potential Bat Maternity Roosts
- Terrestrial Crayfish
- Ecological Land Classification (ELC)

563400 563600 563800 564000 564200

4818800 4818600 4818400 4818200

YEWHOLME DR
COLUMBUS CRES
KRON DR
KORTRIGHT RD W
KEATS CRES
KORTRIGHT RD W
MOSS PL
SIDNEY CRES
RODGERS RD
MOSS PL
RICKSON AVE
DARNELL RD
GEDDES CRES
CARRINGTON DR
TRUESDALE CRES
TRUESDALE CRES
EDINBURGH RD S
HARTS LANE
GORDON ST
BALFOUR CRT
BATHGATE DR
LANDSDOWN DR

Removed Barn
Removed Barn

Path: X:\1374_HartsLaneEIS\NRSI_1374_Fig3_SWH_4K_2015_12_21_GCS.mxd

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Project: 1374 Date: December 21, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:3,500**

0 50 100 150 200 Metres

N

Path: X:\1374_HartsLaneEIS\NRSI_1374_Fig4_NaturalHazards_4K_2015_12_21_GCS.mxd

Map 4

Hart Village

Natural Hazards

Legend

- Subject Property
- Floodplain (GRCA, approximate)
- Ecological Land Classification (ELC)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374
Date: December 21, 2015

NAD83 - UTM Zone 17
Size: 11x17"
1:3,500

N

0 50 100 150 200 Metres

Map 5

Hart Village

Proposed Trails and Development Plan

Legend

- Subject Property
- Draft Plan of Subdivision
- Existing Conditions
- Roadside Trail
- Off-road Trail
- Connection Trail
- Possible Connection to Off Site Trails

KORTRIGHT ROAD WEST
(Established By Reg'd Plan 657) (30.48 Metres Wide)

RODGERS ROAD
(Established By Reg'd Plan 657) (20.00 Metres Wide)

DARNELL ROAD

RICKSON AVENUE
(Established By Reg'd Plan 658) (20.00 Metres Wide)

MOSS PLACE

RODGERS ROAD

CARRINGTON PLACE

HARTS LANE WEST

STACKED TOWNHOUSES BLOCK 120 1.142ha 68 UNITS
COMMON AMENITY AREA 844m²

PARK BLOCK 122 0.613ha

OPEN SPACE BLOCK 126

OPEN SPACE BLOCK 126 2.25ha

APARTMENT BLOCK 121 1.01ha 153 UNITS
COMMON AMENITY AREA 1,920m²

SWM BLOCK 123 0.25ha

STORMWATER MANAGEMENT BLOCK 124 0.64ha

EXISTING HOUSE

ROAD A

ROAD B

LOT 4, CONCESSION 7

BLOCK 125 TO BE CONVEYED TO THE CITY OF GUELPH

PART 3, 61R-2156

WETLAND

WETLAND LIMIT CONFIRMED BY THE GRCA AND SURVEYED ON MAY 21, 2013

30m WETLAND BUFFER

EMERGENCY ACCESS

BLOCK B, PLAN 657

END OF GRCA FLAGGING

Path: X:\1374_HartsLaneEIS\NRSI_1374_Map5_ProposedTrails_DevelopmentPlan_2K_2015_12_21_GCS.mxd

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374 Date: December 21, 2015	NAD83 - UTM Zone 17 Size: 11x17" **1:2,000**

0 50 100 150 Metres

APPENDIX I

Plant Species Observed in and Adjacent to the Subject Property

Plant Species Observed from the Subject Property

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
PTERIDOPHYTES	**FERNS & ALLIES**												
Dryopteridaceae	**Wood Fern Family**												
Dryopteris carthusiana	Spinulose Wood Fern	5	-2		S5			X	X	X			
Dryopteris cristata	Crested Wood Fern	7	-5		S5			X					
Matteuccia struthiopteris var. pensylvanica	Ostrich Fern	5	-3		S5			X	X				
Onoclea sensibilis	Sensitive Fern	4	-3		S5			X	X	X			
Equisetaceae	**Horsetail Family**												
Equisetum arvense	Field Horsetail	0	0		S5			X	X	X			
Thelypteridaceae	**Beech Fern Family**												
Thelypteris palustris var. pubescens	Marsh Fern	5	-4		S5			X	X	X			
GYMNOSPERMS	**CONIFERS**												
Cupressaceae	**Cypress Family**												
Thuja occidentalis	White Cedar	4	-3		S5			X	X	X	X		
Pinaceae	**Pine Family**												
Pinus strobus	Eastern White Pine	4	3		S5			X					
DICOTYLEDONS	**DICOTS**												
Aceraceae	**Maple Family**												
Acer negundo	Manitoba Maple	0	-2		S5			X	X		X		
Acer rubrum	Red Maple	4	0		S5			X	X	X			
Acer saccharum ssp. saccharum	Sugar Maple	4	3		S5			X			X		X
Acer x freemanii	Freeman's Maple							X	X				
Apiaceae	**Carrot or Parsley Family**												
Aegopodium podagraria	Goutweed		0	-3	SE5			X		X			
Cicuta maculata	Spotted Water-hemlock	6	-5		S5			X	X	X			
Daucus carota	Wild Carrot		5	-2	SE5			X		X	X		X
Erigenia bulbosa	Harbinger-of-spring	9	5		S3?	R	X						
Sanicula canadensis var. grandis	Long-styled Canada Snakeroot	7	2		S2		X						
Sium suave	Hemlock Water-parsnip	4	-5		S5			X		X			
Asclepiadaceae	**Milkweed Family**												
Asclepias syriaca	Common Milkweed	0	5		S5			X				X	X

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Asteraceae	**Composite Family**												
Achillea millefolium ssp. millefolium	Common Yarrow		3	-1	SE?			X		X		X	X
Arctium minus ssp. minus	Common Burdock		5	-2	SE5			X					X
Bidens connata	Connate Beggar-ticks				S4?			X		X			
Bidens frondosa	Devil's Beggar-ticks	3	-3		S5			X	X	X	X		
Cirsium arvense	Canada Thistle		3	-1	SE5			X		X	X	X	X
Cirsium vulgare	Bull Thistle		4	-1	SE5			X		X	X	X	X
Conyza canadensis	Horseweed	0	1		S5			X		X			
Erigeron annuus	Daisy Fleabane	0	1		S5			X					X
Erigeron philadelphicus ssp. philadelphicus	Philadelphia Fleabane	1	-3		S5			X			X		
Eupatorium perfoliatum	Perfoliate Thoroughwort	2	-4		S5			X	X	X			
Eupatorium maculatum ssp. maculatum	Spotted Joe-pye-weed	3	-5		S5			X	X				
Euthamia graminifolia	Flat-topped Bushy Goldenrod	2	-2		S5			X	X	X	X		X
Leucanthemum vulgare	Ox-eye Daisy		5	-1	SE5			X				X	
Solidago altissima var. altissima	Tall Goldenrod	1	3		S5			X	X	X			X
Solidago canadensis	Canada Goldenrod	1	3		S5			X			X		X
Solidago gigantea	Giant Goldenrod	4	-3		S5			X	X	X	X		
Solidago rugosa ssp. rugosa	Rough Goldenrod	4	-1		S5			X	X	X	X		
Symphyotrichum lanceolatum var. lanceolatum	Tall White Aster	3	-3		S5			X	X	X			X
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	3	-2		S5			X			X		
Symphyotrichum novae-angliae	New England Aster	2	-3		S5			X					X
Symphyotrichum puniceum var. puniceum	Purple-stemmed Aster				S5			X	X	X			
Taraxacum officinale	Common Dandelion		3	-2	SE5			X	X	X			X
Tragopogon dubius	Doubtful Goat's-beard		5	-1	SE5			X		X		X	
Tussilago farfara	Coltsfoot		3	-2	SE5			X					X
Balsaminaceae	**Touch-me-not Family**												
Impatiens capensis	Spotted Touch-me-not	4	-3		S5			X	X	X			
Betulaceae	**Birch Family**												
Betula papyrifera	White Birch		2		S5			X	X				
Boraginaceae	**Borage Family**												
Myosotis laxa	Smaller Forget-me-not	6	-5		S5			X	X	X			
Myosotis scorpioides	Mouse-ear Scorpion-grass		-5		SNA			X	X				

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Brassicaceae	**Mustard Family**												
Alliaria petiolata	Garlic Mustard		0	-3	SE5			X			X	X	
Caprifoliaceae	**Honeysuckle Family**												
Lonicera tatarica	Tartarian Honeysuckle		3	-3	SE5			X		X	X		X
Viburnum opulus	Guelder Rose		0	-1	SE4			X		X	X		X
Celastraceae	**Staff-tree Family**												
Euonymus atropurpurea var. atropurpurea	Burning Bush	8	1		S3	R	X						
Chenopodium album var. album	Lamb's-quarters		1	-1	SE5			X			X		
Convolvulaceae	**Morning-glory Family**												
Convolvulus arvensis	Field Bindweed		5	-1	SE5			X				X	
Cornaceae	**Dogwood Family**												
Cornus stolonifera	Red-osier Dogwood	2	-3		S5			X		X	X		
Cucurbitaceae	**Gourd Family**												
Echinocystis lobata	Prickly Cucumber	3	-2		S5			X	X		X		
Dipsacaceae	**Teasel Family**												
Dipsacus fullonum ssp. sylvestris	Wild Teasel		5	-1	SE5			X			X		
Euphorbiaceae	**Spurge Family**												
Euphorbia esula	Leafy Spurge		5	-2	SE5			X		X			
Fabaceae	**Pea Family**												
Lotus corniculatus	Bird's-foot Trefoil		1	-2	SE5			X		X		X	
Medicago sativa ssp. sativa	Alfalfa		5	-1	SE5			X					X
Trifolium pratense	Red Clover		2	-2	SE5			X				X	
Fagaceae	**Beech Family**												
Quercus macrocarpa	Bur Oak	5	1		S5			X	X				
Geraniaceae	**Geranium Family**												
Geranium maculatum	Spotted Crane's-bill	6	3		S5			X			X		
Grossulariaceae	**Currant Family**												
Ribes americanum	Wild Black Currant	4	-3		S5			X	X				
Ribes triste	Wild Red Currant	6	-5		S5			X	X				

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Guttiferae	**St. John's-wort Family**												
Hypericum perforatum	Common St. John's-wort		5	-3	SE5			X					X
Hypericum prolificum	Shrubby St. John's-wort	6	3		S2	R	X						
Juglandaceae	**Walnut Family**												
Juglans nigra	Black Walnut	5	3		S4			X		X	X		
Lamiaceae	**Mint Family**												
Glechoma hederacea	Creeping Charlie		5	-2	SE5			X			X		
Leonurus cardiaca ssp. cardiaca	Common Motherwort		5	-2	SE5			X			X	X	
Lycopus americanus	Cut-leaved Water-horehound	4	-5		S5			X	X	X		X	
Lycopus uniflorus	Northern Water-horehound	5	-5		S5			X				X	
Mentha arvensis ssp. borealis	American Wild Mint	3	-3		S5			X	X	X	X		
Monarda didyma	Oswego-tea	8	3		S3	R	X						
Monarda fistulosa	Wild Bergamot	6	3		S5			X		X			
Nepeta cataria	Catnip		1	-2	SE5			X					X
Prunella vulgaris ssp. vulgaris	Common Heal-all		0	-1	SE3			X		X	X		X
Scutellaria galericulata	Hooded Skullcap	6	-5		S5			X	X				
Linaceae	**Flax Family**												
Linum virginianum	Wild Yellow Flax	10	-3		S2		X						
Lythraceae	**Loosestrife Family**												
Lythrum salicaria	Purple Loosestrife		-5	-3	SE5			X	X				
Magnoliaceae	**Magnolia Family**												
Liriodendron tulipifera	Tulip Tree	8	2		S4			X		X			
Oleaceae	**Olive Family**												
Fraxinus americana	White Ash	4	3		S5			X			X	X	
Fraxinus pennsylvanica	Green Ash	3	-3		S5			X	X				
Onagraceae	**Evening-primrose Family**												
Circaea alpina	Smaller Enchanter's Nightshade	6	-3		S5			X			X		
Circaea lutetiana ssp. canadensis	Yellowish Enchanter's Nightshade	3	3		S5			X			X		
Epilobium species	Willow-herb speices							X		X			
Epilobium leptophyllum	Narrow-leaved Willow-herb	7	-5		S5			X		X			
Epilobium parviflorum	Sparse-flowered Willow-herb		3	-1	SE4			X		X			
Oxalidaceae	**Wood Sorrel Family**												
Oxalis stricta	Upright Yellow Wood-sorrel	0	3		S5			X	X	X	X		

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Papaveraceae	**Poppy Family**												
Chelidonium majus	Celandine		5	-3	SE5			X			X		
Plantaginaceae	**Plantain Family**												
Plantago lanceolata	Ribgrass		0	-1	SE5			X		X		X	
Plantago major	Common Plantain		-1	-1	SE5			X				X	
Polemoniaceae	**Phlox Family**												
Phlox subulata ssp. subulata	Moss Phlox		5	-1	SNA	R	X						
Polygonaceae	**Smartweed Family**												
Polygonum persicaria	Lady's-thumb		-3	-1	SE5			X	X				
Rumex crispus	Curly-leaf Dock		-1	-2	SE5			X			X	X	
Primulaceae	**Primrose Family**												
Lysimachia nummularia	Moneywort		-4	-3	SE5			X		X			
Ranunculaceae	**Buttercup Family**												
Ranunculus acris	Tall Buttercup		-2	-2	SE5			X	X	X	X	X	
Ranunculus hispidus var. caricetorum	Swamp Buttercup	5	-5		S5			X		X			
Ranunculus repens	Creeping Buttercup		-1	-1	SE5			X		X			
Rhamnaceae	**Buckthorn Family**												
Frangula alnus	Glossy Buckthorn		-1	-3	SE5			X	X	X	X		
Rhamnus cathartica	Common Buckthorn		3	-3	SE5			X	X		X		X
Rosaceae	**Rose Family**												
Crataegus species	Hawthorn species							X			X	X	
Fragaria vesca ssp. americana	Woodland Strawberry	4	4		S5			X					
Fragaria virginiana	Wild Strawberry				S5			X			X		
Geum aleppicum	Yellow Avens	2	-1		S5			X			X		
Geum canadense	White Avens	3	0		S5			X			X		
Malus domestica	Common Apple							X			X		
Argentia anserina ssp. anserina	Silverweed	5	-4		S5			X		X			
Prunus avium	Cherry Plum		5	-2	SE4			X	X		X		
Prunus virginiana ssp. virginiana	Choke Cherry	2	1		S5			X			X		
Rosa acicularis ssp. sayi	Prickly Rose	7	3		S5			X	X				
Rubiaceae	**Madder Family**												
Galium palustre	Marsh Bedstraw	5	-5		S5			X	X	X			

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Salicaceae	**Willow Family**												
Populus balsamifera ssp. balsamifera	Balsam Poplar	4	-3		S5			X	X	X	X		
Populus tremuloides	Trembling Aspen	2	0		S5			X	X		X		
Salix species	Willow species							X					
Salix discolor	Pussy Willow	3	-3		S5			X	X				
Salix exigua	Sandbar Willow	3	-5		S5			X					
Salix fragilis	Crack Willow		-1	-3	SE5			X	X	X	X		
Salix petiolaris	Slender Willow	3	-4		S5			X	X				
Scrophulariaceae	**Figwort Family**												
Linaria vulgaris	Butter-and-eggs		5	-1	SE5			X				X	
Verbascum thapsus	Common Mullein		5	-2	SE5			X		X	X		
Solanaceae	**Nightshade Family**												
Solanum dulcamara	Bitter Nightshade		0	-2	SE5			X	X	X	X	X	
Ulmaceae	**Elm Family**												
Ulmus americana	White Elm	3	-2		S5			X	X	X	X		X
Urticaceae	**Nettle Family**												
Urtica dioica ssp. gracilis	American Stinging Nettle	2	-1		S5			X		X	X		
Verbenaceae	**Vervain Family**												
Verbena hastata	Blue Vervain	4	-4		S5			X	X	X	X	X	
Violaceae	**Violet Family**												
Viola species	Violet species							X	X				
Vitaceae	**Grape Family**												
Parthenocissus vitacea	Woodbine	3	3		S5			X	X	X	X		
Vitis riparia	Riverbank Grape	0	-2		S5			X	X		X		X
MONOCOTYLEDONS	**MONOCOTS**												
Alismataceae	**Water-plantain Family**												
Alisma plantago-aquatica	Common Water-plantain	3	-5		S5			X		X			
Cyperaceae	**Sedge Family**												
Carex bebbii	Bebb's Sedge	3	-5		S5			X	X	X			
Carex blanda	Woodland Sedge	3	0		S5			X			X	X	
Carex bromoides	Bromelike Sedge	7	-4		S5			X		X			
Carex careyana	Carey's Sedge	10	5		S2	R	X						

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Carex cristatella	Crested Sedge	3	-4		S5			X	X				
Carex flava	Yellow Sedge	5	-5		S5			X		X			
Carex gracillima	Graceful Sedge	4	3		S5			X	X				
Carex hystericina	Porcupine Sedge	5	-5		S5			X		X			
Carex retrorsa	Retrorse Sedge	5	-5		S5			X		X		X	
Carex spicata	Spiked Sedge		5	-1	SE5			X			X		
Carex stipata	Awl-fruited Sedge	3	-5		S5			X	X	X			
Carex vulpinoidea	Fox Sedge	3	-5		S5			X		X			
Eleocharis erythropoda	Red-footed Spike-rush	4	-5		S5			X				X	
Schoenoplectus smithii	Smith's Club-rush	10	-5		S3	R	X						
Scirpus atrovirens	Dark-green Bulrush	3	-5		S5			X		X			
Scirpus cyperinus var. cyperinus	Wool-grass	4	-5		S5			X		X			
Juncaceae	**Rush Family**												
Juncus acuminatus	Sharp-fruited Rush	6	-5		S3	R	X						
Juncus articulatus	Jointed Rush	5	-5		S5			X	X				
Juncus dudleyi	Dudley's Rush	1	0		S5			X		X			
Juncus effusus var. solutus	Soft Rush	4	-5		S5			X		X			
Juncus nodosus	Knotted Rush	5	-5		S5			X		X			
Juncus tenuis	Path Rush	0	0		S5			X				X	
Juncus torreyi	Torrey's Rush	3	-3		S5			X		X			
Lemnaceae	**Duckweed Family**												
Lemna minor	Lesser Duckweed	2	-5		S5			X	X				
Liliaceae	**Lily Family**												
Hemerocallis fulva	Orange Day-lily		5	-3	SE5			X		X			
Orchidaceae	**Orchid Family**												
Cypripedium arietinum	Ram's-head Lady's Slipper	10	-4		S3	R	X						
Poaceae	**Grass Family**												
Agrostis gigantea	Redtop		0	-2	SE5			X		X			X
Andropogon gerardii	Big Bluestem	7	1		S4			X		X			
Avena sativa	Cultivated Oats		5	-1	SE3			X			X		
Bromus inermis ssp. inermis	Awnless Brome		5	-3	SE5			X		X	X	X	X
Calamagrostis canadensis	Blue-joint Grass	4	-5		S5			X		X			
Dactylis glomerata	Orchard Grass		3	-1	SE5			X		X	X	X	X
Echinochloa crusgalli	Common Barnyard Grass		-3	-1	SE5			X			X		
Elymus repens	Quack Grass		3	-3	SE5			X					
Elymus virginicus var. virginicus	Virginia Wild Rye	5	-2		S5			X		X			
Festuca arundinacea	Tall Fescue		2	-1	SE5			X		X	X	X	

