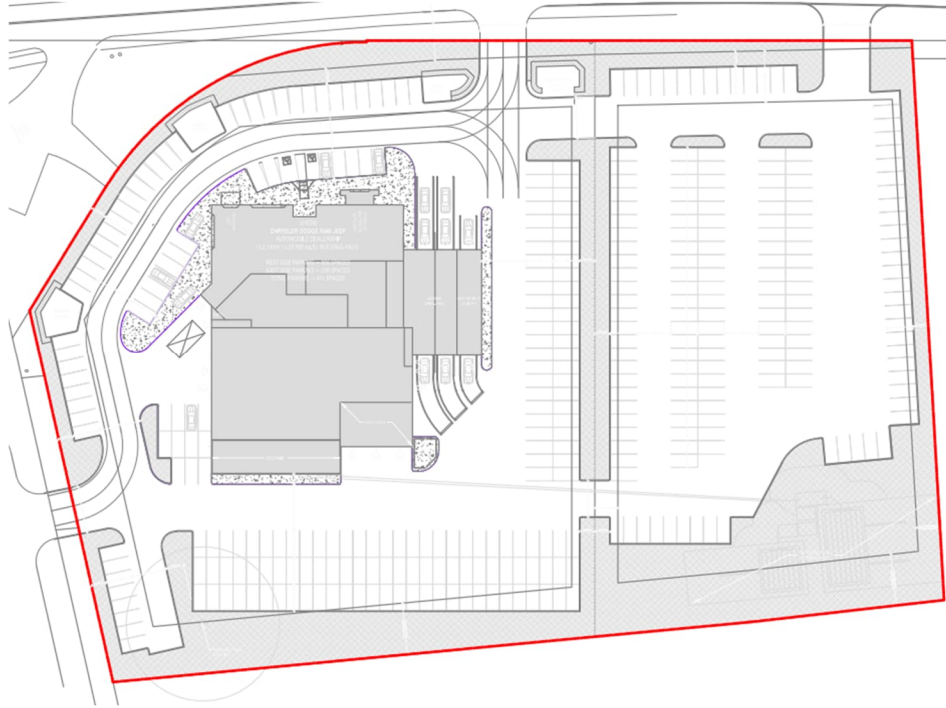


ADEQUACY OF SERVICES REPORT MYERS BANKFIELD CHRYSLER



Project No.: CCO-22-3879

Prepared for:

Zena Investment Corporation
1200 Baseline Road
Ottawa, ON, K2C 0A6

Prepared by:

Egis Canada Ltd. (formerly McIntosh Perry)
115 Walgreen Road
Carp, ON K0A 1L0

Submitted: Feb 15, 2024

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1.0 PROJECT OVERVIEW

1.1 Purpose

Egis Canada Ltd. (formerly McIntosh Perry) has been retained by Zena Investment Corporation to prepare this Adequacy of Services Report in support of the proposed development at 1450-1468 Bankfield Road & 5479-5485 Elijah Court, within the City of Ottawa.

The main purpose of this report is to demonstrate that the proposed development can be adequately serviced in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will discuss the conceptual water, sanitary, and storm servicing for the development.

1.2 Site Description

The subject property, herein referred to as the site, is located at 1450-1468 Bankfield Road & 5479-5485 Elijah Court, within the Rideau – Jock ward in the City of Ottawa. The site covers approximately 1.91 ha and is located at the intersection of Bankfield Road and Prince of Wales Drive, as shown by *Figure 1*, below. The site is zoned DR1 (Development Reserve Zone). Refer to the Site Location Plan included in *Appendix 'A'*.



Figure 1: Site Map

1.3 Proposed Development and Statistics

The proposed development consists of a two-storey car dealership, complete with surface parking and drive aisles with street access from Bankfield Road and Elijah Court. Refer to the *Site Plan* prepared by KWC Architects Inc. for reference.

1.4 Existing Conditions and Infrastructure

The property is located within the Mud Creek – Lower Rideau catchment of the Lower Rideau River sub-watershed. The site is currently partially developed containing a decommissioned automotive repair shop and five single family homes serviced by private well and septic systems.

Sewer and watermain mapping collected from the City of Ottawa indicate that no municipal services exist across the property frontages within the adjacent municipal right-of-ways.

1.5 Approvals

The proposed development will be subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provide concurrence and approve the engineering design package. Permits to construct can be request once the City has issued a site plan agreement.

An Environmental Compliance Approval (*ECA*) through the Ministry of Environment, Conservation and Parks (*MECP*) is not anticipated to be required for the proposed development as the stormwater management system meets the exemption requirements under O.Reg 525/90. The collection of properties are to be amalgamated into a single parcel, serviced by a single stormwater management system that will not outlet to a combined sewer, and industrial use is not proposed.

2.0 BACKGROUND STUDIES, STANDARDS, AND REFERENCES

2.1 Background Reports / Reference Information

A topographic survey of the site was completed by Annis, O'Sullivan, Vollebakk Ltd. The Site Plan (A-010) was prepared by KWC Architects Inc.

2.2 Applicable Guidelines and Standards

City of Ottawa:

- ◆ Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (*Ottawa Sewer Guidelines*)
 - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (*ISTB-2014-01*)
 - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (*PIEDTB-2016-01*)
 - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (*ISTB-2018-01*)
 - Technical Bulletin ISTB-2018-04 City of Ottawa, March 2018. (*ISTB-2018-04*)
 - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (*ISTB-2019-02*)
- ◆ Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (*Ottawa Water Guidelines*)
 - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (*ISD-2010-2*)
 - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (*ISDTB-2014-02*)
 - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (*ISTB-2018-02*)
 - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. (*ISTB-2021-03*)

Ministry of Environment, Conservation and Parks:

- ◆ Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (*MECP Stormwater Design Manual*)
- ◆ Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (*MECP Sewer Design Guidelines*)

Other:

- ◆ Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (*FUS Guidelines*)

3.0 WATERMAIN

3.1 Existing Watermain

There is no municipal watermain available to service the subject site. Based on the findings of the Phase II Environmental Assessment, there are seven existing wells located within the development area.

3.2 Contemplated Watermain

The new building will be serviced via a pump and new drilled well located within the limits of the site. The exact size, location, and services required for the well and pump will be specified during the detailed design phase by others. Existing wells within the subject site will be decommissioned in accordance with Ontario Regulation 904 under the Ontario Water Resources Act.

The Fire Underwriters Survey 2020 (FUS) method was utilized to estimate the required fire flow for the site. Fire flow requirements were calculated per City of Ottawa Technical Bulletin *ISTB-2018-02*. The following parameters were coordinated with the developer:

- ◆ Type of construction – Fire-Resistive Construction
- ◆ Sprinkler Protection – Fully Supervised Sprinklered

The following parameter was selected based on Table 3 of the FUS guidelines:

- ◆ Occupancy type – Combustible

The results of the calculations yielded a required fire flow of *4,000 L/min* (66.67 L/s). The detailed calculations for the FUS can be found in *Appendix 'C'*.

