REPORT
PROJECT: 131947-6.04.03

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP
CITY OF OTTAWA

Prepared for: Tartan Homes Corporation
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1 INTRODUCTION

1.1 Purpose

The purpose of this report is to investigate and confirm the adequacy of public services for the proposed site. This report will review major municipal infrastructure including water supply, wastewater collection and disposal and management of stormwater. This report will also include a Sedimentation and Erosion Control Plan.

This report is being prepared as a technical document in support of a re-zoning application for the subdivision, and was prepared in accordance with the November 2009 "Servicing Study Guidelines for Development Applications" in the City of Ottawa. **Appendix A** contains a customized copy of those guidelines which can be used as a quick reference for the location of each of the guideline items within the study report.

1.2 Background

The City of Ottawa completed a Community Design Plan (CDP) for the Village of Carp in June 2004. Among other things the CDP recommended a preferred Land Use plan for the Village of Carp. In support of the CDP, A.J. Robinson assisted the City of Ottawa in March 2005 with the preparation of an Environmental Management Plan (EMP). Attached for reference in **Appendix A**, is a copy of the Village of Carp – Community Design Plan – Schedule A – Land Use Plan which was extracted from the EMP report. Area I on that plan, which includes 232 Donald B. Munro Drive, is designated as low density residential land use.

In 2011, D & H Rivington Enterprises started the Green Meadows subdivision which is located south of Donald B. Munro Drive also in Area I. They retained the services of exp Services Inc. to complete a Site Servicing and Stormwater Management Report for the Green Meadows Subdivision. That report provided a detailed description and design for water supply, wastewater collection and stormwater management for the Green Meadow development. That design also included a storm sewer outlet for the subject site and extension of both a sanitary sewer and watermain along the section of Donald B. Munro Drive in front of the subject site. The original watermain and sanitary sewer were constructed in the mid-1990's in that street up to the limits of the Green Meadows development and subject site.

1.3 Subject Site

The current concept plan for the subject site is shown in **Figure 1.1**. The site covers about 24.3 ha but only about 8.0 ha are zoned for urbanization, the balance will remain as a Natural Environmental Area (NEA). The site is located at 232 Donald B. Munro Drive in the Village of Carp. It is located between two existing residential developments with an unopened road allowance to the north and Donald B. Munro Drive to the south. The proposed development includes a mix of single-family units; semi-detached units and townhouses, totalling 117 units. The existing topography is from north to south so municipal services will connect and outlet to Donald B. Munro Drive.

1.4 Scope

Tartan Homes Corporation is planning to develop the subject site. This report is being prepared in support of a re-zoning application for the subject lands. This report will provide a recommended preliminary servicing plan for the major municipal infrastructure needed to support development of the site. The review will be a macro level study with further details to be confirmed and provided

during the detailed design process in the form of detail drawings and design briefs. This report will demonstrate how proposed municipal servicing is in conformance with previous servicing studies. Any deviation from those documents will also be identified with rationalization for the change.

1.5 Phasing

The project is expected to be developed as one phase.

1.6 Previous Studies

Some of the previous studies, reports and designs that provided background, context and development recommendations for the subject sire include the following:

1. **Village of Carp, Communal Water Supply and Sewage Systems**, August 1993, by Kostuch Engineering Limited for the Regional Municipality of Ottawa-Carleton. This design included construction of a 200 mm dia watermain and 250 mm dia sanitary sewer in Donald B. Munro Drive up to the western limit of the subject site.
2. **Community Design Plan (CDP) for the Village of Carp**, City of Ottawa June 2004. The CDP identified areas for urbanization including Area I which includes a portion of the subject land.
3. **Village of Carp Environmental Management Plan (EMP)**, City of Ottawa by Robinson Consultants Inc., March 2005. The EMP was prepared in support of the CDP and provided recommendations for treatment of stormwater runoff including that from the subject site.
4. **Site Servicing and Stormwater Management Report**, August 2011, prepared by exp Services Inc., for D & H Rivington Enterprises. The report provided the detail design of the Green Meadows Subdivision. The design of that subdivision included runoff allowances for the subject site for both minor and major flows.

The subject property will follow the servicing recommendations of these reports.

1.7 Environmental Issues

The subject property covers about 24.3 ha of which only 8.0 ha is proposed for urbanization. The balance is proposed to remain undeveloped as an environmental area. Some of the area which is proposed for urbanization has been stripped of vegetation including topsoil. About 60% of the property is still vegetated with trees and shrubs. A tree cutting permit will be required prior to development.

There is an existing ditch which bisects the site in a north-south direction and carries runoff from the property to a catchbasin which is connected to the minor storm sewer system constructed as part of the Green Meadows subdivision south of Donald B. Munro Drive.

In the spring of 2021, the City Natural Systems and Rural Affairs staff, the applicant and environmental consultants field-proofed and confirmed the boundary between development and environmental protection lands, and this boundary will be reflected in a future zoning by-law application.

1.8 Pre-Consultation

There was a pre-consultation meeting with the City of Ottawa on December 16, 2020 and a copy of the meeting notes are attached in **Appendix A**. Some of the topics covered during the meeting included the following:

- Traffic Impact Assessment Screening Form
- Affordability
- Townhouses
- Noise wall potential
- Capacity of existing water supply and wastewater collection systems
- Environmental Protection Zone
- Soil Conditions
- Hydrogeotechnical Report
- Stormwater Management
- Speed Limits
- Environmental Impact Statement and IER
- Zoning Limits
- Headwater Assessment
- Parkland Dedication
- Village Entrance
- Tree Conservation Report

1.9 Geotechnical Consideration

Paterson Group Inc., completed a geotechnical investigation report on October 4, 2021 titled, “Geotechnical Investigation Proposed Residential Development 232 Donald B. Munro Drive Village of Carp, Ontario”. The report provides recommendations for both house and servicing construction. Parts of the site consist of clay to the extent that grade raise restrictions in some areas are limited to between 1.8 m and 2.5 m. The report also recommended obtaining a Permit To Take Water. Other topics included in the preliminary report include Site Grading and Preparation; Pavement Design and Groundwater Control.

1.10 Watercourses and Setbacks

There is an existing watercourse that bisects the site in a north to south direction. The watercourse carries surface runoff from the natural environment area of the property and outlets to an existing storm sewer system. The lower reaches of that watercourse are proposed to be filled in the urbanized portion of the property. Consultation with the Mississippi Valley Conservation will confirm any permit requirements. Because the watercourse is proposed to be filled there will be no setback requirements related to the watercourse.

As noted earlier, the northern portion of the property is a Natural Environmental Area (NEA) which will not be urbanized. We understand that there will be a requirement to respect a 15 m setback distance from the NEA.

1.11 Private Services

A hydrogeological report will be required to support any development application for the property. The report will confirm the existence of any private services including wells within a radius of

influence of the development. If so identified, the development program will deal with such situations as needed.

2 WATER SUPPLY

2.1 Existing Conditions

There is an existing 200 mm watermain in Donald B. Munro Drive along the south boundary of the site. **Figure 2.1** shows the location of the existing watermains in the vicinity of the subject site. A 200 mm watermain stub has been provided for a connection to Street No 2. Although there is a looped water distribution network adjacent to the site in Donald B. Munro Drive, the City has advised that the Carp water distribution network is currently operating at capacity and cannot presently provide a reliable water supply to new urban expansions such as the subject site. The City also advised that it is reviewing the situation with an aim of increasing the Carp water supply system in order to accommodate further urban expansion in Carp.

2.2 Design Criteria

2.2.1 Water Demands

Water demands have been calculated for the site based on per unit population density and consumption rates taken from Tables 4.1 and 4.2 of the City of Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Single Family 3.4 person per unit
- Townhouse and Semi-Detached 2.7 person per unit
- Average Apartment 1.8 person per unit
- Residential Average Day Demand 280 l/cap/day
- Residential Peak Daily Demand 700 l/cap/day
- Residential Peak Hour Demand 1,540 l/cap/day
- ICI Average Day Demand 50,000 l/gross ha/day
- ICI peak Daily Demand 75,000 l/gross ha/day
- ICI Peak Hour Demand 135,000 l/gross ha/day

Residential units in the subject site consists of street townhouses, single family lots and semi-detached units. A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

- Average Day 1.17 l/s
- Maximum Day 2.93 l/s
- Peak Hour 6.44 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Maximum Pressure — Maximum pressure at any point in the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552

kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Water Age	A total travel time of 5 days or less during basic day demand is reasonable. A resident time of 8 days should not be exceeded.

2.2.3 Fire Flow Rates

In the recent Technical Bulletin 'ISDTB-2014-02, Revisions to Ottawa Design Guidelines – Water', the fire flow requirements for single detached dwellings and traditional town and row houses can be capped at 10,000 l/min provided that there is a minimum separation of 10 meters between the backs of adjacent units and that the town and row house blocks are limited to 600 square meters of building areas and seven dwelling units. The townhouses and lots in the majority of this development meet the requirements of ISDTB-2014-02, the fire flow rate of 10,000 l/min (166.7 l/s) will be used in the fire flow analysis.

There are several locations where the rear of the single family home faces the side of an adjacent unit. At these locations the distance between the rear and side of the adjacent building may be less than 10 meters depending on the size of the houses which appears to violate item 4.1 of Technical Bulletin ISDTB-2014-02 which requires a 10 meter separation between the backs of the adjacent units. Without the 10,000 l/min cap the Fire Underwriters Survey (FUS) method of determining fire flow rates cannot be used as wood frame buildings separated by less than 3 meters is considered one fire unit. As the side yard distances between houses are usually less than 3 meters then all adjacent houses are considered one fire unit which results in a very large fire flow which is impractical to achieve. At the locations where the rear yard to side yard distance is less than 10 meters, a fire flow can be determined if a 3 meter separation is provided between adjacent units. The locations of potential 3 meter building separations are shown on **Figure 2.2**, Conceptual Watermain Plan.

2.3 Proposed Water Plan

The proposed water plan for this development is shown on **Figure 2.2** which shows 200 mm watermains extended through the development. At this time the City of Ottawa is not providing watermain boundary conditions for the existing watermain on Donald B. Munro Drive pending further study. A watermain analysis was conducted for the adjacent Green Meadows Subdivision in a Site Servicing Report by exp Services Inc., March 2011 that is referenced in Section 1.6. The City provided a hydraulic boundary condition at the same location where Street No. 2 will connect to the existing watermain. The boundary condition was provided in 2007 and had a fire flow demand of 125 l/s which is less than the 167 l/s (10,000 l/mm) fire flow requirement per Section 2.2.3. No hydraulic analysis will be done on this site until the City of Ottawa can provide updated boundary conditions for the existing watermain on Donald B. Munro Drive.

A discussion on the system pressure requirements is outlined in Section 2.2.2 above, some comments and observations of the proposed water plan follow.

Maximum Pressure	In the 2007 boundary condition a high pressure check elevation of 163.0 m was provided which corresponds approximately to a surface elevation of 106.7m at which the pressure is 552 kPa.
Minimum Pressure	Based on the peak hour boundary condition of 159.0 m provided in 2007 it is expected that all units in the proposed development will exceed the minimum pressure requirements of 276 kPa.
Fire Flow	Without a current boundary condition based on a 167 l/s fire flow demand it is difficult to speculate on the fire flows. As shown on **Figure 2.2,** Conceptual Watermain Plan, there are 21 lots on a dead end cul-de-sac at the east end of Street No. 1. While the 22 unlooped lots meet the requirements of Section 4.3.1 of the Ottawa Design Guidelines Water Distribution it may be possible that adequate fire flows cannot be achieved on the unlooped watermain. Fire flows can be achieved by increasing the size of the watermain on Street No. 2 from Donald B. Munro Drive to the east end of Street No. 1, however, the increase in pipe size increases the volume of water in the system which can affect water quality. Fire flows can also be calculated using the method from Appendix I of Technical Bulletin ISTB-2018-02. In this method an AA rated hydrant within 75 m of a building can contribute 5,700 l/min fire flow and 3,800 l/min for hydrants within 75 and 150 m from the building. Therefore a building with two Class AA rated hydrants within 75 m will have a fire flow of 5,700 + 5,700 l/min for a total of 11,400 l/min which exceeds the 10,000 l/min requirement outlined in Section 2.2.3. A hydraulic analysis is required to determine if the hydrants in the model can be classified as AA rating.
Water Age	There are 22 single family lots on Street No. 1 which are not on a looped watermain. An analysis is included in **Appendix B** which uses a consumption rate of 200 l/capital/day. Results of the analysis shows a turnover time for water consumption of less than 8 hours in the unlooped section. Before buildout the water quality on the cul-de-sac may be a concern based on the house building and occupancy schedule. An automatic flushing unit could be installed on the cul-de-sac to improve water turnover until a sufficient population is in place to provide the water demand.

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

The Carp Sanitary Pump Station is the wastewater outlet for all urban lands in the Village of Carp. Flows from that pump station are carried in a 300 mm dia forcemain to sanitary sewer systems in Kanata where flows are ultimately directed to the Robert O. Pickard Wastewater Treatment Facility.

In the mid-1990's, the former Regional Municipality of Ottawa-Carleton, constructed central municipal infrastructure in the Village of Carp including the Pump Station and sanitary sewers. The sewer system at that time extended eastward along Donald B. Munro Drive and terminated at the western limit of the subject property.

In about 2011 that sanitary sewer was extended a little further eastward as part of the Green Meadows subdivision development. At present there is a 250 mm dia sanitary sewer terminated at the doorstep of the subject site near Street No. 2. **Figure 3.1**, Existing Sanitary Sewers, shows the location of the existing wastewater infrastructure in the vicinity of the subject site. Besides the 250 mm dia sanitary sewer, a 200 mm dia watermain and a 300 mm dia pump station forcemain are also located in Donald B. Munro Drive in front of 232 Donald B. Munro Drive.

Although there is a sanitary sewer collection and disposal system in the Village of Carp, the City of Ottawa has advised that the station is presently at capacity and cannot accept flows from new urban expansion including the subject site. The City also advised it is in the process of reviewing the situation with an aim of increasing wastewater capacity in order to accommodate further urban expansion in Carp.

3.2 Master Servicing Studies

The City of Ottawa completed the Community Design Plan (CDP) for the Village of Carp in June 2004. The CDP provided a master plan for developments within the Village. Among other things it identified areas for urbanization which included the subject site. That property is identified as Area I on the Land Use plan from the CDP. A copy of same is included in **Appendix A**.

3.3 Design Criteria

The sanitary sewers for the subject site will be based on the standards of both the City of Ottawa and the provincial Ministry of the Environment Conservation and Parks. Some of the key criteria will include the following:

Average Day Residential Flow	280 l/cap/day
Residential Peaking Factor	Modified Harmon Formula (min – 2.0, max – 4.0)
Industrial Flow Rate	55,000 l/day/ha (N/A)
Commercial & Institutional Flow Rate	28,000 l/day/ha (N/A)
ICI Peaking Factor	1.5
Infiltration Rate	0.33 l/s/ha
Single Unit Population Density	3.4 ppu
Townhouse/Semi Unit Population Density	2.7 ppu
Velocities:	min – 0.6 m/s
	max – 3.0 m/s

3.4 Recommended Wastewater Plan

A Conceptual Sanitary Sewer Plan for 232 Donald B. Munro Drive is shown in **Figure 3.2**. Based on the preliminary concept plan, which includes 57 single units, 6 semi-detached units and 54 townhouses over an area of 8.02 ha, the peak wastewater flow from the property will be 6.61 l/s. A copy of this calculation is included in **Appendix C**. The minimum size sanitary sewers permitted by the City of Ottawa is 200 mm dia which at a minimum slope has a capacity of 19.66 l/s. Therefore all proposed sanitary sewers will be 200 mm dia in size.

There will be one connection to the existing 250 mm dia sewer in Street No. 2 which will service the western potion of the proposed subdivision. A second outlet sanitary sewer is recommended to outlet to Donald B. Munro Drive at Street No. 1. A new 200 mm dia sewer running westward along Donald B. Munro Drive will be needed to direct flows from the east portion of the proposed development to the existing outlet sewer.

3.5 Local Extraneous Flows

All sanitary sewers will be constructed to City of Ottawa standards, including testing prior to being put into service. There are no unusual local conditions within the subject site that are expected to contribute extraneous flows higher than those noted in the City's guidelines.