								NRSI Observed					
Scientific Name	**Common Name**	**CC[1]**	**CW[1]**	**Weed[1]**	**SRANK[2]**	**Wellington County[3]**	**NHIC[4]**	**Complete Subject Property**	**SWTO5**	**MAMO1-3**	**FODM3-1**	**TAGM5**	**MEFM1**
Festuca pratensis	Meadow Fescue		4	-1	SE5			X	X		X		X
Glyceria grandis	Tall Manna Grass	5	-5		S4S5			X	X				
Glyceria striata	Fowl Meadow Grass	3	-5		S5			X	X	X	X		
Leersia oryzoides	Rice Cut Grass	3	-5		S5			X	X	X			
Muhlenbergia mexicana var. mexicana	Mexican Satin Grass	1	-3		S5			X	X	X			
Panicum capillare	Witch Grass	0	0		S5			X			X	X	X
Phalaris arundinacea	Reed Canary Grass	0	-4		S5			X	X	X	X		
Phleum pratense	Timothy		3	-1	SE5			X			X	X	X
Phragmites australis	Common Reed	0	-4		S5			X	X	X			
Poa palustris	Fowl Meadow Grass	5	-4		S5			X	X	X			
Poa pratensis ssp. pratensis	Kentucky Bluegrass	0	1		S5			X		X	X		X
Typhaceae	**Cattail Family**												
Typha angustifolia	Narrow-leaved Cattail	3	-5		S5			X	X	X			
Typha latifolia	Broad-leaved Cattail	3	-5		S5			X	X	X	X		
							TOTAL	**166**	**68**	**89**	**66**	**31**	**31**

[1]Oldham, M.J., W.D. Bakowsky and D.A. Sutherland 1995; [2]OMNR 2013; [3]Dougan & Associates 2009; [4]NHIC 2013

LEGEND	
+ Non-native species	**SRANK**
CC Coefficient of Conservatism	S2 Imperiled
CW Coefficient of Wetness	S3 Vulnerable
Weed Weediness Index	S4 Apparently Secure
Local Status Wellington	S5 Secure
R Rare	SE Exotic
	SNA Unranked
	S#? Rank Uncertain

APPENDIX II

Field Survey Summary

Survey Date	Survey Type									
	ELC	Vascular Flora	Wetland Boundary Flagging/ Review	Breeding Birds & Barn Swallow Nest Survey	Breeding Amphibians & Road Monitoring	Snake Coverboards & Area Searches	Significant Wildlife Habitat	Tree Inventory & Health Assessment	Aquatic Habitat	Incidental Wildlife/ Flora Inventory
2012										
Dec-12	X			X				X		X
Dec-14	X						X	X		X
2013										
Feb-26				X						X
Feb-27				X						X
Apr-04					X					X
Apr-16					X					X
Apr-18					X					X
Apr-24					X					X
Apr-25					X					X
Apr-29					X					X
May-02					X					X
May-03						X	X			X
May-08					X					X
May-09						X	X		X	X
May-10					X					X
May-14					X					X
May-21			X		X					X

Survey Date	Survey Type									
	ELC	Vascular Flora	Wetland Boundary Flagging/ Review	Breeding Birds & Barn Swallow Nest Survey	Breeding Amphibians & Road Monitoring	Snake Coverboards & Area Searches	Significant Wildlife Habitat	Tree Inventory & Health Assessment	Aquatic Habitat	Incidental Wildlife/ Flora Inventory
May-22					X					X
May-23					X				X	X
May-24									X	X
May-28					X					X
Jun-05				X						X
Jun-06					X					X
Jun-19	X	X		X		X				X
Jun-25					X					X
Aug-14		X				X	X			X
Sep-16								X		X
Oct-11		X				X				X
2014										
Jan-23	X							X		X
Apr-03			X							X
Aug-18		X								X
2015										
May-20								**X**		
May-26								**X**		
Total	**4**	**4**	**2**	**5**	**16**	**5**	**4**	**6**	**3**	**31**

APPENDIX III

Tree Preservation Plan

Hart Village Tree Preservation Plan

Prepared for:
Carrington Farm Trust
45 Speedvale Avenue East, Unit #5
Guelph, ON
N1H 1J2

Project No. 1374 | December 2015

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Hart Village
Tree Preservation Plan

Project Team:

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Report submitted on December 2015

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TABLE OF CONTENTS

1.0 Introduction 1
2.0 Tree Inventory and Methodology 4
2.1 Common Buckthorn Removal 4
2.2 Tree Inventory 4
3.0 Summary of Tree Inventory 7
4.0 Tree Removal and Retention Analysis 9
4.1 Subdivision 9
4.2 Trail 10
5.0 Tree Protection Measures and Recommended Mitigation 12
5.1 Prior to Construction 12
5.2 During Construction 13
5.3 Post-Construction 13
5.4 Mitigation 13
6.0 Tree Compensation Plan 15
6.1 Subject Property 16
6.2 Harts Lane 16
6.3 Locations for Tree Compensation Plantings 17
7.0 References 19

List of Tables

Table 1. Tree Assessment Criteria 6
Table 2. Summary of Inventoried Trees 7
Table 3. Overall Condition of Trees Inventoried 8
Table 4. Summary of Trees to be Removed Requiring Compensation - Subdivision 16
Table 5. Summary of Trees to be Removed Requiring Compensation – Harts Lane 17

List of Maps

Map 1a & 1b. Tree Inventory and Preservation Plan
Map 2. Proposed Trail
Map 3a & 3b. Tree Protection Fencing Plan

List of Appendices

Appendix I Buckthorn Removal Correspondence
Appendix II Hart Village Tree Inventory Data
Appendix III Conditions of Assessment

1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by the Carrington Farm Trust (the "Client") to conduct a Tree Preservation Plan (TPP) and assessment of common buckthorn (*Rhamnus cathartica*) removal in conjunction with an Environmental Impact Study (EIS) for the proposed development of a Draft Plan of Subdivision at 132 Harts Lane, Guelph Ontario, herein referred to as the Hart Village or subject property. Carrington Farm Trust is proposing to build a mixed residential neighbourhood, including single-detached and semi-detached residences, cluster townhouses and an apartment block. The proposed neighbourhood will also include a road network, stormwater facility, open space, and park.

The subject property is bordered by Kortright Road west to the north, Gordon Street to the east, Rickson Avenue to the west and Darnell Road to the south, and is legally described as Part of Lot 4, Concession 7(Geographic Township of Puslinch), City of Guelph, County of Wellington. The property is approximately 12.65ha is size and is comprised of agricultural fields, a deciduous hedgerow and an existing residential dwelling.

In addition to the Hart Village, where the residential development is proposed to occur, this report also considers a portion of Harts Lane, which extends from the subject property to Gordon Street, within the City right of way. The inclusion of Harts Lane was to include analysis of trees along the lane that may influence the trail (which is part of the preferred roadside option for Harts Lane).

The Tree Preservation Plan was conducted in accordance with the City of Guelph By-law (2010) -19058. This by-law states that if an owner wishes to destroy or injure a regulated tree and if none of the exemptions set out in this by-law are applicable, then the owner shall submit the information required in Part 5 of the by-law, including a Landscaping, Replanting and Replacement Plan. Within the By-law, a regulated tree is defined as

> "*a specimen of any species of deciduous or coniferous growing woody perennial plant, supported by a single root system, which has reached, or could have*

reached a height at least 4.5m from the ground at physiological maturity, is located on a lot that is greater than 0.2 hectares (0.5 acres) in size and has a DBH of at least 10cm".

The City of Guelph's Official Plan Amendment Number 42: Natural Heritage System (July 2010b – currently under appeal) also requires that a Tree Inventory and Preservation Plan be required for the replacement of all healthy indigenous trees measuring over 10cm DBH. Although OPA 42 is currently under appeal, the tree inventory was conducted to satisfy relevant policies. Section 6.2.5 Tree Inventory and Tree Preservation Plan within OPA 42 notes:

1. *"Tree Inventory and Tree Preservation Plans shall as a minimum include:*
   - *i) A Tree Inventory measuring all trees over 10cm diameter at breast height (dbh), including the size, species composition and health, and indigenous shrubs in accordance with the City's tree inventory guidelines,*
   - *ii) A Tree Preservation Plan identifying healthy indigenous and non-invasive trees to be protected, including those that may be transplanted (e.g. small specimens),*
   - *iii) The protective measures required for tree protection during construction, and*
   - *iv) Measures for avoiding disturbance to any breeding birds during construction"*

This report provides the findings of the tree inventory, analysis of construction plans against existing health and/or structural integrity of trees, protection measures for trees to be retained, and recommended mitigation and compensation measures. The tree data and mapping has been compared to the layout of the proposed draft plan of subdivision prepared by Astrid J. Clos Planning Consultants (2015) and grading plan prepared by GM BluePlan (2015). Map 1a and Map 1b show the tree inventory data overlaying the proposed development plan. This plan shows the proposed grading, lot and stormwater management layout, road network, open space blocks and trees inventoried. The off-road trail alignment along within the buffer is shown on Map 2 of this report. Other alignments are shown on Map 5 of the EIS addendum and result in only minimal tree removal. Trees that require removal as a result of current condition, as

well as proposed development off-road trail alignment are identified. Avoidance, mitigation and protection measures for trees were examined to determine which trees would be impacted and which could be retained. In the case of trees requiring removal, compensation for removal is discussed.

This report summarizes the following:

- findings of the tree inventory,
- assessment of existing health and/or structural integrity of inventoried trees,
- tree retention analysis based on details of the proposed development,
- protection measures for trees to be retained and,
- recommended mitigation and compensation measures.

2.0 Tree Inventory and Methodology

2.1 Common Buckthorn Removal

Common buckthorn is a small stature shrub that was historically introduced from Europe as a windbreak species for farmers' fields. This species rapidly produces seeds that have a high germination rate and are readily transported by birds, thus, leading to invasion of this species in areas suitable for native shade tolerant trees and shrubs. Buckthorn is able to grow in a wide range of soil and light conditions, threatening the ability of a forest or natural area to regenerate. The identification and removal of this species is essential to the preservation of native habitats in Ontario.

In 2012, the landowner proposed to remove common buckthorn and dead/high hazard trees from lands adjacent to the subject property. Removals were proposed along the Kortright Road allowance along the fence line northeast of the subject property (owned by the City of Guelph), and south of Harts Lane, east of the subject property (owned by Guelph City Realty). The proposed removal technique, duration and timing was outlined in a letter that was submitted to the City of Guelph Environmental Planner on March 27, 2013. Approval for buckthorn removal was granted by the City in late March 2013 and removal began in early April 2013. The buckthorn removal letter is provided in Appendix I.

Approximately 115 buckthorn individuals were removed in the spring of 2013 from the subject property following the methods identified in Appendix I. In addition, approximately 27 trees with high potential for structural failure that were approved by the City for removal were also removed in the spring of 2013. Approximately 25 of the removed trees were identified as fruit trees. The buckthorn and high potential for structural failure tree removal locations are shown on Figure 4 within the Hart Village EIS Addendum (NRSI 2015).

2.2 Tree Inventory

A comprehensive inventory of trees ≥10cm in Diameter at Breast Height (DBH) on and within 10m of the subject property and City right of way along a portion of Harts Lane was completed by NRSI Certified Arborists on December 10 and 11, 2012, September

16 and December 6, 2013, January 23, 2014, May 20, 2015, and May 26, 2015. Individual trees that were ≥10cm in DBH were tagged with a pre-numbered aluminum forestry tag, with the exception of 30 trees identified as Trees 1, 2, 5-11, 13, and 14, and Trees 883.01-883.19 on Appendix II and Maps 1a and 1b. The location of trees inventoried was subsequently surveyed using a Trimble GeoXT or an SXBlue II GNSS GPS unit by the Certified Arborist. A complete list of the trees that were assessed and their overall health and potential for structural failure is included in Appendix II. The location of trees at the northwest end of the site outside of the subject property was recorded if their canopy overlapped the off-road trail alignment as shown on Map 2.

The following information was recorded for each tree:

- species,
- Diameter at Breast Height measurement (DBH),
- crown radius (metres),
- general health (excellent, good, fair, poor, very poor),
- potential for structural failure (low, medium, high),
- tree location (on-site/off-site), and,
- general comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development).

The general health and potential for failure of each tree was assessed based on the criteria outlined in Table 1. In carrying out this assessment, NRSI has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out this assessment. The assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. None of the trees examined on the property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken.

Table 1. Tree Assessment Criteria

Assessment Criteria	Definition[1]
Health Rating*	
Excellent	Represents a tree in near perfect form, health, and vigor. This tree would exhibit no deadwood, no decline, and no visible defects.
Good	Represents a tree ranging from a generally healthy tree to a near perfect tree in terms of health, vigor and structure. This tree exhibits a complete, balanced crown structure with little to no deadwood and minimal defects as well as a properly formed root flare.
Fair	Represents a tree with minor health, balance or structural issues with minimal to moderate deadwood. Branching structure shows signs of included bark or minor rot within the branch connections or trunk wood. The root flare shows minimal signs of mechanical injury, decay, poor callusing, or girdling roots. Trees in the category require minor remedial actions to improve the vigor and structure of the tree.
Poor	Represents a tree that exhibits a poor vigor, reduced crown size (<30% of crown typical of species caused by overcrowding or decline), extreme crown unbalance, or extensive rot in the branching and trunk wood. Fungus could be seen from these rotting areas, suggesting further decay. These trees have extensive crown die back with a large amount of deadwood, and possibly dead sections. These weakened areas can lead to a potential failure of tree sections. Rooting zones show signs of extensive root decay or damage (fruiting bodies or mechanical damage) or girdling roots. Trees in this category require more extensive actions to prevent failure. A tree identified as poor would be a candidate for removal in the near future.
Very Poor	Represents a tree that exhibits major health and structural defects. Quite often the defects or diseases affecting this tree will be fatal. Large quantities of fungus, large dead sections with possible cavities and bark falling off all are signs that a tree is in a major state of decline and would be identified as very poor. These trees have a high potential for structural failure. These trees should be identified for removal.
Potential for Structural Failure Rating*	
Low	Trees that show good vigor and structure and show little to no signs of decline or structural issues.
Medium	Trees with some structural issues that are forming which could lead to failure if not addressed and properly treated (i.e. pruned). Symptoms of these structural issues include cavity openings/stem damage <30% of the circumference of the tree, poor branching union within the scaffold branches (signs of canker or decay within branch union), signs of historic branch failure throughout the crown, or advanced signs of included bark within the branch unions throughout the tree (water staining, tight angled branch unions, noticeable gap in branch union).
High	Trees with a large number of structural issues (i.e. poor branch union, decay) which could lead to the failure of large scaffold branches or major sections. Major defects include: large cavities within stem or branch wood, historic crown damage of the majority of the canopy, extensive lean due to recent or historic root damage/decay, or large dead crown limbs with fruiting bodies present. If trees identified as a High Potential for Structural Failure are located within striking distance of a target (high traffic place, person, or high value thing), the tree should be identified for removal as soon as possible.
* Trees which are located within dense groupings are evaluated as individual specimens. Trees within these stands quite often have a reduced crown size (<30% of crown typical of species), off balanced crowns, and prioritized upward growth (i.e. low trunk taper and few lateral branches). As such, these trees would be considered to have poor vigour. As well, these trees pose a high potential for structural failure when newly exposed edges or individual trees are isolated through removal of surrounding trees. This is often the case with overstocked plantations. Individual trees which meet the above criteria will be identified as poor or high potential for structural failure.	

[1]Dunster 2009

3.0 Summary of Tree Inventory

In total, 279 trees were inventoried, including 26 species. Of the trees inventoried and assessed, 158 (56.6%) are native species and 121 (43.4%) are non-native. A complete list of trees inventoried is provided in Appendix II and tree locations are shown on Map 1a and Map 1b.

Table 2 provides a list of tree species inventoried, whether they are native or non-native and their overall condition.

Table 2. Summary of Inventoried Trees

Common Name	Scientific Name	Good	Fair	Poor	Very Poor	Total
Native Species						
Balsam poplar	*Populus balsamifera*			2		2
Basswood	*Tilia americana*		3	2		5
Black cherry	*Prunus serotina*		1	4		5
Black walnut	*Juglans nigra*	1	1			2
Bur oak	*Quercus macrocarpa*	3				3
Eastern white pine	*Pinus strobus*	1	1			2
Green ash	*Fraxinus pennsylvanica*		2			2
Hawthorn ssp.	*Crataegus* ssp.	3	12	27	7	49
Honey locust	*Gleditsia triacanthos*			2	1	3
Manitoba maple	*Acer negundo*		2	1		3
Pin cherry	*Prunus pensylvanica*	1				1
Slippery elm	*Ulmus rubra*			2		2
Sugar maple	*Acer saccharum*	4	3		2	9
Trembling aspen	*Populus tremuloides*	2	2	28	2	34
White ash	*Fraxinus americana*	7	8	4	2	21
White cedar	*Thuja occidentalis*	1	1	2	3	7
White elm	*Ulmus americana*		2	3		5
White spruce	*Picea glauca*		1	1		2
Willow ssp.	*Salix ssp.*		1			1
Total		**23**	**40**	**78**	**17**	**158**
Non-Native Species						
Apple	*Malus domestica*	1	2	3	4	10
Austrian pine	*Pinus nigra*	1	4	6		11
Colorado spruce	*Picea pungens*	5	10	6	3	24
Crack willow	*Salix fragilis*		1	5	3	9
Norway maple	*Acer platanoides*		1			1
Scots pine	*Pinus sylvestris*		1		1	2
Siberian elm	*Ulmus pumila*		18	45	1	64
Total		**7**	**37**	**65**	**12**	**121**
Overall Total		**30**	**77**	**143**	**29**	**279**

Table 3 provides a summary of the overall condition of trees inventoried, along with their structural failure rating. A majority of the trees inventoried are in poor condition with a medium potential for structural failure.