The water demands for the proposed development have been calculated to adhere to *Ottawa Water Guidelines* and can be found in *Appendix 'C'*. The results have been summarized below:

Table 1: Water Supply Design Criteria and Water Demands

Design Parameter	Value
Development Area	1.91 ha
Commercial	28,000 L/gross ha/d
Commercial Peaking Factor (Day)	1.5 x avg. day
Commercial Peaking Factor (Hour)	1.8 x max day
Average Day Demand (L/s)	0.09 L/s
Maximum Daily Demand (L/s)	0.13 L/s
Peak Hourly Demand (L/s)	0.24 L/s
FUS Fire Flow Requirement (L/s)	4,000 L/min (66.67 L/s)

A remote hydrant system and underground storage tanks will be required to provide fire flow to the proposed development. Per Table 1 of the Fire Underwriters Survey, for a fire flow demand of 4,000 L/min, fire flow must be provided for a duration of 1.5 hours. This results in a preliminary on-site water storage volume estimate of approximately 360,000 litres. The exact fire flow requirements and storage volume is subject to change as the site plan develops and will need to be confirmed during the detailed design phase.

As the building is proposed to be equipped with sprinkler system, the remote hydrant system will include at least one hydrant within 45m of the building's fire department connection to satisfy Ontario Building Code requirements. The exact location of the hydrants will depend on the access route location and the associated unobstructed path of travel, which will need to be confirmed during the detailed design phase. Refer to the *Conceptual Servicing Figure* for the preliminary layout of the remote hydrant system. The exact layout and orientation of the system will be coordinated with the architectural and mechanical designs of the site and confirmed during the detailed design phase.

4.0 SANITARY DESIGN

4.1 Existing Sanitary Sewer

There is no municipal sanitary sewer available to service the subject site. Existing buildings within the development limits are currently serviced by private septic systems.

4.2 Contemplated Sanitary Sewer

The new building will be serviced via a new private septic system installed within the southeast landscaped area of the property. The septic design including the size, location, and anticipated flow rates will be confirmed and designed by others.

The septic designer will be responsible for obtaining all required permits and approvals. It is expected that on-site septic treatment will be governed by the OBC, as it is anticipated that the Daily Design Flow for the proposed building will be less than 10,000 litres per day. The proposed septic system will need to be constructed with all appropriate setbacks, treatment units and stipulations as per applicable Ontario regulations.

For further design information pertaining to the on-site sewage system, please refer to the septic plans.

5.0 STORM SEWER DESIGN

5.1 Existing Storm Sewers

There are no existing municipal storm sewers available to service the proposed development. Stormwater runoff from the site is currently tributary to Mud Creek within the Lower Rideau River sub-watershed. Runoff from the existing site is primarily directed to the existing municipal ditch along Bankfield Road, where it travels approximately 1.1km east before discharging to Mud Creek.

Runoff from a small section of the site is directed to the municipal ditch within Elijah Court. Runoff directed to Elijah Court is conveyed to the First Line Road municipal ditch, and then to the Bankfield Road municipal ditch before discharging to Mud Creek.

5.2 Contemplated Storm Sewers

It is anticipated that a 450 mm diameter storm sewer will be required at the downstream end of the storm servicing. Sizing estimates are based on the unrestricted 5-year flow with an estimated pipe slope of 1.0%. Sizing within the upstream reaches of the storm sewer network will be dependent on the grading schemes developed during detailed design, however estimates have been provided within the *Conceptual Servicing Figure* based on preliminary grading concepts.

It is anticipated that runoff will be discharged to the Bankfield Road municipal ditch at a restricted rate to meet stormwater management requirements, as discussed in *Section 6.1*. It is expected that a combination of surface storage, subsurface storage, and infiltration will be required to meet the criteria identified by the City of Ottawa Sewer Design Guidelines and Pre-Consultation notes.

6.0 STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for the site will be maintained through positive drainage away from the proposed building and towards the adjacent ROWs. The quantitative and qualitative properties of the storm runoff for both the pre- and post-development flows are further detailed below.

The following design criteria will need to be employed to develop the stormwater management design for the site:

Quality Control

- Quality control will be required up to an enhanced level of treatment (80% TSS Removal).

Quantity Control

- Based on consultation with City staff, any storm events greater than 2-year, up to 100-year, and including 100-year storm event must be detained on site.
- Post-development flow must be restricted to match the existing 2-year storm event rate, based on a calculated time of concentration of at least 10 minutes.
- The pre-development condition will be considered greenfield, and all buildings and impervious areas shall assume a pre-development coefficient for soft landscaping.

6.2 Quality Control

As mentioned above, quality controls will be required up to an enhanced level of treatment (80% TSS removal). Given the layout shown in the Site Plan, it is expected that there will be insufficient green space for a treatment train approach to quality control.

Quality control options such as the Silva Cell bioretention system may be used to provide a level of quality treatment, however it is anticipated that an Oil & Grit Separator Unit located at the downstream end of the proposed storm servicing will ultimately be required to meet quality control requirements. As the contemplated Oil & Grit separator unit will be treating runoff from a large tributary area, it may be necessary to instead provide several smaller quality treatment units throughout the site.

6.3 Quantity Control

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where	C	= Runoff coefficient
	I	= Rainfall intensity in mm/hr (City of Ottawa IDF curves)
	A	= Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the *Ottawa Sewer Guidelines*, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

The time of concentration (Tc) used for pre-development shall be calculated and no less than 10 minutes.

6.3.1 Site Drainage

Based on the criteria listed in *Section 6.1*, the proposed development will be required to restrict flow to the 2-year storm event.

It has been assumed that the existing development contained no stormwater management controls for flow attenuation. A time of concentration of 18 minutes was calculated based on the Airport Method. The estimated pre-development peak flows for the 2- and 100-year events are summarized in *Table 2*, below.

Table 2: Pre-Development Runoff Summary

Drainage Area	Area (ha)	C (2-Yr/100-Yr)	Intensity (mm/hr)		Tc (min)	Q (L/s)	
			2-Yr	100-Yr		2-Year	100-Year
A1	1.91	0.34/0.41	55.5	128.1	18	100.44	281.69

The required restricted release rate is detailed in *Table 3*, below, and is based on a fully greenfield site.

Table 3: Required Restricted Release Rate

Drainage Area	Area (ha)	C (2-Year)	Intensity (mm/hr)	Tc (min)	Q (L/s)
					2-Year
A1	1.91	0.20	55.5	18	58.86

As seen in *Table 3*, above, the required restricted release rate will be 58.86 L/s based on the criteria identified in the Pre-Consultation notes.

To meet the stormwater objectives the proposed development is expected to contain a combination of flow attenuation along with surface storage, rooftop storage, subsurface storage, and infiltration.

It is anticipated that runoff collected on the roof of the building will be controlled and stored using flow-controlled roof drains. Controlled runoff from the roof area is anticipated to be conveyed to a subsurface infiltration area. The feasibility of the infiltration area will be dependent on groundwater conditions and the hydraulic conductivity of the native soils, which will need to be confirmed during the detailed design phase.

Runoff from the parking lot and drive aisle is expected to be controlled with the use of inlet control devices. Based on the existing topography, it is assumed that surface storage alone will be insufficient to restrict runoff to the allowable release rate, and subsurface storage options will likely be required.

The following storage requirement estimate assumes that approximately 5% of the development area will be directed to the outlet without flow attenuation, and that runoff from the proposed building roof can be infiltrated. A runoff coefficient of 0.71 has been calculated for the post-development condition based on the Site Plan. The estimated post-development peak flows and required storage volume for the 2- and 100-year events are summarized in *Table 4*, below. Please note that calculations for the roof area have been excluded as they will be heavily reliant on the findings of the Geotechnical Report and Hydrogeological Assessment.