3.6 Sewer Calculations

Detailed sanitary sewer designs and drainage area plans, using criteria of the City of Ottawa and the provincial Ministry of Environment Conservation and Parks, will be provided during the detailed design of the subject site.

3.7 Environmental Constraints

The subject site covers an area of about 24.3 ha. Only about 8.0 ha of that area is zoned for urbanization while the balance is to remain as a naturalized environmental area. Accordingly, the southern limits of that environmental area will dictate the northern limit of the proposed subdivision. We understand that the urbanization of the site must respect a 15 m setback from the NEA.

4 STORMWATER MANAGEMENT

4.1 Existing Conditions

The subject property covers about 24.3 ha. The northern portion of the site is covered in vegetation while the southern portion has been cleared and grubbed. The site generally slopes from north to south with an average gradient in excess of 6%. There is an existing drainage ditch which bisects the site in a north south direction and directs surface runoff to an existing ditch inlet located adjacent to Donald B. Munro Drive. **Figure 4.1** shows the existing site topography.

The adjacent Green Meadows development was constructed in about 2011 and, among other things, included a minor storm sewer system which provided capacity for the subject site. **Figure 4.2** shows the location of the existing minor storm sewer system adjacent to the subject property. There is a 1050 mm dia storm sewer located in Donald B. Munro Drive adjacent to Street No. 2. That sewer system has been extended through the Green Meadows development where it passes frequent storm events through an oil and grit separator prior to release to the Carp River. The separator is designed to provide water quality treatment for both the Green Meadows development and the subject site.

4.2 Environmental Management Plan

The 2004 Community Design Plan for the Village of Carp and the Village of Carp Environment Management Plan, completed in 2005, proposed that runoff from Area I should receive quality treatment in a wet pond stormwater management facility. Among other areas, Area I includes the Green Meadows subdivision and the subject property. During the design of the adjacent and downstream Green Meadows subdivision, it was decided and agreed by relevant stakeholders that an oil and grit separator, in lieu of a wet pond facility, would be the preferred strategy for quality treatment of runoff from the subject site.

For reference, a copy of Section 6.2 Stormwater Management from the August 2011 Site Servicing and Stormwater Management Report by exp Services Inc., is included in **Appendix C**. Section 6.2 from the above noted report, explains the rationale of why an oil and grit separator (OGS) was the preferred treatment strategy by the City. It is our understanding that an OGS, sized for the Green Meadows development and the subject site was constructed and commissioned in about 2011 as part of the municipal infrastructure for the Green Meadows development.

4.3 Storm Sewer Design Criteria

In accordance with the October 2012 City of *Ottawa Sewer Design Guidelines*, the following design criteria was used to size storm sewers using the rational method:

- Design return period: 1:2 year (subdivision)
- Time of Concentration: 10 minutes
- Minimum velocity: 0.8 m/s
- Maximum velocity: 3.0 m/s
- Manning's roughness coefficient: 0.013
- Minimum allowable slopes: refer to below **Table 4.1**.

Table 4.1 City of Ottawa Minimum Allowable Slopes for Storm Sewer Pipes

DIAMETER (MM)	SLOPE (%)
250	0.432
300	0.340
375	0.250
450	0.195
525	0.160
600	0.132
675	0.113
750 and larger	0.100

Based on the preliminary concept plan for the property, a reasonable average runoff coefficient for the site is 0.55 for rear yards and 0.70 for roadways including Donald B. Munro Drive.

4.4 Proposed Minor Storm Plan

Based on the design criteria noted above, a preliminary storm sewer design sheet and **Figure 4.3**, Conceptual Storm Drainage Plan were developed and are included in **Appendix C**. The proposed minor storm plan is also shown on **Figure 4.4**. Most of the minor storm sewers within the site could drain from Street No. 2 into the existing 1050 mm dia sewer. It is also recommended that flows from the environmental area north of the urbanized area be collected in that sewer section. To accomplish this a drainage swale could be constructed along the edge of the environmental area and directed to a location noted on **Figure 4.4**. From there the external flows will be carried in the minor storm sewer pipes. Runoff from the eastern portion of the site could outlet along Street No. 1 to Donald B. Munro Drive at manhole 400 where shown in **Figure 4.4**. The existing 250 mm dia storm sewer along that street will need to be replaced with new 450 mm and 525 mm dia sewers which would connect to the existing 1050 mm dia sewer. From there, minor runoff from the subject site will discharge into the Green Meadows minor storm sewer.

4.5 Dual Drainage

The urbanized portion of the subject site will be designed with a dual drainage system that accommodates both minor and major stormwater runoff. During frequent storm events, the effective runoff of a catchment area is directly released via catchbasin inlets to the network of storm sewers, called the minor system. During less frequent storm events, the balance of the flow (in excess of the minor flow) is accommodated by a system of rear yard swales and street segments, called the major system. Opportunities for on-site storage in road sags across the subject site are limited. Inlet control devices (ICDs) will be utilized across the site to control the surcharge in the minor system during infrequent storm events and maximize use of available on-site storage. ICDs will be sized at the detailed design stage.

As noted above, the design of the downstream Green Meadows site accounts for runoff from 28.58 ha of future development area north of Donald B. Munro Drive. The rational method spreadsheet accounts for the 5 year flow calculated based on a runoff coefficient of 0.5. This results in a 5 year flow of 2.4 cms. Of the 24.3 ha proposed site, approximately 8.0 ha will be urbanized and the remainder will remain undeveloped. It is proposed that the undeveloped portion be picked up in the minor system at the top of end of the subdivision. Based on a preliminary calculation, the 2 year capture from the urbanized portion and full capture from the undeveloped portion corresponds to a minor system capture of approximately 2.0 cms, which is less than the allocated flow in the receiving pipe.

In terms of major flow from the subject site, the Green Meadows report contains 100 year runoff calculations that account for the 100 year runoff from the 28.58 ha parcel in the downstream culvert crossing of Green Meadows storm sewer.

Opportunity to increase minor system capture at available road sags of the subject site will be explored; however, there is limited opportunity for on-site storage in the form of street sags. This means that a significant portion of the site will have continuous grade. There is an inefficiency to how much runoff catchbasins on continuous grade can capture. Ultimately this means that minor system capture can be increased above the 2 year level of service on street segments with road sags, but not those on continuous grades. At this stage it is anticipated that a combination of two approaches would be required at the detailed design stage: minor system capture would be increased at available road sags, and, if required, the opportunity to cascade major flow across Donald B. Munro to the Green Meadows development would be considered.

Since the design of the downstream receiving system, City guidelines related to stormwater management design have been updated. As such, best effort will have to be made to follow current City of Ottawa design criteria with respect to dual drainage design while respecting the capacity of the downstream system.

4.6 Hydraulic Evaluation

A hydraulic grade line (HGL) assessment was not carried out for the downstream receiving system; however, a dynamic HGL assessment will be completed for the subject site at the detailed design stage. This will help to demonstrate that the required minimum 0.3 m clearance between potential under side of footing (USF) elevation and the HGL is maintained across subject site.

4.7 Water Quality and Quantity Control

An oil and grit separator provides water quality treatment of the runoff from the Green Meadows subdivision. The unit was sized to provide treatment for a 28.58 ha area north of Donald B. Munro Drive with a corresponding runoff coefficient of 0.5. The proposed development area of 8.0 ha would require water quality treatment. Based on an average runoff coefficient of 0.60 (reflective of current City guidelines), the resulting AxC is 4.8, less than that assumed for the area in the Green Meadows Site Servicing and SWM Report (28.58 ha x 0.5 = 14.3). Despite the proposed AxC being lower than that previously assumed, due to the proprietary nature of the oil grit separator, it is IBI's opinion that the supporting design calculations would need to be revisited by the manufacturer once the details of the subdivision design are known to confirm the performance of the oil grit separator.

If the proposed development exceeds the equivalent AxC considered in the Green Meadows report (that is, an area of 28.58 ha with a runoff coefficient of 0.5), on-site quality and quantity treatment may be required.

4.8 Macro Grading Plan

Figure 4.5 shows a macro level grading plan for the subject property. Because of existing topography, all streets will slope from the north to the south towards Donald B. Munro Drive. This figure also shows the proposed routing of surface flows along the three subdivision streets. Major storm flows along Street No. 2 will flow to Donald B. Munro Drive at the western intersection to that street. About half of the major storm runoff from Street No. 1 will flow towards the eastern connection with the existing street.

Development of this site will pose some grading challenges. The site topography is generally steep with existing average slopes from north to south in excess of 6%. One consequence of this is that

it will be challenging to tie the new development into the surrounding properties. It is likely there will be terracing required in several areas of the site including along the rear of the lots and blocks that abut the NEA area. It is also likely there could be some retaining walls required throughout the site. Some terracing and potential retaining wall locations are indicated on **Figure 4.5**. The existing topography could also lend itself well to walkout units. Full details of the ultimate grading scheme for the development will be confirmed at the time of final design.

The storm drainage strategy for the property will need to include allowances to capture surface runoff from the NEA. The storm sewer design noted in Section 4.4 assumes these flows (up to the 1:100 yr) will be captured in a ditch inlet to be located near the existing ditch which in turn will outlet to a nearby storm sewer in Street No. 1.

The existing grades along the 15 m setback limit are variable and may not be ideal to route the NEA external flows to one location. It is therefore recommended that during the detail design of the development that alternative drainage designs, better suited to the existing topography, be investigated. It is possible that the flows from the NEA area may be captured in several ditch inlets as opposed to one prior to being routed to the proposed local storm sewer system. In that instance capturing the NEA drainage could be incorporated into the rear yard drainage design of the properties that back onto the NEA.

5 EROSION AND SEDIMENTATION CONTROL PLAN

5.1 General

During construction, existing stream and conveyance systems can be exposed to significant sediment loadings. Although construction is only a temporary situation, it is proposed to introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These will include:

- Until the local storm sewers are constructed, groundwater in trenches will be pumped into a filter mechanism prior to release to the environment or alternatively, dewatering will be routed to the nearest storm sewer;
- Bulkhead barriers will be installed at the nearest downstream manhole in each sewer which connects to an existing downstream sewer;
- Seepage barriers will be constructed in any temporary drainage ditches;
- Filter cloths will remain on open surface structures such as maintenance holes and catchbasins until these structures are commissioned and put into use; and
- Silt fence on the site perimeter.

5.2 Trench Dewatering

The two likely options for disposal of taken water during construction are to discharge into the existing storm sewer in Donald B. Munro Drive which will outlet to an existing Oil and Grit Separator in the Green Meadow subdivision and which provides end-of-pipe treatment or to discharge into a filter trap made up of geotextile filters and straw bales similar in design to the OPSD 219.240 Dewatering Trap. These will be constructed in a bowl shape with the fabric forming the bottom and the straw bales forming the sides. Any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filters as needed, including sediment removal and disposal and material replacement as needed.

5.3 Bulkhead Barriers

Because the proposed site sewers discharge into sewers in downstream developments and in order to prevent sediments entering those sewers, ½ diameter bulkheads will be constructed over the lower half of the new outletting sewers to reduce sediment loadings during construction. These bulkheads will trap any sediment laden flows, thus preventing any construction-related contamination into existing sewers. The bulkheads will be inspected and maintained including periodic sediment removal as needed.

5.4 Seepage Barriers

In order to further reduce sediment loading to the environment or the Stormwater Management Facility, a seepage barrier will be installed on any surface water courses at appropriate locations that may become evident during construction. These barriers will be similar to either the Light Duty Straw Bale Barrier as per OPSD 219.100 or the Light Duty Silt Fence Barrier as per OPSD219.110 (copies of both are included in **Appendix E**). They are typically made of layers of straw bales or geotextile fabric staked in place. All seepage barriers will be inspected and maintained as needed.

A potential Erosion and Sedimentation Control Plan (ESC) is shown on **Figure 4.6**. Among other items, light duty silt fence barriers should be erected and maintained around most of the perimeter of the property including along the 15 m NEA set back limits. Straw bale barriers should also be installed along the existing Donald B. Monroe Drive ditch near lot 15. Existing catchbasins and manhole covers could also be equipped with filter cloths. A final ESC plan will be developed by the Owner's selected contractor for review by relevant stakeholders.

6 APPROVALS AND PERMIT REQUIREMENTS

6.1 City of Ottawa

The City of Ottawa will review all and approve most development applications as they relate to provision of water supply, wastewater collection and disposal, and stormwater conveyance and treatment. Ultimately, the City will issue final approvals for construction, including:

- MECP Section 53 Application for Sewers
- Form 1 for Watermains
- Commence Work Notification

6.2 Province of Ontario

At the time of final design approvals, the Ministry of Environment, Conservation and Parks (MECP) will approve the local sewers under Section 53 of the Ontario Water Resources Act and issue the appropriate Environmental Compliance Approvals. If required, the MECP will also issue a Permit To Take Water (PTTW).

6.3 Conservation Authority

The Mississippi Valley Conservation will be consulted during the detailed design process to confirm the requirements for potential permits.

6.4 Federal Government

There are no anticipated permits, authorizations or approvals required from the federal government for the proposed development.

7 CONCLUSIONS AND RECOMMENDATIONS

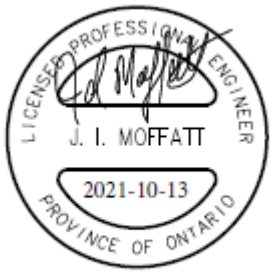
7.1 Conclusion

The Village of Carp Community Design Plan has been well thought out and planned. That plan has provided development guidelines and criteria for the subject site. Including updated information contained in this report, it appears that the subject lands can proceed with development when a number of improvements and/or extensions of existing major municipal infrastructure are completed. These include:

1. Increasing capacity to the Village of Carp water supply system.
2. Increasing capacity to the Carp Sanitary Pump Station.
3. Extending the sanitary sewer along Donald B. Munro Drive.
4. Upgrading the existing storm sewer in Donald B. Munro Drive.

7.2 Recommendation

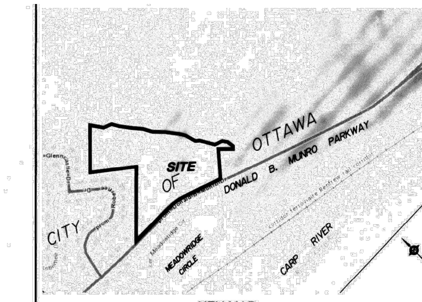
Once the major municipal infrastructures identified in Section 7.1 are implemented, the subject site can proceed to final development. This report therefore recommends that the City provide relevant draft conditions and that the planning and development review processes for the subject lands move forward.



James I. Moffatt, P. Eng.
Associate

Meghan Black, P. Eng.
Associate

https://ibigroup.sharepoint.com/sites/Projects1/131947/Internal Documents/6.0_Technical/6.04_Civil/03_Tech-Reports/Assessment of Adequacy/Sub 1/CTR-Assessment of Adequacy-2021-01-06.docx\



KEY MAP
NOT TO SCALE

DRAFT PLAN OF SUBDIVISION OF

PART OF LOT 17
CONCESSION 2

Geographic Township of Huntley

CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 1000

40 30 20 10 0 20 40 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
The boundaries of the lands to be subdivided and their relationship to adjoining lands have been accurately and correctly shown.

Oct. 5/21
Date

T. Hartwick
ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE

This is to certify that we are the owners / agents of the lands to be subdivided and that this plan was prepared in accordance with our instructions.