Table 3. Overall Condition of Trees Inventoried

Structural Failure Rating	Overall Condition				Total
	Good	Fair	Poor	Very Poor	
Low	26	41	12	3	82
Medium	4	36	92	11	143
High			39	15	54
Total	**30**	**77**	**143**	**29**	**279**

4.0 Tree Removal and Retention Analysis

Tree removal and retention was based on two considerations:

1) Trees identified as having a high potential for structural failure or poor condition. The removal of these trees would be recommended for safety etc., especially if they are located within striking distance of a component of the proposed development, or existing off-site sidewalks, roads or buildings. They would be given a rating of high potential for structural failure. For the purpose of this report, trees which fall into this category are identified for removal,
2) Trees that require removal based on the extent of proposed site grading. This was determined by comparing the location of the trees to the location of the components of the development proposal as shown on Figure 1 and Figure 2.

The tree removal and retention analysis has been conducted separately for trees located on the subject property and those located along the City right of way along a portion of Harts Lane. The analysis is summarized in the sections below.

4.1 Subdivision

Of the 279 trees inventoried, 266 are located on the subject property. Development on the subject property will result in the removal of 233 trees. This includes 157 trees that are in poor to very poor condition and/or have a high potential for structural failure. An additional 2 trees under these conditions are not located within striking distance of a component of the development that may pose a safety concern, and therefore will be retained. These trees are located within Storm Water Management (SWM) Block 123 and are located greater than 10m from any development area proposed for public use.

The remaining 76 trees require removal based on the extent of the proposed site grading, which is required to effectively service the lands. This includes trees situated along the grading limit or in close proximity (i.e. within 5-10m) that may incur root damage as a result of grading. Most of these trees are in fair condition with low potential for structural failure, and range in size from 11cm to 181.7cm DBH. Approximately 59% of these trees are native and are dominated by Hawthorn (*Crataegus ssp.)*. Non-native trees are dominated by Siberian elm (*Ulmus pumila)*.

The proposed use of Harts Lane includes services under the existing 5.2m wide farm lane, including a sanitary sewer and watermain, as well as a multi-use trail for cycling and walking. A cul-de-sac turnaround is proposed on the easterly side of the wetland terminus of the existing Harts Lane municipal road.

Of the 279 trees inventoried, 13 are located within the City right of way along a portion of Harts Lane. This will require the removal of 6 trees as a result of grading and/or safety concerns. These trees are in poor or very poor condition.

4.2 Trail

City of Guelph Parks staff requested an analysis of the 3 possible trail alignments within Hart Village. A trail connection between Harts Lane and Kortright Road West may occur through the use of either roadside, off-road trails or a combination of the two. All 3 of these options include a trail along the existing Harts Lane as well as a trail along the access road associated with the proposed SWM pond in Block 124. Map 2 displays the off-road trail alignment within the wetland buffer that would require substantive tree removal. The other alignments are shown on Map 5 of the EIS addendum.

From a tree removal and ecological perspective, the roadside trail is the preferred alignment. The analysis of the various trail alignments takes into account direct tree removal for trail construction, as well as removal of high hazard trees within striking distance of the trail.

The preferred roadside alignment would be located within the existing footprint of Harts Lane, but instead of continuing through SWM Block 123 as for the off-road alignment, would instead travel southwest through Block 125 and along the side of Road B and A and out to Kortright Road West through the Walkway Block 127. This alignment will only require the removal of a single tree in fair or good/excellent health (i.e. a tree which would normally be retained).

An off-road trail alignment is shown in the Tree Preservation Plan (Appendix III) which extends from SWM Block 124 in the southeastern corner of the subject property through

SWM Block 123 and Open Space Black 126 to Kortright Road West and along Harts Lane. The consideration of impacts from this trail alignment on the natural features takes into account direct tree removal for trail construction, as well as removal of high hazard trees adjacent to the trail. This option also takes the trail alignment through the outer 15m of the wetland buffer and would have a greater impact on the adjacent natural features than a roadside trail alignment. Based on this alignment, as many as 18 trees will need to be removed, primarily off site where the trail would join with Kortright Road.

Another alternative trail alignment would be a shorter connection between Harts Lane and Road A. This alignment would be located along the off-road trail through SWM Block 123, however, instead of continuing through the Open Space Block 126, it would be redirected southwest through the amenity area in Block 121 and onto Road A where it would then join the roadside trail described above. Steeper grades within the amenity area provide a challenge to meet the 5% grade required to satisfy City Facility Accessibility Design Manual Standards (FADM 2015) and substantial grading would likely be required to accommodate a trail, resulting in the removal of as many as 12 trees. However, many of the trees within the amenity area are in poor or very poor condition and are to be removed. An additional option is to direct the trail connection through the Apartment Block 121 in the area adjacent to the amenity area. However, an easement would be required in this location to accomplish this.

5.0 Tree Protection Measures and Recommended Mitigation

5.1 Prior to Construction

Temporary tree protection fencing will be situated where trees are adjacent to the limit of disturbance/grading as shown on Map 3a and Map 3b. In most cases, the tree protection fencing will be installed 1-5m beyond the dripline; however, in instances where grading is directly adjacent to dripline, the tree protection fencing will be installed at the limit of disturbance. A combined sediment and erosion control fencing (i.e. silt fence) and tree protection fence is recommended where trees are situated adjacent to the limit of disturbance. This tree protection fencing is to take the form of 1200mm high heavy-duty paige-wire fencing.

The temporary tree protection fencing will be installed and maintained by the developer or contractor. Prior to works commencing on-site, fence installation and location is to be inspected by a Certified Arborist and/or the on-site Environmental Inspector. Signage indicating the purpose of protection fencing will be attached to the paige-wire fencing every 20m. Recommended fencing and signage locations are shown on Maps 3a and 3b.

In most cases, the temporary tree protection fencing will correspond to the placement of sediment and erosion control paige-wire fencing associated with protected natural areas and existing residential lots.

A number of trees that are recommended for removal due to their high potential for structural failure are located in areas that also contain trees to be retained. As such, prior to installation of the tree protection fence, these trees will need to be clearly marked for removal by a Certified Arborist or qualified other and then removed. The trees should then be felled and removed with minimal disturbance to neighbouring trees and vegetation.

The Tree Preservation Plan is to be reviewed and approved by the City of Guelph. Upon approval of the Tree Preservation Plan, and prior to any on-site works (i.e. rough grading, tree removal), a qualified environmental consultant is to submit written

verification to the City that all of the recommended tree protection measures have been installed in accordance with the Tree Preservation Plan.

5.2 During Construction

Temporary tree protection fencing is to be maintained by the Developer during the entire construction period to ensure that trees being retained and their root systems are protected. Any minimal damage (i.e. damage to limbs or roots) to trees to be retained during construction must be pruned using proper arboricultural techniques. Should any of the trees intended to be retained be seriously damaged or die as a result of construction activities, the owner will remove and replace the tree at their own expense at a 3:1 ratio. Replacement species are to be reviewed by a Certified Ontario Landscape Architect (OLA) or Certified Arborist. Watering and pruning of newly planted trees will be carried out by the owner/contractor as required during the warranty period (approximately 2 years).

5.3 Post-Construction

As trees being retained are situated along the boundaries of Park Block 122, Common Amenity Area (adjacent to Lot 58), Lot 58, SWM Blocks 123 and 124, and Open Space Block 126, it is recommended that the temporary tree protection fencing be removed upon completion of construction activities and adjacent areas are stabilized with a vegetative cover (i.e. sod in urban area or native vegetation along buffer edge) to the satisfaction of the Environmental Inspector or qualified biologist.

5.4 Mitigation

The recommendations provided below are aimed at protecting retained trees and associated natural features. Species used for replacement/enhancement plantings, with the exception of street trees, should be native to Wellington County and not include any species that are listed as introduced, or locally, provincially or federally significant. The use of hardy species will ensure successful early establishment and minimize the potential for invasive species proliferation. For street tree plantings, the use of non-native species that are sometime more tolerant of urban conditions (i.e. salt and drought

tolerant) may be suitable as long as they do not include invasive species such as Norway maple (*Acer platanoides*).

At the detailed design stage, it is recommended that the below listed criteria be followed during the development of proposed planting plans:

- plantings within Common Amenity Areas, Block 58, SWM Blocks 123 and 124, and Open Space Block 126 will be limited to native, non-invasive tree and shrub species indigenous to Wellington County that complement the surrounding natural features. In addition, a large cluster of Siberian Elm on the back of lots adjacent to the western property boundary (Lots 9-29) are to be removed and 1-2 trees should be planted in these lots as well,
- tree species to be situated in close proximity to roads should be salt tolerant,
- avoid ash species due to the risk of the emerald ash borer (*Agrilus planipennis*),
- avoid 'messy trees', such as fruiting trees or poplars (*Populus* spp.) where plantings occur in close proximity to driveways and roadways,
- all plant material is to conform to the latest edition of the *Canadian Nursery Trades Association Specifications and Standards*,
- plantings installed as per specifications outlined in planting plans to be prepared by an OLA or Certified Arborist (e.g. place a minimum of 10cm of shredded pine-bark mulch or equivalent around all planted material),
- spacing of plant material should account for the ultimate size and form of the selected species and also the purpose of the planting, whether it be for screening, shade, naturalizing, rehabilitation, etc.,
- special attention to location and height of trees in proximity to utilities, and,
- ensure that there is sufficient soil volume for all plantings.

6.0 Tree Compensation Plan

Section 5 (h) in the City's tree by-law (2010)-19058 states that *"where three or more trees are proposed for Destruction or Injuring, and where the Inspector so requires, a Landscaping, Replanting and Replacement Plan"* is required. Overall compensation for tree loss is a requirement of the City's by-law which notes that *"each tree Destroyed or Injured be replaced with one or more replacements trees to be planted and maintained to the satisfaction of the Inspector in accordance with the Landscaping, Replanting and Replacement Plans approved by the Inspector"* [Section 7 (b)]..

A 1:1 or greater replacement plan is required for trees removed or injured in the City's by-law; however, from recent experience on other projects throughout the City, a compensation ratio of 3:1 is requested by the City to be applied to all trees removed that are native or non-native and in excellent to fair condition.

According to City of Guelph Tree By-law Number (2010)-19058, trees exempt from compensation must have the following site specific criteria:

- "*A tree having no living tissue, having 70% or more of its crown dead, or being infected by a lethal pathogen, fungus or insect (including the Emerald Ash Borer or the Asian Longhorned Beetle), and where required, a certificate issued by an Arborist, confirming this justification for Destruction or Injuring, has been submitted to an Inspector" [Part 4, section (a)],*
- *"A tree which is Hazardous, and where required, a certificate issued by an Arborist, confirming this justification for Destruction or Injuring, has been submitted to an Inspector" [Part 4, section (b)]*
- *"A specimen of Rhamnus cathartica (common buckthorn), Rhamnus frangula (European or glossy buckthorn), Alnus glutinosa (black alder), Elaeagnus umbellate (autumn olive), or Morus alba (white mulberry)" [Part 4, section (g)],*
- *"A fruit tree that is capable of producing fruit for human consumption" [Part 4, section (h)].*

The tree compensation plan analysis has been conducted separately for trees located on the subject property and those located within the City right of way along a portion of Harts Lane. The analysis is summarized in the sections below.

6.1 Subject Property

Development on the subject property will result in the removal of 233 trees. This includes trees requiring removal due to safety concerns, as well as the proposed grading for the installation of roads and services and mixed residential development blocks. Trees proposed for removal that have a high potential for structural failure and/or are in poor to very poor condition are exempt pursuant to Section 4 of the City's tree by-law and do not require compensation.

There are 74 native and non-native trees in excellent to fair condition, of which 4 are fruit trees, proposed for removal as a result of road installation, lot grading and safety concerns. As such, a ratio of 3:1 is proposed as compensation for native and non-native trees in excellent to fair condition (excluding fruit trees), for a total of 210 trees. **Error! Reference source not found.** provides a summary of the trees inventoried on the subject property, total number proposed for removal and the proposed compensation plan.

Table 4. Summary of Trees to be Removed Requiring Compensation - Subdivision

Tree Inventory	
Total number of trees inventoried within subdivision area	266
Trees to be removed	233
Trees to be retained	33
Exempt Trees	
Fruit trees	15
Trees in poor to very poor condition and/or high structural failure (exempt from compensation)	148
Tree Compensation	
Trees in excellent to fair condition to be removed requiring compensation	70
3:1 Compensation for Trees in excellent to fair condition	**210**

6.2 Harts Lane

The proposed trail along Harts Lane will require the removal of 6 trees. This includes trees requiring removal due to safety concerns. Trees proposed for removal that have a high potential for structural failure and/or are in poor to very poor condition are exempt pursuant to Section 4 of the City's tree by-law and do not require compensation.

As the 6 trees identified for removal are all in poor condition, they do not require compensation. **Error! Reference source not found.** provides a summary of the trees inventoried and total number proposed for removal.

Table 5. Summary of Trees to be Removed Requiring Compensation – Harts Lane

Tree Inventory	
Total number of trees inventoried within subdivision area	13
Trees to be removed	6
Trees to be retained	7
Exempt Trees	
Fruit trees	0
Trees in poor to very poor condition and/or high structural failure (exempt from compensation)	6
Tree Compensation	
Trees in excellent to fair condition to be removed requiring compensation	0
3:1 Compensation for Trees in excellent to fair condition	**0**

6.3 Locations for Tree Compensation Plantings

Detailed landscaping plans will be required for the property at the Environmental Implementation (EIR) Stage or Site Plan Stage; however, it is anticipated that compensation plantings can be provided within SWM Blocks 123-124, Block 58, Open Space Block 126, and in Blocks 9-29 where Siberian Elms in poor condition are to be removed, as well as any street tree plantings required by the City of Guelph through the Site Plan Approval stage.

As outlined in the EIS Addendum (NRSI 2015), plantings should aim to bulk up natural areas and buffer them from ad-hoc pedestrian trails and residential development. The enhancement and compensation plantings will provide additional habitat through re-vegetation of native species. This should focus on supplementing existing thicket habitats associated with the wetland and adjacent wooded habitats. Enhanced buffer plantings in the area where residential properties are immediately adjacent to the

wetland buffer should include plantings of suitable native woody species to prohibit people from trampling vegetation or entering the wetland buffer, and prevent erosion.

The proposed re-vegetation program would provide opportunities for additional wildlife habitat, aesthetic properties for the residential development and active restoration and enhancement. To achieve this goal, it is recommended that the final compensation strategy, including appropriate species and potential use of trees and shrubs, be negotiated with the City of Guelph prior to the development of landscaping plans.

7.0 References

Astrid J. Clos Planning Consultants. 2015. Draft Plan of Subdivision – Hart Village. December 17, 2015.

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City of Guelph. 2010b. Amendment Number 42 to the Official Plan for the Corporation of the City of Guelph: Natural Heritage System Amendment. Adopted by Guelph City Council July 27, 2010 – Currently under Appeal. http://www.guelph.ca/uploads/PBS_Dept/planning/PDF/OP%20Update/OPA%2042%20-%20final.pdf

Dunster, J. 2009. Tree Risk Assessment in Urban Areas and the Urban/Rural Interface: Course Manual. Silverton, Oregon: Pacific Northwest Chapter, International Society of Arboriculture.

GM BluePlan 2015. Draft Preliminary Servicing & Stormwater Management Report – Hart Subdivision, City of Guelph. May 12, 2015.

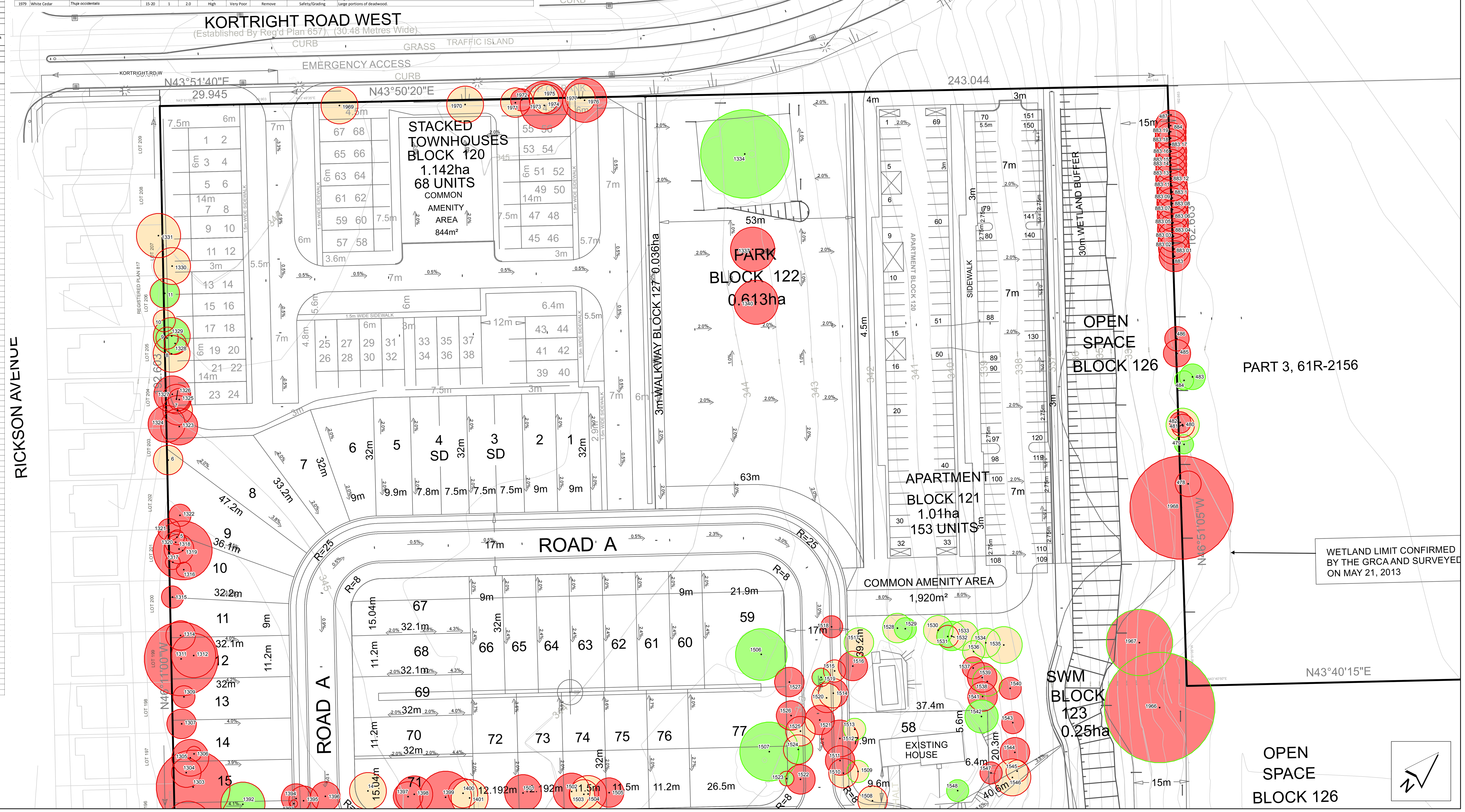
Natural Resource Solutions Inc. (NRSI). 2015. Hart Village Environmental Impact Study Adendum (re-issued). Prepared for Carrington Farm Trust. December 21, 2015.

