



ADEQUACY OF PUBLIC SERVICING REPORT
145541-6.04.03

4401 Fallowfield Road – Phase 2 PHEONIX HOMES

CITY OF OTTAWA

Document Control Page

CLIENT:	Phoenix Homes
PROJECT NAME:	PHOENIX MER BLEUE
REPORT TITLE:	PHOENIX HOMES 4401 FALLOWFIELD ROAD – PHASE 2
IBI REFERENCE:	145541-6.4.3
VERSION:	APSR Submission#2
DIGITAL MASTER:	145541/InternalDocuments/6.0_Technical/6.04_Civil/03_Reports/APSR Submission #2/CTR_O'Keefe_APSR_2024-07-08.docx\
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HISTORY:	

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1 INTRODUCTION

1.1 Objective

Arcadis Professional Services (Canada) Inc. (hereinafter referred to as Arcadis) has been retained by Phoenix Homes to prepare this Assessment of Adequacy of Public Services Report in support of their rezoning application for Phase 2 of its 4401 Fallowfield Road development project in the City of Ottawa. This report will provide stakeholders with a conceptual level layout of the proposed development sufficient to support the rezoning draft plan approval of the subject lands.

1.2 Location

The project site is located at O’Keefe Court. The parcels are approximately 3.40 Ha in total, and the contemplated development is commercial. The site is bound to the north by O’Keefe Court, to the south by Fallowfield Road, to the west by Provincial Highway 416, and to the east existing Phase 1 lands. Refer to **Figure 1.1** below for key map of site location, and **Appendix A** for a copy of the redevelopment concept plan.



Figure 1.1 – Key Map of Subject Lands

1.3 Proposed Development

The intent of the rezoning application is to seek permission to develop the site with automotive dealership usage. A formal Site Plan Application may be made following the rezoning application.

Vehicular access to the subject lands is primarily proposed off O’Keefe Court.

1.4 Previous Studies

Previously, IBI Group (now Arcadis) prepared a Design Brief in support for the full development of the 4401 Fallowfield “416 Lands” project. The “Design Brief”, dated May 2018 was approved by the City of Ottawa. The City of Ottawa File Number is D07-16-13-0013, and it issued a commence work notification to DCR/Phoenix Homes on November 7, 2018.

Additionally, IBI Group (now Arcadis) prepared a “Stormwater Management Report and Design Brief” dated May 17, 2018, in support of a wet stormwater management facility servicing Phase 1 and 2 of the O’Keefe Court 416 Lands.

An Environmental compliance approval was issued for Stormwater Management Works and wastewater infrastructure to service the subject development lands. The existing ECA number is 3871-B3PKE8.

1.5 Pre-Consultation

A pre-consultation meeting was hosted virtually by the City of Ottawa on April 26th, 2023. With a follow up pre-consultation meeting held by the City of Ottawa on September 7th, 2023. With respect to servicing, there were no specific concerns flagged during the pre-consult.

As noted in the pre-consultation notes, included in **Appendix A**, the internal watermain will be extended from the Lusk Street cul-de-sac and looped back to the 600 mm diameter watermain on O’Keefe Street. All drainage boundaries from the subject lands are set out by previous servicing studies, and the master servicing study for the community.

1.6 Geotechnical Considerations

Kollaard Associates was retained to prepare a geotechnical investigation for a proposed residential development within the subject lands. The report, 060445, was prepared and dated August 7, 2006 and can be found in **Appendix E**. Kollaard provided a memorandum to update the findings of the original geotechnical investigation. The memo, 130399, is dated June 17, 2013 and is included in **Appendix E**.

The report and update memo recommendations were based on the findings and observations from a combination of test pits performed by Kollaard Associates, July 7, 2006 and additional subsurface investigations in March, 2008. Among other items, the report recommendations deal with:

- Site grading;
- Foundation design;
- Pavement structure;
- Earthquake design classification;
- Basement Slab design;
- Sewer and Watermain Construction;
- Groundwater Control;
- Frost Protection.

2 WATER DISTRIBUTION

2.1 Existing Conditions

The subject property is located in the City of Ottawa Barrhaven Water Pressure Zone. An existing large diameter (610 mm) watermain runs along O’Keefe Court north of the site. There is a 300 mm diameter watermain in Lusk Street and an existing 300 mm diameter watermain is located along the south of the site.

2.2 Design Criteria

2.2.1 Water Demands

As previously noted, the proposed development will consist of 2 car dealership buildings and a clinic. Based on projected populations taken from Table 4.1 of the City Design Guidelines, a watermain demand calculation sheet was prepared; Per unit population density and consumption rates are taken from **Tables 4.1** and **4.2** at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Commercial Average Day Demand 55,000 l/gross ha/day
- Commercial Peak Daily Demand 82,500 l/gross ha/day
- Commercial Peak Hour Demand 148,500 l/gross ha/day
- Commercial Average Day Demand 28,000 l/gross ha/day
- Commercial Peak Daily Demand 42,000 l/gross ha/day
- Commercial Peak Hour Demand 75,600 l/gross ha/day

A water demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

Average Day	0.74 l/s
Maximum Day	1.11 l/s
Peak Hour	1.99 l/s
Fire Flow	15,000 l/min

2.2.2 System Pressure

The 2010 City of Ottawa Water Distribution Guidelines 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 the guidelines are as follows:

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

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 may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa

2.2.3 Boundary Conditions

The City of Ottawa has provided hydraulic boundary conditions at two locations to evaluate the watermain for the O’Keefe Court site, which includes Connection 1 to O’Keefe Court and Connection 2 to Lusk Street. A copy of the boundary condition is included in **Appendix B** and summarized as follows:

DEMAND SCENARIO	CONNECTION 1 – O’KEEFE COURT		CONNECTION 2 – LUSK ST	
	HEAD (m)	PRESSURE (psi)	HEAD (m)	PRESSURE (psi)
Maximum HGL (Basic Day)	153.4	67.5	153.4	71.5
Minimum HGL (Peak Hour)	149.2	61.6	149.2	65.6
Max Day + Fire Flow (283 L/s)	147.7	59.5	144.0	58.1

2.2.4 Watermain Layout

The conceptual watermain layout for this development is shown on **Figure 2.1** in **Appendix B**. Two connections are proposed for the site, the first is to the 610mm watermain in O’Keefe Court. The second connection is a 300mm watermain that will be extended from Lusk Street through Block 10 to complete a loop. There are two potential connection locations, which will be determined by the designing Engineer at Site Plan Control stages.

2.2.5 Hydraulic Model

A hydraulic model for the watermain has been developed using the InfoWater 12.4 program produced by Innovyze. The hydraulic model was run under basic day, peak hour, and maximum day with fire flows 15,000 L/min. Watermains are sized to provide sufficient pressure and to deliver the required fire flows. Based on the pressures provided by the boundary conditions, the model results indicate that all the watermain pressure and fire flow requirements will be met for this phase. A revised hydraulic model is recommended at Site Plan Control Stages to reconfirm demands and fireflows.

Results of the hydraulic model are included in **Appendix B** and summarized as follows:

Scenario

Basic Day (Max HGL) Pressure Range	472.81 to 475.75 kPa
Peak Hour Pressure Range	431.65 to 434.59 kPa
Max Day + 250 l/s Fire Flow Pressure Range	385.94 to 416.56 kPa

A comparison of the results and the design criteria is summarized as follows:

Maximum Pressure: All nodes have basic day pressures under 552 kPa, therefore pressure reducing control is not required for this development.

Minimum Pressure:	All nodes in the model exceed the minimum value of 276 kPa (40 psi).
Fire Flow:	The lowest fire flow for the residential lands is 383.2 l/s which exceeds the requirement of 283.3 l/s.

2.2.6 Watermain Access

The proposed watermain loop through the subject lands is required for the greater benefit of the commercial neighbourhood. As the majority of this loop exists within the municipal right-of-way, or within municipality owned lands and provides benefit to other landowners, it will require a dedicated easement 6m minimum width easement through the private lands. This easement must remain free from barriers and must be permanently accessible to City Staff.

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

Lusk Street has a 250 mm diameter sanitary sewer that provides a stub within Block 5 to the east of the site. The Lusk Street sanitary sewer outlets to O’Keefe Court, and ultimately crosses Fallowfield and discharges into Cobble Hill Drive.

The Lusk Street sanitary sewer design included an allocation for the subject lands into existing 250mm sanitary stub to the site. The design of sewer stub was completed based on the outdated Ottawa Sewer Design Guidelines, for which a demand of 50,000 L/Ha/Day was used. It had estimated a commercial area including allocation for municipal ROW’s of 3.53Ha. The peak flow attributed to the Phase 2 lands is **3.66 L/s** in sewer run 301A to 210A. Refer to Sanitary Sewer Design Sheet reference in **Appendix C**.

3.2 Design Criteria

The sanitary flows for the subject lands are determined based on current City of Ottawa design criteria which includes, but is not limited to the following:

3.2.1 Design Flow:

Average commercial flow	= 28,000 l/ha/day
Peak ICI flow factor	= 1.5 if ICI area is \geq 20% total area = 1.0 if ICI area is < 20% total area
Inflow and Infiltration Rate	= 0.33 l/s/ha
Minimum Full Flow Velocity	= 0.60 m/s
Maximum Full Flow Velocity	= 3.0 m/s
Minimum Pipe Size	= 200 mm diameter

3.3 Proposed Wastewater Disposal System

It is proposed that the subject lands discharge into the existing wastewater disposal system from the existing 250mm sanitary sewer stub from Lusk Street, eventually into the 250mm sanitary sewer on O’Keefe Court.

The calculated site sanitary tributary area is 3.24Ha (Area 1 being 2.83Ha and Area 2 being 0.41Ha). Using the site area at the design criteria noted above, the peak flow can be calculated as 1.58 L/s, including a 1.5 peaking factor, and the infiltration allowance can be calculated at 1.12 L/s. The total peak flow from the re-zoned Phase 2 lands can be estimated at 2.70 L/s. This is less than the allocated flow in the previously approved subdivision, therefore the system has adequate capacity to service the subject lands. The calculation for wastewater flows can be found in **Section 3.3.1**.

Proposed Sanitary sewers will consist of 250mm diameter sewers, constructed to current City of Ottawa design standards. A conceptual Sanitary Sewer Layout Plan **Figure 3.1**, and a Sanitary Drainage Area Plan **Figure 3.2** have been prepared for this Adequacy of Public Servicing. These documents can be found in **Appendix C**.

3.3.1 Wastewater Flow Calculation

The total wastewater flow for the 3.24 Ha tributary area can be calculated as follows:

$$\begin{aligned} Q_{\text{Peak Flow}} &= A \times I_{\text{Demand}} \times I_{\text{Peak Factor}} && \text{Where:} \\ A &= \text{Commercial Tributary Area} = 3.24 \text{ Ha} \\ I_{\text{Demand}} &= \text{Average Commercial Demand} = 28,000 \text{ L/Ha/Day} \\ I_{\text{Factor}} &= \text{Peak Factor} = 1.50 \\ &= (3.24 \times 28,000 \times 1.50) / 86400 \\ &= \mathbf{1.58 \text{ L/s}} \end{aligned}$$

$$\begin{aligned} Q_{\text{Infiltration Flow}} &= A \times I_{\text{Allowance}} && \text{Where:} \\ A &= \text{Commercial Area} = 3.40 \text{ Ha} \\ I_{\text{Allowance}} &= \text{Infiltration Allowance} = 0.33 \text{ L/s/Ha} \\ &= 3.40 \times 0.33 \\ &= \mathbf{1.12 \text{ L/s}} \end{aligned}$$

$$\begin{aligned} Q_{\text{Total Flow}} &= Q_{\text{Peak Flow}} + Q_{\text{Infiltration Flow}} \\ &= 1.58 \text{ L/s} + 1.12 \text{ L/s} \\ &= \mathbf{2.70 \text{ L/s}} \end{aligned}$$

4 STORMWATER MANAGEMENT

4.1 Existing Conditions

A SWM facility was constructed in Block 4 of the registered plan during the 416 Lands O’Keefe Court Phase 1 Project. The existing SWM Facility provides quality and quantity control for Phase 1 and 2 of the O’Keefe Court 416 Lands site (4401 Fallowfield Road).

The allocated flow for Block 16 is 60.0 L/s, and the allocated flow for the remainder of Phase 2 is 462.0 L/s for the 2-year storm event, for a total of 522.0 L/s. Flows in excess of the identified release rate are to be retained on-site by implementing on-site storage and shall be gradually released to the minor system. The release rates for each block from the 416 Lands O’Keefe Court report are summarized in the table below. The table below summarizes the intended release rates from the 416 Lands – O’Keefe Court subdivision Design Brief. Excerpts of the report summary have been provided in **Appendix D**.

TRIBUTARY AREA	AREA (HA)	RELEASE RATES (L/S)
B16	0.36	60.0
AREA 2 TOTAL	0.36	60.0
B17	0.58	93.0
S305	0.08	17.0
S304	0.28	54.0
S302	0.07	15.0
B3	0.51	80.0
B2	0.43	69.0
B1	0.55	87.0
B400	0.23	41.0
B401	0.03	6.0
AREA 1 TOTAL	2.76	462.0
TOTAL	3.12	522.0

4.2 Synopsis of Previous Studies

Previously, IBI Group (now Arcadis) prepared a Design Brief in support for the full development of the 4401 Fallowfield “416 Lands” project. The “Design Brief”, dated May 2018 was approved by the City of Ottawa. The City of Ottawa File Number is D07-16-13-0013, and it issued a commence work notification to DCR/Phoenix Homes on November 7, 2018.

Additionally, IBI Group (now Arcadis) prepared a “Stormwater Management Report and Design Brief” dated May 17, 2018, in support of a wet stormwater management facility servicing Phase 1 and 2 of the O’Keefe Court 416 Lands.

4.3 Proposed Stormwater Management Plan

The storm sewer system in the subject site is proposed to convey runoff (up to the ICD restriction) from the 3.24 ha storm tributary area to the SWMF. Inlet control devices (ICDs) are proposed to limit the flow into the minor system during the 100-year event. A detailed stormwater management analysis will be required at Site Plan Control stage (Detailed Design) to ensure that the release rate targets are being met.