Oct 8, 2021
Date

Constance Rivington-Howie (Executor)
Estate of Douglas Gordon Rivington
I have authority to bind the corporation

Oct 8, 2021
Date

Susan Rivington (Executor)
Estate of Douglas Gordon Rivington
I have authority to bind the corporation

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 OF THE PLANNING ACT

(a) see plan
(b) see plan
(c) see plan
(d) single and multi-family residential housing and walkway
(e) see plan
(f) see plan
(g) see plan
(h) City of Ottawa
(i) see soils report
(j) see plan
(k) sanitary, storm sewers, municipal water, bell, hydro, cable and gas to be available
(l) see plan

PROPOSED LAND USE TABLE

PROPOSED USE	BLOCKS	UNITS	Ha (Ac)
SINGLES	1 - 57	57	4.306 (10.64)
TOWNHOMES	58, 59, 60, 62, 63, 65 - 72, 74 and 75	54	1.590 (3.93)
SEMI-DETACHED	61, 64 AND 73	6	0.264 (0.65)
STREETS	1, 2 AND 3	--	1.512 (3.73)
WALKWAY	76 AND 77	--	0.338 (0.84)
TOTAL		117	8.01 (19.79)

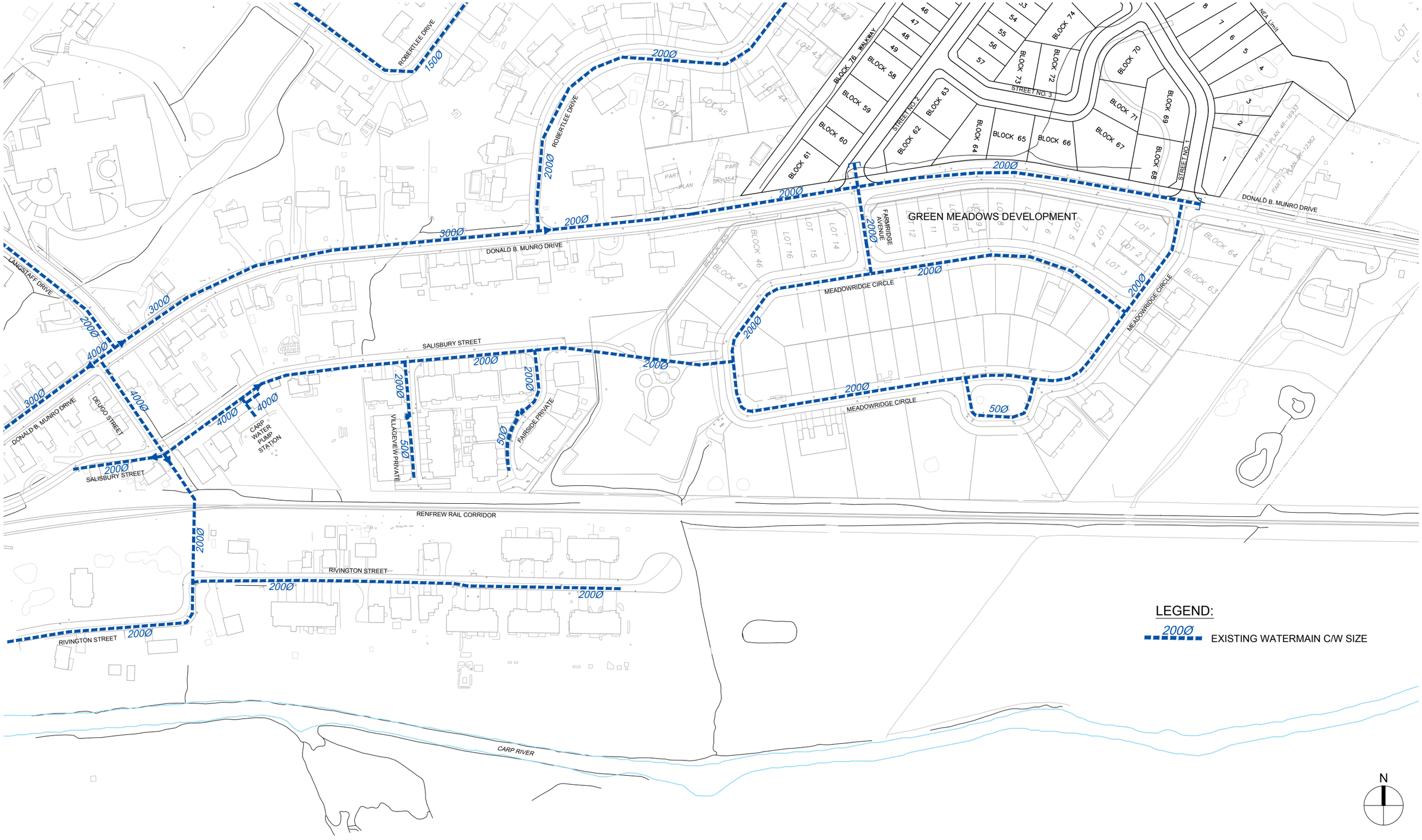
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com

Ontario Land Surveyors

Job No. 20703-20 Tartan Pt Lt 17 C2 HU DPS D13 | N

IBI

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES 232 DONALD B. MUNRO DRIVE VILLAGE OF CARP	CONCEPT PLAN	FIGURE 1.1



J:\13147_Carp\12_Production\103_Design\04_Civil_Land_AssessmentReports_Sheetdet\Figure 2.1 EXISTING WATERMAINS.dwg Layout Name: FIGURE 2.1 EXISTING WATERMAINS Plot Style: ------ Plot Scale: 1:4.526 Plotted At: 10/12/2021 8:30 PM Last Saved By: DSouma Last Saved At: Aug 31

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Scale

N.T.S.

Project Title

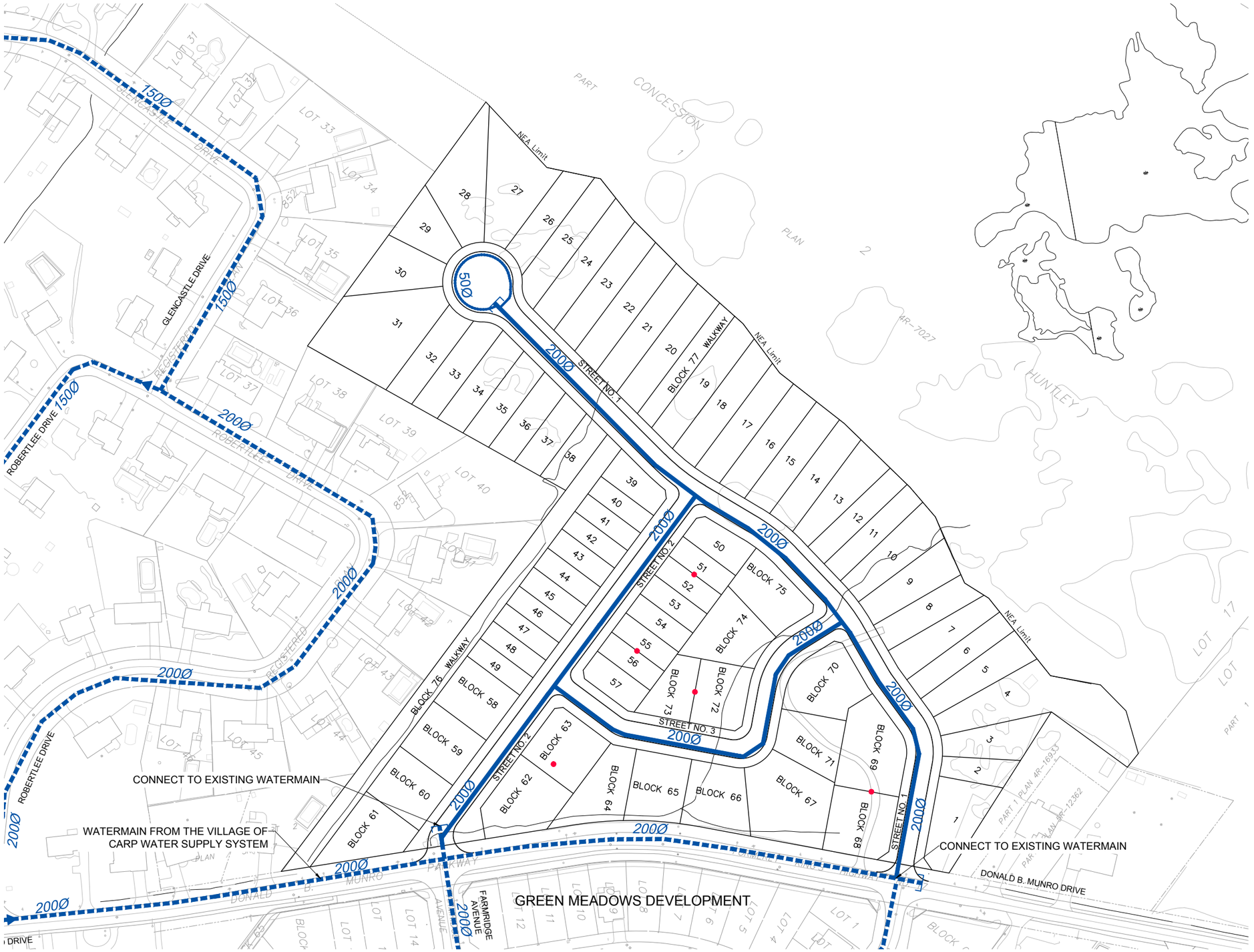
ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title

EXISTING WATERMAINS

Sheet No.

FIGURE 2.1



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N.T.S.

Project Title

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title

CONCEPTUAL WATERMAIN PLAN

Sheet No.

FIGURE 2.2

G:\131947_Carp\2.0_Production\2.03_Design\04_Civil_Land_Assessment\Reports_Sheeted\Figure 2.2 CONCEPTUAL WATERMAIN PLAN.dwg Layout Name: CONCEPTUAL WATERMAIN PLAN Plot Style: ------ Plot Scale: 1:4.526 Plotted At: 10/12/2021 8:32 PM Last Saved By: DSturns Last Saved At: Oct. 12

GREEN MEADOWS DEVELOPMENT

ROBERTLEE DRIVE
DONALD B. MUNRO DRIVE
LANCASTAFF DRIVE
SALISBURY STREET
DELVGO STREET
CARP PUMP STATION
VILLAGEVIEW PRIVATE
FAIRSIDE PRIVATE
FAIRRIDGE AVENUE
MEADOWRIDGE CIRCLE
STREET NO. 1
STREET NO. 2
STREET NO. 3
BLOCK 75 - WALKWAY
RIVINGTON STREET
RENFREW RAIL CORRIDOR
CARP RIVER

LEGEND:

- 200Ø EXISTING SANITARY SEWERS SIZE AND DIRECTION
- EXISTING SANITARY MANHOLE
- EXISTING FORCEMAIN CHAMBER
- 300Ø EXISTING SANITARY FORCEMAIN SIZE AND DIRECTION

N

IBI

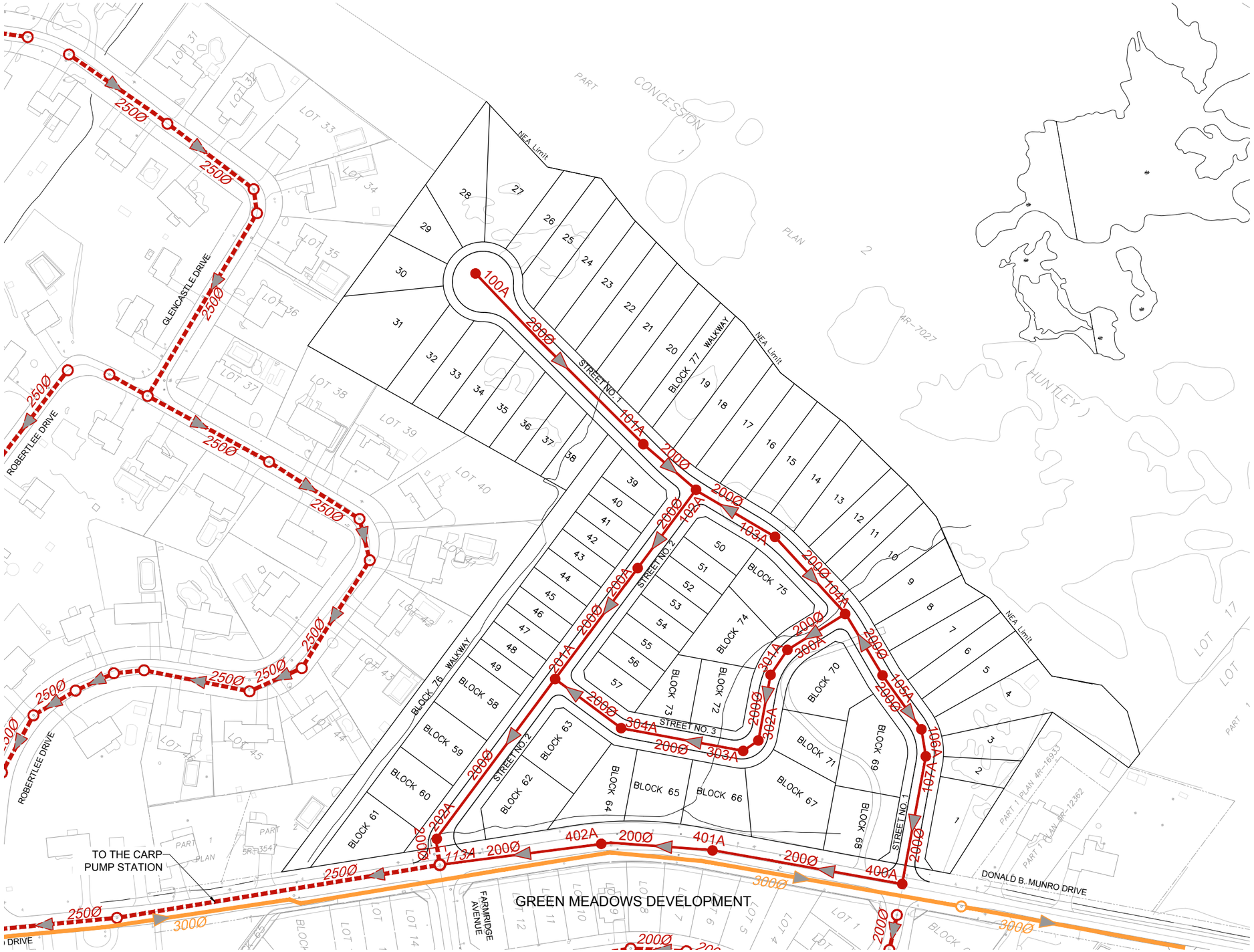
Scale: N.T.S.

Project Title: ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title: EXISTING SANITARY SEWERS

Sheet No.: FIGURE 3.1

A:\191947_Carp\2_Production\3_Design\04_Civil_Local_Assessment\Reports_Sheets\Set\Figure 3.1 EXISTING SANITARY SEWERS.dwg Layout Name: EXISTING SANITARY SEWERS Plot Style: ---- Plot Scale: 1:4.526 Plotted At: 10/13/2021 8:33 PM Last Saved By: DSturno Last Save At: May 14, 2021



J:\31947_2\pro\7.0_Reporting\7.03_Design\04_Civil\Land_Assessment\Reports_Sheets\Figure 3.2 CONCEPTUAL SANITARY SEWER PLAN.dwg Layout Name: CONCEPTUAL SANITARY SEWER PLAN Plot Style: ------ Plot Scale: 14.526 Plotted At: 10/13/2021 9:28 AM Last Saved By: Michael Lalonde

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N.T.S.