MAPS

Hart Property - Tree Preservation Plan
Tree Inventory Data

Tree No.	Common Name	Scientific Name	DBH (cm)	No. of Stems	Crown Radius (m)	Potential for Structural Failure	Overall Condition	Recommendation	Rationale for Removal	Comments
1	Sugar Maple	Acer saccharum ssp. saccharum	23.7	1	4.5	Low	Good	Retain		Tree not tagged.
2	Sugar Maple	Acer saccharum ssp. saccharum	21.5	1	4.0	Low	Good	Retain		Tree not tagged.
5	Hawthorn	Crataegus ssp.	16.3	1	2.0	Medium	Fair	Remove	Grading	Tree not tagged. One-sided crown with main stem on 40 degree angle.
6	Hawthorn	Crataegus ssp.	17.5	1	4.0	Low	Fair	Remove	Grading	Tree not tagged. One-sided crown.
7	Apple	Malus domestica	18.0	1	4.0	Low	Fair	Remove	Grading	Tree not tagged.
8	Hawthorn	Crataegus ssp.	18.8	2	5.0	Medium	Fair	Remove	Grading	Tree not tagged.
9	Hawthorn	Crataegus ssp.	17.0	2	3.0	Low	Good	Remove	Grading	Tree not tagged.
10	Hawthorn	Crataegus ssp.	13.7	1	3.0	Medium	Fair	Remove	Grading	Tree not tagged.
11	Hawthorn	Crataegus ssp.	15.3	6	4.0	Low	Good	Remove	Grading	Tree not tagged.
13	White Ash	Fraxinus americana	14.0	1	2.5	Low	Good	Remove	Grading	Tree not tagged.
14	Hawthorn	Crataegus ssp.	38.0	4	5.0	Medium	Fair	Remove	Grading	Tree not tagged.
60	Sugar Maple	Acer saccharum ssp. saccharum	35.6	1	4.4	Low	Good	Remove	Grading	Minor limb damage.
61	Apple	Malus domestica	15.0	1	4.3	High	Poor	Remove	Safety/Grading	Rooting base. Lean. Lopsided. Dieback. Epicormic growth.
62	Hawthorn	Crataegus ssp.	18.5	1	0.5	High	Very Poor	Remove	Safety/Grading	Cockspur hawthorn. Epicormic growth. Open wounds. Weak base. Major dieback.
63	White Elm	Ulmus americana	52.0	1	4.3	Medium	Fair	Remove	Grading	Epicormic growth. Some dieback.
64	Willow Species	Salix ssp.	24.0	2	3.0	Medium	Fair	Retain		
457	Trembling Aspen	Populus tremuloides	13.8	1	2.2	Low	Very Poor	Remove	Grading	Large open trunk wound.
458	Trembling Aspen	Populus tremuloides	23.2	1	2.9	Low	Fair	Remove	Grading	Dead branches in canopy.
459	Trembling Aspen	Populus tremuloides	18.0	1	3.1	Low	Fair	Retain		Dead branches.
460	Trembling Aspen	Populus tremuloides	13.6	1	2.6	Low	Poor	Retain		Lots of dead branches.
461	Manitoba Maple	Acer negundo	35.5	1	5.0	Low	Fair	Retain		Dead branches.
462	Hawthorn	Crataegus ssp.	16.5	1	3.1	High	Very Poor	Remove	Safety	Rotting trunk wound. Cockspur hawthorn.
463	Trembling Aspen	Populus tremuloides	19.0	1	2.8	Medium	Poor	Retain		Root rot. Trunk seams.
464	Black Walnut	Juglans nigra	27.0	1	4.4	Medium	Fair	Remove	Grading	Dead branches.
465	White Ash	Fraxinus americana	12.0	1	1.5	Low	Poor	Retain		Potential eab.
466	Norway Maple	Acer platanoides	26.1	1	4.3	Low	Fair	Retain		Woodpecker holes.
467	Hawthorn	Crataegus ssp.	13.5	2	2.9	Low	Fair	Remove	Grading	Dead branches.
468	White Ash	Fraxinus americana	12.7	1	2.9	Low	Fair	Remove	Grading	Dead branches. Lean.
469	Balsam Poplar	Populus balsamifera ssp. balsamifera	19.7	1	2.4	High	Poor	Remove	Safety	Butt rot. Dead branches.
470	Trembling Aspen	Populus tremuloides	21.0	1	1.4	High	Very Poor	Remove	Safety	Reduced crown. Dead branches.
471	Balsam Poplar	Populus balsamifera ssp. balsamifera	17.1	1	2.1	High	Poor	Remove	Safety	Hollow.
472	Hawthorn	Crataegus ssp.	12.7	1	1.0	High	Poor	Remove	Safety	Big lean.
473	Hawthorn	Crataegus ssp.	20.0	1	0.0	High	Very Poor	Remove	Safety	45 degree lean. Held up by 472.
474	Crack Willow	Salix fragilis	79.6	1	6.0	High	Very Poor	Remove	Safety	Dead branches. Rot.
475	Trembling Aspen	Populus tremuloides	18.4	1	1.4	Medium	Poor	Retain		Crooked trunk. Dead branches.
476	Crack Willow	Salix fragilis	67.0	2	4.2	High	Very Poor	Remove	Safety	Dead branches. Weak fork. Exposed Roots. Hollow.
477	Trembling Aspen	Populus tremuloides	13.8	2	2.9	Medium	Poor	Retain		Weak fork. Dead branches.
478	White Cedar	Thuja occidentalis	27.5	1	3.5	Medium	Poor	Remove	Safety	Lean. Grapevine. Dead branches.
479	White Cedar	Thuja occidentalis	36.5	1	2.6	Low	Good	Retain		
480	White Cedar	Thuja occidentalis	25.5	5	3.1	High	Very Poor	Remove	Safety	Weak fork. Rot.
481	White Cedar	Thuja occidentalis	37.7	1	4.5	Low	Fair	Retain		Weak fork.
482	White Cedar	Thuja occidentalis	20.0	2	2.9	Medium	Poor	Remove	Safety	Butt rot. Lopsided crown. Crowded.
483	Trembling Aspen	Populus tremuloides	21.0	1	3.5	Low	Good	Retain		
484	Trembling Aspen	Populus tremuloides	11.2	1	2.6	Low	Good	Retain		Dead branches
485	Trembling Aspen	Populus tremuloides	19.7	1	3.7	High	Poor	Remove	Safety	Big lean to west. 10 dead trees nearby.
486	Trembling Aspen	Populus tremuloides	14.1	1	3.3	High	Poor	Remove	Safety	Big lean to west
487	Crack Willow	Salix fragilis	107.3	1	0.0	High	Poor	Remove	Safety	Lots of history of branch failure. Decay.
883	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Lean to west.
883.01	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.02	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.03	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.04	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.05	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.06	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.07	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.08	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.09	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.10	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.11	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.12	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.13	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.14	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.15	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.16	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.17	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.18	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
883.19	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	Tree not tagged.
884	Trembling Aspen	Populus tremuloides	20.1	1	4.2	High	Poor	Remove	Safety	
1018	Sugar Maple	Acer saccharum ssp. saccharum	44.0	1	6.0	Medium	Fair	Remove	Grading	Main stem growing around barbed wire.
1019	Sugar Maple	Acer saccharum ssp. saccharum	54.0	1	6.0	Medium	Good	Retain		Medium risk for structural failure due to size of tree.
1020	Hawthorn	Crataegus ssp.	22.0	2	3.0	Medium	Fair	Remove	Grading	
1021	Hawthorn	Crataegus ssp.	17.0	2	4.0	Medium	Poor	Remove	Safety/Grading	
1025	White Ash	Fraxinus americana	33.0	5	6.0	Medium	Poor	Remove	Safety/Grading	
1026	Sugar Maple	Acer saccharum ssp. saccharum	37.0	1	4.0	Low	Fair	Remove	Grading	
1027	Hawthorn	Crataegus ssp.	11.0	5	3.0	Medium	Very Poor	Remove	Safety/Grading	
1028	Hawthorn	Crataegus ssp.	18.0	1	3.0	Medium	Fair	Remove	Grading	
1029	Hawthorn	Crataegus ssp.	13.0	3	3.0	Medium	Poor	Remove	Safety/Grading	
1030	Hawthorn	Crataegus ssp.	12.0	8	4.0	Medium	Fair	Remove	Grading	
1031	Hawthorn	Crataegus ssp.	19.0	4	5.0	Medium	Poor	Remove	Safety/Grading	
1032	Hawthorn	Crataegus ssp.	23.0	2	3.0	High	Poor	Remove	Safety/Grading	
1033	Hawthorn	Crataegus ssp.	14.0	2	2.0	High	Poor	Remove	Safety/Grading	
1036	Hawthorn	Crataegus ssp.	26.0	2	4.0	High	Poor	Remove	Safety/Grading	
1037	Hawthorn	Crataegus ssp.	28.0	1	4.0	Medium	Poor	Remove	Safety/Grading	
1038	Hawthorn	Crataegus ssp.	19.0	2	2.0	High	Poor	Remove	Safety/Grading	
1039	Siberian Elm	Ulmus pumila	17.0	1	3.0	Low	Fair	Remove	Grading	
1040	Siberian Elm	Ulmus pumila	25.0	4	6.0	Medium	Poor	Remove	Safety/Grading	Medium risk for structural failure due to number of stems and need for lower branch pruning. Weeping open wound, several weak forks, especially at the base.
1041	Siberian Elm	Ulmus pumila	30.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Requires pruning. Recommend pruning to reduce risk of structural failure. Weeping open wound, several weak forks, especially at the base.
1042	Siberian Elm	Ulmus pumila	19.0	1	5.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1043	Siberian Elm	Ulmus pumila	24.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1044	Siberian Elm	Ulmus pumila	18.0	3	4.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1045	Siberian Elm	Ulmus pumila	31.0	1	5.0	Medium	Poor	Remove	Safety/Grading	Requires pruning within lower scaffold branches. Recommend pruning to reduce risk of structural failure. Weeping open wound, several weak forks, especially at the base.
1046	Siberian Elm	Ulmus pumila	29.0	2	6.0	Medium	Poor	Remove	Safety/Grading	Has included bark, leading to higher risk of structural failure. Weeping open wound, several weak forks, especially at the base.
1047	Siberian Elm	Ulmus pumila	22.0	1	3.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1048	Siberian Elm	Ulmus pumila	20.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1049	Siberian Elm	Ulmus pumila	21.0	1	3.0	Medium	Poor	Remove	Safety//Grading	Weeping open wound, several weak forks, especially at the base.
1050	Siberian Elm	Ulmus pumila	22.0	3	7.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1051	Siberian Elm	Ulmus pumila	28.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Has some light pruned scaffold branches. Weeping open wound, several weak forks, especially at the base.
1052	Siberian Elm	Ulmus pumila	29.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1053	Siberian Elm	Ulmus pumila	31.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1054	Siberian Elm	Ulmus pumila	36.0	1	6.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, several weak forks, especially at the base.
1055	Siberian Elm	Ulmus pumila	30.0	1	5.0	Low	Fair	Remove	Grading	
1056	Siberian Elm	Ulmus pumila	37.0	1	6.0	Medium	Poor	Remove	Safety/Grading	
1057	Siberian Elm	Ulmus pumila	25.0	1	4.0	Medium	Fair	Remove	Grading	Sapsucker holes present.
1058	Siberian Elm	Ulmus pumila	13.0	2	2.0	Low	Fair	Remove	Grading	
1059	Siberian Elm	Ulmus pumila	32.0	2	6.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, many weak forks, especially at base
1060	Siberian Elm	Ulmus pumila	25.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Weeping open wound, many weak forks, especially at base
1061	Siberian Elm	Ulmus pumila	27.0	1	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork at base, weeping open wound.
1062	Siberian Elm	Ulmus pumila	22.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Tree draped in riverbank grape, increasing risk of structural failure, weak fork at base, weeping open wound.
1063	Siberian Elm	Ulmus pumila	18.0	1	3.0	Medium	Poor	Remove	Safety/Grading	Weak fork at base, weeping open wound.
1064	Siberian Elm	Ulmus pumila	18.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork at base, weeping open wound.
1065	Siberian Elm	Ulmus pumila	14.0	2	3.0	Medium	Poor	Remove	Safety/Grading	Weak fork at base, weeping open wound.
1066	Siberian Elm	Ulmus pumila	35.0	1	5.0	Low	Fair	Remove	Grading	
1067	Siberian Elm	Ulmus pumila	26.0	1	5.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weeping open wound.
1068	Siberian Elm	Ulmus pumila	20.0	4	5.0	High	Poor	Remove	Safety/Grading	
1069	Siberian Elm	Ulmus pumila	33.0	1	6.0	Medium	Fair	Remove	Grading	
1070	Siberian Elm	Ulmus pumila	27.0	2	6.0	Medium	Fair	Remove	Grading	Recommend pruning of some scaffold branches to reduce risk of structural failure.
1071	Siberian Elm	Ulmus pumila	14.0	2	3.0	Low	Fair	Remove	Grading	
1072	Siberian Elm	Ulmus pumila	23.0	1	4.0	Low	Poor	Remove	Safety/Grading	Many weeping open wounds.
1073	Siberian Elm	Ulmus pumila	26.0	1	4.0	Medium	Poor	Remove	Safety/Grading	One-sided crown, open wound.
1074	Siberian Elm	Ulmus pumila	18.0	2	4.0	Medium	Fair	Remove	Grading	Has included bark, leading to higher risk of structural failure.
1075	Siberian Elm	Ulmus pumila	20.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches.
1076	Siberian Elm	Ulmus pumila	25.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Sapsucker holes present, weeping open wounds.
1077	Siberian Elm	Ulmus pumila	18.0	2	4.0	Medium	Poor	Remove	Safety/Grading	
1078	Siberian Elm	Ulmus pumila	21.0	1	4.0	Low	Fair	Remove	Grading	
1079	Siberian Elm	Ulmus pumila	17.0	1	3.0	Low	Fair	Remove	Grading	
1080	Siberian Elm	Ulmus pumila	16.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork.
1081	Siberian Elm	Ulmus pumila	19.0	1	4.0	Low	Poor	Remove	Safety/Grading	
1082	Siberian Elm	Ulmus pumila	18.0	4	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches, open wound.
1083	Siberian Elm	Ulmus pumila	15.0	1	2.0	Low	Fair	Remove	Grading	
1084	Siberian Elm	Ulmus pumila	11.0	2	2.0	Medium	Fair	Remove	Grading	Has included bark, leading to higher risk of structural failure.
1085	Siberian Elm	Ulmus pumila	11.0	2	2.0	Low	Fair	Remove	Grading	
1086	Siberian Elm	Ulmus pumila	16.0	3	4.0	Medium	Very Poor	Remove	Safety/Grading	Tree almost dead. Photo provided.
1087	Siberian Elm	Ulmus pumila	20.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches.
1088	Siberian Elm	Ulmus pumila	24.0	2	5.0	Medium	Fair	Remove	Grading	Has included bark, leading to higher risk of structural failure.
1089	Siberian Elm	Ulmus pumila	18.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork.
1090	Siberian Elm	Ulmus pumila	13.0	2	3.0	Medium	Poor	Remove	Safety/Grading	Weak fork.
1091	Siberian Elm	Ulmus pumila	26.0	2	5.0	Medium	Poor	Remove	Safety/Grading	
1092	Siberian Elm	Ulmus pumila	17.0	2	4.0	Medium	Poor	Remove	Safety/Grading	
1093	Siberian Elm	Ulmus pumila	13.0	1	2.0	Low	Fair	Remove	Grading	
1094	Siberian Elm	Ulmus pumila	16.0	1	3.0	Low	Fair	Remove	Grading	
1095	Siberian Elm	Ulmus pumila	25.0	2	5.0	Medium	Poor	Remove	Safety/Grading	
1096	Siberian Elm	Ulmus pumila	13.0	2	3.0	Medium	Poor	Remove	Safety/Grading	Weak fork, open wound.
1097	Siberian Elm	Ulmus pumila	29.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork.
1098	Siberian Elm	Ulmus pumila	28.0	1	4.0	Low	Fair	Remove	Grading	
1099	Siberian Elm	Ulmus pumila	39.0	2	6.0	Medium	Poor	Remove	Safety/Grading	Weak fork, open wound.
1100	Siberian Elm	Ulmus pumila	24.0	2	5.0	High	Poor	Remove	Safety/Grading	Weak fork.
1301	Siberian Elm	Ulmus pumila	17.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork, open wound.
1302	Siberian Elm	Ulmus pumila	37.0	1	6.0	Low	Poor	Remove	Safety/Grading	1 side branch (scaffold) with medium potential for structural failure. Recommend pruning. Weak fork.
1303	Manitoba Maple	Acer negundo	50.0	2	10.0	High	Poor	Remove	Safety/Grading	
1304	Apple	Malus domestica	25.0	4	4.0	Medium	Poor	Remove	Safety/Grading	
1305	Apple	Malus domestica	27.0	1	5.0	Medium	Very Poor	Remove	Safety/Grading	Dead branches, open wound with rot.
1306	Hawthorn	Crataegus ssp.	14.0	1	2.0	Medium	Poor	Remove	Safety/Grading	Dead branches, open wound, weak fork.
1307	White Elm	Ulmus americana	16.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork.
1309	Hawthorn	Crataegus ssp.	15.0	1	3.0	Low	Poor	Remove	Safety/Grading	Many dead branches.
1311	White Elm	Ulmus americana	50.0	1	10.0	Medium	Poor	Remove	Safety/Grading	Many dead branches.
1312	White Elm	Ulmus americana	34.0	1	6.0	Medium	Poor	Remove	Safety/Grading	
1314	Apple	Malus domestica	24.0	1	4.0	Medium	Very Poor	Remove	Safety/Grading	Dead branches, open wound, weak fork.
1315	Apple	Malus domestica	22.0	2	3.0	Medium	Very Poor	Remove	Safety/Grading	Dead branches, open wound, weak fork.
1316	Hawthorn	Crataegus ssp.	14.0	1	2.0	Medium	Snag	Remove	Safety/Grading	
1317	Hawthorn	Crataegus ssp.	11.0	1	2.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork.
1318	Apple	Malus domestica	30.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Tree growing on angle.
1319	Black Cherry	Prunus serotina	46.0	1	8.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork, holes (open wound), small canopy.
1320	Hawthorn	Crataegus ssp.	10.0	4	3.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork.
1321	Hawthorn	Crataegus ssp.	10.0	1	3.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork.
1322	Hawthorn	Crataegus ssp.	20.0	1	3.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork.
1323	Apple	Malus domestica	36.0	1	5.0	Medium	Very Poor	Remove	Safety/Grading	Many dead branches, many open wounds.
1324	Black Cherry	Prunus serotina	25.0	1	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork.
1325	Hawthorn	Crataegus ssp.	15.0	1	3.0	Medium	Poor	Remove	Safety/Grading	Many dead branches, weak fork.
1326	Hawthorn	Crataegus ssp.	24.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork, holes.
1327	Black Cherry	Prunus serotina	35.0	1	5.0	Medium	Poor	Remove	Safety/Grading	
1328	Hawthorn	Crataegus ssp.	16.0	1	3.0	Medium	Fair	Remove	Grading	
1329	Apple	Malus domestica	33.0	1	5.0	Low	Good	Remove	Grading	
1330	Hawthorn	Crataegus ssp.	20.0	3	5.0	Medium	Fair	Remove	Grading	
1331	Apple	Malus domestica	41.0	2	6.0	Medium	Fair	Remove	Grading	
1334	Bur Oak	Quercus macrocarpa	141.0	1	12.0	Medium	Excellent	Retain		Risk of structural failure due to size of tree.
1337	Slippery Elm	Ulmus rubra	53.0	1	6.0	Medium	Poor	Remove	Safety	Thin canopy, weak branch attachment.
1340	Slippery Elm	Ulmus rubra	55.0	1	6.0	Medium	Poor	Remove	Safety	Thin canopy, weak branch attachment.
1373	Sugar Maple	Acer saccharum ssp. saccharum	86.5	1	6.0	High	Very Poor	Remove	Safety/Grading	
1374	Sugar Maple	Acer saccharum ssp. saccharum	88.0	1	6.0	High	Very Poor	Remove	Safety/Grading	Tree has cavity in main stem; however, showing signs of compartmentalization.
1375	Honey Locust	Gleditsia triacanthos	75.0	2	6.0	High	Very Poor	Remove	Safety/Grading	Extensive butt rot, weak fork.
1376	Honey Locust	Gleditsia triacanthos	54.0	1	6.0	Medium	Poor	Remove	Safety/Grading	Extensive rot, lean, dead branches, unbalanced crown.
1377	Honey Locust	Gleditsia triacanthos	70.0	1	7.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches, internal rot.
1378	White Ash	Fraxinus americana	14.0	1	2.0	Low	Good	Remove	Grading	
1379	White Ash	Fraxinus americana	15.0	1	4.0	Low	Good	Remove	Grading	
1380	White Ash	Fraxinus americana	20.0	3	4.0	Low	Good	Remove	Grading	
1381	White Ash	Fraxinus americana	29.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Has included bark, leading to higher risk of structural failure, weak fork.
1382	White Ash	Fraxinus americana	79.0	1	8.0	High	Very Poor	Remove	Safety/Grading	Many dead branches.
1383	White Ash	Fraxinus americana	28.0	1	4.0	Medium	Fair	Remove	Grading	
1384	White Ash	Fraxinus americana	13.0	1	3.0	Medium	Fair	Remove	Grading	One-sided crown.
1386	White Ash	Fraxinus americana	15.2	2	3.0	Low	Fair	Remove	Grading	Unbalanced and thin crown.
1387	White Ash	Fraxinus americana	31.0	1	5.0	Low	Fair	Remove	Grading	Dead branches, unbalanced and thin crown.
1388	White Ash	Fraxinus americana	19.5	1	4.0	Low	Good	Remove	Grading	Tag missing during reassessment, but nail present.
1389	White Ash	Fraxinus americana	12.0	2	1.0	Medium	Fair	Remove	Grading	Unbalanced and thin crown.
1390	White Ash	Fraxinus americana	14.8	2	4.0	Medium	Fair	Remove	Grading	Unbalanced and thin crown, deer rub.
1391	White Ash	Fraxinus americana	12.0	1	2.0	Low	Good	Remove	Grading	
1392	Hawthorn	Crataegus ssp.	29.0	3	6.0	Medium	Good	Remove	Grading	
1393	Hawthorn	Crataegus ssp.	12.0	1	1.0	Medium	Very Poor	Remove	Safety/Grading	
1394	Hawthorn	Crataegus ssp.	23.0	3	4.0	Medium	Poor	Remove	Safety/Grading	Open wound, weak fork, many dead branches.
1395	Hawthorn	Crataegus ssp.	18.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Dead branches, weak fork, open wound.
1396	Hawthorn	Crataegus ssp.	26.0	3	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork, open wound, dead branches.
1397	Hawthorn	Crataegus ssp.	24.0	1	4.0	Low	Poor	Remove	Safety/Grading	
1398	Hawthorn	Crataegus ssp.	19.0	7	5.0	Medium	Poor	Remove	Safety/Grading	
1399	White Ash	Fraxinus americana	77.0	1	7.0	High	Very Poor	Remove	Safety/Grading	