It is proposed that the subject lands discharge into the existing storm sewers construction in Phase 1 and ultimately into the stormwater pond facility within Block 4. The SWMF discharges to the O’Keefe Drain. No additional Quality Control measures are required within the Phase 2 lands.

The storm sewer system has been extended beyond the SWMF blocks and exists within each of the two remaining conceptual blocks shown on the **Concept Plan** found in **Appendix A**. No offsite storm sewer works will be required to service the proposed development, regardless of final use.

4.4 Minor Storm Sewer Design Criteria

In keeping with guidelines published by the City of Ottawa for storm sewers in greenfield developments, the storm drainage system proposed for the subject property will follow the principles of dual drainage.

The minor storm flow estimates were reviewed by the rational method. A conceptual Storm sewer layout **Figure 4.1**, a conceptual Storm Drainage Area Plan **Figure 4.2** have been prepared for this adequacy of public servicing report. These documents can be found in **Appendix D**.

4.5 Major System

Inlet control devices (ICDs) will be proposed at detailed design to control the surcharge in the minor system downstream of the site during infrequent storm events and maximize the use of available on-site storage. Each Site Plan Control application will require a detailed analysis of on-site storage requirements. Storage may be provided in many forms, including but not limited to rooftop, road/parking lot sags, oversized sewers, internal cisterns, and/or dedicated underground storage systems. Emergency flow routes have been provided and direct emergency overland flows towards the SWMF, and are shown on the Macro Grading Plan **Figure 5.1** in **Appendix E**.

4.5.1 Stormwater Management Facility Access

The original intent of the O’Keefe Court – 416 Lands subdivision was to provide a municipal right-of-way in Phase 2, which would connect to the maintenance access road to the pond. The maintenance access road was constructed as part of Phase 1. At time of Site Plan Control, a dedicated maintenance access road and easement will be required through the subject lands to provide the City with permanent unimpeded access to its SWMF. The road should provide a minimum physical access width of 6m in straight sections, and should be sized to accommodate typical heavy equipment truck movements to the pond.

5 GRADING AND ROADS

5.1 Site Grading

The existing grades within portions of the proposed development lands vary significantly due to the existing topography of the site. The final grading plan will require the balancing of various requirements including but not limited to geotechnical constraints, minimum/maximum slopes, overland routing of stormwater, all to ensure the site is graded in accordance with municipal standards.

A conceptual macro grading plan has been prepared to identify the conceptual grading of the proposed development. Refer to **Figure 6.1** in **Appendix E**.

5.2 Road Network

The concept plan delineates the proposed parking and access route pattern for the development. The proposed parking spaces and access routes within the development are all to be designed to the City of Ottawa Standard.

Sidewalks and pathways will be provided as agreed in the draft conditions of subdivision.

5.3 Intersection Improvements

Any intersection improvements will be identified in the Traffic Impact Study.

5.4 Geotechnical Memorandum Conclusion

A geotechnical memorandum was requested by the City to verify that the conclusions made in the original geotechnical report (2006), additional subsurface investigation (2008) and additional geotechnical guidelines memo (2013) for the overall subdivision will not change with what is currently proposed with this development. As well that the previous investigations adhere to today's standards and guidelines. A copy of the memorandum has been included in **Appendix E**.

Kollaard Associates confirm in the July 10, 2024 Geotechnical Memorandum that:

- The geotechnical conclusions provided in the previously completed geotechnical works remain valid to support the current zoning bylaw amendment
- There are no geotechnical conditions at the site that would preclude the construction of the buildings permitted by the proposed zoning supported by conventional spread footing foundations
- A site specific geotechnical investigation should be completed for each site at the site plan control approval stage
- The site (building) specific geotechnical investigation and report will be completed in accordance with current standards and guidelines

6 SOURCE CONTROLS

6.1 General

Since an end of pipe treatment facility is already provided for the development lands, stormwater site management for the subject lands will focus on site level or source control management of runoff. Such controls or mitigative measures are proposed for this development not only for final development but also during construction and build out. Some of these measures are:

- flat site grading where possible;
- vegetation planting; and
- groundwater recharge in landscaped areas.

6.2 Lot Grading

Where possible, all of the proposed blocks within the development will make use gentle surface slopes on hard surfaces such as asphalt and concrete. In accordance with local municipal standards, all grading will be between 0.5 and 5.0 percent for hard surfaces and 2.0 and 7.0 percent for all landscaped areas. Significant grade changes will be accomplished through the use of terracing (3:1 max slope), ramps and/or retaining walls. All street and parking lot catchbasins shall be equipped with 3.0m subdrains on opposite sides of a curbside catchbasin running parallel to the curb, and with 3.0m subdrains extending out from all 4 sides of parking lot catchbasins.

6.3 Vegetation

As with most subdivision agreements, the developer will be required to complete a vegetation and planting program. Vegetation throughout the development including planting along roadsides and within the individual blocks provides opportunities to re-create lost vegetation.

6.4 Groundwater Recharge

Perforated sub-drain systems will be implemented at capture locations in all vegetated areas. Roof leaders for pitched roofs are to direct runoff to landscaped areas. This will promote increased infiltration during low flow events before water is collected by the storm sewer system.

7 CONVEYANCE CONTROLS

7.1 General

Besides source controls, the development also proposes to use several conveyance control measures to improve runoff quality. These will include:

- vegetated swales; and
- catchbasin sumps and manhole sumps.

7.2 Vegetated Swales

All landscaped areas within the proposed development make use of relatively vegetated swales. These swales generally employ saw-toothing at regular intervals and encourage infiltration and runoff treatment.

7.3 Catchbasins and Maintenance Hole Sumps

All catchbasins within the development, either rear yard or street, will be constructed with minimum 600 mm deep sumps. These sumps trap pollutants, sand, grit and debris which can be mechanically removed prior to being flushed into the minor pipe system. Both rear yard and street catchbasins will be to OPSD 705.02. All storm sewer maintenance holes serving local sewers less than 900 mm diameter shall be constructed with a 300 mm sump as per City standards.

8 SEDIMENT AND EROSION CONTROL PLAN

8.1 General

During construction, existing stream and conveyance systems can be exposed to significant sediment loadings. A conceptual sediment and erosion control will be detailed during the detailed design stages. Although construction is only a temporary situation, it will be proposed to introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These may include:

- groundwater in trench will be pumped into a filter mechanism prior to release to the environment;
- 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 structure such as manholes and catchbasins until these structures are commissioned and put into use; and
- Silt fence on the site perimeter.

8.2 Trench Dewatering

Although little groundwater is expected during construction of municipal services, any trench dewatering using pumps will be discharged 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.

8.3 Bulkhead Barriers

At the first new manhole constructed within the development that is immediately upstream of an existing sewer a temporary ½ diameter bulkhead will be constructed over the lower half of the outletting sewer. This bulkhead will trap any sediment carrying flows thus preventing any construction-related contamination of existing sewers. The bulkheads will be inspected and maintained including periodic sediment removal as needed and removed prior to top course asphalt being laid.

8.4 Seepage Barriers

The presence of roadside ditches will necessitate the installation of seepage barriers. These barriers will consist of both the Light Duty Straw Bale Barrier as per OPSD 219.100 or the Light Duty Silt Fence Barrier as per OPSD 219.110. The barriers are typically made of layers of straw bales or geotextile fabric staked in place. All seepage barriers will be inspected and maintained as needed.

8.5 Surface Structure Filters

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. However, until the surrounding surface has been completed these structures should be covered in some fashion to prevent sediment from entering the minor storm sewer system. Until landscape areas are sodded or until streets are asphalted and curbed, catchbasins and manholes will be constructed with geotextile filter bags or a geotextile filter fabric located between the structure frame and cover

respectively. These will stay in place and be maintained during construction and build until it is appropriate to remove same.

8.6 Stockpile Management

During construction of any development similar to that proposed by the Owner, both imported and native soils are stockpiled. Mitigative measures and proper management to prevent these materials entering the sewer systems is needed. Significant excess material will be generated from the subject lands, and will need to be disposed of off-site in a manner consistent with all MOE regulations.

During construction of the deeper municipal services, water, sewers and service connections, imported granular bedding materials are temporarily stockpiled on site. These materials are however quickly used up and generally before any catchbasins are installed. Street catchbasins are installed at the time of roadway construction and rearyard catchbasins are usually installed after base course asphalt is placed.

Contamination of the environment as a result of stockpiling of imported construction materials is generally not a concern provided the above noted seepage barriers are installed. These materials are quickly used and the mitigative measures stated previously, especially the ½ diameter sewer bulkheads and filter fabric in catchbasins and manholes help to manage these concerns.

The roadway granular materials are not stockpiled on site. They are immediately placed in the roadway and have little opportunity of contamination. Lot grading sometimes generates stockpiles of native materials. However, this is only a temporary event since the materials are quickly moved off site.

To assist in the control of transporting sediment off-site into municipal roads, mud mats will be employed at the construction entrances.

9 CONCLUSIONS

Water, wastewater and stormwater systems required to accommodate the orderly development of O’Keefe Court Development. The attached figures and supporting conceptual analysis illustrate that the lands can be developed in an orderly and effective manner and in accordance with the City of Ottawa’s current level of service requirements.

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the proposed sediment and erosion control plan during construction will minimize harmful impacts on surface water.

This report outlined a conceptual servicing scheme to support the draft plan approval of the proposed development. Detail design of the infrastructure would be completed upon issuance of draft plan approval and would be subject to various governmental approvals prior to construction, including but not limited to the following:

- Certificate of Authorization (C of A) for sewers and SWM: Ministry of Environment;
- Commence Work Order: City of Ottawa;
- Municipal Consent: City of Ottawa.

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APPENDIX A

- Concept Draft Plan
- Preconsultation Notes 1 – 2023-05-27
- Preconsultation Notes 2 – 2023-09-07



SITE INFORMATION

ZONING			
Actual Zone:			IP
SITE AREA			
Total Site Area:	33,985m ²	3.40 Ha	
PARKING RATES			
Car sales/service area:	2.0 per 100 m ² of GFA		
HEIGHT			
Maximum:	ZBL 24-36-48m	OP N/A	SP N/A
SETBACKS			
	F.Y.	C.S.Y.	S.Y.
	6.0 m	6.0 m	3.0 m
			R.Y. 6.0 m

DEVELOPMENT STATISTICS

TOTAL BUILDING AREA		Automobile D.
Proposed buildings (A+B):	9,524m ²	
GFA*		Automobile D.
Proposed buildings (A+B):	8,572m ²	
<i>*assumes an 90% efficiency</i>		
PARKING		Required: Provided:
Vehicles:	171	283
Total:	171	283
PARKLAND DEDICATION		Required: Provided:
	680m ²	2%
	Cash-in-Lieu	
NOTES		

**O'KEEFE COURT
OTTAWA
Concept Plan**



LEGEND

- PROPOSED BUILDING
- LANDSCAPING
- AMENITIES
- EXISTING WOODED AREA
- SURROUNDING OPEN SPACE / PARK
- 14m MTO BUFFER FROM THE HIGHWAY
- WATERBODY
- 30m BUFFER FROM WATER COURSE/CREEK
- 3m DRAINAGE EASEMENT
- SUBJECT PROPERTY BOUNDARY
- PROPERTY BOUNDARY
- SETBACKS
- BUILDING ENTRANCE
- TREES

- Assumes typical Automobile Store floor height of 12m.
- *GFA: as defined in City of Ottawa Zoning Bylaw means the total area of each floor whether located above, at or below grade, measured from the interiors of outside walls, but excluding areas dedicated for uses such as mechanical and electrical rooms, common hallways, corridors, staircases and elevators, interior amenities, bicycle storage and parking. Assume 90% efficiency for Automobile Dealership service buildings. Areas are approximate.
- The base plan (lot lines, existing roads and surrounding areas) is based on the City's Open Data and aerial images. The site area is approximate and all dimensions need to be confirmed by a legal survey.
- This concept is part of a development concept report and should be interpreted as per findings and descriptions of such report. This concept may require minor variances for setback reduction, parking, heights, etc.

6	REVISE CONCEPT PLAN	2024.01.31	TS
5	REVISE CONCEPT PLAN	2023.08.24	GV
4	REVISE CONCEPT PLAN	2023.07.24	GV
3	REVISE CONCEPT PLAN	2023.04.05	GV
2	CONCEPT PLAN	2023.03.20	GV
1	BASE PLAN	2023.03.15	GV
No.	REVISION	DATE	BY

CLIENT
PHOENIX HOMES

FOTENN
Planning + Design

OTTAWA: 396 Cooper Street, Suite 300, Ottawa ON K2P 2H7 613.730.5709
 KINGSTON: 4 Cataraqui St., Suite 315, Kingston ON K7K 1Z7 613.542.5454
 TORONTO: 174 Spadina Ave., Suite 304, Toronto ON M5T 2C2 416.789.4530

DESIGNED	GV
REVIEWED	TS
DATE	2023.03.15

P1

Hello Mr. Saunders,

Please refer to the below (and/or attached notes) regarding the Pre-Application Consultation (pre-con) Meeting held on April 26, 2023 for the property at 4401 Fallowfield Road for a Zoning By-law Amendment in order to allow the development of two industrial buildings by DCR Phoenix Group of Companies. I have also attached the required Plans & Study List for application submission.