Project Title

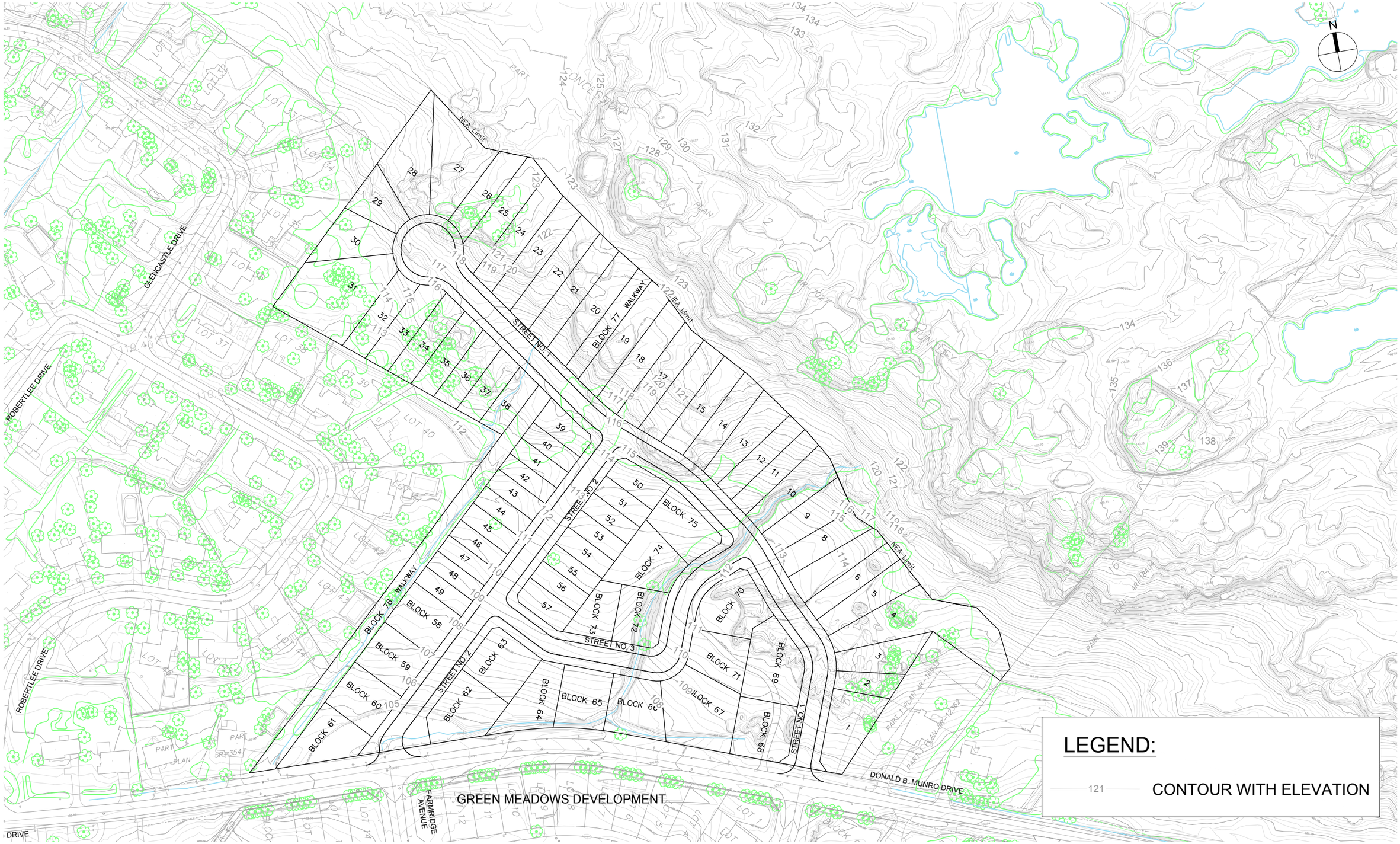
ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title

CONCEPTUAL
SANITARY SEWER PLAN

Sheet No.

FIGURE 3.2



C:\31947_Corp\7.0_Production\7.03_Design\04_Civil_Local_Assessment\Reports_Sheets\Art\Figure 4.1 EXISTING TOPOGRAPHY.dwg Layout Name: EXISTING TOPOGRAPHY Plot Style: ----- Plot Scale: 1:4.526 Plotted At: 10/12/2021 8:37 PM Last Saved By: DiSanna Last Saved At: Sep. 24

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Project Title
ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title
EXISTING TOPOGRAPHY

Sheet No.
FIGURE 4.1

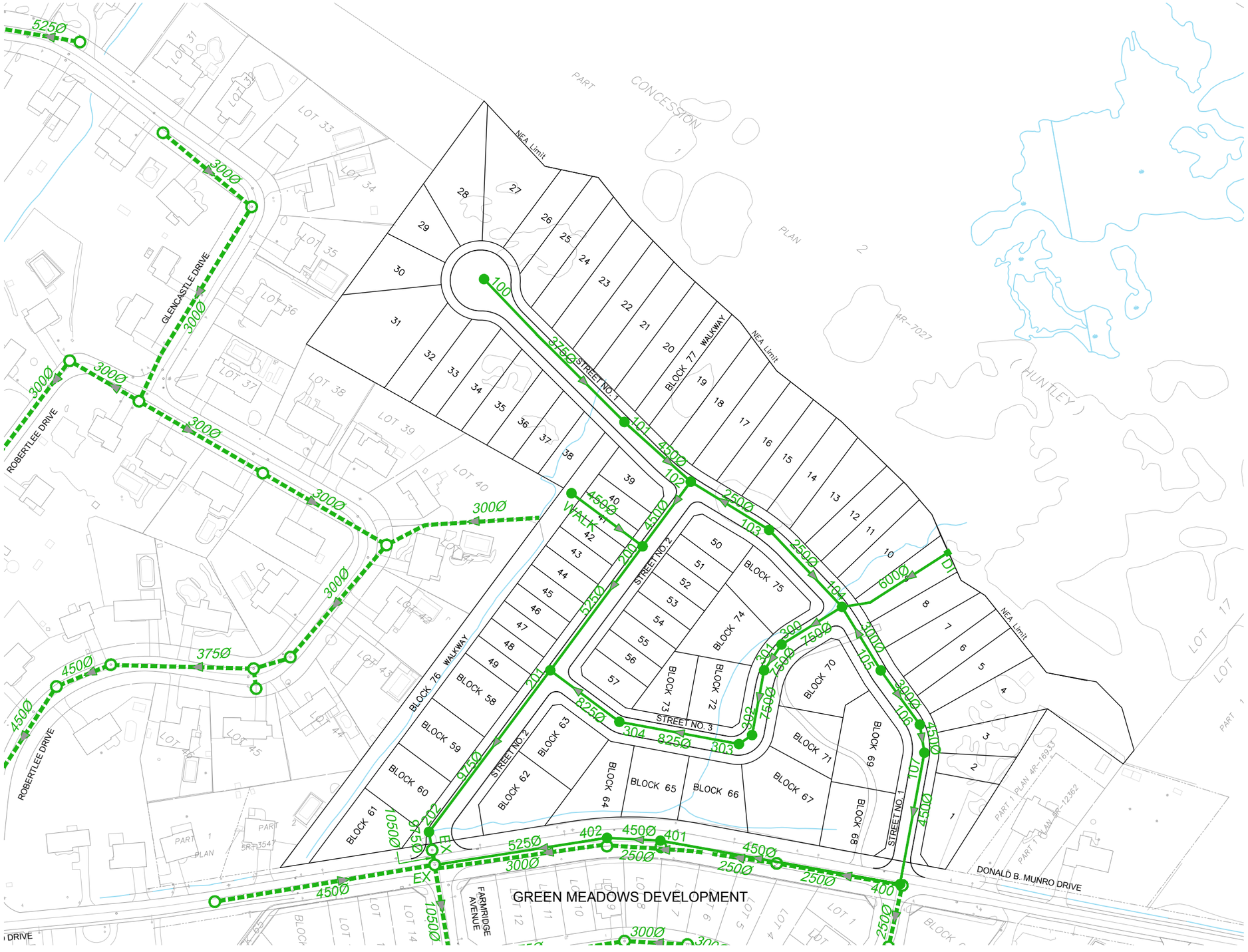
LEGEND:

2000Ø EXISTING STORM SEWERS SIZE AND DIRECTION

EXISTING STORM MANHOLE

C:\131947_Corp\12_Production\12.03_Design\04_Civil_Land_AssessmentReports_Sheetsets\Figure 4.2 EXISTING STORM SEWERS.dwg Layout Name: EXISTING STORM SEWERS Plot Style: ----- Plot Scale: 1:4,526 Plotted At: 10/12/2021 8:38 PM Last Saved By: DSturna Last Saved At: 10/12/2021 8:37 PM

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES 232 DONALD B. MUNRO DRIVE VILLAGE OF CARP	EXISTING STORM SEWERS	FIGURE 4.2

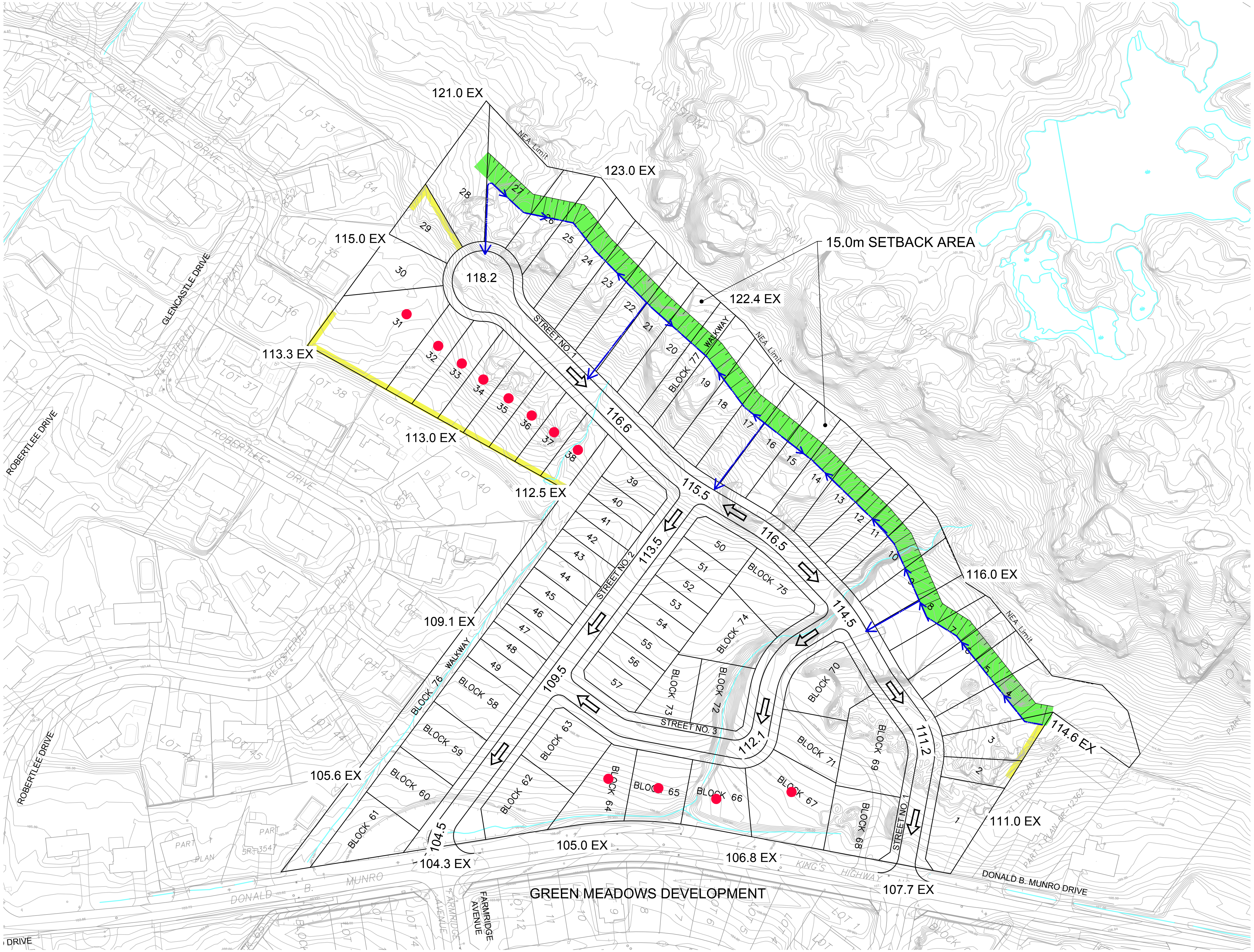


LEGEND:

- 1050Ø — PROPOSED STORM SEWERS SIZE AND DIRECTION
- PROPOSED STORM MANHOLE
- 200Ø — EXISTING STORM SEWERS SIZE AND DIRECTION
- EXISTING STORM MANHOLE

IBI	Scale: N.T.S.	Project Title: ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES 232 DONALD B. MUNRO DRIVE VILLAGE OF CARP	Drawing Title: CONCEPTUAL STORM SEWER PLAN	Sheet No.: FIGURE 4.4

J:\131947_Carp\7.0_Production\7.03_Design\04_Civil_Land_Assessment\Reports_Sheets\Figure 4.4 CONCEPTUAL STORM SEWER PLAN.dwg Layout Name: CONCEPTUAL STORM SEWER PAN Plot Style: ------ Plot Scale: 14.626 Plotted At: 10/15/2021 8:43 PM Last Saved By: Emma Lee-Sang, M.Sc., P.Eng.



LEGEND:

112.8	PROPOSED GRADE
115.0 EX	EXISTING GRADE
⇦	PROPOSED MAJOR OVERLAND FLOW ROUTE
(green hatched band)	POTENTIAL TERRACING
(yellow line)	POTENTIAL RETAINING WALLS
●	POTENTIAL WALKOUT UNITS
(blue arrowed line)	NEA SWALE IN REAR YARDS

J:\131947_Carp\7.0_Production\7.03_Design\04_Civil_Land_AssessmentReports_SheetsSet\Figure 4.5 CONCEPTUAL MACRO GRADING PLAN.dwg Layout Name: CONCEPTUAL MACRO GRADING PLAN Plot Style: ---- Plot Scale: 1:4.526 Plotted At: 10/12/2021 8:55 PM Last Saved By: DSiurna Last Saved At: Oct. 7, 21

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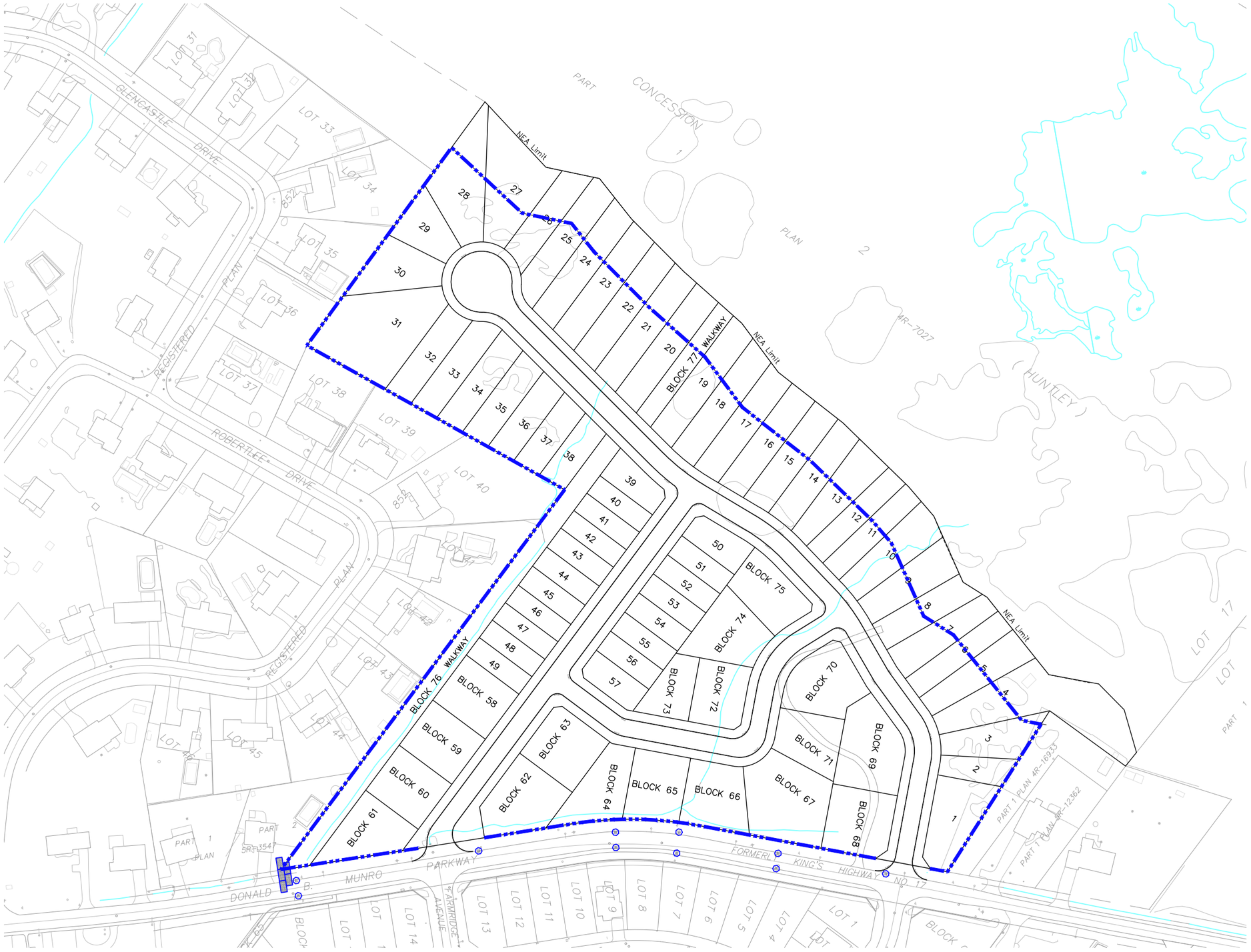
Project Title: ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title: CONCEPTUAL MACRO GRADING PLAN

Sheet No.: FIGURE 4.5



LEGEND:

- SILT FENCE BARRIER
- STRAW BALE BARRIER
- FILTER CLOTH TRAPS

J:\151847_Carp\2.0_Production\2.01_Design\04_Civil_Land_Assessment\Report_Sheets\Art\Figure 4.6 EROSION AND SEDIMENTATION CONTROL PLAN.dwg Layout Name: EROSION AND SEDIMENTATION CONTROL PLAN Plot Style: ---- Plot Scale: 1:4,526 Plotted At: 10/12/2021 8:56 PM
Last Saved By: Matthew Hunt Date: Jan 10th, '21

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Project Title

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title

EROSION AND
SEDIMENTATION CONTROL PLAN

Sheet No.