Tree No.	Common Name	Scientific Name	DBH (cm)	No. of Stems	Crown Radius (m)	Potential for Structural Failure	Overall Condition	Recommendation	Rationale for Removal	Comments
1400	Hawthorn	Crataegus ssp.	16.0	2	4.0	Medium	Very Poor	Remove	Safety/Grading	Tag missing during reassessment, tree broken in half, many open wounds.
1401	Hawthorn	Crataegus ssp.	29.0	4	5.0	Medium	Fair	Remove	Grading	
1501	Hawthorn	Crataegus ssp.	22.0	7	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches, internal rot.
1502	Hawthorn	Crataegus ssp.	18.0	5	5.0	Medium	Poor	Remove	Safety/Grading	Extensive rot, dead branches, weak fork.
1503	Hawthorn	Crataegus ssp.	15.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Strong lean, dead branches, weak fork.
1504	White Ash	Fraxinus americana	34.0	1	5.0	Medium	Fair	Remove	Grading	No tag.
1505	Hawthorn	Crataegus ssp.	22.0	5	4.0	Medium	Poor	Remove	Safety/Grading	Many dead branches, tractor wound, cavity.
1506	Bur Oak	Quercus macrocarpa	75.0	1	7.0	Low	Good	Retain		
1507	Bur Oak	Quercus macrocarpa	87.0	1	8.0	Medium	Good	Retain		Bordering on excellent condition.
1508	Colorado Spruce	Picea pungens	53.0	1	4.0	Low	Fair	Remove	Grading	Open wound.
1509	White Spruce	Picea glauca	22.0	1	3.0	Low	Fair	Retain		
1510	Scots Pine	Pinus sylvestris	38.0	1	4.0	Low	Fair	Remove	Grading	Slightly one-sided crown, otherwise good condition.
1511	Austrian Pine	Pinus nigra	25.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Two weak forks.
1512	Austrian Pine	Pinus nigra	51.0	1	5.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches.
1513	Colorado Spruce	Picea pungens	45.0	1	3.0	Low	Fair	Retain		
1514	Austrian Pine	Pinus nigra	50.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork, dead branches.
1515	Austrian Pine	Pinus nigra	42.0	1	3.0	Low	Fair	Remove	Grading	
1516	Colorado Spruce	Picea pungens	55.0	1	4.0	Medium	Poor	Remove	Safety	Many weeping open wounds.
1517	Colorado Spruce	Picea pungens	43.0	1	4.0	Low	Fair	Retain		
1518	White Spruce	Picea glauca	37.0	1	3.0	Low	Poor	Remove	Safety/Grading	Many weeping open wounds.
1519	Colorado Spruce	Picea pungens	18.0	1	2.5	Low	Good	Remove	Grading	
1520	Colorado Spruce	Picea pungens	47.0	1	4.0	Low	Fair	Remove	Grading	Exposed roots.
1521	Colorado Spruce	Picea pungens	42.0	1	4.0	Low	Poor	Remove	Safety/Grading	Top broken by Tree 1525.
1522	Austrian Pine	Pinus nigra	30.0	2	4.0	Medium	Poor	Remove	Safety/Grading	Large weak fork, co-dominants.
1523	Colorado Spruce	Picea pungens	25.0	1	2.0	Low	Good	Remove	Grading	
1524	Austrian Pine	Pinus nigra	47.0	1	4.0	Low	Good	Remove	Grading	
1525	Austrian Pine	Pinus nigra	50.0	1	4.0	Low	Fair	Remove	Grading	Broken top.
1526	Colorado Spruce	Picea pungens	58.0	1	4.0	Low	Very Poor	Remove	Safety/Grading	Almost dead, broken top.
1527	Austrian Pine	Pinus nigra	42.0	1	4.0	Medium	Poor	Remove	Safety/Grading	Weak fork.
1528	Colorado Spruce	Picea pungens	34.0	1	4.0	Low	Fair	Retain		
1529	Colorado Spruce	Picea pungens	35.0	1	3.0	Low	Good	Retain		
1530	Colorado Spruce	Picea pungens	38.0	1	4.0	Low	Fair	Retain		Missing leader, poor branch attachment.
1531	Colorado Spruce	Picea pungens	44.0	1	3.0	Medium	Very Poor	Remove	Safety	Missing top of portion of crown, remaining crown is one-sided.
1532	Colorado Spruce	Picea pungens	48.0	1	4.0	Low	Good	Retain		
1533	Colorado Spruce	Picea pungens	49.0	1	4.0	Low	Fair	Retain		
1534	Austrian Pine	Pinus nigra	41.0	1	4.0	Low	Fair	Retain		
1535	Austrian Pine	Pinus nigra	46.0	1	5.0	Medium	Fair	Retain		Poor branch attachment.
1536	Colorado Spruce	Picea pungens	36.0	1	3.0	Low	Fair	Retain		
1537	Colorado Spruce	Picea pungens	36.0	1	3.0	Medium	Very Poor	Remove	Safety	Many dead branches.
1538	Colorado Spruce	Picea pungens	41.0	1	4.0	Low	Fair	Retain		Thin crown.
1539	Colorado Spruce	Picea pungens	41.0	1	4.0	Medium	Poor	Remove	Safety	Unbalanced crown.
1540	Colorado Spruce	Picea pungens	42.0	1	3.0	Low	Poor	Remove	Safety	Broken top.
1541	Scots Pine	Pinus sylvestris	34.0	1	4.0	Low	Very Poor	Remove	Safety	Many dead branches.
1542	Eastern White Pine	Pinus strobus	38.0	1	4.5	Low	Good	Retain		
1543	Austrian Pine	Pinus nigra	39.0	1	3.0	Low	Poor	Remove	Safety	Dead top, weak branch attachment.
1544	Colorado Spruce	Picea pungens	47.0	1	4.0	Low	Poor	Remove	Safety	Root wounds/damage, many open wounds, girdling roots.
1545	Colorado Spruce	Picea pungens	46.0	1	3.0	Low	Fair	Remove	Grading	
1546	Eastern White Pine	Pinus strobus	49.0	1	5.0	Low	Fair	Remove	Grading	Open wound, tractor wound.
1547	Colorado Spruce	Picea pungens	48.0	1	3.0	Medium	Poor	Remove	Safety	Strong lean.
1548	Colorado Spruce	Picea pungens	45.0	1	3.0	Low	Good	Retain		
1954	White Ash	Fraxinus americana	49.0	2	5.0	Medium	Poor	Remove	Safety/Grading	Dieback bark. Cracks. No possible eab
1955	Black Cherry	Prunus serotina	11.9	1	2.0	Low	Good	Retain		Moderate lean.
1956	Green Ash	Fraxinus pennsylvanica	25.0	1	3.0	Medium	Fair	Retain		Wound. Some dieback. Grapevine.
1957	Green Ash	Fraxinus pennsylvanica	21.3	1	2.0	Low	Fair	Retain		Corrected lean. Wounds moderate codition.
1958	Manitoba Maple	Acer negundo	15.3	2	3.0	Low	Fair	Retain		Wound with moderate response growth.
1959	Trembling Aspen	Populus tremuloides	11.9	1	3.0	High	Poor	Remove	Safety/Grading	Dieback. Top snapped off.
1960	Black Ash	Fraxinus nigra	13.5	1	2.5	Low	Good	Remove	Grading	Minimal dieback.
1961	Black Walnut	Juglans nigra	20.1	1	3.5	Low	Good	Retain		Minimal dieback.
1962	Crack Willow	Salix fragilis	47.1	1	5.0	Medium	Poor	Remove	Safety	History of recent branch failure on main codominant branch, bark cracks, epicormic due to extensive pruning under lines.
1963	White Elm	Ulmus americana	24.4	1	4.0	Medium	Fair	Retain		Insect activity galleries. Lateral branch.
1964	Crack Willow	Salix fragilis	48.1	1	6.0	Medium	Fair	Retain		History of recent branch failure, epicormic due to extensive pruning under lines, sapsucker feeding, poor root flare.
1965	Crack Willow	Salix fragilis	38.8	2	5.0	High	Poor	Remove	Safety	Split in main codominate stem. 5m hollow. Many adventit branches.
1966	Crack Willow	Salix fragilis	89.5	1	15.0	High	Poor	Retain		Carpenter ants. History of large branch failure. Lots of epicormic shoots. Several hangers. Growing horizontal
1967	Crack Willow	Salix fragilis	61.2	1	9.0	High	Poor	Retain		Growing vertical and horizontal. History of scaffold branch failure. Wounds. Poor response growth. Epicormic shoots. No root flare.
1968	Crack Willow	Salix fragilis	181.7	1	14.0	High	Very Poor	Remove	Grading	Some crown horizontal. Several cavities. Epicormic shoots. Decay. Poor codititon, mostly dead except adventitious branches.
1969	Sugar Maple	Acer saccharum ssp. saccharum	63.2	1	5.0	Medium	Fair	Remove	Grading	Some history of branch failure. Barbbwire growing into tree. Some staining. Minimal dieback.
1970	Basswood	Tilia ssp.	63.6	1	5.0	Medium	Fair	Remove	Grading	Some staining with moderate response to growth. Hobf. Tree grew around metal stake.
1971	Basswood	Tilia ssp.	21.9	3	4.0	Medium	Fair	Remove	Grading	Wound on stem, likely from mechanical damage. Codominate stem.
1972	Hawthorn	Crataegus ssp.	16.5	2	3.0	Medium	Poor	Remove	Safety/Grading	Decay. Exit holes. Scaff dieback. Live crown one side
1973	Basswood	Tilia ssp.	51.7	4	6.5	Medium	Poor	Remove	Safety/Grading	Previously topped wires. Hobf. Decay with poor response growth. 1 stem dead.
1974	Basswood	Tilia ssp.	28.0	4	4.0	Medium	Poor	Remove	Safety/Grading	Decay with moderate codition. Previously topped wires. Codominate stems.
1975	Basswood	Tilia ssp.	16.0	5	4.0	Medium	Fair	Remove	Grading	Codominate stem. Unbalanced crown.
1976	Black Cherry	Prunus serotina	48.8	2	6.0	Medium	Poor	Remove	Safety/Grading	Growing into adjacent cherry. Exuding lots of sap. History of branch failure. Dieback.
1977	Black Cherry	Prunus serotina	47.7	1	4.0	Medium	Fair	Remove	Grading	Sapsuck decay moderate to poor codition. History of branch failure.
1978	White Cedar	Thuja occidentalis	15-20	1	2.0	High	Very Poor	Remove	Safety/Grading	Large portions of deadwood.
1979	White Cedar	Thuja occidentalis	15-20	1	2.0	High	Very Poor	Remove	Safety/Grading	Large portions of deadwood.