Below (or attached) are staff's preliminary comments based on the information available at the time of pre-con meeting:

Planning

- The described proposal intends to add permitted uses to the property, including automobile dealership, warehouse, distribution and logistics and animal hospital clinic.
- The property is designated as Mixed Industrial within the Suburban (Southwest) Transect, adjacent to Greenspace and Industrial and Logistics designations.
- The land's IP (Business Park Industrial) Zone generally permits the requested uses, however, these uses are prohibited within Urban Exception 2265. The amending report is attached. Note that Light Industrial Uses is a permitted use on the property per Exception 2265.
- Note, there is record of a covenant registered on title relating to any future Site Plan Control application for the examination of transportation issues and trip generation and TIA.
- The Mixed Industrial designation broadly permits light manufacturing, warehousing, distribution and storage; Staff do not have significant concerns with the proposed uses.
- Consideration for the nearby residential zones should be made when planning the uses and site design.
- The proposed uses are accompanied by a significant amount of parking and Staff recommend occasional relief from the congregated asphalted areas for canopy trees and landscaping.
- Please be aware that the phased pre-application consultation process is anticipated to begin June 14, 2023 and a second pre-application consultation may be required if a complete application is not submitted by June 13, 2023.
- The Applicant must now provide a proposed strategy for public consultation as directed by Bill 73

Urban Design

A Scoped Design brief is required and can be combined with the Planning Rationale. A term of reference will be provided with the meeting minutes outlining the requirements. A concept plan is required to understand the area and location of uses.

The site is adjacent to a Scenic Entry Route (Schedule C13) and due to the proximity and views, extra care is needed on the west and south portion of the site. This would include a strong landscape planting of large trees. Consider directing the loading area for Building B away from the scenic route.

When developing the plan, please consider keeping the building footprints flexible so that landscape buffers, loading areas and parking can best address policies for the Scenic Entry Route.

Engineering

/ As per the servicing strategy for the subdivision the 300 mm dia. watermain capped in the Lusk Street cul-de-sac is required to be extended under the O'keefe Drain and looped back to the 600 mm diameter high pressure watermain on O'Keefe Court. Likewise for the sanitary sewer, the sanitary sewer in the Lusk Street cul-de-sac is to be extended under the O'keefe Drain for servicing the subject. The existing stormwater management pond was built to provide stormwater quality and quantity for the subject lands. Currently there exists an approved servicing design for these lands with an MECP ECA for the storm and sanitary sewers. Should the servicing design be revised, a review of the revised design will be required and may require an ECA amendment. Servicing blocks and or easements may be required.

/

/ Feel free to contact the Infrastructure Project Manager, Jeff Shillington, at Jeff.Shillington@ottawa.ca, for follow-up questions.

/

Transportation

A TIA is required. The conditions below apply. In this case, the City needs to ensure that the new proposed uses will not result in exceeding the threshold below:

- *The Owner agrees to prepare a Transportation Impact Assessment (TIA), all to the satisfaction of the City of Ottawa, for all future site plans, to examine transportation issues, including but not limited to, the total trip generation from the overall subdivision. Should the TIS of a future site plan suggest that the total trip generation from the subdivision exceeds the estimated 739 vph in the peak hour, as concluded in the 4401 Fallowfield Road Community Transportation Study (IBI, 2015), the Owners acknowledges and agrees to modify the site plan proposal to reduce the trip generation, all to the satisfaction of the City of Ottawa."*
- *"The Transportation Impact Assessment for all future site plans to examine transportation issues, including but not limited to, the total trip generation from the subdivision, and all future transportation impact assessments shall consider a 15% alternative transportation model split maximum, including transit, walking and cycling".*

/

/ Please start this process as soon as possible.

/

/ The Applicant is advised that their application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable). Collaboration and communication between development proponents and City staff are required at the end of every step of the TIA process.

/

/ Feel free to contact the Transportation Project Manager, Neeti Paudel, at Neeti.paudel@ottawa.ca, for follow-up questions.

Environmental

- No comments at this time.

Parkland

- The amount of parkland dedication that will be required for the proposed development will be calculated as per the City of Ottawa Parkland Dedication By-law (currently #2022-280).
- The current parkland requirement for commercial / industrial uses is calculated as 2% of the gross land area of the site being developed.
- Parks & Facilities Planning estimates the gross land area of the redevelopment to be 33,985 square meters.
- Therefore, the estimated Parkland Dedication requirement is calculated to be 680 square meters, as shown below:

<u>property</u>	<u>proposed use</u>	<u>approximate gross land area</u>
4401 Fallowfield	commercial / industrial	33,985 m ²
		33,985 m ²
<u>Approximate Parkland Dedication Requirement (rate = 2%):</u>		680 m ²
		0.0680 ha

- The actual parkland dedication requirement will be based on the exact gross land area. A surveyor’s area certificate will be required.
- Please note that the park comments are preliminary and will be finalized (and subject to change upon receipt of the development application and the requested supporting documentation. Additionally, if the proposed land use changes, then the parkland dedication requirement be re-evaluated accordingly.

/

- Form of Parkland Dedication:
 - It is anticipated that Parks & Facilities Planning will be requesting Cash-in-Lieu of Parkland for the future development. Therefore, O1 zoning is not required as part of this application. If the parkland dedication is revised as part of the future development application, and land conveyance is requested, the zoning can be revisited.

/

- Neighbourhood Connectivity
 - A public path/walkway block/access route, is requested on the east side of the development site.
 - The purpose is to provide a pedestrian/cycling connection between phases 1 and 2 of the subdivision and the existing stormwater pond and pathway to Lytle Park and the recreation trail that extends beyond the park. A proposed location for the block is shown by the green arrow in the image below.
 - The public access block should be approximately 9m, or larger, in width (to match the existing east-west block).
 - The block should line up with the existing entrance to Lytle Park.



City Surveyor

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

/
Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Other

- Plans are to be standard A1 size (594 mm x 841 mm) or Arch D size (609.6 mm x 914.4 mm) sheets, dimensioned in metric and utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All PDF submitted documents are to be unlocked, flattened and not saved as a portfolio file.
- You are encouraged to contact the Ward Councillor, Councillor David Hill, at David.Hill@ottawa.ca about the proposal. You may also consider contacting the Orchard Estates Community Association.

/
Please refer to the links to [Guide to preparing studies and plans](#) and [fees](#) for further information. Additional information is available related to [building permits, development charges, and the Accessibility Design Standards](#). Be aware that other fees and permits may be required, outside

of the development review process. You may obtain background drawings by contacting geoinformation@ottawa.ca.

It is anticipated that, as a result of the *More Homes for Everyone Act, 2022*, for applications for site plan approval and zoning by-law amendments, new processes in respect of pre-application consultation will be put in place. The new processes are anticipated to require a multiple phase pre-application consultation approach before an application will be deemed complete. Applicants who have not filed a complete application by the effective date may be required to undertake further pre-application consultation(s) consistent with the provincial changes. The by-laws to be amended include By-law 2009-320, the Pre-Consultation By-law, By-law 2022-239, the planning fees by-law and By-law 2022-254, the Information and Materials for Planning Application By-law.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,

Craig Hamilton

Planner I | *Urbaniste I*

Development Review, South | *Examen des projets d'aménagement, Sud*

Planning, Real Estate and Economic Development Department | Services de la planification, des biens immobiliers et du développement économique

City of Ottawa | *Ville d'Ottawa*

110 Laurier Avenue West. Ottawa, ON | *110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1*

☎ 613.580.2424 ext./poste 23502

ottawa.ca/planning / ottawa.ca/urbanisme

Evan Saunders
Fotenn Consultants Inc.
Via email: saunders@fotenn.com

**Subject: Phase 1 Pre-Consultation: Meeting Feedback
Proposed Zoning By-law Amendment and Official Plan Amendment
Application – 4401 Fallowfield**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on September 7, 2023.

Pre-Consultation Preliminary Assessment

1 <input type="checkbox"/>	2 <input checked="" type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
----------------------------	---------------------------------------	----------------------------	----------------------------	----------------------------

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.
 - a. 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.

Planning

List of Studies and Plans Reviewed:

- **Concept Plan**, P1, prepared by Fotenn Planning and Design, dated 2023-03-15.

Comments:

1. The subject lands are designated as Mixed Industrial within the Suburban Transect and zoned IP[2265] H(24). These lands form part of the employment lands cluster.
2. Staff are generally not supportive of the proposal to introduce high-rise apartment dwellings on the subject property. While there may be reasonable possibility and rationale to adequately include a form of residential dwellings on-site, the proposed high-rise apartment dwellings raise concerns with both compatibility and location.
 - a. **Compatibility:** Staff have concerns that introducing residential uses will reduce availability of important employment lands within the surrounding area and have the potential to impact land values for the remaining employment lands. This will negatively impact the long-term viability and maintenance of these lands. At the site scale, new residential uses will limit the use of the property per D6 guidelines, setbacks for sensitive residential uses from industrial uses such as the car dealership, etc.
 - b. **Location:** The density of the residential use is a concern of Staff as the immediate area largely lacks the standard pedestrian infrastructure typically associated with high-rise residential dwellings. This would include sidewalks, nearby stores, access to transit, however, Staff note that there is a park space easily accessible from the site. High-rise apartment dwellings are typically located closer to hubs and PMTSA's due to their broad availability of these infrastructure elements.
3. Should the residential use be further contemplated, please consider the abovementioned pedestrian infrastructure elements and restructuring the uses on-site to provide an adequate transition of uses and spatial buffer.

Urban Design

List of Studies and Plans Reviewed:

- **Concept Plan**, P1, prepared by Fotenn Planning and Design, dated 2023-03-15.

Comments:

4. Comments are high-level for this stage of the concept plan:

5. More consideration is needed for what the anchor of the site should be, the current concept proposes 5 different uses. Is there sufficient space for each use to be appealing to future owners when you consider the need for loading, parking, landscaping and functional movement throughout the site.
6. It might be more appropriate to focus on a few mix of uses, like the car dealership, vet clinic and hotel. Or residential towers and legion hall.
7. Whichever path forward or mix of uses, it seems like this concept would benefit from a plan of subdivision so that appropriately sized lots can be established.
8. The decision to permit residential uses on site will ultimately come down to development review but the following need to be sufficiently addressed:
 - a. Relocating the residential uses away from the highway. If residential is to be included, it should be where the vet clinic currently is. When situating the residential, consider noise and light spillover from adjacent sites. Being near the drain and stormwater pond presents a more compatible residential setting.
 - b. Pedestrian movement into and out of the site needs to be addressed. O'Keefe is a rural cross-section and is not a safe connection for people to be walking on in the current condition unless its updated (the entire length, not just the site width). There is the business part to the east with a walkway and path system. Consider connecting to this system but further consideration for how maintenance and safety is handled needs to be considered.
 - c. We would need to see that sufficient transition is provided between these proposed uses. Some trees in a parking island wouldn't be enough so how would residents be buffered from the industrial uses to the north or east or from the highway noise.
9. Design Brief required, attached to the meeting minutes are the term of reference for an OPA and ZBLA. Additional studies and plans required are Elevations (conceptual, massing model), Shadow Study, Wind Study, and conceptual Landscape Plan.

Engineering

Engineering comments remain unchanged since Phase 1 of the pre-consultation process. See them below:

As per the servicing strategy for the subdivision, the 300 mm dia. watermain capped in the Lusk Street cul-de-sac is required to be extended under the O'Keefe Drain and looped back to the 600 mm diameter high pressure watermain on O'Keefe Court. Likewise, the sanitary sewer in the Lusk Street cul-de-sac is to be extended under the O'Keefe Drain for servicing the subject lands. The existing

stormwater management pond was built to provide stormwater quality and quantity for the subject lands. There is an approved servicing design for these lands with an MECP ECA for the storm and sanitary sewers. Should the servicing design be revised, a review of the revised design will be required and may require an ECA amendment. Servicing blocks and or easements may be required.

Feel free to contact Reed Adams (Reed.adams@ottawa.ca), Infrastructure Project Manager, for follow-up questions.

Noise

List of Studies and Plans Reviewed:

- Concept Plan**, P1, prepared by Fotenn Planning and Design, dated 2023-03-15.

Comments:

10. N/a

Feel free to contact Neeti Paudel, Transportation Project Manager, for follow-up questions.

Transportation

List of Studies and Plans Reviewed:

- Concept Plan**, P1, prepared by Fotenn Planning and Design, dated 2023-03-15.

Comments:

11. TIA addendum is required at Phase 3.

12. Ensure pedestrian connectivity from the site to the future 3.0m access road and pathway is provided (per the subdivision plan, the pathway should connect to Lusk.

13. Ensure the spacing between access to legion hall and car dealership meets the private approach by law requirements.

Feel free to contact Neeti Paudel, Transportation Project Manager, for follow-up questions.

Environment and Trees

List of Studies and Plans Reviewed:

- **Concept Plan**, P1, prepared by Fotenn Planning and Design, dated 2023-03-15.

Comments:

14. Planning Forester (mark.richardson@ottawa.ca) comment

- a. A Tree Conservation Report will be required with any Plan of Subdivision or Site Plan Control applications. Contact the planning Forester for submission details, recommendations, and mandatory requirements.
 - b. Any tree removal will require a tree permit as issued under the Tree Protection Bylaw
 - c. The landscape plan will need to document that all trees planted have a high probability of surviving to maturity. Please contact the planning forester for tree planting requirements
15. Staff are comfortable waiving the EIS requirement for the OPA and ZBA. Staff will be requiring an EIS for any future Plan of Subdivision, Consent to Sever or Site Plan Control applications because of potential significant habitat for threatened or endangered species on the subject property.
16. The appropriate setbacks from the O’Keefe Drain were established during the previous plan of subdivision process and the O’Keefe corridor (and stormpond facility) have been transferred to the City’s ownership.
17. You are encouraged to consider designs that retain as many of the existing trees as possible while planning the ZBLA and OPA applications, and details can be finalized during a Site Plan Control application.

Feel free to contact Sami Rehman, Environmental Planner (Sami.rehman@ottawa.ca), or Mark Richardson, Forester (Mark.richardson@ottawa.ca), for follow-up questions.

Parkland

List of Studies and Plans Reviewed:

- **Concept Plan**, P1, prepared by Fotenn Planning and Design, dated 2023-03-15.

Comments:

18. To be provided under separate cover.

Feel free to contact Jeanette Krabicka (Jeanette.krabicka@ottawa.ca), Parks Planner, for follow-up questions.