FIGURE 4.6

APPENDIX A

- Servicing Study Guidelines
- Carp Community Design Plan – Schedule A – Land Use Plan
- December 16, 2020 – Pre-Consultation Meeting Notes

GENERAL CONTENT

	ITEM DESCRIPTION	LOCATION
	Executive Summary (for larger reports only)	N/A
√	Date and revision number of the report	Front Cover
√	Location Map and plan showing municipal address, boundary, and layout of proposed development.	Figure 1.1
√	Plan showing the site and location of all existing services.	Figures 2.1, 3.1 and 4.2
√	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 2.2.1, 3.3 and 4.3
√	Summary of Pre-consultation Meeting with City and other approval agencies.	Appendix A
√	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 1.6
√	Statement of objectives and servicing criteria	Sections 2.2.1, 3.3 and 4.2
√	Identification of existing and proposed infrastructure available in the immediate area.	Figures 2.1, 3.1 and 4.3
√	Identification of Environmentally Significant Areas, Watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Section 1.10
√	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Section 4.8 Figure 4.4
√	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	Section 1.11
	Proposed phasing of the development, if applicable.	Section 1.5
√	Reference to geotechnical studies and recommendations concerning servicing.	Section 1.9

√	All preliminary and formal site plan submissions should have the following information: • Metric scale • North arrow (including construction North) • Key plan • Name and contact information of applicant and property owner • Property limits including bearings and dimensions • Existing and proposed structures and parking areas • Easements, road widening and rights-of-way • Adjacent street names	Done

DEVELOPMENT SERVICING REPORT: WATER

	ITEM DESCRIPTION	LOCATION
√	Confirm consistency with Master Servicing Study, if available	Sections 1.6, 3.2 and 4.2
√	Availability of public infrastructure to service proposed development	Figures 2.1, 3.1 and 4.2 Sections 2.1, 3.1 and 4.1
√	Identification of system constraints – external water needed	Section 2.3
√	Identify boundary conditions	Section 2.3
√	Confirmation of adequate domestic supply and pressure	Sections 2.2.2 and 2.3
√	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 2.2.3 and 2.3
√	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Section 2.3
	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defining phases of the project including the ultimate design.	N/A
	Address reliability requirements such as appropriate location of shut-off valves.	N/A
√	Check on the necessity of a pressure zone boundary modification.	N/A
√	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Section 2.3
√	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Figure 2.4
√	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities and timing of implementation.	Section 2.1
√	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 2.2.1
√	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Section 2.3 Appendix B

DEVELOPMENT SERVICING REPORT: WASTEWATER

	ITEM DESCRIPTION	LOCATION
√	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 3.3
√	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Section 3.2
√	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age condition of sewers.	Section 3.5
√	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 3.1
√	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 3.1
	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix "C") format.	Section 3.4 Appendix C
√	Description of proposed sewer network including sewers, pumping stations and forcemains.	Section 3.4 Figure 3.2
√	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	Section 1.11 Section 6.3
√	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	Section 3.1
√	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
√	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
√	Special considerations such as contamination, corrosive environment etc.	Section 1.9

DEVELOPMENT SERVICING REPORT: STORMWATER CHECKLIST

	ITEM DESCRIPTION	LOCATION
√	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 4.1 and 4.5
√	Analysis of available capacity in existing public infrastructure.	Section 4.4
√	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Figure 4.1
√	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be	Section 4.5 and 4.7

	included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	
√	Water quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 4.5 and 4.7
√	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 4.4 and 4.5
√	Set-back from private sewage disposal systems.	N/A
√	Watercourse and hazard lands setbacks.	N/A
√	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
√	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Section 4.2
√	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 4.4 and 4.5 Appendix D, 5.4 and 5.5
√	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Sections 1.7 and 4.4
	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 4.5
√	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
√	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Sections 4.4 and 4.5 Figure 4.3
	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	Section 4.7
√	Identification of potential impacts to receiving watercourses	N/A
√	Identification of municipal drains and related approval requirements.	N/A
√	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Sections 4.4, 4.5 and 4.7
√ √	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
	Inclusion of hydraulic analysis including hydraulic grade line elevations.	Section 4.6
√	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 5
√	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
√	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

APPROVAL AND PERMIT REQUIREMENTS: CHECKLIST

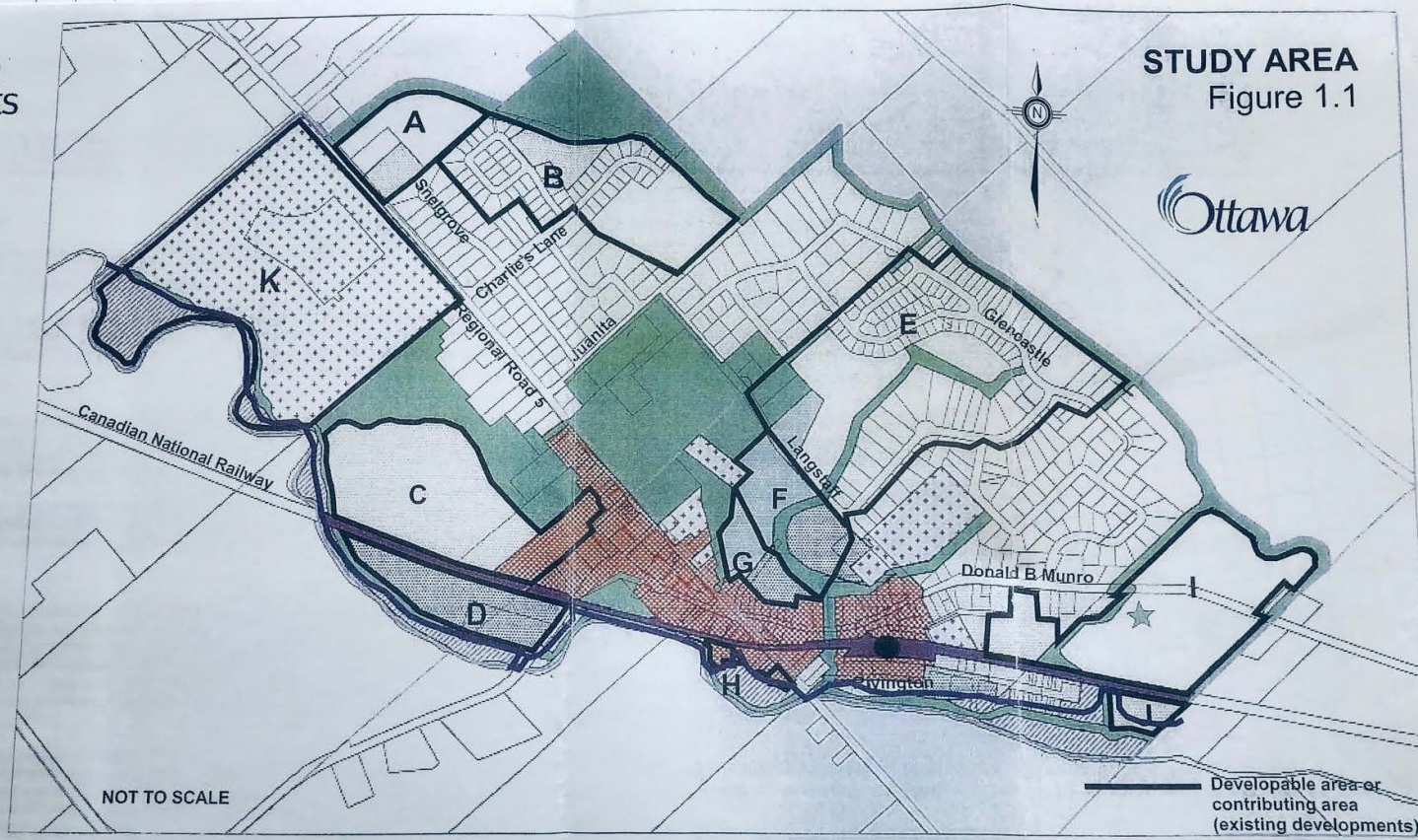
	ITEM DESCRIPTION	LOCATION
√	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 6.3
	Application for Certification of Approval (CofA) under the Ontario Water resources Act.	Section 6.2
√	Changes to Municipal Drains	N/A
√	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	Sections 6.3 and 6.4

CONCLUSION CHECKLIST

	ITEM DESCRIPTION	LOCATION
√	Clearly stated conclusions and recommendations	Section 7
	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N/A
√	All draft and final reports shall be signed and stamped by professional Engineer registered in Ontario.	Done

Robinson
Consultants

STUDY AREA
Figure 1.1



Village of Carp - Community Design Plan
Schedule A - Land Use

Village de Carp - plan de conception de communautaire
Annexe A - Utilisation du sol

Official Plan Designations
Désignations du Plan officiel

- Flood Plain / plaine inondable
- Village Core / Centre du village
- Residential - One and Two Unit Dwellings / Résidentiel - Habitations à un ou à deux logements
- Residential - Ground Oriented Multi Unit / Résidentiel - Logements multiples de plain-pied
- Residential - Multi Unit / Résidentiel - Logements multiples
- Institutional / Zones institutionnelles
- Open Space / Espaces libres
- Potential Fairground Expansion / Expansion potentielle du champ de foire
- Future Neighbourhood Park / Parc du voisinage
- Transportation Corridor / Couloir de transp
- Future Train Station / Future gare

File Number PC2020-0332

1 February 2021

Tartan Land Consultants Inc.
Melissa Cote
237 Somerset St. W
Ottawa, ON
K2P 0J3

Dear Ms Cote

Re: 232 Donald B. Munro Drive, Village of Carp Pre-Consultation Results

Date of Meeting December 16, 2020

In attendance and/or provided comments:

Ostafichuk, Jeffrey Jeffrey.Ostafichuk@ottawa.ca
Brown, Adam Adam.Brown@ottawa.ca
Whittaker, Damien Damien.Whittaker@ottawa.ca
Melissa Cote mcote@tartanland.on.ca
Pierre Dufresne pdufresne@tartanland.on.ca
David Hook DHook@IBIGroup.com
Ben.Pascolo-Neveu@ibigroup.com
Stow, Nick Nick.Stow@ottawa.ca
Rehman, Sami Sami.Rehman@ottawa.ca
Shepherd, Reid reid.shepherd@ottawa.ca
Gervais, Josiane josiane.gervais@ottawa.ca
Young, Mark Mark.Young@ottawa.ca
Erica Ogden eogden@mvc.on.ca
Joseph Zagorski Joseph.Zagorski@ottawa.ca

Please find below the results of our meeting with respect to your proposal to develop a “multi residential” dwellings on a private street.

Comments

Jeff Ostafichuk Planning

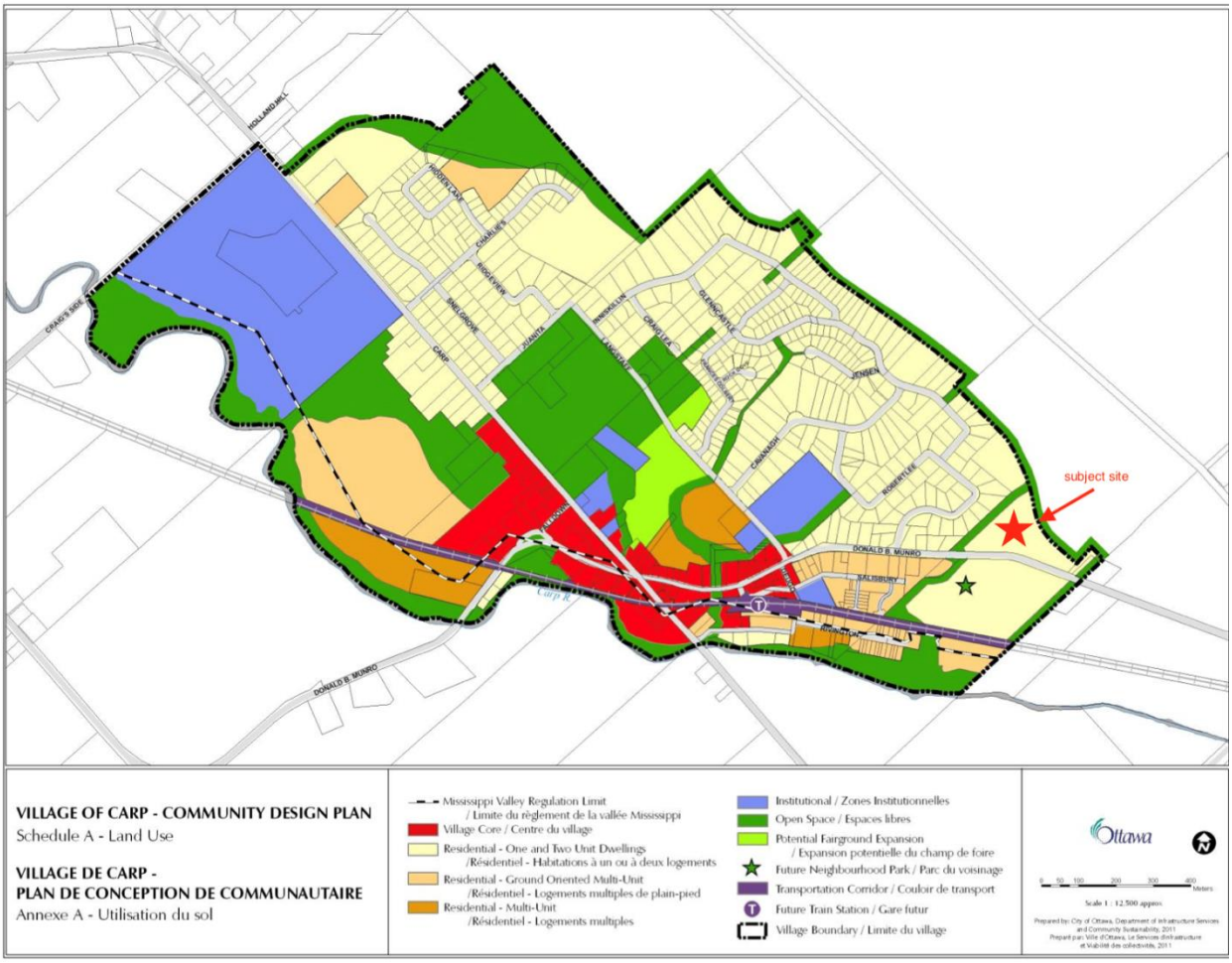
In our discussions you have suggested that you will be filing a plan of subdivision and zoning by-law amendment. Policies that need to be considered as per the Official

Plan and Village of Carp CDP (changing to Secondary Plan through the new Official Plan) are as follows.

Land Use

The proposed plan of subdivision is located in the Village of Carp. The lands front onto the north side of Donald B. Munro, the main northwest/southwest entrance to the Village. The site, approximately 7.2 ha in size, proposes 64 single family lots and 65 townhouse/semi detached units. Access to the site is provided by two intersections to the north side of Donald B. Munro Drive which service the development via an internal loop road system (18 metre right-of -way). The applicant proposes municipal servicing via an extension to the existing local water and sanitary systems.

The subject lands are within the “Village” designation as identified on Schedule ‘A’, Rural Policy Plan of the City Official Plan. Further land uses within the Village of Carp are determined in the context of the Carp CDP (New OP Secondary Plan). The CDP provides guidelines for land use planning, such as subdivision, zoning applications. The CDP sets aside these lands for residential use.