Map 1a

Hart Village

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Tree to be Retained (crown to scale)
- Tree to be Removed (crown to scale)
- Proposed Grading
- Proposed Development
- Site Survey

Tree Health

- Excellent/Good
- Fair
- Poor/Very Poor/Snag

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374
Date: December 21, 2015

NAD83 - UTM Zone 17
Size: 24x36"
1:600

0 5 10 15 20 25 30 Metres

Map 1b

Hart Village

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Tree to be Retained (crown to scale)
- Tree to be Removed (crown to scale)
- Proposed Grading
- Proposed Development
- Site Survey

Tree Health

- Excellent/Good
- Fair
- Poor/Very Poor/Snag

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374	NAD83 - UTM Zone 17
Date: December 21, 2015	Size: 24x36"
	1:600

0 5 10 15 20 25 30 Metres

ROAD A

ROAD B

RODGERS ROAD

RICKSON AVENUE
(Established By Reg'd Plan 858) (20.00 Metres Wide)

DARNELL ROAD

HARTS LANE WEST

CARRINGTON PLACE

COMMON AMENITY AREA
1,920m²

BLOCK 121
1.01ha
153 UNITS

EXISTING HOUSE

SWM BLOCK 123
0.25ha

OPEN SPACE BLOCK 126
2.25ha

WETLAND

30m WETLAND BUFFER

WETLAND LIMIT CONFIRMED BY THE GRCA AND SURVEYED ON MAY 21, 2013

BLOCK 125
TO BE CONVEYED TO THE TO THE CITY OF GUELPH

STORMWATER MANAGEMENT BLOCK 124
0.64ha

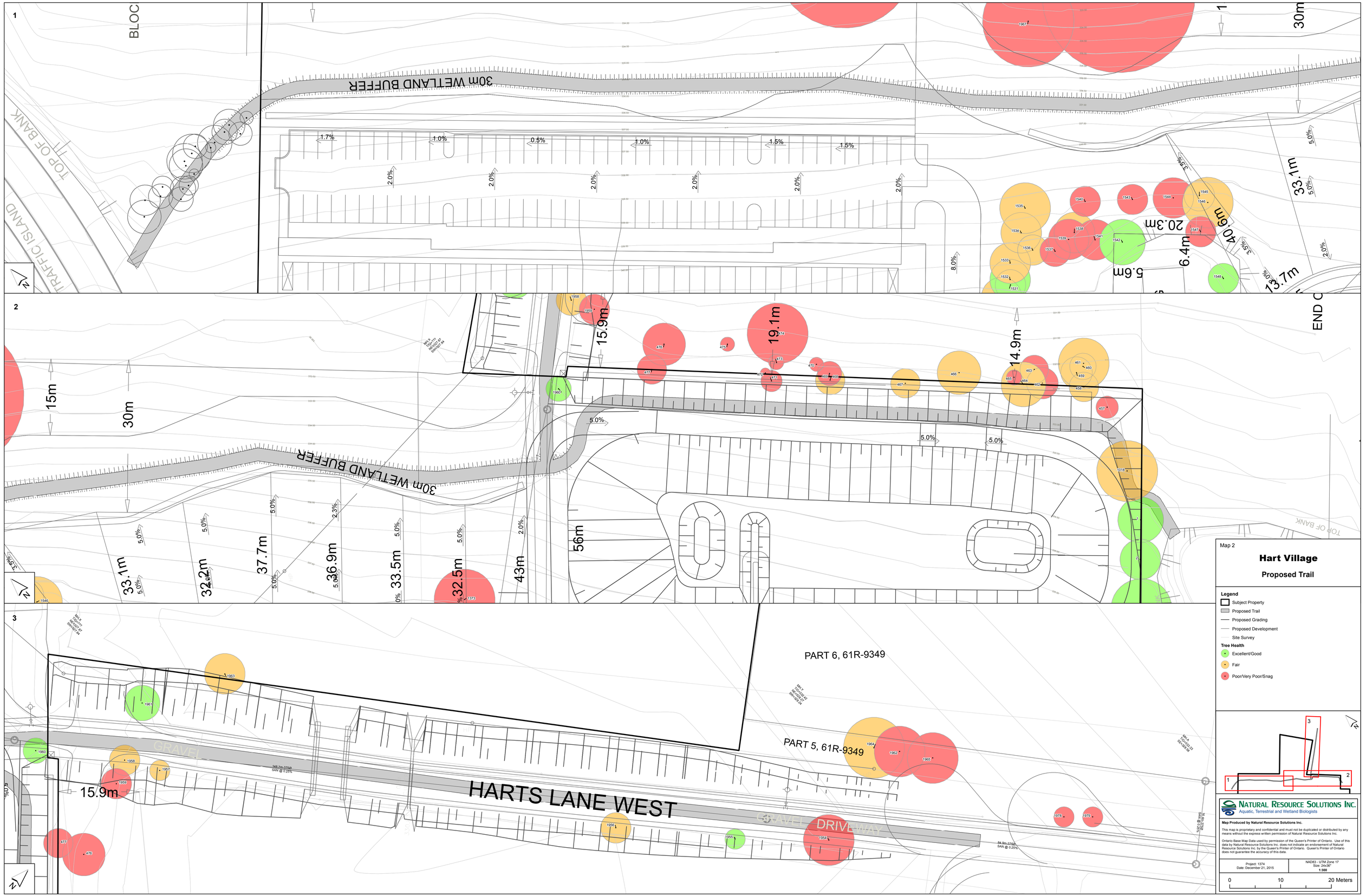
LOT 4, CONCESSION 7

LOT 52, CON. 7

PART 6, 61R-9349

PART 5, 61R-9349

END OF GRCA FLAGGING



Map 2

Hart Village

Proposed Trail

Legend

- Subject Property
- Proposed Trail
- Proposed Grading
- Proposed Development
- Site Survey

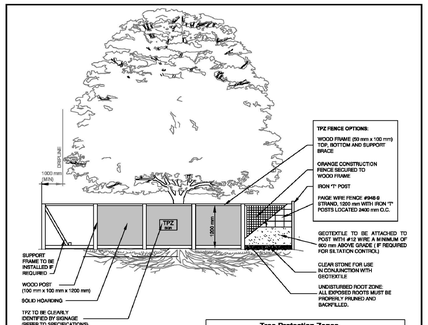
Tree Health

- Excellent/Good
- Fair
- Poor/Very Poor/Snag

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374 Date: December 21, 2015	NAD83 - UTM Zone 17 Size: 24x36" 1:300

0 10 20 Meters



TREE PROTECTION BARRIER NOTES:

1. HOARDING TYPE SHOULD BE DETERMINED IN CONSULTATION WITH THE CITY.
2. ALL TREE PROTECTION HOARDING SHALL BE IN PLACE AND MUST BE INSPECTED AND APPROVED BY THE CITY PRIOR TO ANY CONSTRUCTION ACTIVITIES.
3. ALL ARBORICULTURE WORK SUCH AS PRUNING OF BRANCHES AND ROOTS SHALL BE CONDUCTED BY A CERTIFIED ARBORIST.
4. CONSTRUCTION ACTIVITIES, GRADE CHANGES, AND STORAGE OF EQUIPMENT AND MATERIALS ARE NOT ALLOWED WITHIN THE TREE PROTECTION ZONE.
5. THIS DRAWING TO BE USED IN CONJUNCTION WITH "CITY OF GUELPH TREE TECHNICAL MANUAL".

Tree Protection Zones

Diameter of Trunk Centimetres at 1.4 m above grade (DBH)	Minimum Tree Protection Zone (TPZ) Distance from trunk, measured in metres	Potential Rooting Area (PRA) for all trees and TPZ for trees in NHS, parks, open spaces and other significant natural heritage areas[1,2]
<10	1.2	2.4
10-29	1.8	3.6
30-40	2.4	4.8
41-50	3.0	6.0
51-60	3.6	7.2
61-70	4.2	8.4
71-80	4.8	9.6
81-90	5.4	10.8
91-100	6.0	12.0
>100	6 cm per 1 cm DBH	12 cm per 1 cm DBH

Notes:
1- Or dripline plus 1 metre, whichever is greater.
2- Works in PRA are subject to specifications outlined in Subsection 4.4.4. of "City of Guelph Tree Technical Manual".

CITY OF GUELPH STANDARD DRAWING

TREE PROTECTION ZONE FENCE DETAIL

DATE DRAWN: JAN/11 | REV. No.:
DESCRIPTION:
REV. DATE: | REV. BY: G.F./ C.M.C.
APPROVED BY:
CITY ENGINEER
ENGINEERING
SD - 90a

Schedule A: Tree Protection Zone (TPZ) Information Signage

TREE PROTECTION ZONE (TPZ)

NO GRADE CHANGE
DUMPING
STORAGE OF MATERIALS
STORAGE OF EQUIPMENT
UNAUTHORIZED ENTRY
TREE INJURY OR REMOVAL
DISTURBANCE OF ANY KIND

THIS FENCING MUST NOT BE DAMAGED OR MOVED

CONTACT: name and telephone number of contact
name and telephone number of contact

City of Guelph - Planning, Building, Engineering & Environmental Services
(519) 837-5616

40 CM MIN.
60 CM MIN.

Sign Design, Installation and Maintenance: TPZ information signs shall be constructed from metal, corrugated plastic, Gatorboard or wood, and shall be installed in an appropriate manner such that it will be able to withstand inclement weather conditions. Signage shall be maintained in good condition and in the original location throughout the duration of site development works. Signage shall be clearly legible, with black text on a white background being the preferred design.

Sign Content: The TPZ information sign shall, at minimum, provide a list of activities prohibited within the TPZ. Such activities shall include, but not be limited to: grade change, dumping, storage of equipment and materials, unauthorized entry by personnel, tree injury or removal, or other disturbance of any kind. The signage shall also note that TPZ fencing shall not be damaged or removed. The signage shall also provide the contact information for the City of Guelph Planning, Building, Engineering and Environmental Services Department. A City of Guelph corporate logo shall be displayed on the TPZ information sign.

Sign Placement: TPZ information signs shall be affixed no more than 20 m apart on each side of tree protection fencing, at a height of no less than 100 cm.

Sign Size: TPZ information signs shall be a minimum of 40 cm x 60 cm in size

CITY OF GUELPH STANDARD DRAWING

TREE PROTECTION ZONE INFORMATION SIGNAGE DETAIL

DATE DRAWN: JAN/11 | REV. No.:
DESCRIPTION:
REV. DATE: | REV. BY: G.F./ C.M.C.
APPROVED BY:
CITY ENGINEER
ENGINEERING
SD - 90c

Migratory Birds Convention Act

1. The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act*, 1994.
2. Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults.
3. Vegetation clearing is recommended to occur outside the bird nesting season (May 1-July 31) so as to limit disturbances to nesting activities of birds within the proposed work zone.
4. If vegetation clearing cannot be avoided during the bird nesting season, a qualified biologist will be retained to carry out a nest search ahead of clearing activities within the work zone.
5. Nest areas will be identified in the field. There shall be no construction activity in identified nesting areas until sign-off is obtained from the biologist.
6. Areas identified as having no bird nesting activity can be cleared; however, clearing must occur within 48 hours of nest searching. If vegetation clearing is not performed within 48 hours, additional nest searches must be conducted.

Map 3a

Hart Village

Tree Protection Fencing Plan

Legend

- Subject Property
- Tree to be Retained (crown to scale)
- Tree Protection Information Signage
- Proposed Tree Protection Fencing
- Proposed Grading
- Proposed Development
- Site Survey

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374	NAD83 - UTM Zone 17
Date: December 21, 2015	Size: 24x36"
	1:600

0 5 10 15 20 25 30 Metres

KORTRIGHT ROAD WEST
(Established By Reg'd Plan 657) (30.48 Metres Wide)
KORTRIGHT RD W
RICKSON AVENUE
BLOCK B, PLAN 657
STACKED TOWNHOUSES BLOCK 120 1.142ha 68 UNITS
COMMON AMENITY AREA 844m²
PARK BLOCK 122 0.613ha
APARTMENT BLOCK 121 1.01ha 153 UNITS
COMMON AMENITY AREA 1,920m²
EXISTING HOUSE
SWM BLOCK 123 0.25ha
OPEN SPACE BLOCK 126
OPEN SPACE BLOCK 126 2.25ha
ROAD A
ROAD B
3m WALKWAY BLOCK 127
30m WETLAND BUFFER
PART 3, 61R-2156
WETLAND LIMIT CONFIRMED BY THE GRCA AND SURVEYED ON MAY 21, 2013
WETLAND
TRAFFIC ISLAND
TOP OF BANK
EMERGENCY ACCESS
SIDEWALK
CURB
GRASS
N43°51'40"E
N43°50'20"E
N43°40'15"E
N46°11'00"W
N46°51'05"W
63.9m
29.945
243.044
162.663
192.603
154

Map 3b

Hart Village

Tree Protection Fencing Plan

Legend

- Subject Property
- Tree to be Retained (crown to scale)
- Tree Protection Information Signage
- Proposed Tree Protection Fencing
- Proposed Grading
- Proposed Development
- Site Survey

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1374	NAD83 - UTM Zone 17
Date: December 21, 2015	Size: 24x36"
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0 5 10 15 20 25 30 Metres

ROAD A

ROAD B

RODGERS ROAD

RICKSON AVENUE
(Established By Regd Plan 858) (20.00 Metres Wide)

DARNELL ROAD

HARTS LANE WEST

CARRINGTON PLACE

BLOCK 121
1.01ha
153 UNITS

COMMON AMENITY AREA
1,920m²

EXISTING HOUSE

SWM BLOCK 123
0.25ha

STORMWATER MANAGEMENT BLOCK 124
0.64ha

OPEN SPACE BLOCK 126
2.25ha

WETLAND

30m WETLAND BUFFER

WETLAND LIMIT CONFIRMED BY THE GRCA AND SURVEYED ON MAY 21, 2013

BLOCK 125
TO BE CONVEYED TO THE TO THE CITY OF GUELPH

LOT 4, CONCESSION 7

LOT 5 CON. 7

PART 6, 61R-9349

PART 5, 61R-9349

END OF GRCA FLAGGING

APPENDIX I
Buckthorn Removal Correspondence

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Memo

Project No. 1374

To: **Adele Labbe (City of Guelph)**
Cc: **Andrew Lambden (Terraview Homes)**

From: **David Stephenson)**

Date: **March 27, 2013**

Re: **132 Hart's Lane**
Proposed Buckthorn Removal

Natural Resource Solutions Inc. (NRSI) has been requested on behalf of the owner of 132 Hart's Lane in Guelph, Ontario to provide details regarding the proposed removal of common buckthorn *(Rhamnus cathartica)* from neighbouring lands. To date the removal of buckthorn on the subject property has occurred (in fall 2012), and will continue through late winter 2013. As well, dead trees and high hazard trees have also been removed on-site. The landowner is also interested in removing buckthorn and dead/high hazard trees on immediately adjacent lands to avoid future invasion of this shrub species. I understand that Andrew Lambden has had a number of discussions as well as a site tour with you to ensure all work completed is in compliance with City requirements.

Buckthorn is a small stature shrub which was introduced from Europe as a windbreak for farmers' fields. It rapidly produces seed which carry a high germination rate and which are readily transported by birds that eat the berries of this shrub, which results in buckthorn taking over areas which are suitable for native shade tolerant trees and shrubs. Buckthorn is also able to grow in a wide range of soils and light conditions, and as such, this species threatens the ability of a forest or natural area to regenerate. The identification and removal of common buckthorn is essential to the preservation of native habitats in Ontario.

Prior to any work on site, all buckthorn and dead or hazard trees will be marked by a Certified Arborist who will also be on site during the removal to ensure that trees or shrubs to be retained are not removed.

Extent
The proposal is to remove common buckthorn and dead/high hazard trees from lands adjacent to the subject property (see appended map), some of which are within the 30m buffer to the Hanlon Creek Swamp PSW. The following locations are proposed:

- Kortright Road allowance along the fence line northeast of the subject property (owned by the City of Guelph),
- south of Hart's Lane east of the subject property (owned by Guelph City Realty).

Most of the buckthorn proposed for removal occurs along the fence line of the Kortright Road allowance. It is expected that approximately all buckthorn within 9m of the property boundary will be removed in total. The locations of proposed buckthorn and dead/high hazard tree removal are shown on the appended figure.

Proposed Removal

Removal Technique
No equipment is proposed to occur off-site. An excavator will be used to remove the buckthorn; however, it will be stationed on the private lands of 132 Hart's Lane. The excavator claw will extend approximately 9m onto the adjacent properties to remove the buckthorn along the fence line. In addition to the buckthorn, any dead trees and trees with a high risk for structural failure will also be removed. All tree and shrub removal will be completed using proper arboricultural techniques detailed by the International Society of Arboriculture (ISA) to ensure that the surrounding trees will not be injured. If any of the retained trees are injured from the removals, the damaged areas will be pruned according to ISA standards to ensure there are no lasting effects. To prevent the spread of buckthorn, all removed material will be mulched on site.

Duration and Timing
It is proposed that the removal of buckthorn will require 1-2 days to complete. The removal is scheduled to be completed April 2013 to prevent any interference with the Migratory Birds Convention Act (1994) which prohibits the removal of active bird nests during the breeding season which runs from May 1st through July. If vegetation is to be cleared during this period, an avian biologist will carry out a nest search to confirm the absence of nests prior to vegetation removal.

Reporting
A summary report outlining the work completed and number of buckthorns and dead and/or hazard trees removed will be provided to the City of Guelph and Chester Carare upon completion.

Should you have any questions, please do not hesitate to contact us.

Sincerely,
Natural Resource Solutions Inc.