Community issues



Comments:

19. N/a

Other

20. N/a

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,
Craig Hamilton

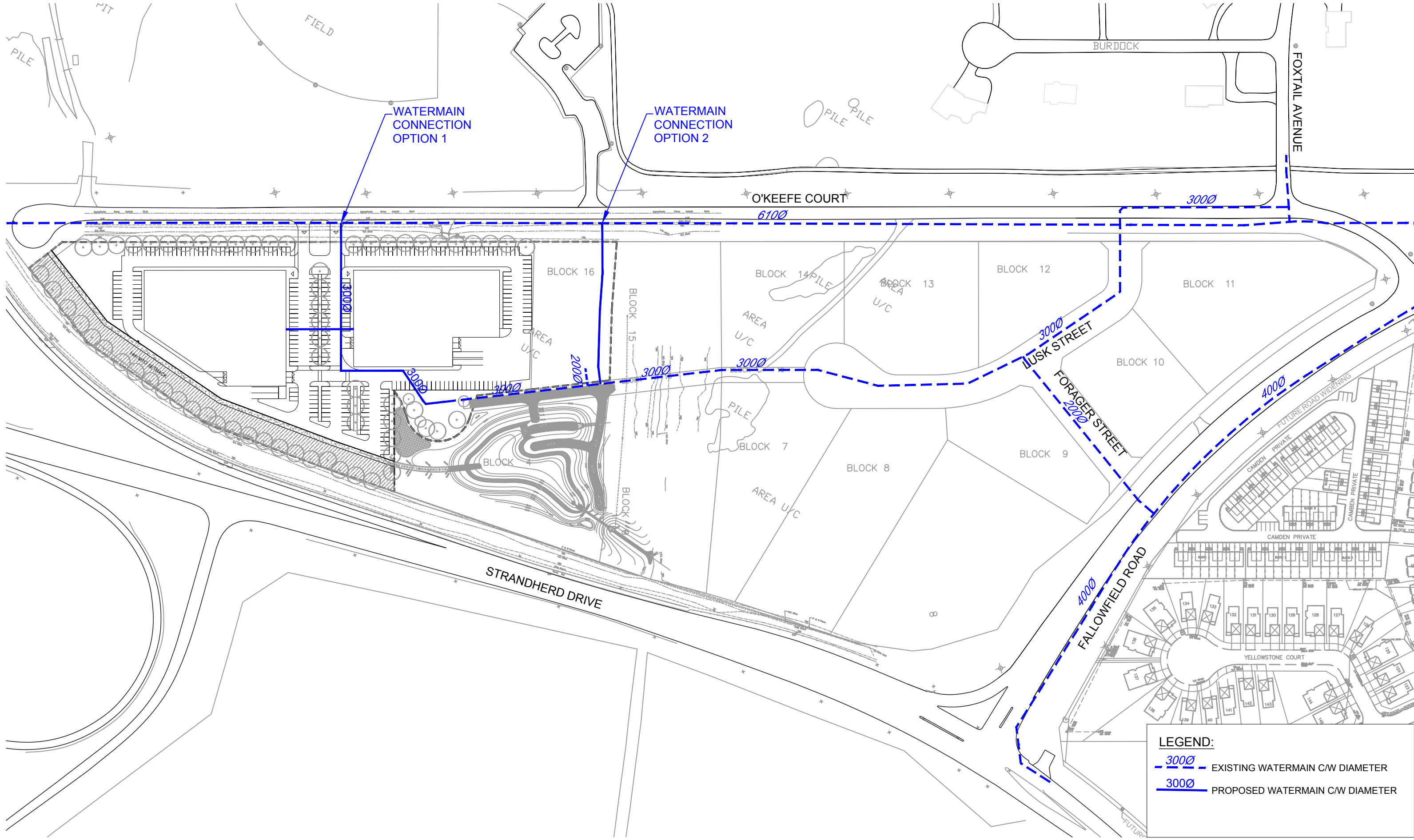
cc.

Stream Shen
Molly Smith
Mark Richardson
Reed Adams
Jeanette Krabicka
Sami Rehman

APPENDIX B

- Figure 2.1 Water Distribution
- Water Demands
- Fireflow Calculations
- Boundary Conditions
- Water Model Results

J:\145541_0'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 2.1 CONCEPTUAL WATERMAIN LAYOUT.dwg Last Saved At: Feb. 28, 24





ARCADIS
 500-333 Preston Street
 Ottawa, Ontario K1S 5N4 Canada
 arcadis.com

WATERMAIN DEMAND CALCULATION SHEET

O'Keefe Court Ottawa | Phoenix Homes
 145541-6.0 | Rev #0 | 2023-12-20
 Prepared By: WZ | Checked By: RM

NODE	RESIDENTIAL				NON-RESIDENTIAL (ICI)			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/min)
	SINGLE FAMILY UNITS	3 bedroom UNITS	2 bedroom UNITS	POPULATION	INDUST. (ha)	COMM. (ha)	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
<u>Site</u>					0.95	0.4045			0.74	0.74		1.11	1.11		1.99	1.99	15,000
TOTAL					1	0				0.74			1.11			1.99	

ASSUMPTIONS						
POPULATION DENSITY	WATER DEMAND RATES		PEAKING FACTORS		FIRE DEMANDS	
Single Family	3.4 persons/unit	Residential	280 l/cap/day	Maximum Daily		Single Family 10,000 l/min (166.7 l/s)
3 Bedroom Units	2.7 persons/unit	Light Industrial	55,000 l/gross ha/day	Residential	2.5 x avg. day	
2 Bedroom Units	1.8 persons/unit	Other Commercial	28,000 l/gross ha/day	Commercial	1.5 x avg. day	Semi Detached & Townhouse 10,000 l/min (166.7 l/s)
				Maximum Hourly		
				Residential	2.2 x max. day	
				Commercial	1.8 x max. day	Medium Density 15,000 l/min (250 l/s)

STEP	Contents	Description	Adjustment Factor	Result
1	Building A (1-storey)	1st Floor Area	Height 12.0m 3	4513 m ²
	Total Effective Floor Area	(Storage space exceeding 3m in height, floor area X 3)		13539 m ²
2	Type of Construction	Type V Wood Frame 1.5 Type III Ordinary Construction 1.0 Type II Noncombustible Construction 0.8 Type I Fire Resistive Construction 0.6	Type II Noncombustible Construction 0.8	
3	Required Fire Flow	RFF = 220C \sqrt{A} , rounded to nearest 1000 L/min		20000 L/min
4	Occupancy and Contents	Noncombustible Contents -25% Limited Combustible Contents -15% Combustible Contents 0% Free Burning Contents 15% Rapid Burning Contents 25%	Combustible - F2 Repair Garages 0%	0 L/min
	Fire Flow			20000 L/min
5	Automatic Sprinkler Protection	Automatic Sprinkler Conforming to NFPA 13 -30% Standard Water Supply for both the system and Fire Department Hose Lines -10% Fully Supervised System -10%	Yes -30% No No	-6000 L/min 0 L/min -6000 L/min
	Total Sprinkler Adjustment			-6000 L/min
6	Exposure Adjustment	Based on Table 6 Exposure Adjustment Charges for Subject Building		
	North	Separation (m) >30 Length X Height Factor (m.storeys) 0 Construction Type Type II	With unprotected opening 0%	0 L/min
	South	Separation (m) >30 Length X Height Factor (m.storeys) 0 Construction Type Type II	With unprotected opening 0%	0 L/min
	East	Separation (m) 20.3 Length X Height Factor (m.storeys) 40 Construction Type Type V	With unprotected opening 2%	400 L/min
	West	Separation (m) >30 Length X Height Factor (m.storeys) 0 Construction Type Type II	With unprotected opening 0%	0 L/min
	Total Exposure Adjustment			400 L/min
7	Total Required Fire Flow			14400 L/min
		Rounded to Nearest 1000 L/min		14000 L/min

233 L/s

Notes 1. Fire flow calculation are based on Fire Underwriters Survey version 2020.

STEP	Contents	Description	Adjustment Factor	Result
1	Building B (1-storey)	1st Floor Area	Height 12.0m 3	5004 m ²
	Total Effective Floor Area	(Storage space exceeding 3m in height, floor area X 3)		15012 m ²
2	Type of Construction	Type V Wood Frame 1.5 Type III Ordinary Construction 1.0 Type II Noncombustible Construction 0.8 Type I Fire Resistive Construction 0.6	Type II Noncombustible Construction 0.8	
3	Required Fire Flow	RFF = 220C \sqrt{A} , rounded to nearest 1000 L/min		22000 L/min
4	Occupancy and Contents	Noncombustible Contents -25%	Combustible - F2 Repair Garages 0%	0 L/min
		Limited Combustible Contents -15%		
		Combustible Contents 0%		
		Free Burning Contents 15%		
	Fire Flow	Rapid Burning Contents 25%		22000 L/min
5	Automatic Sprinkler Protection	Automatic Sprinkler Conforming to NFPA 13 -30%	Yes -30%	-6600 L/min
		Standard Water Supply for both the system and Fire Department Hose Lines -10%	No	0 L/min
		Fully Supervised System -10%	No	
	Total Sprinkler Adjustment			-6600 L/min
6	Exposure Adjustment	Based on Table 6 Exposure Adjustment Charges for Subject Building		
	North	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 0		
		Construction Type Type II		
	South	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 0		
Construction Type Type II				
East	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 0			
	Construction Type Type II			
West	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 0			
	Construction Type Type II			
	Total Exposure Adjustment			0 L/min
7	Total Required Fire Flow			15400 L/min
		Rounded to Nearest 1000 L/min		15000 L/min

250 L/s

Notes 1. Fire flow calculation are based on Fire Underwriters Survey version 2020.

STEP	Contents	Description	Adjustment Factor	Result
1	Clinic (1-storey)	1st Floor Area	Height 3.0m 1	1500 m ²
	Total Effective Floor Area	(Storage space exceeding 3m in height, floor area X 3)		1500 m ²
2	Type of Construction	Type V Wood Frame 1.5	Type V Wood Frame 1.5	
		Type III Ordinary Construction 1.0		
		Type II Noncombustible Construction 0.8		
		Type I Fire Resistive Construction 0.6		
3	Required Fire Flow	RFF = 220C _v /A, rounded to nearest 1000 L/min		13000 L/min
4	Occupancy and Contents	Noncombustible Contents -25%	Limited Combustible - D -15% Medical Offices	-1950 L/min
		Limited Combustible Contents -15%		
		Combustible Contents 0%		
		Free Burning Contents 15%		
		Rapid Burning Contents 25%		
	Fire Flow			11050 L/min
5	Automatic Sprinkler Protection	Automatic Sprinkler Conforming to NFPA 13 -30%	No	0 L/min
		Standard Water Supply for both the system and Fire Department Hose Lines -10%	No	0 L/min
		Fully Supervised System -10%	No	
		Total Sprinkler Adjustment		0 L/min
6	Exposure Adjustment	Based on Table 6 Exposure Adjustment Charges for Subject Building		
	North	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 0		
		Construction Type Type II		
	South	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 0		
		Construction Type Type II		
East	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 0			
	Construction Type Type II			
West	Separation (m) 20.3	With unprotected opening 4%	442 L/min	
	Length X Height Factor (m.storeys) 120			
	Construction Type Type II			
	Total Exposure Adjustment			442 L/min
7	Total Required Fire Flow			11492 L/min
		Rounded to Nearest 1000 L/min		11000 L/min

183 L/s

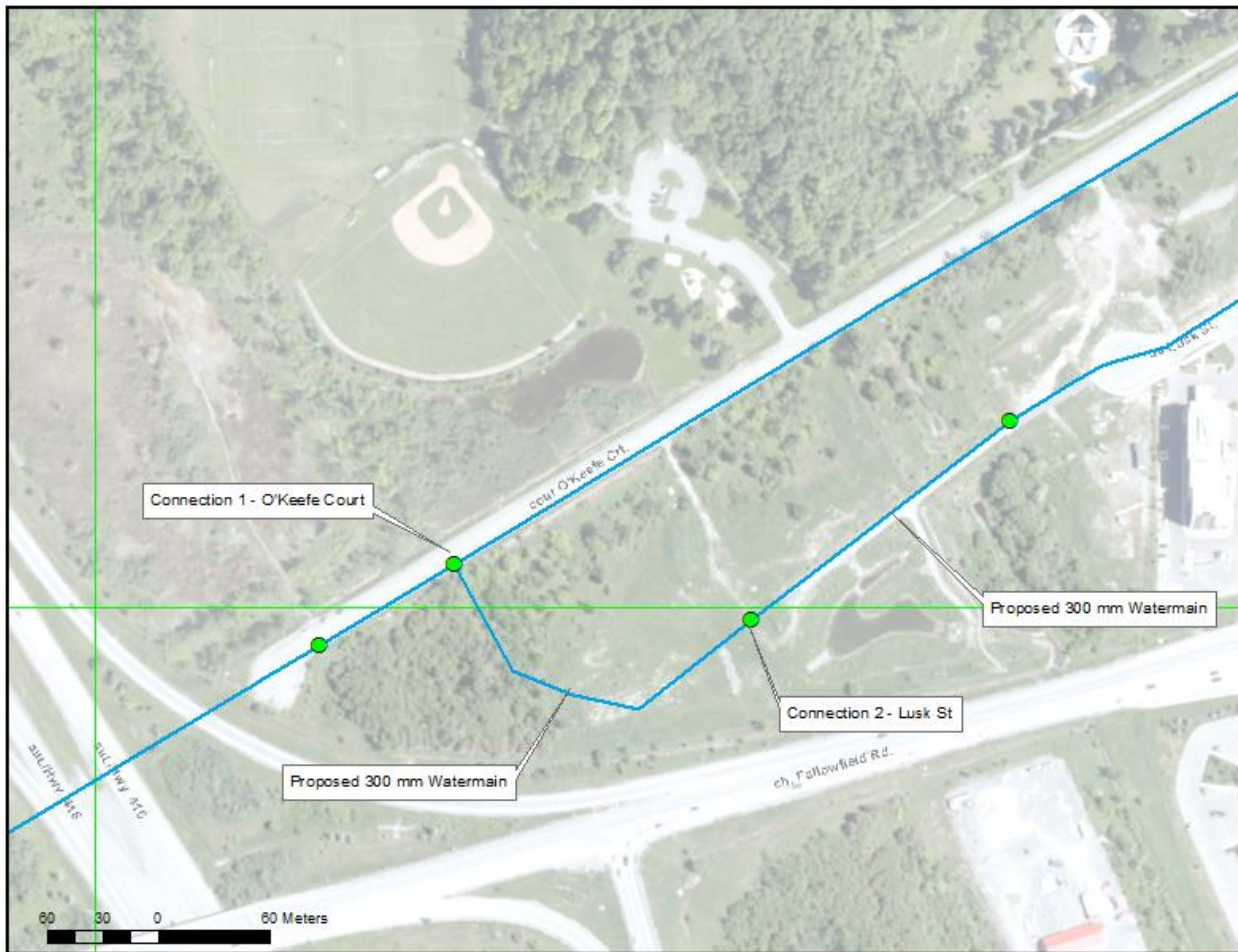
Notes 1. Fire flow calculation are based on Fire Underwriters Survey version 2020.