Table 4: Post Development Flow Rate and Storage Requirements

Drainage Area	Area (ha)	C (2/100-Year)	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m ³)	
			5-year	100-Year	5-Year	100-Year	5-Year	100-Year
B1 (Roof Area)	0.23	0.90/1.00	43.35	111.98	0.00	0.00	TBD	TBD
B2 (Restricted)	1.60	0.71/0.79	241.60	630.13	19.50	25.69	207.90	650.83
B3 (Unrestricted)	0.08	0.71/0.79	12.72	33.16	12.72	33.16	-	-
Total	1.91	-	297.66	775.27	32.22	58.86	207.90	650.83

It is anticipated that approximately 650.83 m³ of storage will be required on site to attenuate flow to the established release rate of 58.86 L/s. Runoff and storage calculations can be found within *Appendix 'G'*. Storage volumes are provided as an estimate only and will need to be confirmed during the detailed design phase.

7.0 SUMMARY

- A new two-storey automotive dealership is proposed at 1450-1468 Bankfield Road & 5479-5485 Elijah Court;
- The FUS method estimated fire flow indicated $4,000\text{ L/min}$ is required for the proposed development;
- A remote hydrant system and water storage tanks are proposed to provide fire flow to the proposed development;
- The development will be serviced by a new drilled well and private septic system.
- The development will be required to attenuate post-development 2- and 100-year flows to the 2-year release rate of 58.86 L/s ;
- It is contemplated that stormwater objectives may be met through storm water retention via infiltration and roof top, surface, and subsurface storage. It is anticipated that approximately 650.83 m^3 of onsite storage will be required to attenuate flow to the established release rate; and
- Quality controls are required to provide an enhanced level of treatment (80% TSS removal).

8.0 RECOMMENDATION

This report is respectfully being submitted for review.

Sincerely,

Egis Canada Ltd. (formerly McIntosh Perry)



Francis Valenti, EIT.
Engineering Intern, Land Development
E: f.valenti@mcintoshperry.com



James Hewson, P.Eng.
Project Engineer, Land Development
E: j.hewson@mcintoshperry.com

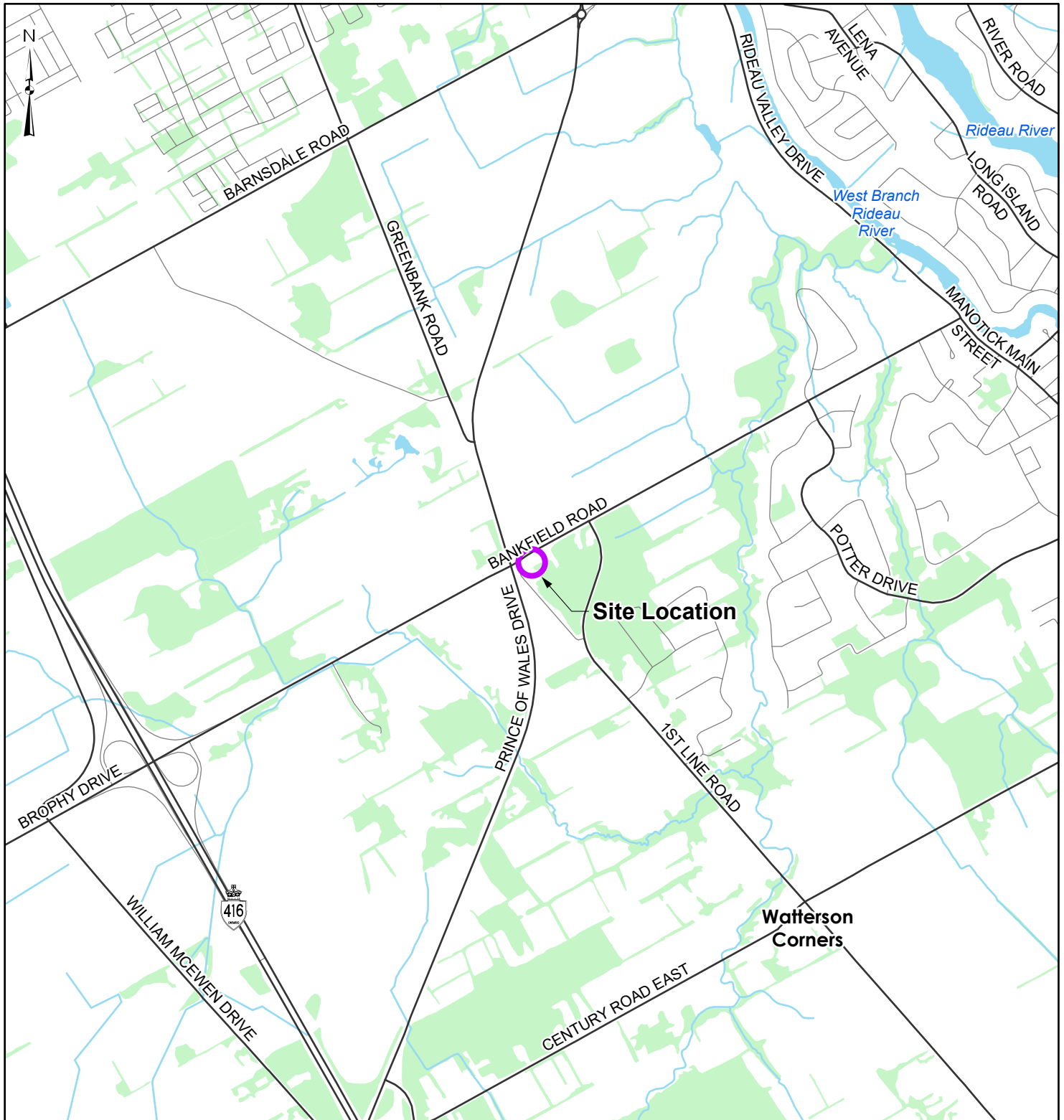
9.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of Zena Investment Corporation. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Parks and Climate Change, City of Ottawa and local approval agencies. Egis Canada Ltd. (formerly McIntosh Perry) reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by Egis Canada Ltd. and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. Egis Canada Ltd. (formerly McIntosh Perry) accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, Egis Canada Ltd. (formerly McIntosh Perry) should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A KEY PLAN



LEGEND

- | | | | |
|---|---------------|---|-------------|
|  | Site Location |  | Watercourse |
|  | Local Road |  | Waterbody |
|  | Major Road |  | Wooded Area |

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2024.

CLIENT:

ZENA INVESTMENT CORPORATION

PROJECT:

MYERS BANKFIELD CHRYSLER

TITLE:

SITE LOCATION



115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742

PROJECT NO: CCO-22-3879

FIGURE:

Date Feb., 15, 2024

GIS AH

Checked By RR

1

APPENDIX B BACKGROUND DOCUMENTS



File Number PC2021-0300

24 November 2021

Novatech Engineers, Planners & Landscape Architects
Attention Adam Thompson
240 Michael Cowpland Drive, Suite 200
Ottawa, ON,
K2M 1P6

Dear Mr. Thompson

Re: 1464 – 1468 Bankfield Road Pre-Consultation Results

Date of Meeting: October 05, 2021

In attendance and/or provided comments:

Jeff Ostafichuk City
Adam Brown City
Brian Morgan
Tessa Di Iorio City
Eric Lalande RVCA
Matthew Hayley City
Mike Giampa City
Kersten Nitsche City
Adam Thompson Novatech
Murray Chown Novatech
Cyril Leeder Myers Group
Geoff Publow Myers Group

Please find below the results of our meeting with respect to your proposal.