David Stephenson
Senior Biologist/Certified Arborist

APPENDIX II
Hart Village – Tree Inventory Data

Hart Property - Tree Preservation Plan
Tree Inventory Data

Tree #	Common Name	Scientific Name	Native/Non-Native	DBH (cm)	Stem Count	Crown Radius (m)	Risk for Structural Failure	Overall Condition	Proposed Action	Rationale for Removal	Compensation Required	Comments
1	Sugar Maple	*Acer saccharum*	Native	23.7	1.0	4.5	Low	Good	Retain		No	Tree not tagged
2	Sugar Maple	*Acer saccharum*	Native	21.5	1.0	4.0	Low	Good	Retain		No	Tree not tagged
3	Apple	*Malus domestica*	Non-Native	15.0	1.0	4.0	Medium	Fair	Remove	Grading	No	Tree not tagged. One-sided crown, crown growing on 45 degree angle
4	Sugar Maple	*Acer saccharum*	Native	34.5	1.0	5.0	Low	Good	Remove	Grading	Yes	Tree not tagged
5	Hawthorn	*Crataegus* ssp.	Native	16.3	1.0	2.0	Medium	Fair	Remove	Grading	Yes	Tree not tagged. One-sided crown with main stem on 40 degree angle
6	Hawthorn	*Crataegus* ssp.	Native	17.5	1.0	4.0	Low	Fair	Remove	Grading	Yes	Tree not tagged. One-sided crown
7	Apple	*Malus domestica*	Non-Native	18.0	1.0	4.0	Low	Fair	Remove	Grading	No	Tree not tagged
8	Hawthorn	*Crataegus* ssp.	Native	18.8	2.0	5.0	Medium	Fair	Remove	Grading	Yes	Tree not tagged
9	Hawthorn	*Crataegus* ssp.	Native	17.0	2.0	3.0	Low	Good	Remove	Grading	Yes	Tree not tagged
10	Hawthorn	*Crataegus* ssp.	Native	13.7	1.0	3.0	Medium	Fair	Remove	Grading	Yes	Tree not tagged
11	Hawthorn	*Crataegus* ssp.	Native	15.3	6.0	4.0	Low	Good	Remove	Grading	Yes	Tree not tagged
13	White Ash	*Fraxinus americana*	Native	14.0	1.0	2.5	Low	Good	Remove	Grading	Yes	Tree not tagged
14	Hawthorn	*Crataegus* ssp.	Native	38.0	4.0	5.0	Medium	Fair	Remove	Grading	Yes	Tree not tagged
1018	Sugar Maple	*Acer saccharum*	Native	44.0	1.0	6.0	Medium	Fair	Retain		No	Main stem growing around barbed wire
1019	Sugar Maple	*Acer saccharum*	Native	54.0	1.0	6.0	Medium	Good	Retain		No	Medium risk for structural failure due to size of tree
1020	Hawthorn	*Crataegus* ssp.	Native	22.0	2.0	3.0	Medium	Fair	Remove	Grading	Yes	
1021	Hawthorn	*Crataegus* ssp.	Native	17.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	
1025	White Ash	*Fraxinus americana*	Native	33.0	5.0	6.0	Medium	Poor	Remove	Safety/Grading	No	
1026	Sugar Maple	*Acer saccharum*	Native	37.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	
1027	Hawthorn	*Crataegus* ssp.	Native	11.0	5.0	3.0	Medium	Very Poor	Remove	Safety/Grading	No	
1028	Hawthorn	*Crataegus* ssp.	Native	18.0	1.0	3.0	Medium	Fair	Remove	Grading	Yes	
1029	Hawthorn	*Crataegus* ssp.	Native	13.0	3.0	3.0	Medium	Poor	Remove	Safety/Grading	No	
1030	Hawthorn	*Crataegus* ssp.	Native	12.0	8.0	4.0	Medium	Fair	Remove	Grading	Yes	
1031	Hawthorn	*Crataegus* ssp.	Native	19.0	4.0	5.0	Medium	Poor	Remove	Safety/Grading	No	
1032	Hawthorn	*Crataegus* ssp.	Native	23.0	2.0	3.0	High	Poor	Remove	Safety/Grading	No	
1033	Hawthorn	*Crataegus* ssp.	Native	14.0	2.0	2.0	High	Poor	Remove	Safety/Grading	No	
1036	Hawthorn	*Crataegus* ssp.	Native	26.0	2.0	4.0	High	Poor	Remove	Safety/Grading	No	
1037	Hawthorn	*Crataegus* ssp.	Native	28.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	
1038	Hawthorn	*Crataegus* ssp.	Native	19.0	2.0	2.0	High	Poor	Remove	Safety/Grading	No	
1039	Siberian Elm	*Ulmus pumila*	Non-Native	17.0	1.0	3.0	Low	Fair	Remove	Grading	Yes	
1040	Siberian Elm	*Ulmus pumila*	Non-Native	25.0	4.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Medium risk for structural failure due to number of stems and need for lower branch pruning. Weeping open wound, several weak forks, especially at the base.
1041	Siberian Elm	*Ulmus pumila*	Non-Native	30.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Requires pruning. Recommend pruning to reduce risk of structural failure. Weeping open wound, several weak forks, especially at the base.
1042	Siberian Elm	*Ulmus pumila*	Non-Native	19.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base.
1043	Siberian Elm	*Ulmus pumila*	Non-Native	24.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base.
1044	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	3.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base.
1045	Siberian Elm	*Ulmus pumila*	Non-Native	31.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Requires pruning within lower scaffold branches. Recommend pruning to reduce risk of structural failure. Weeping open wound, several weak forks, especially at the base.
1046	Siberian Elm	*Ulmus pumila*	Non-Native	29.0	2.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Has included bark, leading to higher risk of structural failure. Weeping open wound, several weak forks, especially at the base.
1047	Siberian Elm	*Ulmus pumila*	Non-Native	22.0	1.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1048	Siberian Elm	*Ulmus pumila*	Non-Native	20.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1049	Siberian Elm	*Ulmus pumila*	Non-Native	21.0	1.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1050	Siberian Elm	*Ulmus pumila*	Non-Native	22.0	3.0	7.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1051	Siberian Elm	*Ulmus pumila*	Non-Native	28.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Has some light pruned scaffold branches. Weeping open wound, several weak forks, especially at the base.
1052	Siberian Elm	*Ulmus pumila*	Non-Native	29.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1053	Siberian Elm	*Ulmus pumila*	Non-Native	31.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1054	Siberian Elm	*Ulmus pumila*	Non-Native	36.0	1.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, several weak forks, especially at the base
1055	Siberian Elm	*Ulmus pumila*	Non-Native	30.0	1.0	5.0	Low	Fair	Remove	Grading	Yes	
1056	Siberian Elm	*Ulmus pumila*	Non-Native	37.0	1.0	6.0	Medium	Poor	Remove	Safety/Grading	No	
1057	Siberian Elm	*Ulmus pumila*	Non-Native	25.0	1.0	4.0	Medium	Fair	Remove	Grading	Yes	Sapsucker holes present
1058	Siberian Elm	*Ulmus pumila*	Non-Native	13.0	2.0	2.0	Low	Fair	Remove	Grading	Yes	
1059	Siberian Elm	*Ulmus pumila*	Non-Native	32.0	2.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, many weak forks, especially at base
1060	Siberian Elm	*Ulmus pumila*	Non-Native	25.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weeping open wound, many weak forks, especially at base
1061	Siberian Elm	*Ulmus pumila*	Non-Native	27.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork at base, weeping open wound
1062	Siberian Elm	*Ulmus pumila*	Non-Native	22.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Tree draped in riverbank grape, increasing risk of structural failure, weak fork at base, weeping open wound
1063	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	1.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork at base, weeping open wound
1064	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork at base, weeping open wound
1065	Siberian Elm	*Ulmus pumila*	Non-Native	14.0	2.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork at base, weeping open wound
1066	Siberian Elm	*Ulmus pumila*	Non-Native	35.0	1.0	5.0	Low	Fair	Remove	Grading	Yes	
1067	Siberian Elm	*Ulmus pumila*	Non-Native	26.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weeping open wound
1068	Siberian Elm	*Ulmus pumila*	Non-Native	20.0	4.0	5.0	High	Poor	Remove	Safety/Grading	No	
1069	Siberian Elm	*Ulmus pumila*	Non-Native	33.0	1.0	6.0	Medium	Fair	Remove	Grading	Yes	

Hart Property - Tree Preservation Plan
Tree Inventory Data

Tree #	Common Name	Scientific Name	Native/Non-Native	DBH (cm)	Stem Count	Crown Radius (m)	Risk for Structural Failure	Overall Condition	Proposed Action	Rationale for Removal	Compensation Required	Comments
1070	Siberian Elm	*Ulmus pumila*	Non-Native	27.0	2.0	6.0	Medium	Fair	Remove	Grading	Yes	Recommend pruning of some scaffold branches to reduce risk of structural failure
1071	Siberian Elm	*Ulmus pumila*	Non-Native	14.0	2.0	3.0	Low	Fair	Remove	Grading	Yes	
1072	Siberian Elm	*Ulmus pumila*	Non-Native	23.0	1.0	4.0	Low	Poor	Remove	Safety/Grading	No	Many weeping open wounds
1073	Siberian Elm	*Ulmus pumila*	Non-Native	26.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	One-sided crown, open wound
1074	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	2.0	4.0	Medium	Fair	Remove	Grading	Yes	Has included bark, leading to higher risk of structural failure
1075	Siberian Elm	*Ulmus pumila*	Non-Native	20.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches
1076	Siberian Elm	*Ulmus pumila*	Non-Native	25.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Sapsucker holes present, weeping open wounds
1077	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	
1078	Siberian Elm	*Ulmus pumila*	Non-Native	21.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	
1079	Siberian Elm	*Ulmus pumila*	Non-Native	17.0	1.0	3.0	Low	Fair	Remove	Grading	Yes	
1080	Siberian Elm	*Ulmus pumila*	Non-Native	16.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork
1081	Siberian Elm	*Ulmus pumila*	Non-Native	19.0	1.0	4.0	Low	Poor	Remove	Safety/Grading	No	
1082	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	4.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches, open wound
1083	Siberian Elm	*Ulmus pumila*	Non-Native	15.0	1.0	2.0	Low	Fair	Remove	Grading	Yes	
1084	Siberian Elm	*Ulmus pumila*	Non-Native	11.0	2.0	2.0	Medium	Fair	Remove	Grading	Yes	Has included bark, leading to higher risk of structural failure
1085	Siberian Elm	*Ulmus pumila*	Non-Native	11.0	2.0	2.0	Low	Fair	Remove	Grading	Yes	
1086	Siberian Elm	*Ulmus pumila*	Non-Native	16.0	3.0	4.0	Medium	Very Poor	Remove	Safety/Grading	No	Tree almost dead
1087	Siberian Elm	*Ulmus pumila*	Non-Native	20.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches
1088	Siberian Elm	*Ulmus pumila*	Non-Native	24.0	2.0	5.0	Medium	Fair	Remove	Grading	Yes	Has included bark, leading to higher risk of structural failure
1089	Siberian Elm	*Ulmus pumila*	Non-Native	18.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork
1090	Siberian Elm	*Ulmus pumila*	Non-Native	13.0	2.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork
1091	Siberian Elm	*Ulmus pumila*	Non-Native	26.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	
1092	Siberian Elm	*Ulmus pumila*	Non-Native	17.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	
1093	Siberian Elm	*Ulmus pumila*	Non-Native	13.0	1.0	2.0	Low	Fair	Remove	Grading	Yes	
1094	Siberian Elm	*Ulmus pumila*	Non-Native	16.0	1.0	3.0	Low	Fair	Remove	Grading	Yes	
1095	Siberian Elm	*Ulmus pumila*	Non-Native	25.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	
1096	Siberian Elm	*Ulmus pumila*	Non-Native	13.0	2.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, open wound
1097	Siberian Elm	*Ulmus pumila*	Non-Native	29.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork
1098	Siberian Elm	*Ulmus pumila*	Non-Native	28.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	
1099	Siberian Elm	*Ulmus pumila*	Non-Native	39.0	2.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, open wound
1100	Siberian Elm	*Ulmus pumila*	Non-Native	24.0	2.0	5.0	High	Poor	Remove	Safety/Grading	No	Weak fork
1301	Siberian Elm	*Ulmus pumila*	Non-Native	17.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, open wound
1302	Siberian Elm	*Ulmus pumila*	Non-Native	37.0	1.0	6.0	Low	Poor	Remove	Safety/Grading	No	1 side branch (scaffold) with medium potential for structural failure. Recommend pruning. Weak fork
1303	Manitoba Maple	*Acer negundo*	Native	50.0	2.0	10.0	High	Poor	Remove	Safety/Grading	No	
1304	Apple	*Malus domestica*	Non-Native	25.0	4.0	4.0	Medium	Poor	Remove	Safety/Grading	No	
1305	Apple	*Malus domestica*	Non-Native	27.0	1.0	5.0	Medium	Very Poor	Remove	Safety/Grading	No	Dead branches, open wound with rot
1306	Hawthorn	*Crataegus* ssp.	Native	14.0	1.0	2.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, open wound, weak fork
1307	White Elm	*Ulmus americana*	Native	16.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork
1309	Hawthorn	*Crataegus* ssp.	Native	15.0	1.0	3.0	Low	Poor	Remove	Safety/Grading	No	Many dead branches
1311	White Elm	*Ulmus americana*	Native	50.0	1.0	10.0	Medium	Poor	Remove	Safety/Grading	No	Many dead branches
1312	White Elm	*Ulmus americana*	Native	34.0	1.0	6.0	Medium	Poor	Remove	Safety/Grading	No	
1314	Apple	*Malus domestica*	Non-Native	24.0	1.0	4.0	Medium	Very Poor	Remove	Safety/Grading	No	Dead branches, open wound, weak fork
1315	Apple	*Malus domestica*	Non-Native	22.0	2.0	3.0	Medium	Very Poor	Remove	Safety/Grading	No	Dead branches, open wound, weak fork
1316	Hawthorn	*Crataegus* ssp.	Native	14.0	1.0	2.0	Medium	Very Poor	Remove	Safety/Grading	No	
1317	Hawthorn	*Crataegus* ssp.	Native	11.0	1.0	2.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork
1318	Apple	*Malus domestica*	Non-Native	30.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Tree growing on angle.
1319	Black Cherry	*Prunus serotina*	Native	46.0	1.0	8.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork, holes (open wound), small canopy
1320	Hawthorn	*Crataegus* ssp.	Native	10.0	4.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork
1321	Hawthorn	*Crataegus* ssp.	Native	10.0	1.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork
1322	Hawthorn	*Crataegus* ssp.	Native	20.0	1.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork
1323	Apple	*Malus domestica*	Non-Native	36.0	1.0	5.0	Medium	Very Poor	Remove	Safety/Grading	No	Many dead branches, many open wounds
1324	Black Cherry	*Prunus serotina*	Native	25.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork
1325	Hawthorn	*Crataegus* ssp.	Native	15.0	1.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Many dead branches, weak fork
1326	Hawthorn	*Crataegus* ssp.	Native	24.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, holes
1327	Black Cherry	*Prunus serotina*	Native	35.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	
1328	Hawthorn	*Crataegus* ssp.	Native	16.0	1.0	3.0	Medium	Fair	Remove	Grading	Yes	
1329	Apple	*Malus domestica*	Non-Native	33.0	1.0	5.0	Low	Good	Remove	Grading	No	
1330	Hawthorn	*Crataegus* ssp.	Native	20.0	3.0	5.0	Medium	Fair	Remove	Grading	Yes	
1331	Apple	*Malus domestica*	Non-Native	41.0	2.0	6.0	Medium	Fair	Remove	Grading	No	
1334	Bur Oak	*Quercus macrocarpa*	Native	141.0	1.0	12.0	Medium	Good	Retain		No	
1337	Slippery Elm	*Ulmus rubra*	Native	53.0	1.0	6.0	Medium	Poor	Remove	Safety	No	Thin canopy, weak branch attachment
1340	Slippery Elm	*Ulmus rubra*	Native	55.0	1.0	6.0	Medium	Poor	Remove	Safety	No	Thin canopy, weak branch attachment
1373	Sugar Maple	*Acer saccharum*	Native	86.5	1.0	6.0	High	Very Poor	Remove	Safety/Grading	No	
1374	Sugar Maple	*Acer saccharum*	Native	88.0	1.0	6.0	High	Very Poor	Remove	Safety/Grading	No	Tree has cavity in main stem; however, showing signs of compartmentalization
1375	Honey Locust	*Gleditsia triacanthos*	Native	75.0	2.0	6.0	High	Very Poor	Remove	Safety/Grading	No	Extensive butt rot, weak fork