Boundary Conditions 145541 O'Keefe Court

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	44	0.74
Maximum Daily Demand	67	1.11
Peak Hour	119	1.99
Fire Flow Demand #1	15,000	250.00

Location



Results

Connection 1 – O’Keefe Court

Demand Scenario	Head (m)	Pressure¹ (psi)
Maximum HGL	153.4	67.5
Peak Hour	149.2	61.6
Max Day plus Fire Flow #1	147.7	59.5

¹ Ground Elevation = 105.9 m

Connection 2 – Lusk St

Demand Scenario	Head (m)	Pressure¹ (psi)
Maximum HGL	153.4	71.5
Peak Hour	149.2	65.6
Max Day plus Fire Flow #1	144.0	58.1

¹ Ground Elevation = 103.1 m

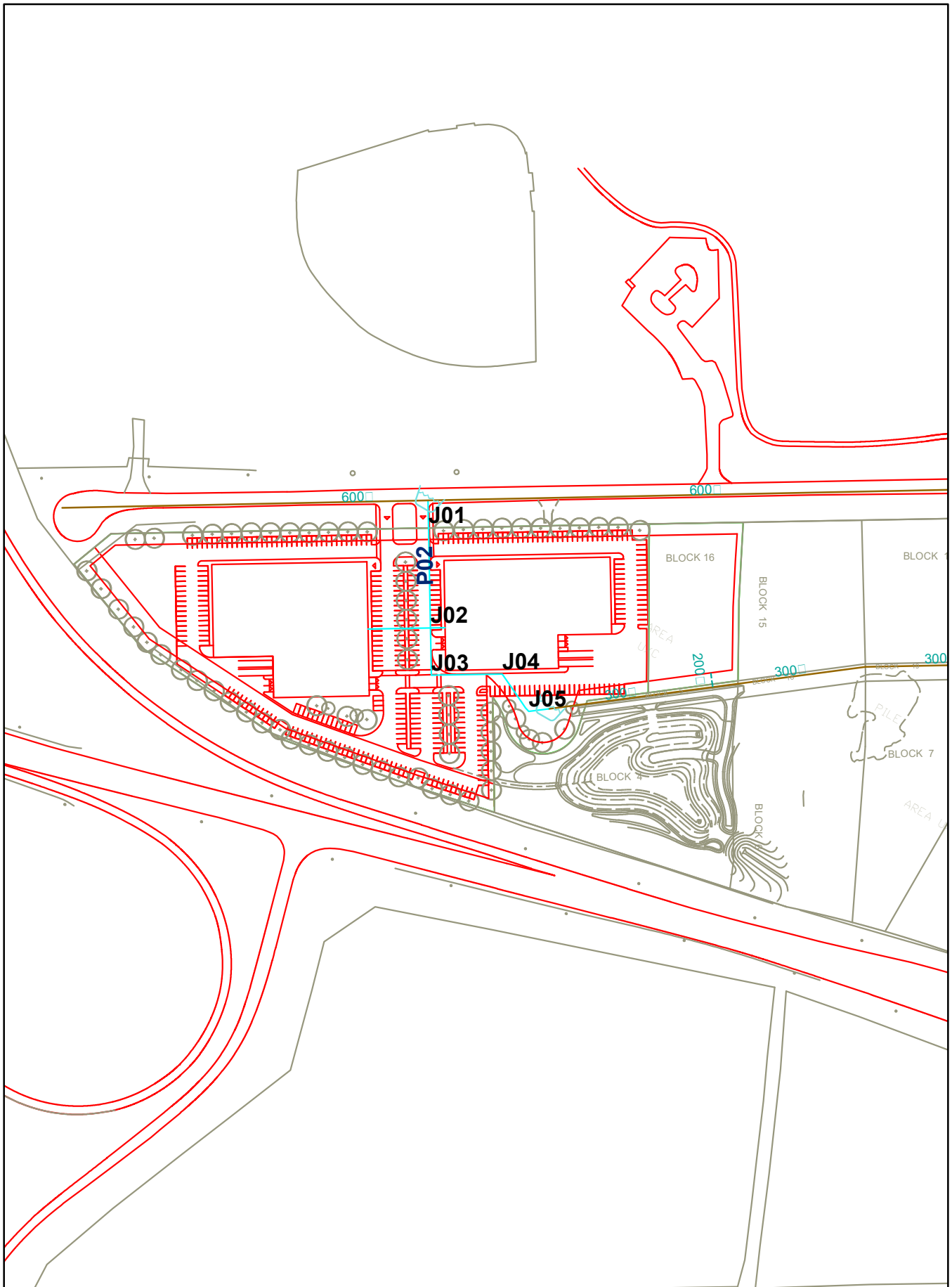
Notes

1. Theoretical extension of 305 mm PVC modelled watermain on Lusk Street to service proposed boundary Connection 2 – Lusk Street.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

O'Keefe Court - Water Model Layout



O'Keefe Court Water Model - Average Day Demand

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J01	0.00	104.86	153.40	475.65
2	<input type="checkbox"/>	J02	0.61	105.05	153.40	473.79
3	<input type="checkbox"/>	J03	0.00	105.10	153.40	473.30
4	<input type="checkbox"/>	J04	0.13	105.15	153.40	472.81
5	<input type="checkbox"/>	J05	0.00	104.85	153.40	475.75

O'Keefe Court Water Model - Peak Hour Demand

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J01	0.00	104.86	149.20	434.50
2	<input type="checkbox"/>	J02	1.64	105.05	149.20	432.63
3	<input type="checkbox"/>	J03	0.00	105.10	149.20	432.14
4	<input type="checkbox"/>	J04	0.35	105.15	149.20	431.65
5	<input type="checkbox"/>	J05	0.00	104.85	149.20	434.59

O'Keefe Court Water Model - Max Day & Fireflow

		ID	Static Demand (L/s)	Static Pressure (kPa)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (kPa)
1	<input type="checkbox"/>	J02	0.91	402.88	146.16	250.00	332.77
2	<input type="checkbox"/>	J04	0.20	388.25	144.77	250.00	340.89

O'Keefe Court Water Model - Max Day & Fireflow

		ID	Hydrant Available Flow (L/s)	Hydrant Pressure at Available Flow (kPa)	Junctions with Pressure Violation
1	<input type="checkbox"/>	J02	520.34	139.96	0
2	<input type="checkbox"/>	J04	596.69	139.96	0

O'Keefe Court Water Model - Max Day & Fireflow

		ID	Node with the Lowest Pressure Violation	Lowest Pressure Violation (kPa)	Average Pressure Violation (kPa)
1	<input type="checkbox"/>	J02			
2	<input type="checkbox"/>	J04			

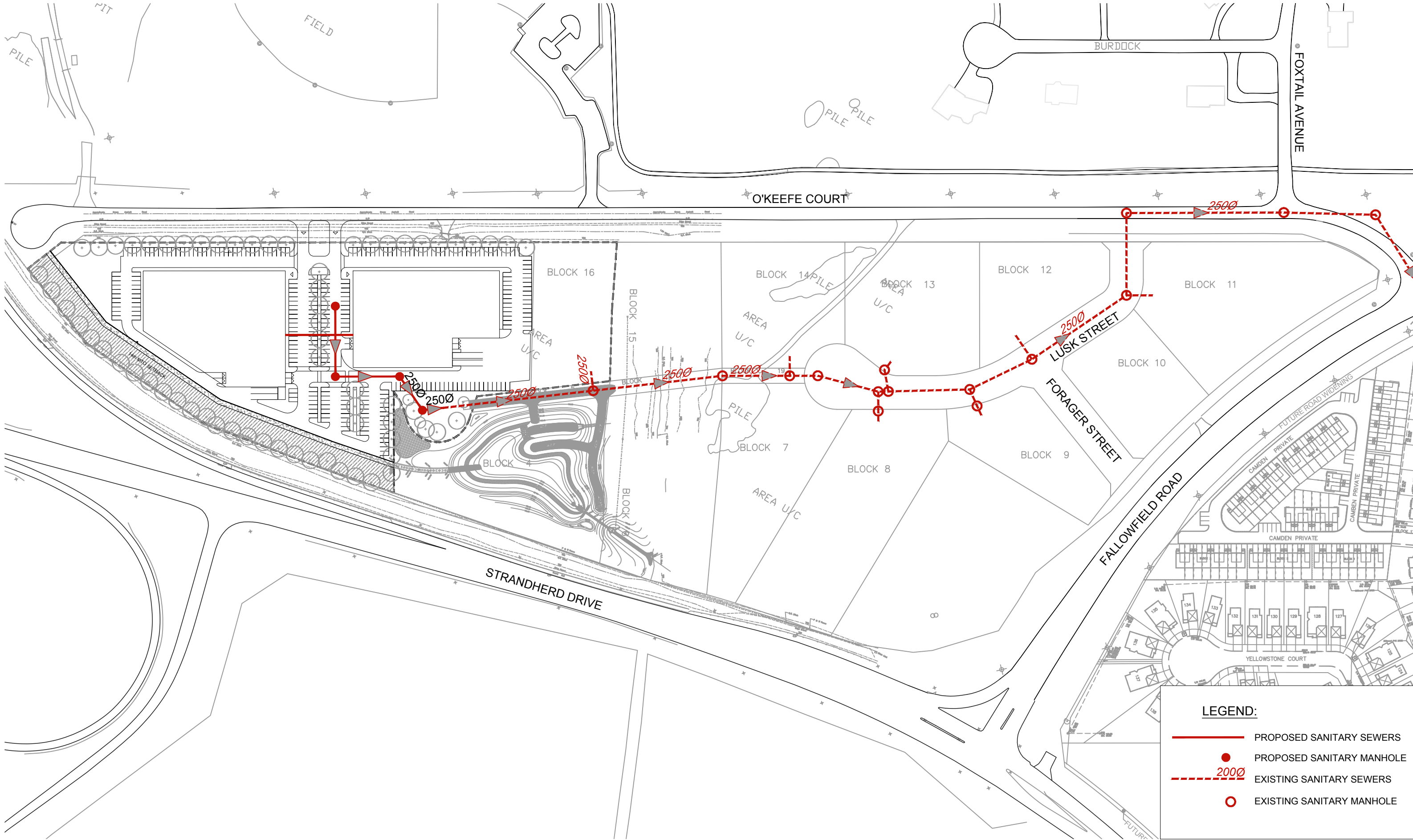
O'Keefe Court Water Model - Max Day

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	<input type="checkbox"/>	J01	0.00	104.86	147.37	416.56
2	<input type="checkbox"/>	J02	0.91	105.05	146.16	402.88
3	<input type="checkbox"/>	J03	0.00	105.10	145.60	396.92
4	<input type="checkbox"/>	J04	0.20	105.15	144.77	388.25
5	<input type="checkbox"/>	J05	0.00	104.85	144.23	385.94

APPENDIX C

- Figure 3.1 O'Keefe Court Conceptual Sanitary Sewer Layout
- 416 Lands Sanitary Sewer Design Sheet Excerpt
- Figure 3.2 O'Keefe Court Sanitary Drainage Area Plan

J:\145541_0'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 3.1 CONCEPTUAL SANITARY SEMER LAYOUT.dwg Last Saved At: Feb. 28, 24

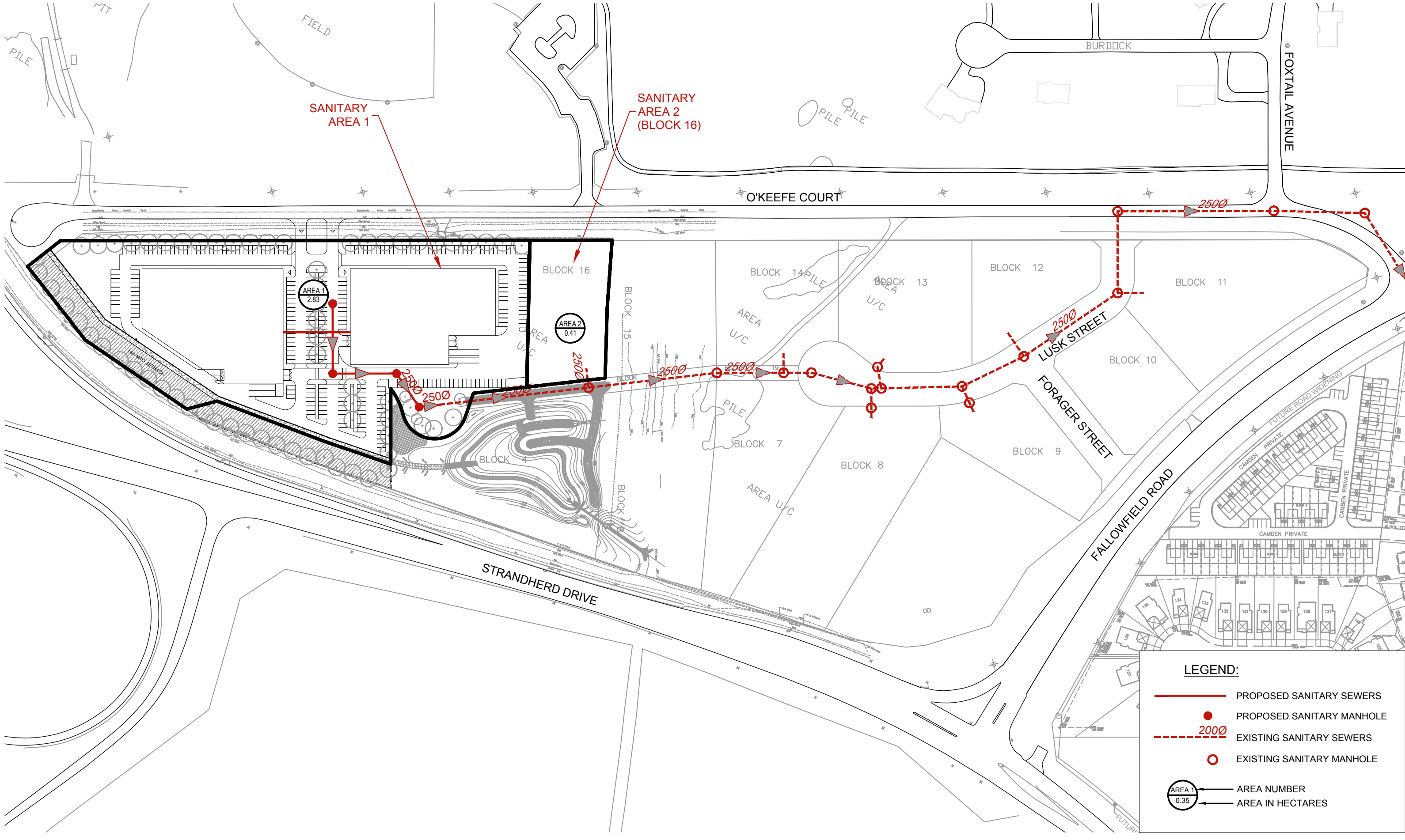


LEGEND:

- PROPOSED SANITARY SEWERS
- PROPOSED SANITARY MANHOLE
- - - 200Ø EXISTING SANITARY SEWERS
- EXISTING SANITARY MANHOLE



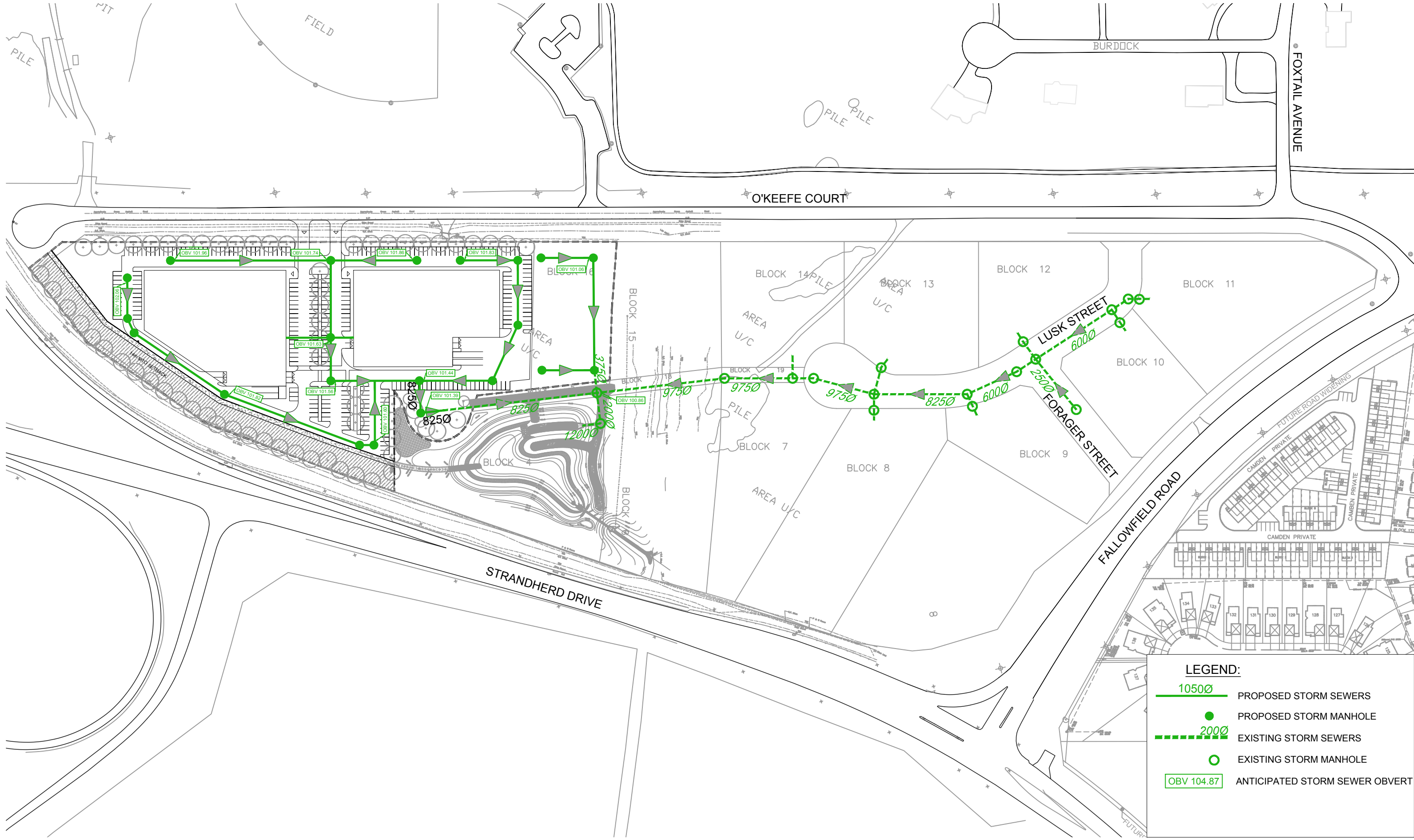
J:\145541_0'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 3.2 CONCEPTUAL SANITARY Drainage.dwg Last Saved By: dsurna Last Saved At: Feb. 29, 24



APPENDIX D

- Figure 4.1 O'Keefe Court Conceptual Storm Sewer Layout
- 416 Lands Storm Sewer Design Sheet Excerpt
- Figure 4.2 O'Keefe Court Storm Drainage Area Plan
- 416 Lands Storm Drainage Area Plan
- 416 Lands SWM Report Excerpt

J:\145541_O'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 4.1 CONCEPTUAL STORM SEWER LAYOUT.dwg Last Saved By: dsurna Last Saved At: Feb. 28, 24

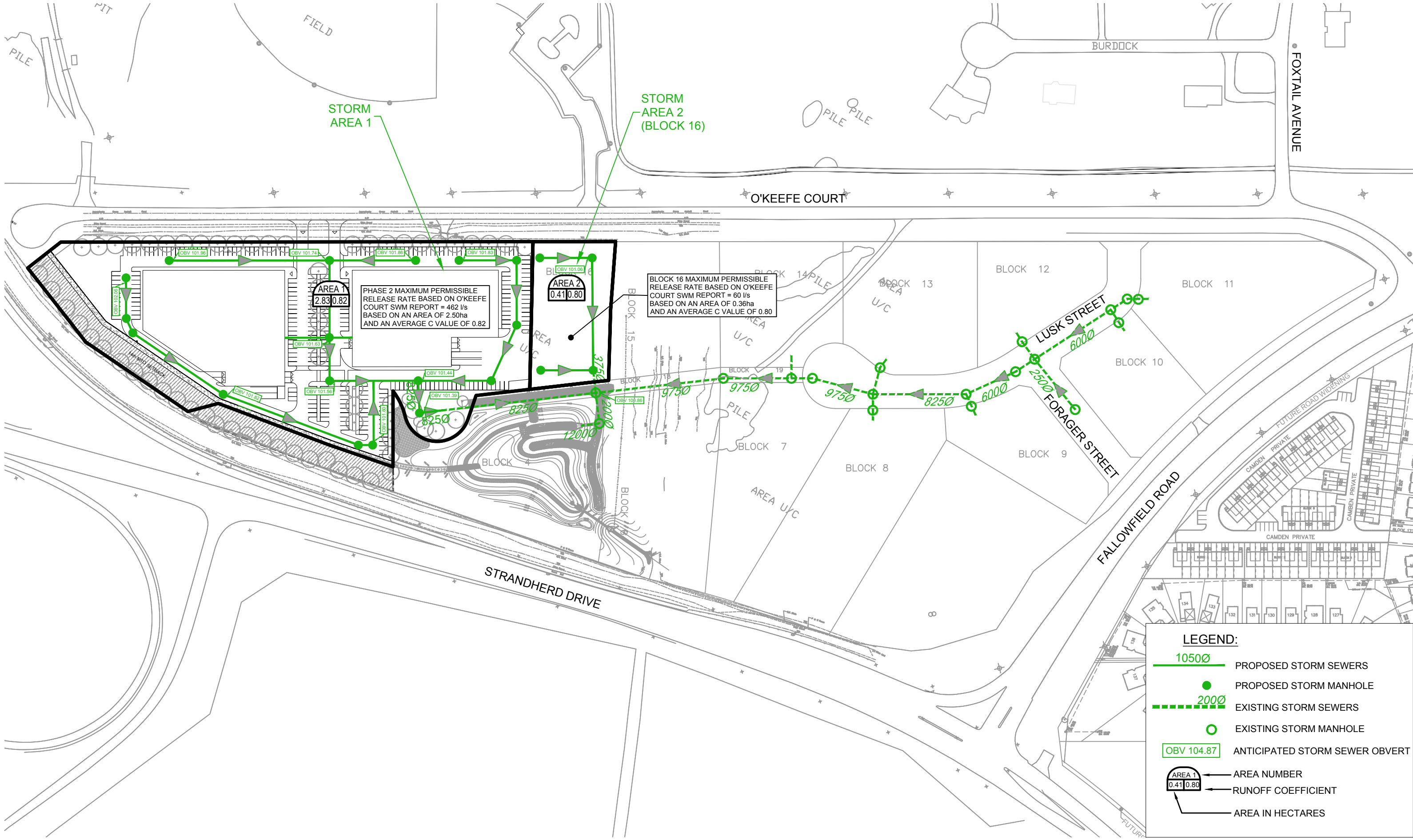


LEGEND:

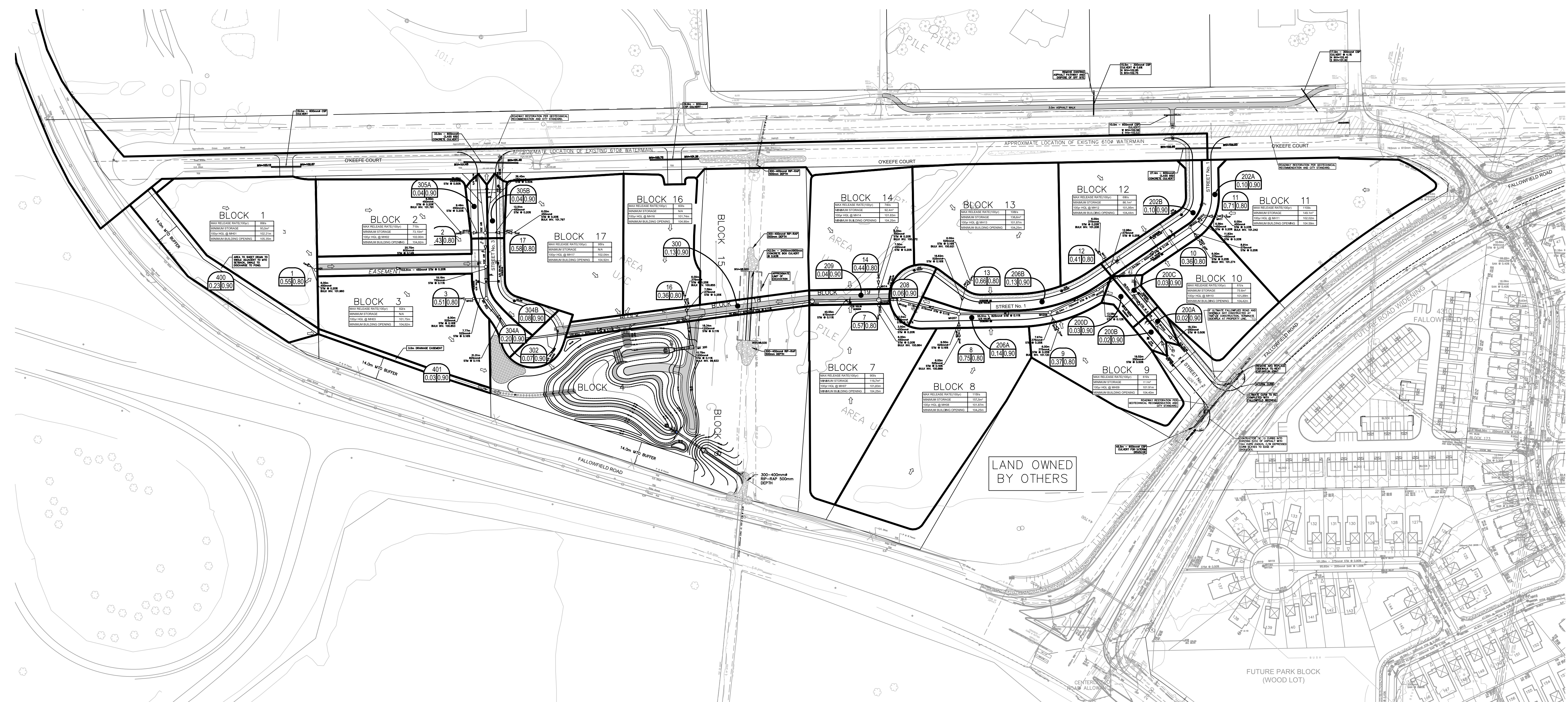
- 1050Ø PROPOSED STORM SEWERS
- PROPOSED STORM MANHOLE
- 200Ø EXISTING STORM SEWERS
- EXISTING STORM MANHOLE
- OBV 104.87 ANTICIPATED STORM SEWER OBVERT



J:\145541_O'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 4.2 CONCEPTUAL STORM TRIBUTARY AREA PLAN.dwg Last Saved At: Feb. 29, 24



J:\39744-may16\5.9 Drawings\5.9\Drawings\Layout\5.9\5.9 Dwg Layout Name: 5057M 18B Plot Size: AIA STANDARD-FULLCTB Plot Scale: 1:25.4 Plotted At: 2/22/2018 11:12 PM Last Saved By: ehenne Last Saved At: May 22, 18

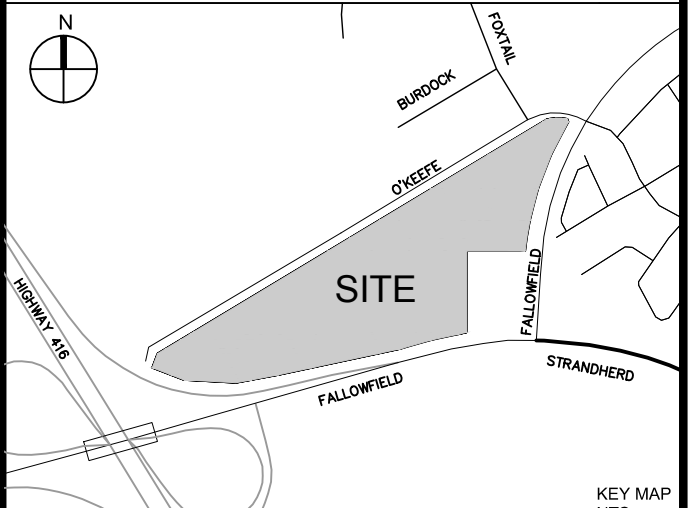


REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH
Signed _____
Date _____ 2017
Plan Number _____

LEGEND :

NOTE :
 * MINIMUM BUILDING OPENING TO BE CONFIRMED AT SITE PLAN STAGE.