The proposal is to rezone the property for the purposes of permitting a variety of commercial uses appropriate to be located outside of the Village of Manotick core area. In particular, the future development of an automobile dealership may be contemplated. At this time, the proposal is to rezone the lands in advance of an application for a Site Plan.

Comments

Jeff Ostafichuk Planning

Given the number of issues presented in the pre-consult, should you wish to proceed, we expect your concept plan to change considerably. We request prior to your submission the City have an opportunity to discuss your revised proposal.

Tessa Di Iorio, Risk Management Official/Inspector, Hydrogeologist

Here are some comments in terms of hydrogeological assessment requirements, as discussed at the pre-consultation meeting.

- A hydrogeological study and terrain analysis is needed to confirm sufficient groundwater quantity and quality and potential impacts.
- Note that the City of Ottawa's Hydrogeological and Terrain Analysis Guidelines (March 2021) are in full effect and provides the basis for the required submission of the Hydrogeological and Terrain Analysis Report.
https://documents.ottawa.ca/sites/documents/files/hydrogeo_terrain_analysis_guide_en.pdf
- The hydrogeological study must include an impact assessment to investigate the potential impact to the Kars Esker.
 - The Mud Creek Subwatershed Study identifies the Kars Esker as valuable source of groundwater and a highly vulnerable aquifer. As such, there are policies related to protecting the Kars Esker. Potentially-contaminating land uses are not recommended on the esker.
 - Esker mapping can be obtained from the RVCA; it is noted current mapping shows that the site is located within the area identified as the Kars Esker. However, current mapping is regionally-based and a local investigation and mapping can be completed to refine the Esker location. Note that the esker is most vulnerable where it is exposed at surface.
 - Technical pre-consultation is highly recommended prior to commencing any field investigation.
- Note that at Site Plan the supply well must be established and tested. If an existing well will be used, then a comparison of demand may be used if supported that new water demand is less than existing demand; however full well pump test will be needed if demand is greater than existing demand. Water quality testing should be provided to confirm quality.
- The hydrogeological report must also include a terrain analysis and septic impact assessment, if the septic is sized over 10,000L/day then an ECA will be required from the MECP.
- It is recommended that the esker assessment be completed first, prior to the water supply assessment or the septic impact assessment to ensure the proposed use is appropriate prior to commencing additional studies.

Kersten Nitsche Parks

The Owner will be required to pay CIL at time of Site Plan Control application (or COA, etc.) in accordance with the Parkland Dedication By-law. If they develop it as proposed with commercial, then it will be 2% of the market value of the land on the day before SPC approval.

Brian Morgan Project Manager, Infrastructure Approvals

General:

The applicant must submit a Concept Plan and refine their proposal before DR can submit a detailed list of required drawings and reports.

Comments:

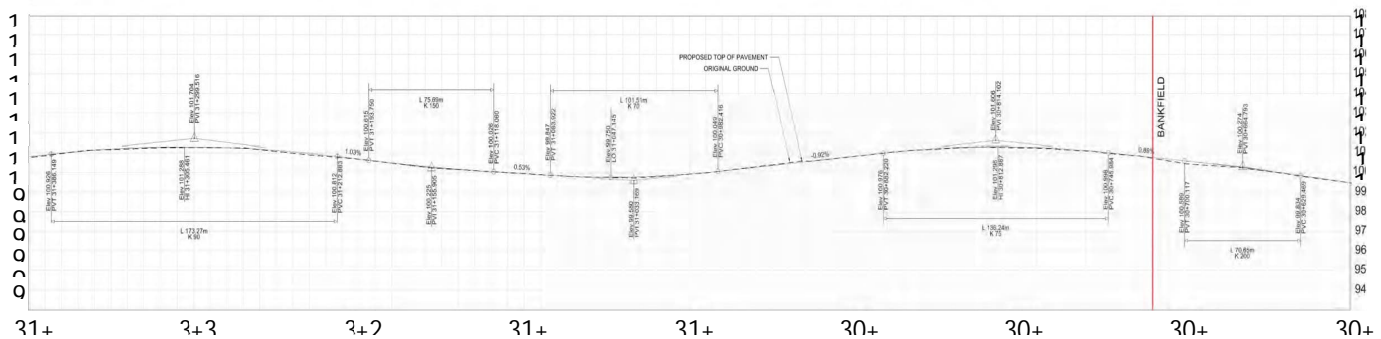
- Existing wells and septic's to be decommissioned as required by the City and the Province.
- Existing septic systems may have to be very carefully placed due the esker and neighbouring properties.
- oil/grit separator will require MECP ECA approval.
- Existing wells being retained and reused must be tested for sufficient quantity and quality.
- Applicant must establish whether the Kars Esker is present on the property. Note that if the Kars Esker is present on the property, it may have a significant impact on the design of wells and septic systems.
- Every effort should be made to protect the aquifer from pollutants.
- Phase 1 ESA required.
- Consultants should review the Mud Creek Subwatershed Study (2015).

Roundabout

- Future roundabout proposed for the intersection of Bankfield and Prince of Wales. (Post-2031). Note that this project is not in the current affordable Transportation Master Plan (TMP).
- Proposed roundabout drawing indicates a road widening will be required along Bankfield Road.
- Given the possibility of an intersection redesign in the future, it is unlikely that the City would be willing to sell off any of the odd parcels of land found along this intersection. Contact the Real Estate department of the City of Ottawa.

RVCA

- Eric from the RVCA is concerned that automotive use may not be appropriate for this site. Wait for results of reports and studies.



Mike Giampa Senior Transportation Engineer, Infrastructure

- Submit a screening form.
- If a TIA is warranted proceed to scoping.
- The application will not be deemed complete until the submission of the draft step 2-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable). Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended. Synchro files are required at Step 4.
- ROW protection on Bankfield is 34 m.
- Please note that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual.
- The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021. The document will be available in French and English on the TRANS website <http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation>.

Matthew Hayley Environmental Planner

- It is located within the Mud Creek SWS
https://documents.ottawa.ca/sites/documents/files/documents/mudcreek-report-s_en.pdf
- The Kars esker limits will need to be identified and addressed as per the requirements of the Mud Creek SWS, see comments from Tessa
- Tree Conservation Report (TCR) required will need to address tree preservation opportunities, butternut trees and other species at risk (as required) and to provide recommendations for landscaping
- Bird-Safe Design - Given the proposal (comercial) the proposal will need to review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: <https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans> .

Jeff Ostafichuk

cc: Brian Morgan
Tessa Di Iorio City
Eric Lalande RVCA
Matthew Hayley City
Mike Giampa City
Kersten Nitsche City

Adam Thompson
Novatech
Via email: a.thompson@novatech-eng.com

Subject: Phase 2 Pre-Consultation: Meeting Feedback
Proposed ZBLA & Site Plan Application – 1450, 1454, 1458, 1464, 1468 Bankfield Road and 5479, 5485 Elijah Court

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on November 14, 2023.

Pre-Consultation Preliminary Assessment

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input checked="" type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
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One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

1. A review of the materials submitted for the above-noted pre-consultation has been undertaken and staff have identified deficiencies needing to be resolved. Please proceed to complete a Pre-consultation Application Form for another Phase 2 review and submit together with the necessary revised studies and/or plans to planningcirculations@ottawa.ca.
2. In your subsequent Phase 2 pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been further identified and/or confirmed, during this phase of pre-consultation, as required (R) or advised (A) as part of a future complete application submission.