2. Managing Growth

2.3 Environmental Protection

Policies are addressed by:

Sami Rehman, Environmental Planner, Planning
Damien Whittaker, Senior Engineer Infrastructure
Erica Ogden, Environmental Planner, MVCA Mississippi Valley Conservation Authority

2.3.1 The Natural Heritage System

Policies are addressed by:
Sami Rehman, Environmental Planner, Planning
Erica Ogden, Environmental Planner, MVCA Mississippi Valley Conservation Authority

2.3.2 Source Water Protection

Land uses that are determined to constitute a significant threat to municipal drinking water (as defined in the Source Water Protection Act and its regulations) may be restricted. The basis and policy mechanism for restrictions will be in accordance with the Mississippi Rideau Source Water Protection Plan and the Official Plan.

Statement in rationale required.

3. Land Use

3.3.2 Design Guidelines for new Residential Development

Policies

1. To maintain the character of traditional village streets, and ensure the buildings define the streetscape, the building face to building face distance should be in the range of 24 to 25 metres for smaller singles, semi, duplexes, town houses, and not greater that 30 meters for larger singles, or low rise apartments.

2. Zoning and subdivision plans will address the following aspects:

- Residential streets will be 18.0m wide
- The length of the driveway to accommodate cars can be measured from the curb, or back of sidewalk rather than from the ROW, provided pedestrian access is not blocked. The result will be parking within the public ROW
- Building setbacks may be reduced to as low as 3.0 meters from the ROW or 6.0 metres from the sidewalk if it is provided for.
- The front of garages should not extend beyond the front façade of the house, either as attached buildings or separate structures.
- The tree lined village streets will be created through the provision of one tree per lot and two on corner lots as part of subdivision development agreements.

3.3.4 Residential – One and Two Unit Dwellings

The uses permitted in the area designated Residential - One and Two Unit Dwellings on Schedule A will be detached, semi-detached and duplex dwelling units including secondary dwelling units.

The proposed draft plan of subdivision provides for a full range of ground oriented dwelling types including single family, semi detached and townhouse units. It is the introduction of townhouse units (ground oriented multi-unit) that goes beyond the site objectives. Some rationale needs to provided to support multiple units; perhaps a discussion is warranted with the Policy team (contact John Lunney) currently updating the OP team because Carp CDP will be amended to become a Secondary Plan.

3.7 Open Space

Policies are addressed by:
Mark Young, Urban Design Planner
Reid Shepherd, Parks

4.10 Create Prominent Approaches to the Village

Policies are addressed by:
Mark Young, Urban Design Planner

Key initiatives

1. At the four approaches to the Village identified on Figure 2:

    a) Erect a Carp Village sign using common and well-designed graphics and materials at the four main entrances to the village;

    b) Reconfigure the road from a rural cross-section to a village cross-section (by providing sidewalks, landscaping etc.); and

    c) Add specific design elements as visual accents that give the impression that travelers are entering a unique village with character.

2. When undertaking road works or as a special community improvement the following will be considered:

    - Plant an avenue of trees along Donald B. Munro Drive from the southern village limit to the Village Core as part of roadway improvements and development of any subdivisions.

5. Road Network and Right-of-Way Protection

Policies are addressed by:
Josiane Gervais, P.Eng. Project Manager

7. Recreation and Open Space

Policies are addressed by:
Mark Young, Urban Design Planner
Reid Shepherd, Parks

7.4 Pedestrian Pathways

Policies

1. The pedestrian pathway system is shown on Schedule C.

2. The City will ensure that new developments are linked to the existing or planned network of public sidewalks, recreational pathways and on-road cycle routes, which connect parks and other open spaces, and community services and facilities.

The proposed plan does not provide for pathways as identified on Schedule 'C'- Pedestrian Pathway System ,CDP.

Damien Whittaker, Senior Engineer Infrastructure

Surveying:

Survey monument to be shown and annotated, and sufficient information to enable a layperson to locate.

Water pipes:

There is a municipal water pipe near the application, though presently there is no capacity in the Carp water treatment plant for the application. When capacity is made available, a looped system may be needed. A 203 mm PVC stub exists in the property. A boundary codition request was submitted and the response to that request is as copied herein "It is to our understanding that there is limited/no more capacity in the Village of Carp Water facility to support further developments. With the understanding that any remaining residual capacity has already been allocated we can not provide the Water Boundary Condition for further site applications at this stage."

Sanitary Sewers:

There is a municipal sanitary sewer adjacent the proposed development, though, presently, there is no capacity in the Carp sanitary pump station for the development.a 200 mm dia sani pipe stub exists in the proposed development. Please check the capacity of the downstream pipes to accept the proposed flows.

The Carp sanitary pump station forcemain is in the ROW and needs to be cautioned against.

Geotechnical:

Please note that sensitive marine clays are anticipated in the area of the proposal and, if so, enhanced geotechnical investigation and analysis will be necessary. Investigation of clays should be undertaken with vane shear, Atterberg limits, shrinkage, size, grade raise restriction, consolidation, sensitivity, and liquefaction analysis- amongst others. Further, to maintain the desired result of the trees in clay soils policy all of the conditions of the policy need to be met. Please note that the 2.1 m of cover in the vicinity of the footings is sometimes a challenge as is the necessary comprehensive linkages between geotechnical, grading, parks, utilities, and trees.
Organic soils exist in the area and enhanced geotechnical investigation and analysis will be necessary. Thin soils, and possibly bedrock outcrops exist in the area and enhanced geotechnical investigation and analysis will be necessary.

Hydrogeological:

A hydrogeological report will be required if a SWM pond, or similar stormwater management infrastructure, is proposed.

Storm Sewers:

There is a municipal storm sewer adjacent the proposed development. And a 1050 mm stub in the lands. Please review the downstream system for capacity.

Groundwater:

Groundwater is anticipated to be high and the level is to be derived from long-term analysis (12 months, or more). With the high groundwater anticipated, the City advises against basements for the development. An (annual) groundwater elevation, from a long-term study will be required.

Noise and vibration:

A noise feasibility study is required showing a number of layouts to minimize noise barriers (if required). In due course a noise report will be required for the traffic from Donald B. Munro Drive, recorded on Official Plan Schedule G as an existing collector, and for the rail corridor located 210 m away (less than the threshold). Rail safety should be reviewed against the document Guidelines for New Development in Proximity to Rail Operations.

Integrated Environmental Review:

An integrated environmental review is required being adjacent to an EP3 zoned area.

Storm Water Management:

Stormwater management quality criteria shall follow the MVCA's requirements of 80% TSS removal. The quantity criteria for the development is that 100-year

post-development shall match 5-year pre-development. LID is required as per the memo from the former MOECC (now MECP). A water budget will need to be developed for the proposal and resulting in a 15% reduction in the change. Any existing stormwater runoff from adjacent site(s) that crosses the property must be accommodated by the proposed stormwater management design. All stormwater management determinations shall have supporting rationale. The stormwater management shall itemize concurrence with the content of the update Carp River wateshed/subwatershed study.
In the pre-consultation it was suggested that that quantity control for the lands being applied for currently was provided by the lands already developed to the south of Donald B Munro known as the Rivington lands. Based on a review of the Rivington report, and existing development, quantity control does not appear to be provided.

Roads:

Please refer to the City of Ottawa Private Approach By-Law 2003-447 for the entrance design. Some of the driveways might be a challenge at curves.
As per the Safer Roads initiative (adopted by Coucil, late 2019), roads must be designed to limit vehicle speeds to 30 km/h (by design; not merely by signage). Additional ROW will be required if sidewalks and/or sensitive marine clay is found. Please note that additional width is required for SMC and additional width for sidewalks (if required)

Energy conservation is required to be demonstrated throughout design as per section 4.9 of the Official Plan.

Permits and Approvals:

Please contact the Mississippi Valley Conservation Authority (MVCA), amongst other federal and provincial departments/agencies, to identify all the necessary permits and approvals required to facilitate the development: responsibility rests with the developer and their consultant for determining which approvals are needed and for obtaining all external agency approvals. The address shall be in good standing with all approval agencies, for example MVCA, prior to approval. Copies of confirmation of correspondence will be required by the City of Ottawa from all approval agencies that a form of assent is given. Please note that a stormwater program for multiple lots is understood to be the expanded type of Environmental Compliance Approval (ECA) application with the MECP; please speak with your engineering consultant to understand the impact this has on the application. An MECP ECA application is not submitted until after City of Ottawa engineering is satisfied that components directly or indirectly aligned with the ECA process concur with standards, directives and guidelines of the MECP. No construction shall commence until after a commence work notification is given by Development Review. Please also note that by the time the ECA is applied for with this application that a different type of process may be underway.

Ministry of the Environment, Conservation and Parks	Mississippi Valley Conservation Authority

Contact Information:
Christina Des Rochers
Water Inspector
613-521-3450 ext. 231
Chstina.Desrochers@ontario.ca

Contact Information:
Erica Ogden
eogden@mvc.on.ca

Plan Submission Requirements for engineering:

Site Servicing Plan*
Grading and Drainage Area Plan*
Erosion and Sediment Control Plan*

*All identified required plans are to be submitted on standard A1 size sheets as per City of Ottawa Servicing and Grading Plan Requirements and shall note the survey monument used to establish datum on the plans with sufficient information to enable a layperson to locate the monument.

Report Submission Requirements:

-Site Servicing Report
To be prepared as per requirements.
-Storm Water Management Report
-Noise Feasibility Report
-Erosion and Sediment Control Measures
-Geotechnical Investigation Study
The geotechnical consultant will need to provide full copies of any published and peer reviewed papers relied on to determine results and conclusions
Earthquake analysis is now required to be provided in the report.

-Phase 1 Environmental Site Assessment (ESA)

The Phase 1 Environmental Site Assessment (ESA) shall be as per O.Reg. 153/04. Phase 1 ESA documents performed to CSA standards are not acceptable. Documents older than 18 months from the time of draft approval will not be accepted

Guide to preparing City of Ottawa Studies and Plans:

http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

To request City of Ottawa plan(s) or report information please contact the ISD Information Centre:

Information Centre
(613) 580-2424 ext. 44455

Joseph Zagorski, P.Eng. Senior Project Manager Asset Management Branch – Infrastructure Planning

Additional comments provided in lieu of pre-consult meeting on state of water servicing for the Village of Carp provided to applicant's consultant:

- Currently peak wet weather flows to the Carp PS are approaching (exceeded) its rated capacity of 57.7 L/s pumping ability, limiting available capacity for the new residential and commercial development in the village. The station is 25 years old with some mechanical and electrical components quickly reaching the end of their design life. In addition, no overflow is provided to protect the station and houses located close to the Carp River during equipment failure or extreme I/I event. The preferred **long-term** *(to accommodate projected wastewater flows from the Carp build-out development inside village boundary)* solutions to the Carp wastewater system includes emergency overflows at both sewage pumping stations, twinning existing forcemain, upgrading pumps and back-up power. Implementing long term solutions to the Carp water and wastewater systems as proposed in the 2009 Class EA is a time-consuming process, required extensive design and construction work including significant capital budget allocation.

- The City has hired a consultant to investigate the possibility of **short-term** options to increase the Carp PS interim capacity (such as installation of new pumps which would deliver more flow but still be below design operating pressures of the existing forcemain) to provide capacity for the new development. This assignment will also confirm if Carp water facility has presently enough capacity to accommodate additional village and Carp Airport development.

Reid Shepherd, Parks

We understand that during the pre-consultation it was suggested there was a clause in the Green Meadows Subdivision (Former Rivington lands opposite Donald B. Munro Dr.) that spoke to an over-dedication of parkland. More specifically, clause 8b page 31 of the Green Meadows subdivision agreement states:

> "In recognition of the over-dedication of parkland by the Owner, the City agrees to transfer the parkland dedication in excess of 5% to the future development of other lands owned by the Owner described as Part of Lot 17, Concession 2, Geographic Township of Huntley, City of Ottawa being Part 1 on Plan 4R-7027". (Agreement attached).

This matter was forwarded to Legal Services for an opinion on the agreement. We understand that the over dedication is applicable to the one who signed the agreement and developed the Rivington subdivision only. Such a clause is not transferable to a new Owner of the lands in question.

As such the following is required with your submission:

Park and Facility Planning Comments:

- The density of this proposal is above 18 units per net hectare and therefore a parkland dedication of 0.43 ha is required based on the current unit numbers.
- Based on the above requirement of 0.43 ha, a parkette located within the development would be feasible. Please revise the concept to include a parkette centrally located within the development. Parkette requirements (location, amenities, etc) and further details can be found within the Park Development Manual, 2nd Edition.
- The Carp CDP proposes a north-south pathway connection to link up with the existing pathway across Donald B Munro, and a second east-west pathway along the northern edge of the development. Please revise the concept to show improved pathway connections within the site and to adjacent subdivisions in line with the vision of the CDP.

Mark Young, Urban Design Planner

Please accept the following comments on behalf of PRUD for the proposed plan of subdivision and zoning by-law amendment in the Village of Carp. A Design Brief will be required. The terms of reference is attached.

Plan of Subdivision:

1. Please review for compliance with the Village of Carp CDP which is being converted into a Secondary Plan as part of the New Official Plan.
2. The CDP identifies an open space corridor across the subject lands linking the park lands to the west with the Carp Ridge to the east. Open space connection blocks are identified as having a width of 10 m and should include tree retention and a publicly accessible path.
3. The CDP does not identify street townhomes as a permitted use in the subject land use designation.
4. Efforts should be taken to minimize the need for noise walls on Donald B. Munro Drive. Options include a window street, rear lane product or fronting lots and driveways directly onto the existing roadway as-is the case in most of the Village.
5. Connectivity to the Carp Ridge is a significant asset for the site. A minimum of two connection points to the natural area to the east should be provided and should be of an adequate width to allow for some views and vistas of this feature.

Zoning By-law Amendment:

1. The Zoning By-law amendment should reflect the need for adequate setbacks and buffering from existing low-density residential uses.
2. The zoning should be reflective of soil conditions, if clay soil tree setbacks are required in front and corner side yards.
3. The zoning should be reflective of the product types proposed. An R1 zone should be utilized abutting the existing dwellings and a minimum lot width and lot coverage should be reflective of the desire to locate the most compatible dwellings adjacent to the existing dwellings.

Sami Rehman, Environmental Planner Planning

The proposed development will require an Integrated Environmental Review (IER) and Environmental Impact Statement (EIS).

- The EIS will review the:
    - NEA boundary,
    - ANSI boundary
    - PSW & wetlands associated with Sign Woodlands
    - SAR, throughout the area
    - Significant Woodlands
    - Sign Wildlife Habitat
    - Results from the RMOC's NESS
    - The surface water feature and the appropriate setbacks from OP 4.7.3.

Plan of Subdivision will require a Tree Conservation Report (TCR), which can be combined with an EIS to avoid duplication.

NEA (and EP3) boundary will need to be verified during the growing season.

Site Visit December 18, 2020

Thank you for inviting me to join your site visit. It was helpful to explore the property, understand the boundaries of your potential purchase and to have the current zoning boundary (as illustrated in GeoOttawa) staked out on the subject property. While it was also useful to explore the geological features when much of the vegetation was in dormancy, it is difficult to identify the boundary of the Natural Environment Area (NEA) until we can examine the vegetation communities during the growing season. As discussed with my colleagues, we would anticipate re-visiting the site after May 2021 to assess the flora and better determine the boundary of the NEA. It is acknowledged that the final NEA boundary will also be the zoning boundary.

Josiane Gervais, P.Eng. Project Manager, Infrastructure Approvals

Follow Traffic Impact Assessment Guidelines:

- Traffic Impact Assessment will be required.
- Screening and Scoping can be submitted together. Start this process asap.
- The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable), draft functional plans (if applicable) and/or monitoring report (if applicable).
- Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)

Local and collector roadways are to be designed for a 30km/hr posted speed, as per the approved Road Safety Action Plan. Further information on design elements to achieve the 30 km/hr design speed can be provided upon request.

If any collector roads are considered, you must follow collector road guidelines for subdivisions, desired 26m ROW for collector Roads.