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5	REVISED PER CITY COMMENTS	DGY	18.05.22
4	REVISED PER CITY COMMENTS	DGY	18.04.06
3	REVISED PER CITY COMMENTS	DGY	18.01.10
2	REVISED PER CITY COMMENTS	DGY	17.09.26
1	ISSUED FOR CITY REVIEW	DGY	17.05.04

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 OTTAWA ONT
 K2E 6T8

IBI GROUP
 400 - 333 Preston Street
 Ottawa ON K1S 5N4 Canada
 tel 613 225 1311 fax 613 225 9888
 ibigroup.com

Project Title
416 LANDS
 4401 FALLOWFIELD ROAD

Drawing Title
STORM DRAINAGE
AREA PLAN

Scale
 1:1250

Design	MB/RM	Date	MARCH 2016
Drawn	EH	Checked	DGY

Project No.	39744	Drawing No.	500
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CITY PLAN No. 17492
CITY FILE No. D07-16-13-0013

storage routing, an additional iteration was performed in which the minor system capture was increased to ensure no overflow, and therefore the depth limited to below the max depth.

The above approach ensures that the City guideline of 0.35 m ponding depth is maintained at all locations. It should also be noted that if the approximate 0.35 m of ponding was designed as the “static” storage, then “dynamic” storage was not available and therefore not used.

- **Future Development Blocks**

To protect the lots from surface flooding, it is required to provide on-site quantity control storages for all the future development blocks, with the exception of Blocks 16, 17, and 3 which directly discharge to the SWMF. The required unit storage rate for each block is based on an average runoff coefficient of 0.80 (impervious ratio of 86%). The provided surface storage for commercial blocks was accounted for in the SWMHYMO model, and is summarized in **Table 4-1**. The assumed surface storage for each block provides on-site storage with no overflow up to the 100 year storm event. Stormwater runoff exceeding the available on-site storage (greater than the 1:100 year event) will overflow onto the downstream street segment, and is summarized in **Table 4-2**.

4.4.2 Summary of Design Parameters

Table 4-1 summarizes the main hydrological parameters used in the SWMHYMO model. The SWMHYMO drainage area plan is presented in **Drawing 750**. Model output files are included on the CD enclosed in **Appendix C**.

Table 4-1: Hydrological parameters – O’Keefe Court development
(Storm files noted in table)

Drainage Area		Downstream Segment ID [†]	MH	IMP Ratio (%)	Segment Length (m)			Time to Peak (hr)	CN*	Static Storage (m ³)		Extended Storage (m ³)	2 Year Modelled Flow (l/s)*	100 Yr ICD Flow (l/s)
Segment ID	Area (ha)				Average	Measured	Calculated			Available	Assumed**			
Area Tributary to SWM Facility														
Street Segments														
B11	0.71	S202A	MH11	86	101.00	133.50	68.80			149.1		107	110	
B12	0.41	S202B	MH12	86	60.00	67.00	52.28			86.1		69	69	
B10	0.36	S202A	MH10	86	59.00	68.50	48.99			75.6		61	61	
S202B	0.10	S202A	MH202	99	46.00	66.00	25.82			8.83	72.70	21	24	
S202A	0.10	S200C	MH202	99	46.00	66.00	25.82			2.24	130.10	21	24	
S200C	0.03	S200D	MH200	99	22.00	30.00	14.14			5.57	42.78	6	6	
S200D	0.03	S206	MH200	99	22.00	30.00	14.14			3.78	48.96	6	6	
S200A	0.04	FLFRD	MH200	99	18.00	20.00	16.33					8	5	
B9	0.37	S206	MH09	86	71.00	92.20	49.67			77.7		60	61	
B8	0.75	S206	MH08	86	105.00	140.00	70.71			157.5		112	115	
B13	0.66	S206	MH13	86	73.00	79.50	66.33			138.6		107	108	
S206	0.27	S208	MH206	99	82.00	121.00	42.43			47.89	120.89	55	48	
S208	0.06	B209	MH208	99	22.00	24.00	20.00			6.91	21.11	13	19	
B7	0.57	B209	MH07	86	91.00	120.00	61.64			119.7		89	90	
B14	0.44	B209	MH14	86	64.00	74.00	54.16			92.4		73	74	
B209	0.04	B18	MH209	99	33.00	49.00	16.33			19.70	28.46	8	20	
B16	0.36	B18	MH16	86	65.00	82.00	48.99					60	60	
B17	0.58	B18	MH17	86	76.00	90.00	62.18					93	95	

Drainage Area		Downstream Segment ID†	MH	IMP Ratio (%)	Segment Length (m)			Time to Peak (hr)	CN*	Static Storage (m ³)		Extended Storage (m ³)	2 Year Modeled Flow (l/s)*	100 Yr ICD Flow (l/s)
Segment ID	Area (ha)				Average	Measured	Calculated			Available	Assumed**			
B18	0.13	SWM	0.00	99	89.00	148.00	29.44					23	0	
B1	0.55	S304	MH01	86	81.00	102.00	60.55			93.5		87	89	
B2	0.43	S304	MH02	86	73.00	93.00	53.54			73.1		69	71	
S304	0.28	S302	MH304	99	52.00	60.00	43.20			88.60	42.03	54	57	
S302	0.07	SWM	MH302	99	21.00	21.30	21.60			17.00	33.61	15	24	
B3	0.51	SWM	MH03	86	83.00	107.00	58.31					80	82	
B400	0.23	B401	0.00	99	84.00	128.00	39.16					41	0	
B401	0.03	SWM	0.00	99	63.00	111.00	14.14					6	0	
S305	0.08	OKFCRT	MH305	99	33.00	42.00	23.09					17	5	
SWM	0.67	DRAIN	SWM					0.25	95			46	0	
Total (ha)	8.86	Total ICD Flow during the 100 year 3 hr Chicago (l/s)											1323	
Area Tributary to O'keefe Drain (in addition to SWMF outflow)														
OKFCRT	1.08	B15	0.00		0.00			0.11	43.0			11	0	
B15	0.54	B6	0.00		0.00			0.17	43.0			5	0	
B6	0.79	FLCLV	0.00		0.00			0.17	43.0			7	0	
FLFDCH	7.36	FLCLV	0.00		0.00			1.82	43.0			14	0	
Total (ha)	18.63													

Notes:

- ‡ Downstream segment presented is the segment which that area ultimately drains to.
- * Areas modeled using NASHYD to generate hydrographs use Time to Peak & CN value rather than IMP ratio & Segment Length. These values are noted in the table.
- ** Assumed ponding volume. Assumes that on-site storage will be provided with no overflow up to the 100 year 3 hour Chicago event.
- # 2 year generated flow values are from the SWMHYMO file (39744-HWY416.dat/out) presented on the CD in Appendix C.
- † Minor flow restriction is from the SWMHYMO file (39744-HWY416.dat/out) presented on the CD in Appendix C during the 100 year 3 hour 10 min Chicago storm event.

The drainage area tributary to SWM facility is about 8.86 ha. Total drainage area of the subject site, including the areas tributary to O'Keefe Drain (FLFDCH, OKFCRT, B15, and B6) is approximately 18.63 ha.

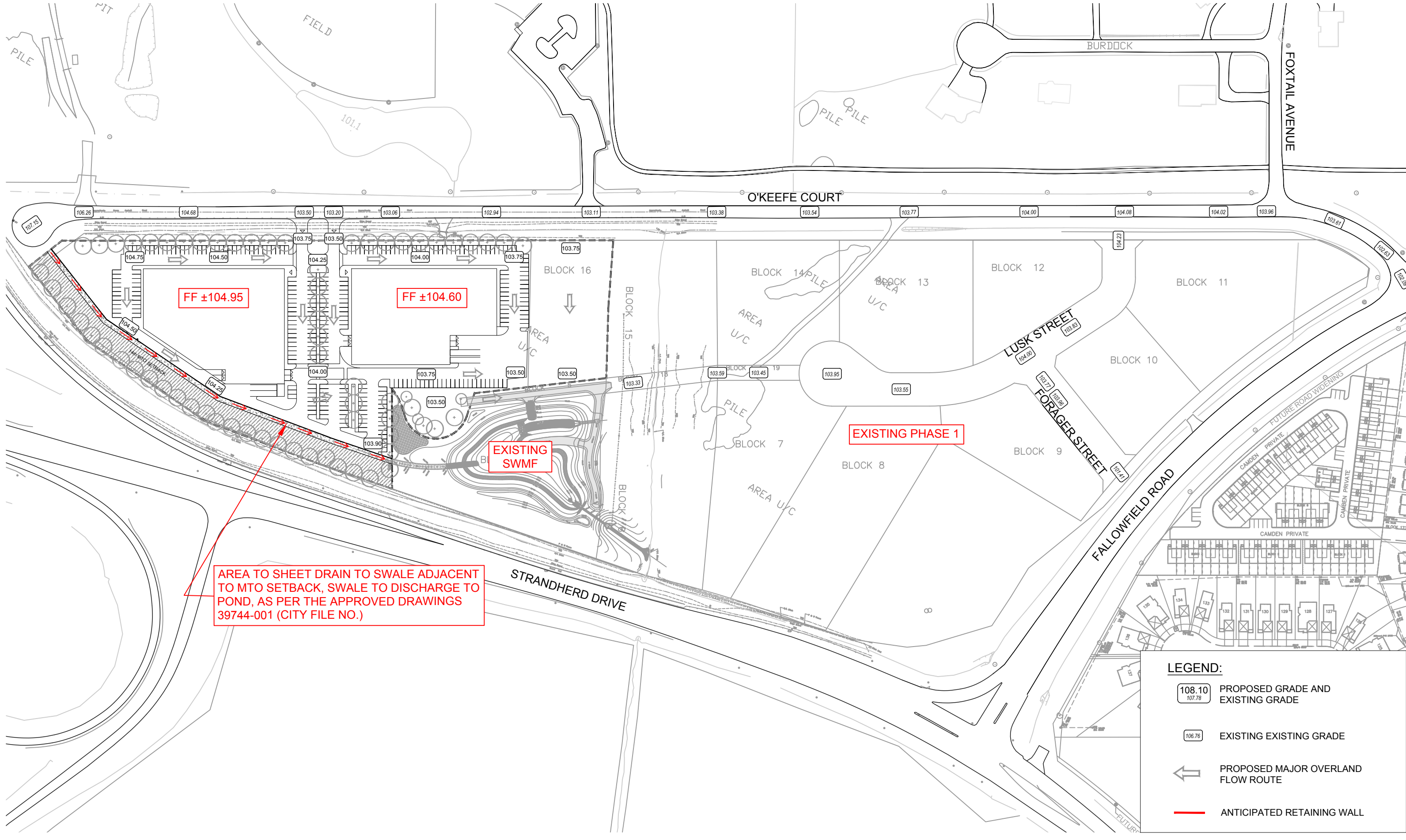
As mentioned before, the O'Keefe Court development is located within EMP existing conditions drainage areas O-6 and O-7 (refer to EMP Figure 4.6, enclosed in **Appendix E**). The EMP Scenario 1 drainage areas that approximately correspond to the O'Keefe Court development is about 21.74 ha (refer to EMP Figure 5.2, enclosed in **Appendix E**).

The decrease in area is due to the revised drainage area boundaries as part of the detailed design. The EMP area assumed tributary boundaries that followed the general centerline road layout. The detailed drainage boundaries (18.63 ha) more accurately reflect the actual tributary limits. In addition to the adjacent parcel (gas station) not being included, we have excluded those portions of Fallowfield Road, and O'Keefe court which drain to existing storm sewer systems.

APPENDIX E

- Figure 5.1 – Macro Grading
- Figure 6.1 – Erosion Control Plan
- 416 Lands Servicing As Built
- Geotechnical Memorandum July 10, 2024

J:\145541_0'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 5.1 CONCEPTUAL MACRO GRADING.dwg Last Saved At: Feb. 28, 24



AREA TO SHEET DRAIN TO SWALE ADJACENT TO MTO SETBACK, SWALE TO DISCHARGE TO POND, AS PER THE APPROVED DRAWINGS 39744-001 (CITY FILE NO.)