The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

- a. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

List of Studies and Plans Reviewed:

Revised Site Plan Parking Layout 01, Drawing # A010, prepared by KWC Architects Inc., dated October 16, 2023.

Comments:

A meeting with the City was requested to discuss a significantly revised proposal. Zena has acquired a total of seven (7) properties at the south-east corner of Bankfield Road and Prince of Wales Drive.

The properties now include:

- 1450 Bankfield Road
- 1454 Bankfield Road
- 1458 Bankfield Road
- 1464 Bankfield Road
- 1468 Bankfield Road
- 5479 Elijah Court
- 5485 Elijah Court

The proposed redevelopment of the Subject Properties will consist of a two-storey automobile dealership of approximately 2,130 square metres (22,900 square feet). The proposal includes 441 parking spaces configured for customer parking and vehicle inventory.

Manotick Secondary Plan

Schedule "A"

- Designated: "Mixed Residential / Commercial"
- Development on Private Services

Policies

3.5 - Mixed Residential-Commercial

16) The Mixed Residential-Commercial designation applies to lands at the south-west corner of Bankfield Road and First Line Road and south of Potter Drive as shown on Schedule A – Designation Plan. Policies 16) The permitted uses include a variety of residential uses and a limited range of commercial and retail uses which would not compete with uses located in the Village Core.

18) For lands located at the south-west corner of Bankfield Road and First Line Road, a hydrogeological study must be submitted at the time of a development application. The study will identify the limit of the hydrogeological constraint area and the feasibility of development due to the presence of the Kars Esker. Public water and wastewater are not foreseen for this area of the village.

19) The Mud Creek Subwatershed Study (2015) will be used to evaluate any proposed development located at the south-west corner of Bankfield Road and First Line Road and south of Potter Drive.

Engineering

List of Studies and Plans Reviewed:

“Site Plan”; dwg no: A010; project: Myers Bankfield Chrysler; prepared by: BBS Construction (Ontario) Ltd.; project no: kwc-2230; rev no: 0; dated: 16-Oct-2023.

Comments:

1. Environmental Site Assessment (Phase 1 & 2 ESA)
 - a. A Phase One ESA is required for the design and construction of this site.
 - b. Environmental Site Assessments (ESA's) are required to ensure that development only takes place on sites where the environmental conditions are suitable for the proposed use in accordance with provincial legislation and regulations.
 - c. The Phase 1 ESA report will determine whether a Phase 2 ESA is required.
2. Geotechnical Study
 - a. A Geotechnical report is required to support the design and construction of this project.
 - b. The Geotechnical report should provide sufficient soils and engineering information to confirm that the site(s) are suitable or can be made suitable for development. The geotechnical report shall adequately discuss the fill requirements, grade raise restrictions, and other limitations and earthworks required for development.

- c. The report should clearly state whether sensitive marine clays or organic soils are present on this site, or not. The report might include: Atterberg limits, consolidation testing, shear strength testing, grade raise restrictions, or a sieve analysis as required.
- d. The report should clearly state whether soil liquefaction is a risk on this site, or not.
- e. In order to determine the predevelopment seasonal high groundwater levels for infiltration areas, water level loggers should be installed in properly constructed monitoring wells (see ASTM for reference standard) and regular manual measurements should be taken to confirm the data loggers are operating properly. The monitoring should be over an extended period of time (typically one year), and should include the spring freshet.

(ref: Ottawa Sewer Design Guidelines (2012), update: ISTB 2018-04 Section 8.2; and

Low Impact Development Technical Guidance Report (Feb 2021) Section 3.5.3 pages 25 of 68). (page 6 of 69 and elsewhere).

- f. Note that there must be a 1.0 metre separation between the bottom of and infiltrative surface and the level of the seasonal high groundwater elevation. (ref: MOECP SWM Planning and Design Manual (March 2003) page 164 of 379)
- g. Given the proposed infiltration trench or soak-away areas, tests must be performed on the soil to determine their actual infiltration rates.
(ref: Low Impact Development Technical Guidance Report (Feb 2021), Section 3.5.1 page 23). Also provide grain-size distribution curves—at least two samples for each geological unit.

3. Grading and Drainage Plan

- a. A Grading Plan is required to support the design and construction of this project.
- b. Grading Plans provided to the City of Ottawa should include:
 - i. All elevations must be referenced to a geodetic reference point.
 - ii. Please indicate the Site Benchmark and the external reference that provides the horizontal and vertical datum of the reference used to set this benchmark.
 - iii. All measurements must be in metric units, although imperial measurement may be provided as a secondary measurement.
 - iv. Provide top of curb (TC) and bottom of curb (BC) elevations.

- v. Please maintain a minimum 150 mm difference between the proposed finished floor elevation and the finished grade at the structure. Maintain positive surface drainage away from the foundation wall.
- vi. A 0.3m freeboard should be provided between the 100-year water elevation and the finished floor elevation.
- vii. Please include the Pavement Design provided in the Geotechnical Report. Typically, this would include a low-density and a heavy-duty pavement design.

4. Hydrogeological and Terrain Analysis

- a. A Hydrogeological and Terrain Analysis (HGTA) will be required to establish that there is an adequate quantity and quality of groundwater to support the site plan control application and that the proposed activities (including the septic system) will not contaminate the underlying aquifers and the natural environment. The report must meet the requirements of the City's Hydrogeological and Terrain Analysis Guideline (March 2021); requirements related to site plan control applications are listed in Section 5.0 – Site Plans.
- b. It is understood that a new well and septic system will be installed to service the proposed development, and that the existing well and septic systems will not be used in the future. Note that any unused existing well or septic systems must be decommissioned as per O.Reg. 903 under the Ontario Water Resources Act. An MECP well decommissioning record for each decommissioned well must be included with the HGTA to support that the well has been decommissioned.
- c. For a site plan control application, the supply well must be installed and tested to confirm water quantity and quality suitability prior to approval. Note that the well must be located where it is protected from damage (i.e. vehicles, snow removal) and potential contamination. The well must be shown on all plans, and the grading plan must show how the well will meet regulations related to final casing height above grade and ground sloping away from the well so surface water does not pool around the well head, as per O.Reg. 903.

Water Quantity and Quality:

- i. Support must be provided for the pump test rate; which should be the maximum day rate. For commercial/industrial operations, a longer pump test is normally recommended, however a minimum of 6 hours is required in the City of Ottawa HGTA Guidelines, unless the demand is greater than 10,000 L/d, in which case the well test shall be for a minimum of 12 hours.
- ii. Water quality parameters that must be tested include the “subdivision suite” known to local well testing companies, as well as trace metals and VOCs. The

report should also provide an assessment of onsite and adjacent and historic land uses and determine if any other parameters need to be tested (i.e. petroleum hydrocarbons, and/or any other parameter of concern).

5. Site Servicing Study

- a. A Site Servicing Study is required to support the design and construction of this project.
- b. Applications for new development are required to demonstrate, to the City's satisfaction, that adequate services are available and can be allocated to support the proposal.
- c. A Site Servicing Plan is required to support the design and construction of this project.
- d. An Erosion Control plan is required to support the design and construction of this project.

Consult with the MECP to determine which Environmental Compliance Approvals will be required, and report to the City. Long-term oversight will be important for this site.