Geometric Road Design (GRD) drawings will be required with the first submission of underground infrastructure and grading drawings. These drawings should include such items as, but are not limited to:

- Road signage and pavement markings;
- Location of depressed curbs and tactile walking surface indicators (TWSI);
- Traffic calming measures aimed at reducing vehicle speed and enhancing pedestrian safety. Measures may include either vertical or horizontal features, however such measures shall not interfere with stormwater management and overland flow routing. Traffic calming measures shall reference best management practices from the Canadian Guide to Neighbourhood Traffic Calming, published by the Transportation Association of Canada, and/or Ontario Traffic Manual, and/or the City of Ottawa's Traffic Calming Design Guidelines;
- Intersection control measures at new internal intersections; and
- ROW protection on Donald B. Munro between Langstaff and Farm Ridge is 23m even, and between Farm Ridge and March Road is 26m even.
- Requesting to change the speed limit on Donald B. Munro as part of the application is not supported.
- Corner triangles as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required:
    - Local Road to Local Road: 3 m x 3 m
    - Local Road to Arterial Road: 5 m x 5 m
- Ensure to pair driveways where possible.
- Noise Impact Studies are required. Both studies must assess:
    - Road, site is within 100m of Donald B. Munro, which is a collector roadway.
    - Rail, site is within the buffer zone Renfrew Rail Corridor, which is an active rail corridor.

It is highly recommended to review noise conditions as soon as possible so that noise effects can be avoided or mitigated as part of the subdivision design. The Noise Feasibility Study is required at the time of application. A detailed Noise Study will be required prior to registration.

Erica Ogden. Environmental Planner MVCA

Please find below a summary of the Conservation Authority's comments.

- The property contains a watercourse and unevaluated wetlands. The Environmental Impact Statement should assess each of these features in regards to their significant under Ontario Regulation 153/06. These features

should be taken into consideration when determining the area for development on the property.

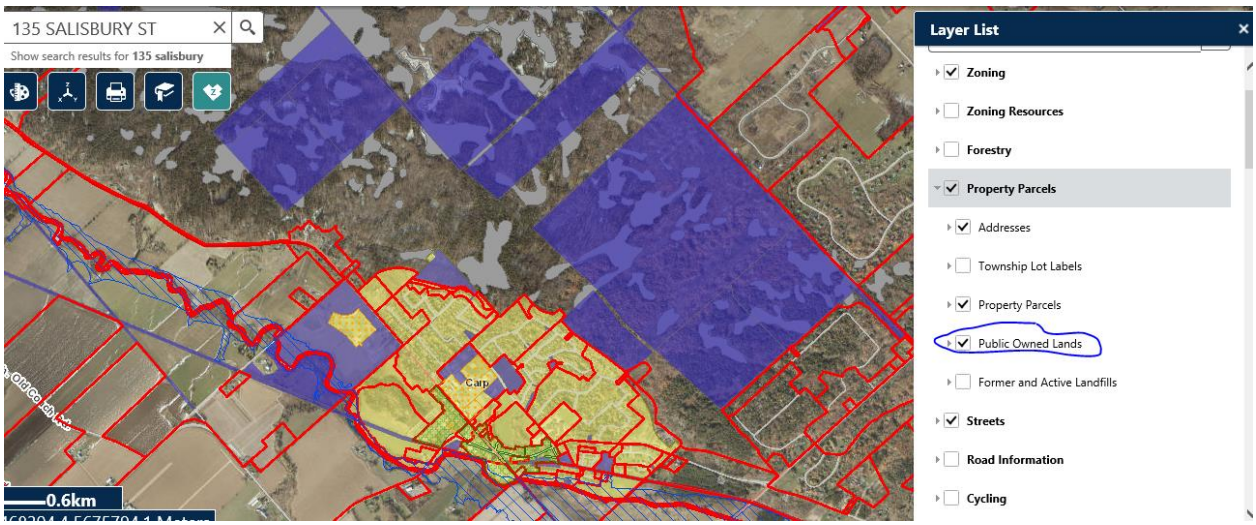
- A headwater feature assessment will be required for the watercourse on the property to provide an understanding of the feature's seasonal functions and develop a mitigation plan. Any hydraulic connection between the wetlands and watercourse should be assessed.
- MVCA will review the stormwater management for the proposed development. The water quality requirement for the Carp River is a normal level of protection which requires 70% total suspended solids removal.
- There is the potential for organic soils on the property, which must be appropriately assessed.

Adam Brown, Manager Development Review

Some information about the Carp Hills.

https://carphills.com/
https://ottawa.ca/en/living-ottawa/environment-conservation-and-climate/conservation-areas#carp-hills

To see what land the City owns in the area, you can go on geoOttawa and turn on the "Property Parcels – Public Owned Lands" box and you will see the City-owned lands in blue.



APPENDIX B

- Watermain Demand Calculations
- Water Quality Analysis

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : 232 Donald B. Munro Drive
LOCATION : Village of Carp
DEVELOPER : 2087575 Ontario Ltd.

FILE: 1319476.04.04
DATE PRINTED: 30-Sep-21
DESIGN: LE
PAGE : 1 OF 1

NODE	RESIDENTIAL UNITS SF	SD	TH	POP'N	NON-RESIDENTIAL INDTRL (ha.)	COMM. (ha.)	INST. (ha.)	AVERAGE DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM HOURLY DEMAND (l/s) Res.	Non-res.	Total	FIRE DEMAND (l/min)
	61	8	49	361				1.17	0.00	1.17	2.93	0.00	2.93	6.44	0.00	6.44	10,000

ASSUMPTIONS

RESIDENTIAL DENSITIES
- Single Family (SF) 3.4 p / p / u
- Semi Detached (SD) 2.7 p / p / u
- Townhouse (TH) 2.7 p / p / u

AVG. DAILY DEMAND
- Residential 280 l / cap / day
- Institutional 15,000 l / ha / day

MAX. DAILY DEMAND
- Residential 700 l / cap / day
- Institutional 22,500 l / ha / day

MAX. HOURLY DEMAND
- Residential 1,540 l / cap / day
- Institutional 40,500 l / ha / day

FIRE FLOW
- SF, SD, TH & ST 10,000 l / min
- ICI 15,000 l / min

232 Donald B. Munro Drive - Water Quality Analysis

Street	Pipe Size (mm)	Pipe Length (m)	Volume of Water in Pipe (liters)	Buildings		Population	Basic Flow (200 l/c/d) (l/s)	Time to Empty (hours)
				Single	Towns			
Unlooped Portion of Street No. 2								
Street No. 2	50	85	167	7		24		
	200	140	4398	15		51		
Total			4565			75	0.17	7.3

0.002314815

APPENDIX C

- Preliminary Sanitary Sewer Design Sheets

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

SANITARY SEWER DESIGN SHEET

Carp Lands
CITY OF OTTAWA
Tartan Homes Corporation

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA	UNIT TYPES				AREA	POPULATION		RES	PEAK	AREA (Ha)						ICI	PEAK	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH	w/ Units (Ha)	SF	SD	TH	APT	w/o Units (Ha)	IND	CUM	PEAK FACTOR	FLOW (L/s)	INSTITUTIONAL IND	INSTITUTIONAL CUM	COMMERCIAL IND	COMMERCIAL CUM	INDUSTRIAL IND	INDUSTRIAL CUM	FACTOR	FLOW (L/s)	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)	L/s	(%)
total subdivision				8.02	57	6	54			355.8	355.8	3.44	3.96		0.00	0.00	0.00		0.00	1.00	0.00	8.02	8.02	2.65		0.00	6.61	19.66	75.25	200	0.33	0.606	13.05	66.38%

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	
APT	1.9	p/p/u	COM	28,000	L/Ha/day	
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart
				17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per cap/a): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peakino Factor:
Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area, 1.5 if greater than 20%, otherwise 1.0

Designed: JIM

Checked:

Dwg. Reference: 131397

No.	Revision	Date
1.	Submission No. 1 To City of Ottawa	2021-09-10
2.		

File Reference: 131397-6.04
Date: 2021-01-06
Sheet No: 1 of 1

APPENDIX D

- Section 6.2 Stormwater Management, Site Servicing and Stormwater Management Report August 2011, exp Services Inc.
- Preliminary Storm Sewer Design Sheets
- Figure 4.3, Conceptual Storm Drainage Plan

As is typical for municipally serviced subdivisions in the City of Ottawa, the storm sewers have been designed using the rational method and the following City of Ottawa design criteria:

- T_c = 10 to 15 minutes
- Minimum velocity 0.76 m/s
- City of Ottawa IDF Curve Information

The storm sewers range in size from 250mm to 1200mm in diameter. At the request of City Review staff, the storm sewers have also been sized to accommodate drainage from the current proposed development as well as the future proposed subdivision lands north of Donald B. Munro Drive. The storm sewer will outlet to a proposed oil/grit separator unit within Block 51 and will be directed via ditch flow from the outlet of the oil/grit separator to the existing ditch along the OCR railroad. Refer to Appendix 4 for the Storm Servicing and Drainage Area Plan 2681-STM, and storm sewer design sheet(s).

6.2 Stormwater Management

As indicated previously, the proposed SWM has been designed in accordance with the recommendations outlined in the Village of Carp EMP and further input from City of Ottawa and MVCA Staff. The SWM criteria and available options (see excerpts from the Village of Carp EMP in Appendix 5), included the following:

- Quantity control not required for all areas directly draining to the Carp River
- Level 2 quality control required
- Lot level controls to direct the runoff, as much as possible, to undisturbed portions of the property (i.e. where existing vegetation is maintained) should be used where feasible
- End-of-pipe SWM facility to provide the necessary level of quality control mitigation

In order to alleviate some of the potential problems of designing a SWM facility that will need to accommodate the ultimate build-out land area but will initially only have a contributing drainage area of 5.6 Ha, an interim SWM measure was originally proposed for this portion of the development (the current subdivision lands south of Donald B. Munro Drive only). An oil/grit separator was the preferred interim SWM measure and was to be replaced with a SWM facility for the ultimate build-out scenario (i.e. current development lands including designated future development lands north of Donald B. Munro Drive). However, after numerous discussions with City Staff and based on the review comments received from City Staff (see bullet #1 in email from Chris Melanson to Kevin Hall dated April 15, 2010, in Appendix 5) have it was decided that one oil/grit separator (sized to include the ultimate build-out lands) was the preferred SWM measure.

Therefore, the SWM design in this report has been revised to provide an oil/grit separator which will accommodate both the current development and ultimate future development lands north of Donald B. Munro Drive (see Section 6.2.1 for details). Storm flows in excess of those requiring treatment will bypass the treatment chamber via an internal weir structure. Storm flows will outlet to the existing 1980mm diameter culvert under the existing OCR railway (see Section 6.2.2 for details) via a 1200mm outlet pipe and short ditch conveyance system. The storm outlets will include rip rap aprons to minimize the potential for erosion from storm flows entering the existing drainage ditch.

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Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

STORM SEWER DESIGN SHEET

Carp Lands
City of Ottawa
Tartan Group

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.15	C= 0.30	C= 0.40	C= 0.49	C= 0.60	C= 0.65	C= 0.66	C= 0.70	C= 0.73	C= 0.80	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
Street No. 1		MH17	MH18					0.53						0.88	0.88	10.00	1.07	11.07	76.81	104.19	122.14	178.56	67.90					67.90	141.68	80.00	375			0.60	1.243	73.78	52.08%
Street No. 1		MH18	MH15					0.34						0.57	1.45	11.07	0.28	11.35	72.92	98.85	115.85	169.31	105.81					105.81	342.20	50.00	375			3.50	3.001	236.38	69.08%
Street No. 1		MH17	MH16					0.46						0.77	0.77	10.00	0.42	10.42	76.81	104.19	122.14	178.56	58.93					58.93	188.73	65.00	300			3.50	2.587	129.80	68.78%
Street No. 1		MH16	MH15					0.24						0.40	1.17	10.42	1.58	12.00	75.23	102.03	119.60	174.82	87.84					87.84	133.02	77.00	450			0.20	0.810	45.17	33.96%
Street No. 1		MH15	MH14					0.28						0.47	3.09	12.00	0.76	12.77	69.88	94.68	110.94	162.11	215.65					215.65	286.47	45.00	600			0.20	0.982	70.82	24.72%
Street No. 1		MH14	MH13					0.54						0.90	3.99	12.77	0.34	13.11	67.60	91.54	107.25	156.68	269.47					269.47	859.40	60.00	600			1.80	2.945	589.93	68.64%
Street No. 1		MH13	MH12					0.57						0.95	4.94	13.11	0.20	13.30	66.63	90.22	105.69	154.40	328.97					328.97	859.40	35.00	600			1.80	2.945	530.43	61.72%
Street No. 1		Mh12	MH11					0.35						0.58	6.69	13.30	0.28	13.59	66.08	89.47	104.80	153.10	442.00					442.00	859.40	50.00	600			1.80	2.945	417.40	48.57%
Street No. 2		DI 1	MH22	18.01										7.51	7.51	25.00	0.21	25.21	45.17	60.90	71.22	103.85				779.91		779.91	1,176.53	40.00	675			1.80	3.185	396.62	33.71%
Street No. 2		MH22	MH21					0.42						0.70	0.70	10.00	0.35	10.35	76.81	104.19	122.14	178.56	53.81					833.72	1,176.53	67.00	675			1.80	3.185	342.81	29.14%
Street No. 2		MH21	MH20					0.19						0.32	1.02	10.35	0.34	10.69	75.48	102.38	120.00	175.42	76.80					856.71	1,109.24	61.00	675			1.60	3.003	252.53	22.77%
Street No. 9		MH20	MH11					0.48						0.80	1.82	10.69	0.74	11.43	74.26	100.69	118.01	172.50	135.01					914.92	1,208.64	60.00	1050			0.18	1.352	293.73	24.30%
Street No. 1		MH11	MH10					0.61						1.02	9.52	13.59	0.60	14.19	65.32	88.42	103.57	151.28	622.08					1,401.99	2,548.04	103.00	1050			0.80	2.851	1146.05	44.98%
Street No. 1		MH10	EX MH					0.56						0.93	10.46	14.19	0.03	14.22	63.75	86.27	101.04	147.58	666.70					1,446.61	2,548.04	5.00	1050			0.80	2.851	1101.43	43.23%
Street No. 2		MH22	MH23					0.62						1.03	1.03	10.00	1.60	11.60	76.81	104.19	122.14	178.56	79.43					79.43	133.02	78.00	450			0.20	0.810	53.59	40.29%
Street No. 2		MH23	MH24					0.45						0.75	1.78	11.60	0.22	11.82	71.15	96.42	112.99	165.11	126.98					126.98	650.17	38.00	525			2.10	2.910	523.18	80.47%
Street No. 2		MH24	MH110					0.56						0.93	2.72	11.82	0.31	12.13	70.45	95.46	111.86	163.46	191.55					191.55	859.40	55.00	600			1.80	2.945	667.85	77.71%
Donald B Munro Drive		MH110	MH111						0.20					0.36	3.08	12.13	0.76	12.89	69.48	94.13	110.29	161.15	214.02					214.02	640.56	100.00	600			1.00	2.195	426.54	66.59%
Donald B Munro Drive		MH111	MH112						0.11					0.20	3.28	12.89	0.27	13.16	67.23	91.05	106.66	155.83	220.46					220.46	859.40	48.00	600			1.80	2.945	638.94	74.35%
Donald B Munro Drive		MH112	Ex MH						0.16					0.29	6.29	13.16	0.61	13.77	66.47	90.00	105.43	154.01	417.89					417.89	640.56	80.00	600			1.00	2.195	222.67	34.76%
Exist Sewer			Ex Sewer											0.00	16.75	13.77	0.00	13.77	64.83	87.75	102.78	150.13	1,085.53					1,864.50	*2,687.55*	*0.00*	*1050*			*0.89*	*3.007*	*823.05*	*30.62%*
Total Urban Area								7.20																												

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013
2. Initial T of C = 10 min