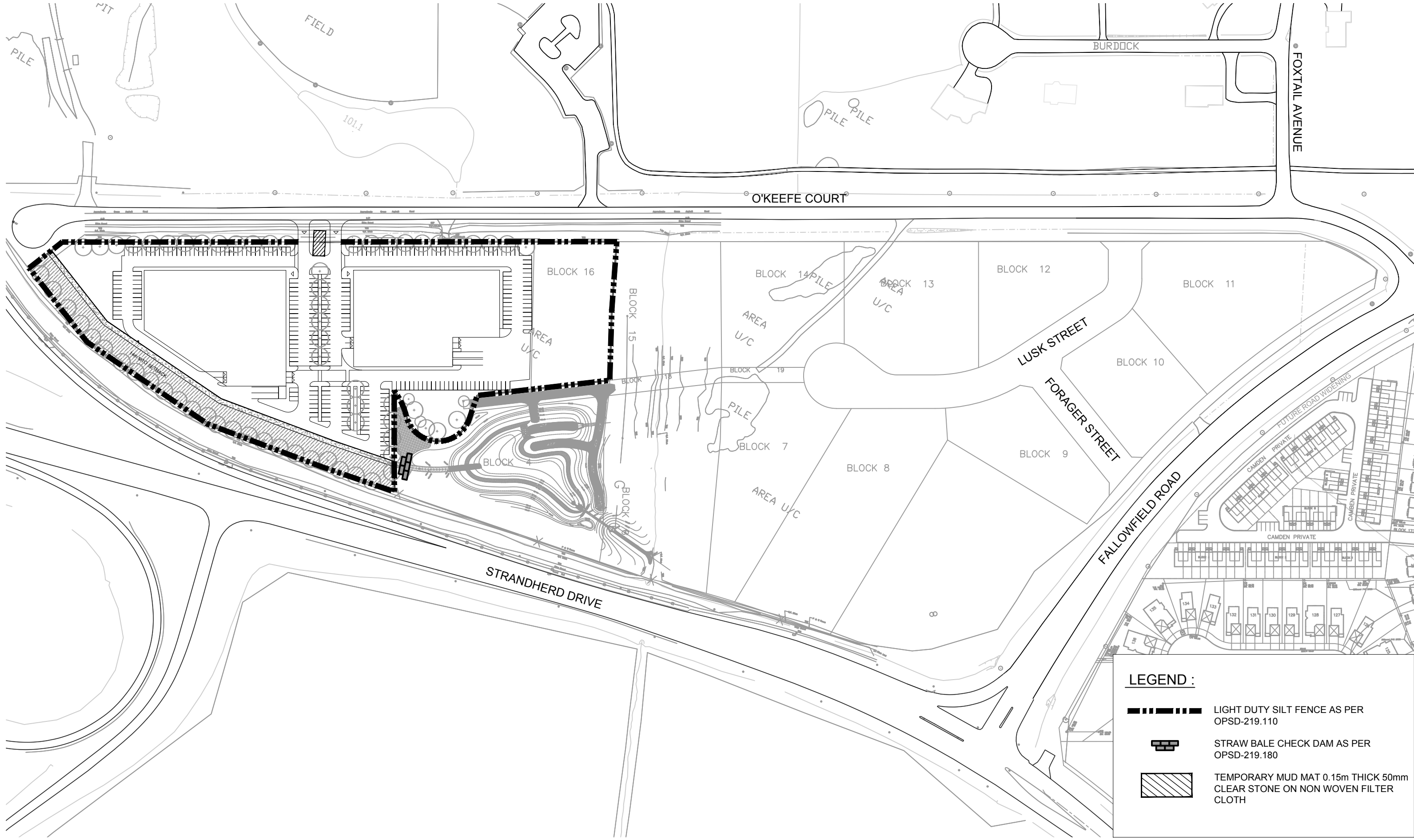
EXISTING SWMF

EXISTING PHASE 1



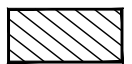
FF ±104.95

FF ±104.60

J:\145541_0'Keefe_Cour\7.0_Production\7.03_Design\04_Civil_Land\APSR_Sheetset\Figure 6.1 EROSION CONTROL PLAN.dwg Last Saved By: dsurna Last Saved At: Feb. 28, 24



LEGEND :

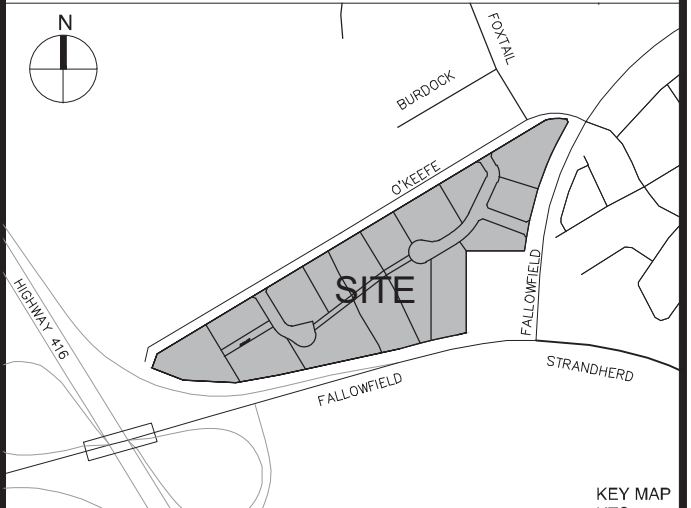
-  LIGHT DUTY SILT FENCE AS PER OPD-219.110
-  STRAW BALE CHECK DAM AS PER OPD-219.180
-  TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

J:\39744-Hwy16\5.9 Drawings\5.9\Drawings\01 GENERAL PLAN.dwg, Name: 001 GENERAL PLAN Plot Size: AIA STANDARD-HALF CTB Plot Scale: 1:63.5 Plotted At: 2/7/2019 10:22 AM Last Saved By: Emeric Last Saved At: Feb 1, 2017



REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH
Signed _____
Date _____ 2017
Plan Number _____

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

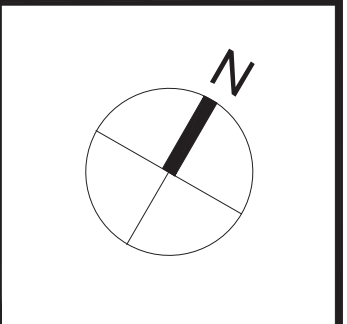
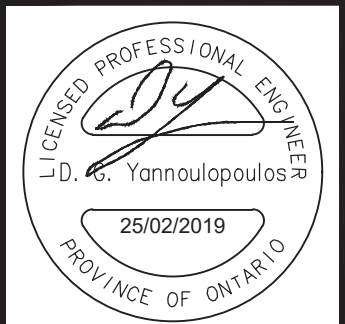


No.	REVISIONS	By	Date
14			
13	RECORD DRAWINGS PHASE 1	DGY	21.02.01
12	ADDED STREET NAMES	DGY	19.02.25
11	REVISED SIDEWALK	DGY	19.02.05
10	ISSUED FOR CWN	DGY	18.09.26
9	REVISED PER CONTRACTOR SANITARY COMMENTS	DGY	18.08.23
8	ISSUED FOR CONSTRUCTION	DGY	18.08.08
7	ADDENDUM #3	DGY	18.06.15
6	ISSUED FOR TENDER	DGY	18.05.24
5	REVISED PER CITY COMMENTS	DGY	18.05.22
4	REVISED PER CITY COMMENTS	DGY	18.04.06
3	REVISED PER CITY COMMENTS	DGY	18.01.10
2	REVISED PER CITY COMMENTS	DGY	17.09.26
1	ISSUED FOR CITY REVIEW	DGY	17.05.04

DCR/PHOENIX GROUP OF COMPANIES
18A BENTLEY AVE.
OTTAWA ONT
K2E 6T8

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

Project Title
416 LANDS
4401 FALLOWFIELD ROAD



Drawing Title
**GENERAL PLAN
OF SERVICES**

Scale
1:1250

Design	MB/RM	Date	MARCH 2016
Drawn	EH	Checked	DGY

Project No.	39744	Drawing No.	001
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CITY PLAN No. 17492
CITY FILE No. D07-16-13-0013



Kollaard Associates

Engineers

210 Prescott Street, Unit 1

P.O. Box 189

Kemptville, Ontario K0G 1J0

Civil • Geotechnical •
Structural • Environmental •
Hydrogeology

(613) 860-0923

FAX: (613) 258-0475

July 10, 2024

240639

DCR Phoenix Homes
18 Bentley Avenue
Ottawa, Ontario
K2E 6T8

Attention: Mr. Mike Boucher

RE: GEOTECHNICAL MEMORANDUM
PROPOSED ZONING BYLAW AMENDMENT
DEVELOPMENT TO BUSINESS PARK INDUSTRIAL ZONE
O'KEEFE COURT AND FALLOWFIELD ROAD
OTTAWA, ONTARIO

Dear Sirs:

This memorandum is intended to provide comment with respect to the use of the previously completed geotechnical reports and letters prepared by Kollaard Associates Inc for the proposed development known as O'Keefe Court to support the current application for a zoning bylaw amendment.

It is understood that the client is in the process of applying for a zoning bylaw amendment that would permit two additional uses of the site: Car Dealership and Animal Clinic. A potential layout for the site is illustrated on the O'Keefe Court Ottawa Concept Plan prepared by Fotenn Planning + Design Rev 6 dated January 31, 2024. The building construction type associated with these two additional uses is already permitted in the current zoning for the site known as O'Keefe Court.

Previously Completed Geotechnical Works

Kollaard Associates Inc previously provided geotechnical guidelines on three separate occasions consisting of the preliminary subsurface investigation dated August 10, 2006; the additional subsurface investigation dated March 5, 2008 and the letter providing additional geotechnical guidelines dated June 17, 2013.

Kollaard Associates previously completed the preliminary subsurface investigation report and additional subsurface investigation letter for a development at the above location consisting of



proposed residential and commercial development. The additional subsurface investigation completed in 2008 was to verify that soft or firm silty clay was not present at any part of the site and that the initial guidelines provided in 2006 were valid for the entire site. Revised plans for development consisting of a Commercial / Business Park Development, including office uses, hotel and associated secondary uses, and a place of worship prompted the letter providing the additional guidelines in 2013. The additional guidelines provided in 2013 referenced a height strategy figure which identified building structures of between 4 to 12 storeys in height.

Current Requirements

It is understood that the City of Ottawa requires a memo verifying that the conclusions made in the above noted geotechnical works for the overall subdivision will not change with what is currently proposed with this development.

The City of Ottawa also requires that the memo verify that the previous investigations adhered to today's standards and guidelines when it comes to carrying out geotechnical investigations.

Soil Background Information

The previously completed geotechnical works indicate that the overall subdivision is underlain by shallow bedrock, glacial till and silty clay. Based on the results of the test pits and boreholes put down at the site for the investigations, the silty clay is stiff to very stiff in consistency. Beneath the silty clay, both boreholes encountered a deposit of glacial till. The glacial till is in a loose to compact state of packing. Refusal to auger advancement and/or practical refusal was encountered on the surface of bedrock or on large boulders within the boreholes and test pits at depths ranging between about 1.3 to 5.5 metres below the existing ground surface.

Geotechnical Considerations and Verification of Conclusions

With the potential exception of variance of the fill thickness at the site and removal of some of the topsoil, there have been no changes to the subsurface conditions at the site since the previously completed geotechnical works. The native subsurface conditions will not have changed in the short geotechnical time period between 2013 and the current time. Any changes to the fill thickness if present or any removal of topsoil would not have changed the geotechnical recommendations for the site.

A review of the previously completed geotechnical works indicates that the works were completed to provided engineering guidelines on the geotechnical aspects of the preliminary design of the project and to verify that there were no subsurface conditions such as soft marine deposited sensitive silty clay which would preclude the construction of residential or commercial buildings on conventional



spread footing foundations. The geotechnical works also provided preliminary guidelines with respect to: engineered fill; groundwater; seismic site classification; the installation of site services and construction of roadways and parking areas.

In addition to the above geotechnical guidelines, the previously completed geotechnical works all provided a similar recommendation paraphrased as follows:

The exact building locations, building size, construction type and foundation requires are not known at this time. As such, these preliminary allowable bearing pressures, factored ultimate bearing resistances and geotechnical recommendations are subject to changed with more detailed, site specific geotechnical investigations for site specific design purposes.

Since there has been no significant change to the site from a geotechnical perspective, the previously provided geotechnical conclusions remain valid.

Conformance of Previously Completed Geotechnical Works to Current Standards

The previously geotechnical works were completed using sound engineering principles and procedures that are in conformance to today's standards and remain valid for the intended purpose. However, it is acknowledged that the previously completed works were not completed in consideration of all of today's standards and guidelines.

As an example: Using today's standards, a site specific Multichannel Analysis of Surface-Waves test would be completed at the site to determine the seismic site classification. Using today's standards, this test would be completed during the site specific geotechnical investigation and reporting in support of the site plan control approval.

The previously completed geotechnical works were completed to verify that the proposed subdivision site was suitable for the construction and development associated with the intended use of the site. The previously completed works were also completed to conclusively demonstrate that there were no underlying geotechnical concerns which would preclude the development of the site and construction of buildings using conventional spread footing foundations. The previously completed works were not intended and are not intended to replace a site specific geotechnical investigation required in support of a site plan control application.

The current application is in support of a zoning amendment to permit additional uses of the site. There are no proposed changes within the zoning amendment that would result in a different building construction than previously approved for the site. In addition, the current application acknowledges that a specific site plan control application will have to be completed for each development. This supports the recommendations in the geotechnical works that site specific geotechnical investigations be completed once the specific development is known.



Conclusions

In summary, Kollaard Associates considers:

- The geotechnical conclusions provided in the previously completed geotechnical works remain valid to support the current zoning bylaw amendment;
- There are no geotechnical conditions at the site that would preclude the construction of the buildings permitted by the proposed zoning supported by conventional spread footing foundations;
- A site specific geotechnical investigation should be completed for each site at the site plan control approval stage;
- The site (building) specific geotechnical investigation and report will be completed in accordance with current standards and guidelines.

We trust this letter provides sufficient information for your purposes. If you have any questions concerning this letter please do not hesitate to contact our office.

Yours truly,

Kollaard Associates Inc.



Steve deWit, P. Eng.