6. Stormwater Management Report

- a. A Stormwater Management report is required in support of the design and construction of this project.
- b. Stormwater design must adhere to the City's 'Ottawa Design Guidelines - Sewer', Second Edition, document no. SDG002, October 2012, City of Ottawa, including technical bulletins: ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04, ISTB-2019-02.
- c. The quantity criteria for the development are that the 100-yr post development peak flow rate must match the 2-year pre-development peak flow rate.
- d. The stormwater management quality criteria for this site are 80% TSS removal.
- e. A calculated time of concentration (cannot be less than 10 minutes) is required.
- f. Runoff volumes must be calculated using the 'C' values found in Ottawa Design Guidelines (Sewer), Section 5.4.5.2.1 page 5.26. There are no standard or maximum 'C' values in the Rural area.

- g. Stormwater outlet and emergency overflow (if any) must outlet to a legal and sufficient outlet.
 - h. The pre-development conditions will be considered greenfield, and all buildings and impervious surfaces shall assume a pre-development coefficient for soft landscaping.
 - i. A 0.3m freeboard should be provided between the 100-year high-water elevation and the finished floor elevation.
 - j. Stormwater or Drainage plans must include the ponding depth, volume, and ponding extent for 2-year and 100-year storm events.
 - k. Please provide pre- & post- development drainage plans clearly identifying the sub-drainage zones, their areas, and 'C' values.
 - l. In regard to proposed LID design, please refer to the City's 'Low Impact Development Technical Guidance Report', in particular 'Section 2.0 Hydrological Constraints', Section 3.3 Geotechnical Investigations, and 'Section 3.5 Current Approaches and Guidance'.
 - m. In order to determine the predevelopment seasonal high groundwater levels for infiltration areas, regular measurements should be taken over an extended period of time (typically one year) that includes the spring freshet. (ref: Ottawa Sewer Design Guidelines (2012), update: ISTB 2018-04 Section 8.2; and Low Impact Development Technical Guidance Report (Feb 2021) Section 3.5.3 pages 25 of 68). (page 6 of 69 and elsewhere). Please see the geotechnical investigation requirements above for additional details.
 - n. While infiltration is proposed as the primary method of dealing with stormwater, the design should also include an emergency overflow to neighbouring ditches to deal with unusual rainfall events.
 - o. The site is located in the Mud Creek Subwatershed Study area and the requirements as they pertain to the Esker need to be addressed.
 - p. Only clean runoff should infiltrate into the subsurface (roof, grasses areas, etc.). Runoff from areas subject to winter salting should not be infiltrated.
7. Septic System Review and Approval:
- a. The City will require septic approval before we can issue Site Plan Approval.

- b. If the sanitary daily design flow is less than 10,000 L/day, a septic permit from the Ottawa Septic System Office (OSSO) is required prior to Site Plan Approval being granted.
- c. If the sanitary daily design flow is greater than 10,000 L/day, the septic system(s) is regulated by the Ministry of the Environment, Conservation and Parks (MECP) and requires a direct submission Environmental Compliance Approval (ECA) application.
- d. Please ensure that the OSSO office is aware if an oil/grit separator is contributing to the flows to the septic system.
- e. Be advised that a Groundwater Impact Assessment will be required.
- f. As per the OSSO office, the septic system must meet all the separation distances, including but not limited to separation from property lines.
- g. Technical consultation with the hydrogeological report reviewer is encouraged, please contact the City hydrogeologist, Michel Kearney (michel.kearney@ottawa.ca) and copy the assigned Infrastructure Project Manager to schedule a technical consultation.
- h. A Noise Control Study is recommended to support the design and construction of this project.
- i. The goal of environmental noise control is to provide guidance between land uses that are noise sensitive and land uses that are sources of noise such as roads, railways, employment areas and equipment for building facilities.

8. Special Consideration

- a. As discussed previously, long range plans at the City of Ottawa are proposing a new roundabout for the intersection of Bankfield and Prince of Wales. (Post-2031). Note that this project is not in the current affordable Transportation Master Plan (TMP).
- b. The proposed roundabout drawing will include a road widening along Bankfield Road.
- c. Given the possibility of an intersection redesign in the future; it is unlikely that the city would be willing to sell off any of the odd parcels of land found along this intersection. Contact the Real Estate department of the City of Ottawa.

Feel free to contact Brian Morgan, Infrastructure Project Manager and/or Michel Kearney, Senior hydrogeologist, for follow-up questions.

Noise

Comments:

A stationary noise study is required.

Transportation

In advance of the meeting a TIA Screening Form was reviewed.

TIA Screening Form

As traffic along Bankfield Rd and Prince of Wales Drive is highest on weekdays, the weekday AM and PM peak hours are anticipated to be the worst-case combination of site generated traffic and adjacent street traffic. The weekday trip generation has been reviewed based on ITE rates for the purposes of the trip generation trigger.

Land Use	ITE Code	AM Peak			PM Peak		
		IN	OUT	TOT	IN	OUT	TOT
Automobile Sales	840	31	12	43	22	33	55

As the proposed development is a car-oriented use and transit is generally not available in this area, the ITE trips are assumed to be equivalent to person trips. Based on the foregoing, the trip generation trigger is not met.

Neither location trigger is met. However, as several of the safety triggers are met, a TIA will be required. As the development is not anticipated to generate 75 vehicle trips or 75 transit trips, the TIA will be limited scope and the Neighbourhood Traffic Calming, Transit, and Intersection Design Modules are exempt.

Can you please confirm if the following study area is sufficient:

- Bankfield Rd/Prince of Wales Drive
- Bankfield Rd/First Line Rd

Comments:

Study area is ok. A request for the roundabout design from TP will be made but it's post 2031 so it may not be available.

Right-of-way protection.

- a. See [Schedule C16 of the Official Plan](#).



Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

TIA submission; warranted and required at Phase 3

Proposed roundabout at POW and Bankfield is a post-2031 project and does not have a construction date nor funding.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

Environment and Trees

Comments:

Tree preservation / distinctive trees – a Tree Conservation Report (TCR) required will need to address tree preservation opportunities, butternut trees and other species at risk (as required) and to provide recommendations for landscaping.

Significant environmental features – It is located within the Mud Creek SWS https://documents.ottawa.ca/sites/documents/files/documents/mudcreek_report-s_en.pdf and contains the Kars Esker.

The Kars esker limits will need to be identified and addressed as per the requirements of the Mud Creek SWS Section 5.4. [Mud Creek Subwatershed Study | Documents | City of Ottawa](#)

Species at risk – will need to be addressed as part of the tree conservation report or as a stand-alone EIS.

Bird-Safe Design - Given the proposal (commercial) the proposal will need to review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: <https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans> .

Feel free to contact Matthew Hayley, Environmental Planner for follow-up questions.

Parkland

Comments:

The Owner will be required to pay CIL at time of Site Plan Control application (or COA, etc.) in accordance with the Parkland Dedication By-law. If they develop it as proposed



with commercial, then it will be 2% of the market value of the land on the day before SPC approval.

Acknowledged by applicant.

Feel free to contact Anissa McAlpine, Parks Planner, for follow-up questions.

Conservation Authority

Comments:

RVCA is concerned that automotive use may not be appropriate for this site. Will wait for results of reports and studies.

Feel free to contact Eric Lalande, Rideau Valley Conservation Authority, for follow-up questions.

We look forward to further discussing your project with you.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,

Jeff Ostafichuk

cc.