Hart Property - Tree Preservation Plan
Tree Inventory Data

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1376	Honey Locust	*Gleditsia triacanthos*	Native	54.0	1.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Extensive rot, lean, dead branches, unbalanced crown
1377	Honey Locust	*Gleditsia triacanthos*	Native	70.0	1.0	7.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches, internal rot
1378	White Ash	*Fraxinus americana*	Native	14.0	1.0	2.0	Low	Good	Remove	Grading	Yes	
1379	White Ash	*Fraxinus americana*	Native	15.0	1.0	4.0	Low	Good	Remove	Grading	Yes	
1380	White Ash	*Fraxinus americana*	Native	20.0	3.0	4.0	Low	Good	Remove	Grading	Yes	
1381	White Ash	*Fraxinus americana*	Native	29.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Has included bark, leading to higher risk of structural failure, weak fork.
1382	White Ash	*Fraxinus americana*	Native	79.0	1.0	8.0	High	Very Poor	Remove	Safety/Grading	No	Many dead branches
1383	White Ash	*Fraxinus americana*	Native	28.0	1.0	4.0	Medium	Fair	Remove	Grading	Yes	
1384	White Ash	*Fraxinus americana*	Native	13.0	1.0	3.0	Medium	Fair	Remove	Grading	Yes	One-sided crown
1386	White Ash	*Fraxinus americana*	Native	15.2	2.0	3.0	Low	Fair	Remove	Grading	Yes	Unbalanced and thin crown
1387	White Ash	*Fraxinus americana*	Native	31.0	1.0	5.0	Low	Fair	Remove	Grading	Yes	Dead branches, unbalanced and thin crown
1388	White Ash	*Fraxinus americana*	Native	19.5	1.0	4.0	Low	Good	Remove	Grading	Yes	Tag missing during reassessment, but nail present
1389	White Ash	*Fraxinus americana*	Native	12.0	2.0	1.0	Medium	Fair	Remove	Grading	Yes	Unbalanced and thin crown
1390	White Ash	*Fraxinus americana*	Native	14.8	2.0	4.0	Medium	Fair	Remove	Grading	Yes	Unbalanced and thin crown, deer rub
1391	White Ash	*Fraxinus americana*	Native	12.0	1.0	2.0	Low	Good	Remove	Grading	Yes	
1392	Hawthorn	*Crataegus* ssp.	Native	29.0	3.0	6.0	Medium	Good	Remove	Grading	Yes	
1393	Hawthorn	*Crataegus* ssp.	Native	12.0	1.0	1.0	Medium	Very Poor	Remove	Safety/Grading	No	
1394	Hawthorn	*Crataegus* ssp.	Native	23.0	3.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Open wound, weak fork, many dead branches
1395	Hawthorn	*Crataegus* ssp.	Native	18.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Dead branches, weak fork, open wound
1396	Hawthorn	*Crataegus* ssp.	Native	26.0	3.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, open wound, dead branches
1397	Hawthorn	*Crataegus* ssp.	Native	24.0	1.0	4.0	Low	Poor	Remove	Safety/Grading	No	
1398	Hawthorn	*Crataegus* ssp.	Native	19.0	7.0	5.0	Medium	Poor	Remove	Safety/Grading	No	
1399	White Ash	*Fraxinus americana*	Native	77.0	1.0	7.0	High	Very Poor	Remove	Safety/Grading	No	
1400	Hawthorn	*Crataegus* ssp.	Native	16.0	2.0	4.0	Medium	Very Poor	Remove	Safety/Grading	No	Tag missing during reassessment, tree broken in half, many open wounds
1401	Hawthorn	*Crataegus* ssp.	Native	29.0	4.0	5.0	Medium	Fair	Remove	Grading	Yes	
1501	Hawthorn	*Crataegus* ssp.	Native	22.0	7.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches, internal rot
1502	Hawthorn	*Crataegus* ssp.	Native	18.0	5.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Extensive rot, dead branches, weak fork
1503	Hawthorn	*Crataegus* ssp.	Native	15.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Strong lean, dead branches, weak fork
1504	White Ash	*Fraxinus americana*	Native	34.0	1.0	5.0	Medium	Fair	Remove	Grading	Yes	No tag
1505	Hawthorn	*Crataegus* ssp.	Native	22.0	5.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Many dead branches, tractor wound, cavity
1506	Bur Oak	*Quercus macrocarpa*	Native	75.0	1.0	7.0	Low	Good	Remove	Grading	Yes	
1507	Bur Oak	*Quercus macrocarpa*	Native	87.0	1.0	8.0	Medium	Good	Remove	Grading	Yes	Bordering on excellent condition.
1508	Colorado Spruce	*Picea pungens*	Non-Native	53.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	Open wound
1509	White Spruce	*Picea glauca*	Native	22.0	1.0	3.0	Low	Fair	Retain		No	
1510	Scots Pine	*Pinus sylvestris*	Non-Native	38.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	Slightly one-sided crown, otherwise good condition.
1511	Austrian Pine	*Pinus nigra*	Non-Native	25.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Two weak forks
1512	Austrian Pine	*Pinus nigra*	Non-Native	51.0	1.0	5.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches
1513	Colorado Spruce	*Picea pungens*	Non-Native	45.0	1.0	3.0	Low	Fair	Retain		No	
1514	Austrian Pine	*Pinus nigra*	Non-Native	50.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork, dead branches
1515	Austrian Pine	*Pinus nigra*	Non-Native	42.0	1.0	3.0	Low	Fair	Remove	Grading	Yes	
1516	Colorado Spruce	*Picea pungens*	Non-Native	55.0	1.0	4.0	Medium	Poor	Remove	Safety	No	Many weeping open wounds
1517	Colorado Spruce	*Picea pungens*	Non-Native	43.0	1.0	4.0	Low	Fair	Retain		No	
1518	White Spruce	*Picea glauca*	Native	37.0	1.0	3.0	Low	Poor	Remove	Safety/Grading	No	Many weeping open wounds
1519	Colorado Spruce	*Picea pungens*	Non-Native	18.0	1.0	2.5	Low	Good	Remove	Grading	Yes	
1520	Colorado Spruce	*Picea pungens*	Non-Native	47.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	Exposed roots
1521	Colorado Spruce	*Picea pungens*	Non-Native	42.0	1.0	4.0	Low	Poor	Remove	Safety/Grading	No	Top broken by Tree 1525
1522	Austrian Pine	*Pinus nigra*	Non-Native	30.0	2.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Large weak fork, co-dominants
1523	Colorado Spruce	*Picea pungens*	Non-Native	25.0	1.0	2.0	Low	Good	Remove	Grading	Yes	
1524	Austrian Pine	*Pinus nigra*	Non-Native	47.0	1.0	4.0	Low	Good	Remove	Grading	Yes	
1525	Austrian Pine	*Pinus nigra*	Non-Native	50.0	1.0	4.0	Low	Fair	Remove	Grading	Yes	Broken top
1526	Colorado Spruce	*Picea pungens*	Non-Native	58.0	1.0	4.0	Low	Very Poor	Remove	Safety/Grading	No	Almost dead, broken top
1527	Austrian Pine	*Pinus nigra*	Non-Native	42.0	1.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Weak fork
1528	Colorado Spruce	*Picea pungens*	Non-Native	34.0	1.0	4.0	Low	Fair	Retain		No	
1529	Colorado Spruce	*Picea pungens*	Non-Native	35.0	1.0	3.0	Low	Good	Retain		No	
1530	Colorado Spruce	*Picea pungens*	Non-Native	38.0	1.0	4.0	Low	Fair	Retain		No	Missing leader, poor branch attachment
1531	Colorado Spruce	*Picea pungens*	Non-Native	44.0	1.0	3.0	Medium	Very Poor	Remove	Safety	No	Missing top of portion of crown, remaining crown is one-sided.
1532	Colorado Spruce	*Picea pungens*	Non-Native	48.0	1.0	4.0	Low	Good	Retain		No	
1533	Colorado Spruce	*Picea pungens*	Non-Native	49.0	1.0	4.0	Low	Fair	Retain		No	
1534	Austrian Pine	*Pinus nigra*	Non-Native	41.0	1.0	4.0	Low	Fair	Retain		No	
1535	Austrian Pine	*Pinus nigra*	Non-Native	46.0	1.0	5.0	Medium	Fair	Retain		No	Poor branch attachment
1536	Colorado Spruce	*Picea pungens*	Non-Native	36.0	1.0	3.0	Low	Fair	Retain		No	
1537	Colorado Spruce	*Picea pungens*	Non-Native	36.0	1.0	3.0	Medium	Very Poor	Remove	Safety	No	Many dead branches
1538	Colorado Spruce	*Picea pungens*	Non-Native	41.0	1.0	4.0	Low	Fair	Retain		No	Thin crown
1539	Colorado Spruce	*Picea pungens*	Non-Native	41.0	1.0	4.0	Medium	Poor	Remove	Safety	No	Unbalanced crown
1540	Colorado Spruce	*Picea pungens*	Non-Native	42.0	1.0	3.0	Low	Poor	Remove	Safety	No	Broken top
1541	Scots Pine	*Pinus sylvestris*	Non-Native	34.0	1.0	4.0	Low	Very Poor	Remove	Safety	No	Many dead branches
1542	Eastern White Pine	*Pinus strobus*	Native	38.0	1.0	4.5	Low	Good	Retain		No	

Hart Property - Tree Preservation Plan
Tree Inventory Data

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1543	Austrian Pine	*Pinus nigra*	Non-Native	39.0	1.0	3.0	Low	Poor	Remove	Safety	No	Dead top, weak branch attachment
1544	Colorado Spruce	*Picea pungens*	Non-Native	47.0	1.0	4.0	Low	Poor	Remove	Safety	No	Root wounds/damage, many open wounds, girdling roots
1545	Colorado Spruce	*Picea pungens*	Non-Native	46.0	1.0	3.0	Low	Fair	Remove	Grading	Yes	
1546	Eastern White Pine	*Pinus strobus*	Native	49.0	1.0	5.0	Low	Fair	Remove	Grading	Yes	Open wound, tractor wound
1547	Colorado Spruce	*Picea pungens*	Non-Native	48.0	1.0	3.0	Medium	Poor	Remove	Safety	No	Strong lean
1548	Colorado Spruce	*Picea pungens*	Non-Native	45.0	1.0	3.0	Low	Good	Retain		No	
1954	White Ash	*Fraxinus americana*	Native	49.0	2.0	5.0	Medium	Poor	Remove	Safety/Grading (All options)	No	Dieback and bark cracks
1955	Pin Cherry	*Prunus pensylvanica*	Native	11.9	1.0	2.0	Low	Good	Retain/Remove	Grading (Options 2 & 3)	Yes (Options 2 & 3)	Moderate lean
1956	Green Ash	*Fraxinus pennsylvanica*	Native	25.0	1.0	3.0	Medium	Fair	Retain/Remove	Grading (Options 2 & 3)	Yes (Options 2 & 3)	Wound on stem with good compartmentalization, some crown dieback, riverbank grape in canopy
1957	Green Ash	*Fraxinus pennsylvanica*	Native	21.3	1.0	2.0	Medium	Fair	Retain/Remove	Grading (Options 2 & 3)	Yes (Options 2 & 3)	Corrected lean, wounds on stem with moderate compartmentalization
1958	Manitoba Maple	*Acer negundo*	Native	15.3	2.0	3.0	Low	Fair	Retain/Remove	Grading (Options 2 & 3)	Yes (Options 2 & 3)	Wound with moderate response growth
1959	Trembling Aspen	*Populus tremuloides*	Native	11.9	1.0	3.0	High	Poor	Remove	Safety/Grading (All options)	No	Top of tree snapped off, with dieback in remaining crown
1960	White Ash	*Fraxinus pennsylvanica*	Native	13.5	1.0	2.5	Low	Good	Remove	Grading (All options)	Yes	Minimal dieback
1961	Black Walnut	*Juglans nigra*	Native	20.1	1.0	3.5	Low	Good	Retain/Remove	Grading (Options 2 & 3)	Yes (Options 2 & 3)	Minimal dieback
1962	Crack Willow	*Salix fragilis*	Non-Native	47.1	1.0	5.0	Medium	Poor	Remove	Safety (All options)	No	History of recent branch failure on main codominant branch, bark cracks, epicormic due to extensive pruning under lines
1963	White Elm	*Ulmus americana*	Native	24.4	1.0	4.0	Medium	Fair	Retain/Remove	Grading (Options 2 & 3)	Yes (Options 2 & 3)	Some insect galleries present, history of lateral branch failure
1964	Crack Willow	*Salix fragilis*	Non-Native	48.1	1.0	6.0	Medium	Fair	Retain		No	History of recent branch failure, epicormic due to extensive pruning under lines, sapsucker feeding, poor root flare
1965	Crack Willow	*Salix fragilis*	Non-Native	38.8	2.0	5.0	High	Poor	Remove	Safety (All options)	No	Split with approximately 5m long hollow in main codominant stem, epicormic due to extensive pruning under lines.
1966	Crack Willow	*Salix fragilis*	Non-Native	89.5	1.0	15.0	High	Poor	Retain		No	Main stem growing horizontally with large vertical scaffold branches, history of large branch failure, decay (presence of carpenter ant galleries/frass), extensive epicormic, several hangers. Although this tree has a high potential for failure and is in poor condition, it is located within the proposed SWM Block 122 and is not within striking distance of a component of the development that may pose a safety concern, and therefore will be retained
1967	Crack Willow	*Salix fragilis*	Non-Native	61.2	1.0	9.0	High	Poor	Retain		No	Main stem growing both vertically and horizontally, history of scaffold branch failure, wounds showing poor response growth, epicormic, poor root flare. Although this tree has a high potential for failure and is in poor condition, it is located within the proposed SWM Block 122 and is not within striking distance of a component of the development that may pose a safety concern, and therefore will be retained
1968	Crack Willow	*Salix fragilis*	Non-Native	181.7	1.0	14.0	High	Very Poor	Remove	Grading	No	Portion of the crown growing horizontal, one large cavity approximately 10m in length, epicormic, decay with poor compartmentalization, history of branch failures, tree is mostly dead with the exception of some adventitious branches.
1969	Sugar Maple	*Acer saccharum*	Native	63.2	1.0	5.0	Medium	Fair	Remove	Grading	Yes	Some history of branch failure, barbed wire growing into the tree
1970	Basswood	*Tilia americana*	Native	63.6	1.0	5.0	Medium	Fair	Remove	Grading	Yes	Some staining with moderate response growth, history of branch failure, tree has grown around metal stake
1971	Basswood	*Tilia americana*	Native	21.9	3.0	4.0	Medium	Fair	Remove	Grading	Yes	Wound on stem, likely from mechanical damage, codominant stem
1972	Hawthorn	*Crataegus* ssp.	Native	16.5	2.0	3.0	Medium	Poor	Remove	Safety/Grading	No	Decay, exit holes, scaffold branch dieback, live crown on one side only
1973	Basswood	*Tilia americana*	Native	51.7	4.0	6.5	Medium	Poor	Remove	Safety/Grading	No	Previously topped due to overhead wires, history of branch failure, decay with poor response growth, 1 stem dead
1974	Basswood	*Tilia americana*	Native	28.0	4.0	4.0	Medium	Poor	Remove	Safety/Grading	No	Decay with moderate response growth, previously topped due to overhead wires, codominant stem
1975	Basswood	*Tilia americana*	Native	16.0	5.0	4.0	Medium	Fair	Remove	Grading	Yes	Codominant stem with unbalanced crown
1976	Black Cherry	*Prunus serotina*	Native	48.8	2.0	6.0	Medium	Poor	Remove	Safety/Grading	No	Growing into adjacent cherry, extensive gummosis, history of branch failure, dieback
1977	Black Cherry	*Prunus serotina*	Native	47.7	1.0	4.0	Medium	Fair	Remove	Grading	Yes	Sapsucker feeding, some decay with moderate response growth
1978	White Cedar	*Thuja occidentalis*	Native	15-20	1.0	2.0	High	Very Poor	Retain/Remove	Safety/Grading (Opt. 2/3)	No	Large portions of deadwood
1979	White Cedar	*Thuja occidentalis*	Native	15-20	1.0	2.0	High	Very Poor	Retain/Remove	Safety/Grading (Opt. 2/3)	No	Large portions of deadwood
FODM3-1 North Edge	Trembling Aspen	*Populus tremuloides*	Native	13-28	15.0	3-5	Low	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged. Some trees have medium potential for failure due to recent history of branch failures from ice accumulation.
	Balsam Poplar	*Populus balsamifera*	Native	20-28	3.0	4.0	Medium	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	Hawthorn	*Crataegus* ssp.	Native	20.0	3.0	3-4	Medium	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	Black Walnut	*Juglans nigra*	Native	25.0	1.0	4.0	Medium	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
FODM3-1 West Edge/ SWM Block 122	Trembling Aspen	*Populus tremuloides*	Native	10-36	40.0	1-5	Low	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	White Cedar	*Thuja occidentalis*	Native	12-38	10.0	2-4	Low	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged. Three of these trees have been identified as dead standing trees; however, as they are located within the proposed SWM Block 122 and is not within striking distance of a component of the development that may pose a safety concern, it is proposed that they will be retained.

Hart Property - Tree Preservation Plan
Tree Inventory Data

Tree #	Common Name	Scientific Name	Native/Non-Native	DBH (cm)	Stem Count	Crown Radius (m)	Risk for Structural Failure	Overall Condition	Proposed Action	Rationale for Removal	Compensation Required	Comments
FODM3-1 West Edge/ SWM Block 123	Trembling Aspen	*Populus tremuloides*	Native	11-32	19.0	2-4.5	Low	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	Black Walnut	*Juglans nigra*	Native	15-20	2.0	3	Medium	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	Hawthorn	*Crataegus* ssp.	Native	15-20	2.0	3	Medium	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	Balsam Poplar	*Populus balsamifera*	Native	15-20	2.0	3	Medium	Fair	Retain		No	Trees within 5m of development line identified, but not individually tagged.
	Sugar Maple	*Acer saccharum*	Native	15	1.0	3	Low	Good	Retain		No	Trees within 5m of development line identified, but not individually tagged.

APPENDIX III
Conditions of Assessment

Conditions of Tree Assessment

Limitations

This tree inventory and assessment is based on the circumstances and observations as they existed at the time of the site inspection of the Client's Property at 132 Harts Lane, Guelph Ontario (the "Property") and the trees situated thereon by NRSI and upon information provided by the Client to NRSI. The opinions in this assessment are given based on observations made and using generally accepted professional judgment, however, because trees are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this assessment are valid only at the date any such observations and analysis took place. No guarantee, warranty, representation or opinion is offered or made by NRSI as to the length of the validity of the results, observations, recommendations and analysis contained within this assessment. As a result, the Client shall not rely upon this assessment, save and except for representing the circumstances and observations, analysis and recommendations that were made as at the date of such inspections. It is recommended that the trees discussed in this assessment should be re-assessed periodically, where required (i.e. within 1 year).

Further Services

Neither NRSI, nor any assessor employed or retained by NRSI (the "Assessor") for the purpose of preparing or assisting in the preparation of this assessment shall be required to provide any further consultation or services to the Client, save and except as already carried out in the preparation of this assessment and including, without limitation, to act as an expert witness or witness in any court in any jurisdiction unless the Client has first made specific arrangements with respect to such further services, including, without limitation, providing the payment of the Assessor's regular hourly billing fees.

NRSI accepts no responsibility for the implementation of all or any part of the assessment, unless specifically requested to examine the implementation of such activities recommended herein. In the event that inspection or supervision of all or part of the implementation is requested, that request shall be in writing and the details agreed to in writing by both parties.

Assumptions

The Client is hereby notified and does hereby acknowledge and agree that where any of the facts and information set out and referenced in this assessment are based on assumptions, facts or information provided to NRSI, the Client and/or third parties and unless otherwise set out within this assessment, NRSI will in no way be responsible for the veracity or accuracy of any such information and further, the Client acknowledges and agrees that NRSI has, for the purposes of preparing their assessment, assumed that the Property, which is the subject of this assessment is in full compliance with all applicable federal, provincial, municipal and local statutes, regulations, by-laws, guidelines and other related laws. NRSI explicitly denies any legal liability for any and all issues with respect to non-compliance with any of the above-referenced statutes, regulations, by-laws, guidelines and laws as it may pertain to or affect the Property to which this assessment applies.

Neither all nor any part of the contents of this assessment shall be disseminated to the public through advertising, public relations, news, sales, the internet or other media (including, without limitation, television, radio, print or electronic media) without the prior written consent of NRSI.

Restriction of Assessment

The assessment carried out was restricted to the Property as identified within this report. No assessment of any other trees has been undertaken by NRSI. NRSI is not legally liable for any other trees on the Property except those expressly discussed herein. The conclusions of this assessment do not apply to any areas, trees, or any other property not covered or referenced in this assessment.

Professional Responsibility

In carrying out this assessment, NRSI and any Assessor appointed for and on behalf of NRSI to perform and carry out the assessment has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out this assessment. The assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect

attack, discolored foliage (during the leaf-on period), the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. Except where specifically noted in the assessment, none of the trees examined on the property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken.

While reasonable efforts have been made to ensure that the trees recommended for retention are healthy, no guarantees are offered, or implied, that these trees, or all parts of them will remain standing. It is professionally impossible to predict with absolute certainty the behaviour of any single tree or group of trees, or all their component parts, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most trees have the potential to fall, lean, or otherwise pose a danger to property and persons in the event of adverse weather conditions, and this risk can only be eliminated if the tree is removed.

Without limiting the foregoing, no liability is assumed by NRSI or its directors, officers, employers, contractors, agents or Assessors for:

a) any legal description provided with respect to the Property;
b) issues of title and or ownership respect to the Property;
c) the accuracy of the Property line locations or boundaries with respect to the Property; and
d) the accuracy of any other information provided to NRSI by the Client or third parties;
e) any consequential loss, injury or damages suffered by the Client or any third parties, including but not limited to replacement costs, loss of use, earnings and business interruption; and
f) the unauthorized distribution of the assessment.

Third Party Liability

This assessment was prepared by NRSI exclusively for the Client. The contents reflect NRSI's best assessment of the trees situated on the Property in light of the information

available to it at the time of preparation of this assessment. Any use which a third party makes of this assessment, or any reliance on or decisions made based upon this assessment, are made at the sole risk of any such third parties. NRSI accepts no responsibility for any damages or loss suffered by any third party or by the Client as a result of decisions made or actions based upon the use or reliance of this assessment by any such party.

General

Any plans and/or illustrations in this assessment are included only to help the Client visualize the issues in this assessment and shall not be relied upon for any other purpose.

This report shall be considered as a whole, no sections are severable, and the assessment shall be considered incomplete if any pages are missing.