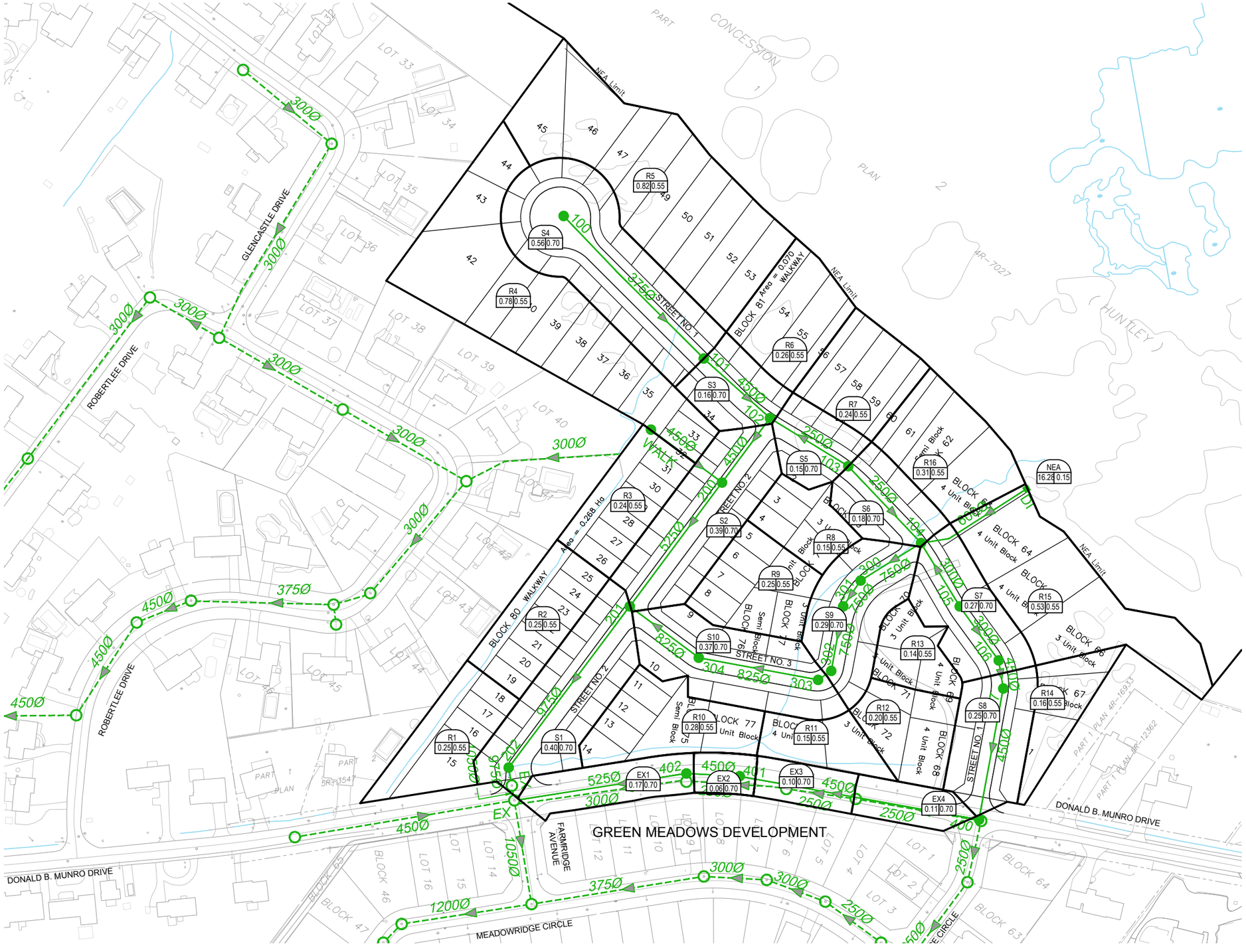
Designed:

Checked:

Dwg. Reference:

No.	Revision	Date
1		
2		

File Reference: 131397.00
Date: 2021-01-15
Sheet No: 1 of 2



C:\13147_2\Dgn\7.0_Production\7.03_Design\1A_Civil\1_Land_AssessmentReports_Sheets\Sh\Figure 4.3 CONCEPTUAL STORM DRAINAGE PLAN.dwg Layout Name: CONCEPTUAL STORM DRAINAGE PLAN Plot Style: ----- Plot Scale: 1:4.526 Plotted At: 10/8/2021 11:51 AM Last Saved By:

IBI

Scale

N.T.S.

Project Title

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
232 DONALD B. MUNRO DRIVE
VILLAGE OF CARP

Drawing Title

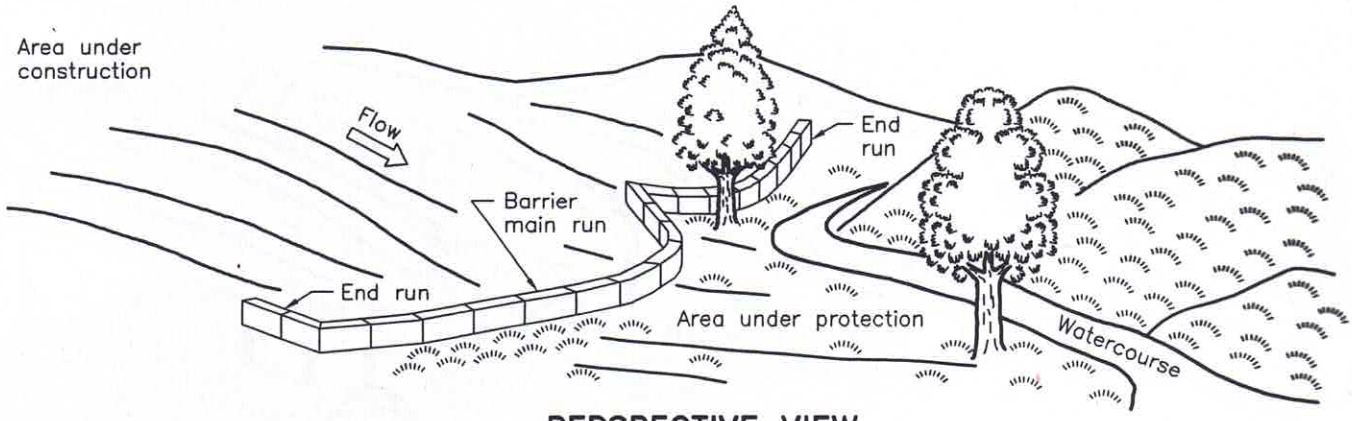
CONCEPTUAL
STORM DRAINAGE PLAN

Sheet No.

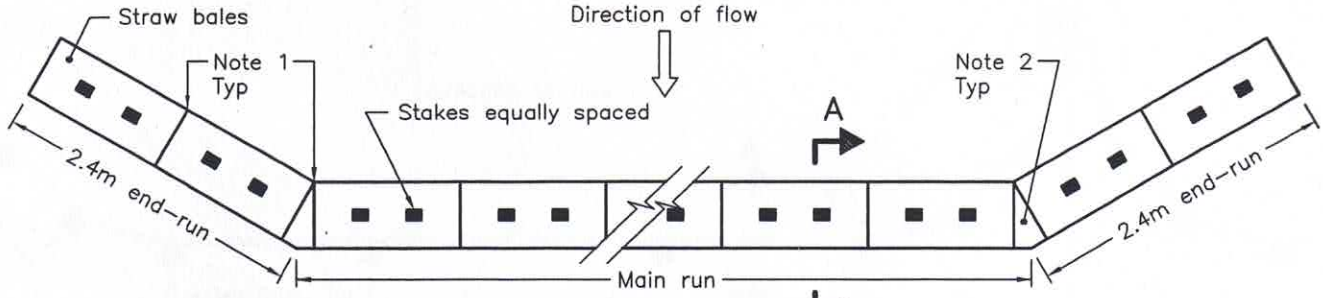
FIGURE 4.3

APPENDIX E

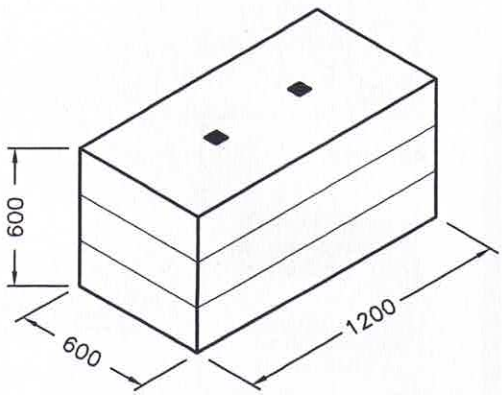
- Light Duty Straw Bale Barrier OPSD 219.100
- Light Duty Silt Fence Barrier OPSD 219.110



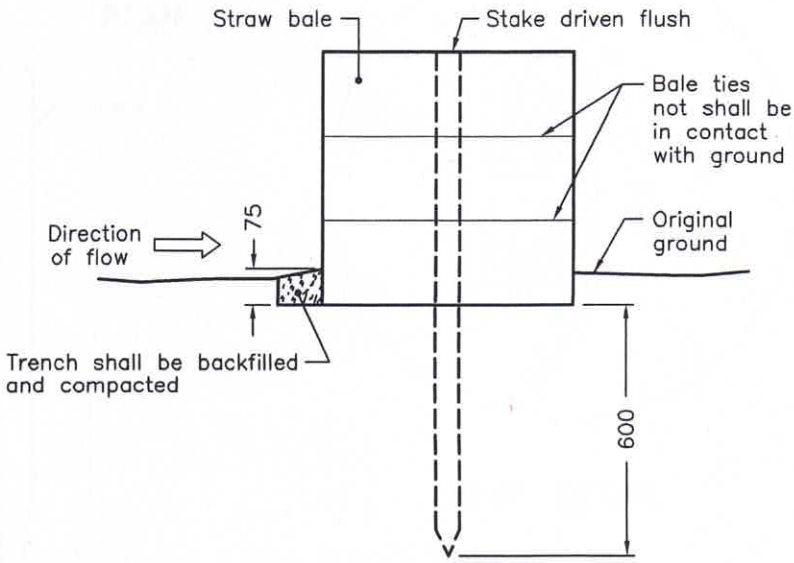
PERSPECTIVE VIEW



PLAN



ISOMETRIC VIEW



SECTION A–A

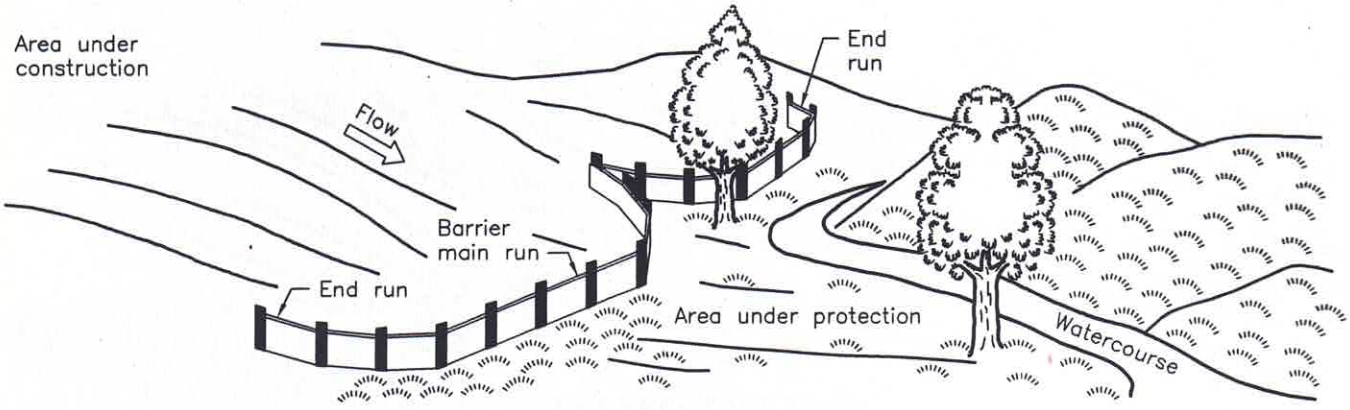
NOTES:

1 Straw bales shall be butted tightly against adjoining bales to prevent sediment flow through barrier.

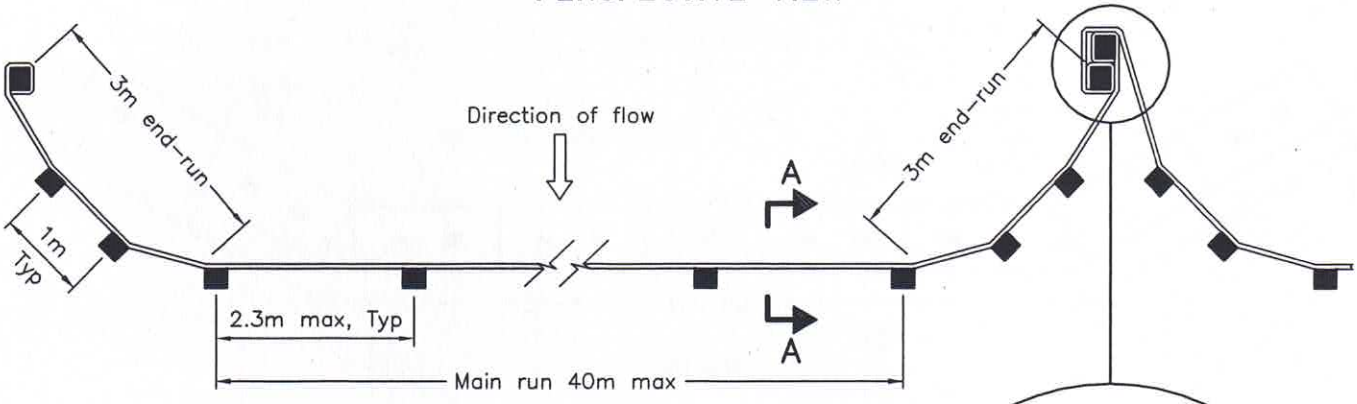
2 Caulk and compact gaps with loose straw.

A All dimensions are in millimetres unless otherwise shown.

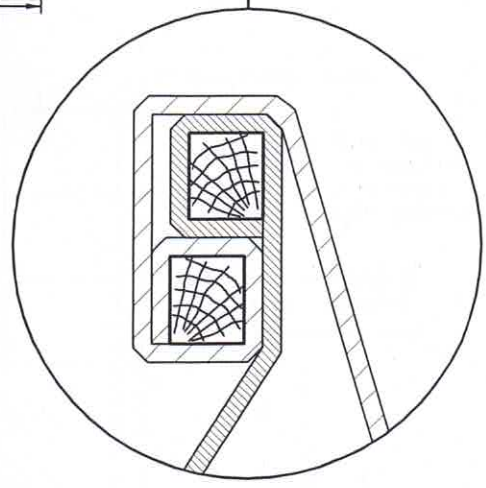
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	2
LIGHT–DUTY STRAW BALE BARRIER			
		OPSD 219.100	



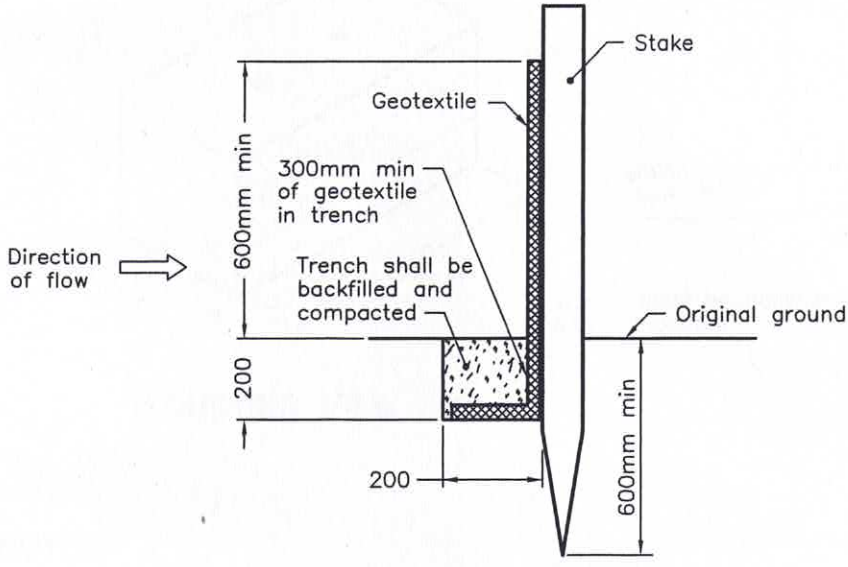
PERSPECTIVE VIEW



PLAN



JOINT DETAIL



SECTION A–A

NOTE:

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	2
LIGHT–DUTY SILT FENCE BARRIER			
	OPSD 219.110		