Brian Morgan
Adam Brown
Anissa McAlpine
Matthew Hayley
Mike Giampa
Michel Kearney

APPENDIX C WATERMAIN CALCULATIONS

McINTOSH PERRY

CCO-22-3879 - Bankfield Chrysler - Water Demands

Project:	Bankfield Chrysler
Project No.:	CCO-22-3879
Designed By:	FV
Checked By:	JH
Date:	February 8, 2024
Site Area:	1.91 gross ha

Commercial 2728 m2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m ² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	Residential	0.00 L/s
	Commercial/Industrial/ Institutional	0.09 L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	9.5 x avg. day	L/c/d
Industrial	1.5 x avg. day	L/gross ha/d
Commercial	1.5 x avg. day	L/gross ha/d
Institutional	1.5 x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	0.00 L/s
	Commercial/Industrial/ Institutional	0.13 L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	14.3 x avg. day	L/c/d
Industrial	1.8 x max. day	L/gross ha/d
Commercial	1.8 x max. day	L/gross ha/d
Institutional	1.8 x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	0.00 L/s
	Commercial/Industrial/ Institutional	0.24 L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.09	L/s
MAXIMUM DAILY DEMAND	0.13	L/s
MAXIMUM HOUR DEMAND	0.24	L/s

McINTOSH PERRY

CCO-22-3879 - Bankfield Chrysler - Fire Underwriters Survey

Project: Bankfield Chrysler
Project No.: CCO-22-3879
Designed By: FV
Checked By: JH
Date: February 8, 2024

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x vA Where: F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Fire-Resistive Construction

C	0.6	A	2,727.7 m ²
Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)			2,727.7 m ² *Unprotected Vertical Openings

Calculated Fire Flow	6,894.1 L/min
	7,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:
Combustible 0%

Fire Flow	7,000.0 L/min
-----------	---------------

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered -50%

Reduction	-3,500.0 L/min
-----------	----------------

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons. of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	Over 30 m	Wood frame	N/A	N/A		0%
Exposure 2	Over 30 m	Wood frame	N/A	N/A		0%
Exposure 3	Over 30 m	Wood frame	N/A	N/A		0%
Exposure 4	Over 30 m	Wood frame	N/A	N/A		0%
% Increase*						0%

Increase*	0.0 L/min
-----------	-----------

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	3,500.0 L/min
Fire Flow Required**	4,000.0 L/min

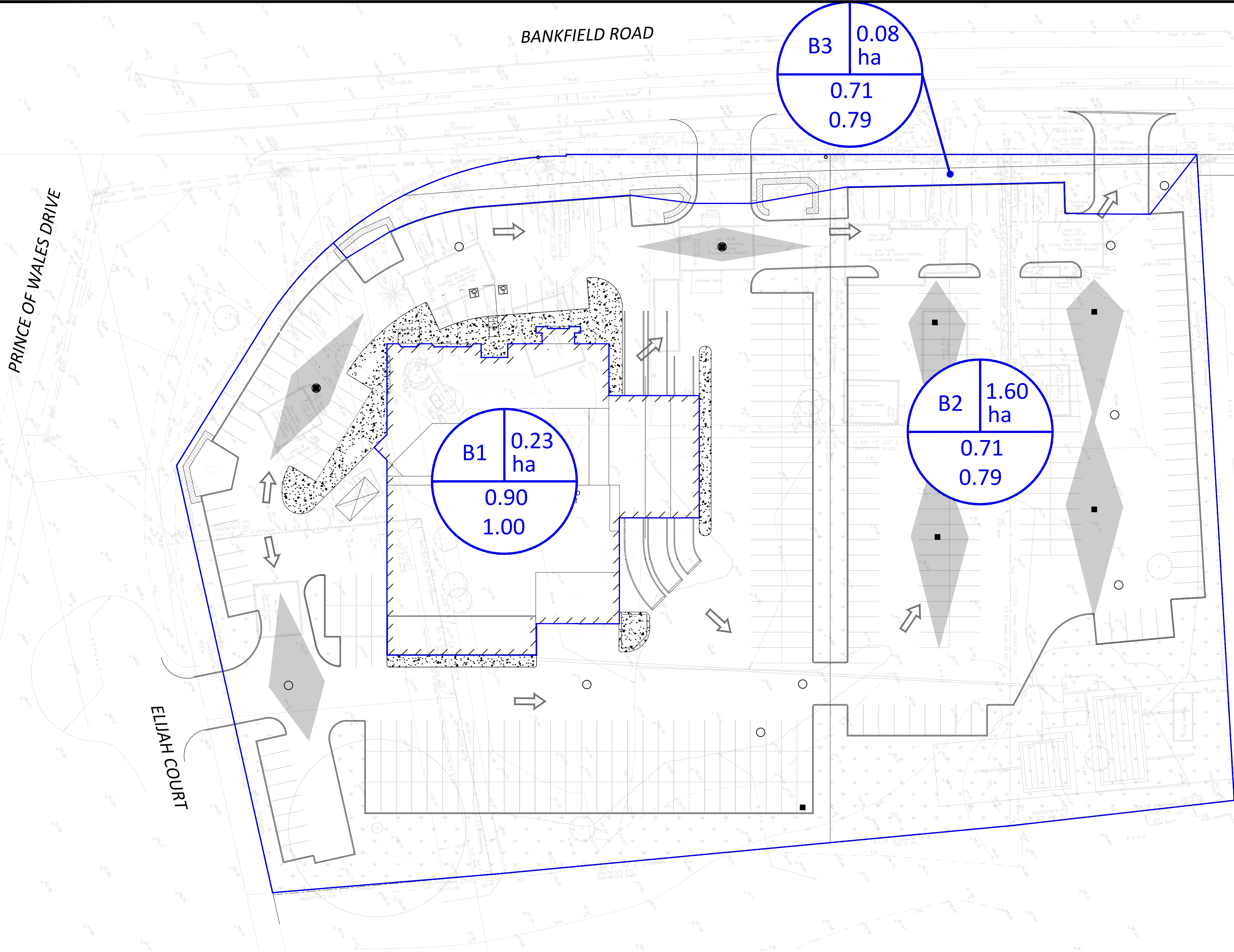
*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%

**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

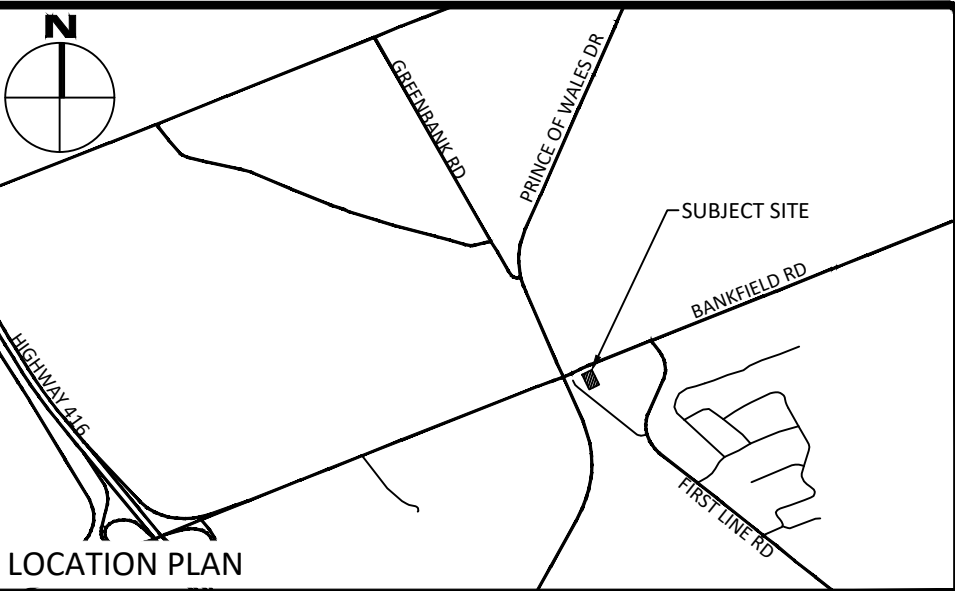
APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

FILENAME: I:\Ottawa\01 Project - Proposal\2022\06\CCO-22-3879 BAS - Chrysler GM - 1464 Bankfield Road\12 - Drawings\CCO-22-3879 - PRESENTATION.dwg
LAST SAVED: Tuesday, February 12, 2024 1:51 PM
LAST PLOTTED: Thursday, February 15, 2024 1:51 PM
CUT FILE USED: —



GENERAL NOTES

- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY, AND IMPLY NO GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
- THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED INFORMATION SUPPLIED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. (JOB NO. 22671-22) AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLES SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
- THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
- EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL, SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
- TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION, IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
 - ELECTRICAL SERVICE - HYDRO ONE,
 - GAS SERVICE - ENBRIDGE,
 - TELEPHONE SERVICE - BELL CANADA,
 - TELEVISION SERVICE - ROGERS.
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

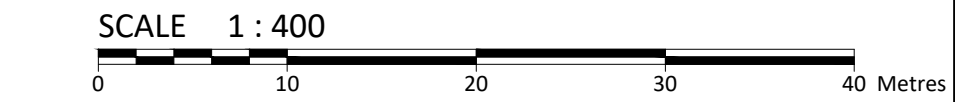


LEGEND

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

1	ISSUED FOR REVIEW	FE.B 15, 2024
No.	Revisions	Date

Check and verify all dimensions before proceeding with the work Do not scale drawings



McINTOSH PERRY
egis GROUP

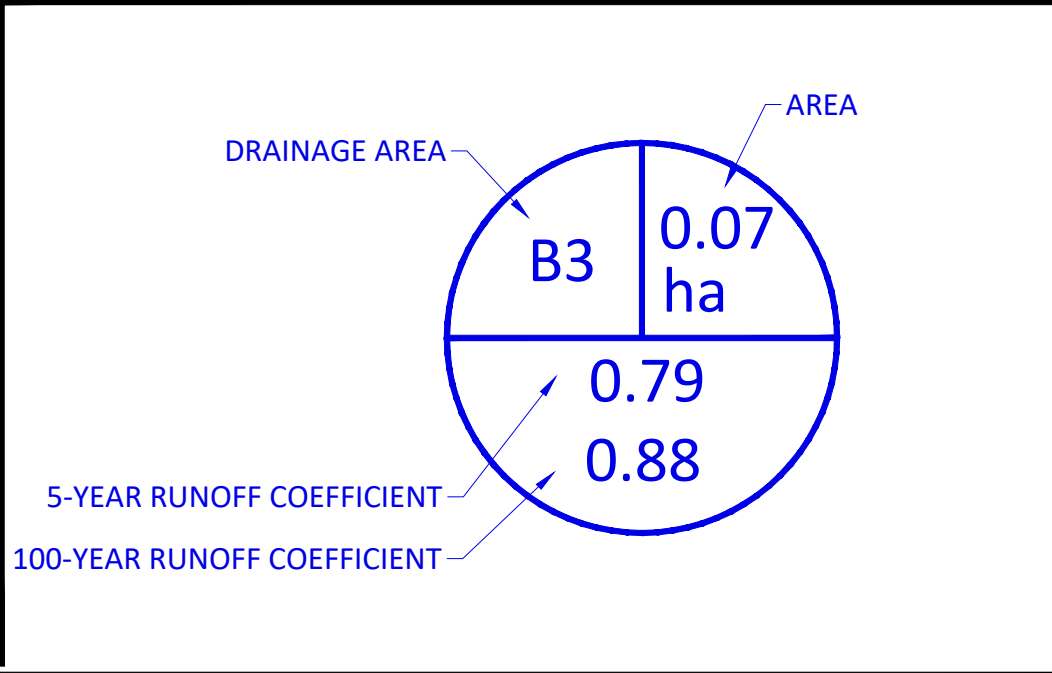
Stamp:

Client:
ZENA INVESTMENT CORPORATION
1200 BASELINE ROAD
OTTAWA, ON K2C 0A6

Project:
MYERS BANKFIELD CHRYSLER

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale:	1:400	Project Number:	CCO-22-3879
Drawn By:	FV	Drawing Number:	POST
Checked By:	JH		
Designed By:	JH		



D07-12-XX-XXXX
#XXXXX

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CCO-22-3879 - Myers Bankfield Chrysler

1 of 2

Tc (min)	Intensity (mm/hr)		
	2-Year	5-Year	100-Year
18	55.5	75.0	128.1
10	76.8	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m ²)	Gravel (m ²)	Pervious Area (m ²)	Average C (2/5-year)	Average C (100-year)
A1	1,825	3,546	13,706	0.34	0.41

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	5-Year	100-Year
A1	1.91	0.34	0.41	18	100.44	135.71	281.69
Total	1.91				100.44	135.71	281.69

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m ²)	Gravel (m ²)	Pervious Area (m ²)	Average C (5-year)	Average C (100-year)	
B1	2,256	0	0	0.90	1.00	Proposed Bldg Roof
B2	11,599	0	4,382	0.71	0.79	Restricted Flow
B2	610	0	231	0.71	0.79	Unrestricted Flow (Assumed 5% of Site)

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	100-Year	
B1	0.23	0.90	1.00	10	43.35	111.98	Proposed Bldg Roof
B2	1.60	0.71	0.79	10	241.60	630.13	Restricted Flow
B3	0.08	0.71	0.79	10	12.72	33.16	Unrestricted Flow
Total	1.91				297.66	775.27	

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	Q (L/s)
				2-Year
A1	1.91	0.20	18	58.86

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/S)		Restricted Flow (L/S)		Storage Required (m ³)		
	2-year	100-Year	2-Year	100-Year	2-Year	100-Year	
B1	43.35	111.98	0.00*	0.00*	TBD	TBD	*Roof runoff to infiltrate
B2	241.60	630.13	19.50	25.69	207.90	650.83	
B3	12.72	33.16	12.72	33.16			
Total	297.66	775.27	32.22	58.86	207.90	650.83	

McINTOSH PERRY

CCO-22-3879 - Myers Bankfield Chrysler - Storage Requirements (B2)

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2-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
10	76.8	241.60	19.50	222.10	133.26
20	52.0	163.67	19.50	144.17	173.00
30	40.0	125.96	19.50	106.46	191.63
40	32.9	103.38	19.50	83.88	201.31
50	28.0	88.21	19.50	68.71	206.12
60	24.6	77.25	19.50	57.75	207.90
70	21.9	68.93	19.50	49.43	207.60
80	19.8	62.38	19.50	42.88	205.81

Maximum Storage Required 2-Year (m ³) =	207.90
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100-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
100	37.9	133.76	25.69	108.07	648.40
110	35.2	124.23	25.69	98.54	650.34
120	32.9	116.09	25.69	90.39	650.83
130	30.9	109.04	25.69	83.35	650.11
140	29.2	102.88	25.69	77.19	648.36
150	27.6	97.44	25.69	71.75	645.71
160	26.2	92.60	25.69	66.91	642.30
170	25.0	88.26	25.69	62.57	638.21

Maximum Storage Required 100-Year (m ³) =	650.83
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