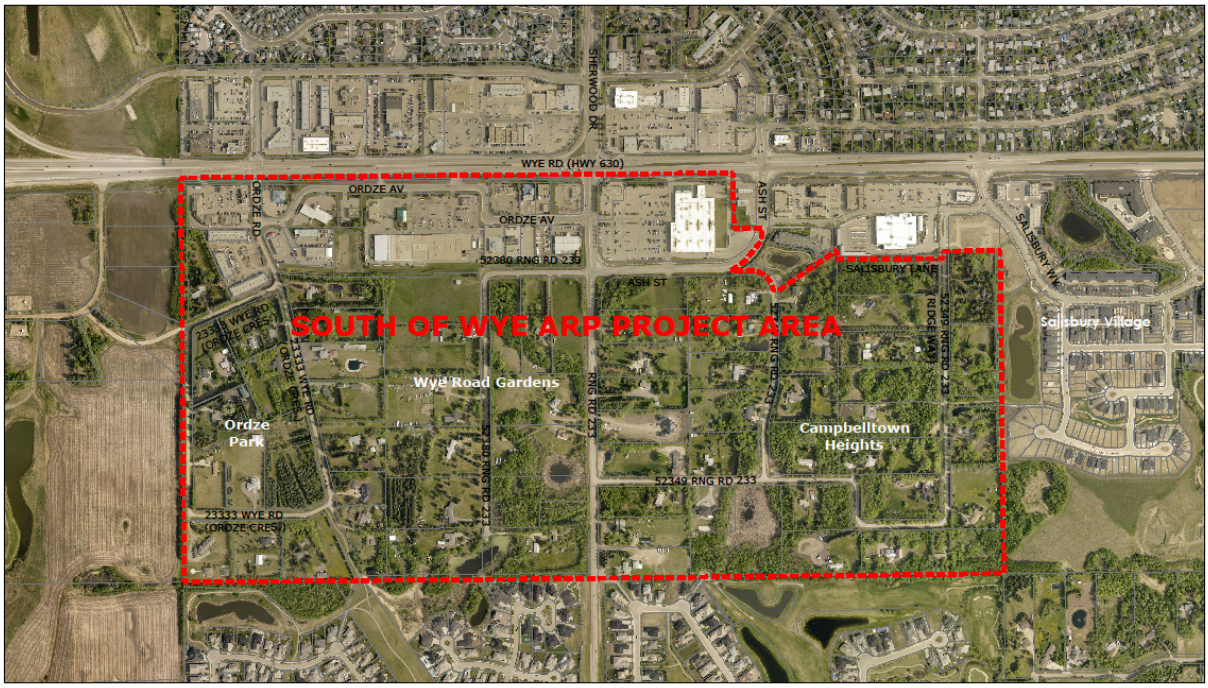
STRATHCONA COUNTY

SOUTH OF WYE ARP PROJECT
UTILITIES BACKGROUND ANALYSIS REPORT SUMMARY

APRIL 20, 2021



1 INTRODUCTION

1.1 GENERAL

The South of Wye ARP Project (ARP Project) Utilities Background Analysis Report was completed by WSP Canada Inc. (WSP) to analyze the current water distribution, wastewater and stormwater systems. Findings from this report will be used as a baseline for the final Utility Master Plan in support of the ARP Project and future redevelopment considerations.

1.2 PROJECT AREA

The ARP Project Area is bounded by Wye Road to the north, the Anthony Henday Drive Transportation Utility Corridor (TUC) to the west, existing country residential to the south, and the Salisbury Village ASP Phase 2 Boundary and Glenwood Funeral Home and Cemetery parcel to the east. The ARP Project Area consists of approximately 122 hectares, which includes the existing South of Wye Road ARP, Ordze Park, Wye Road Gardens, and Campbelltown Heights.

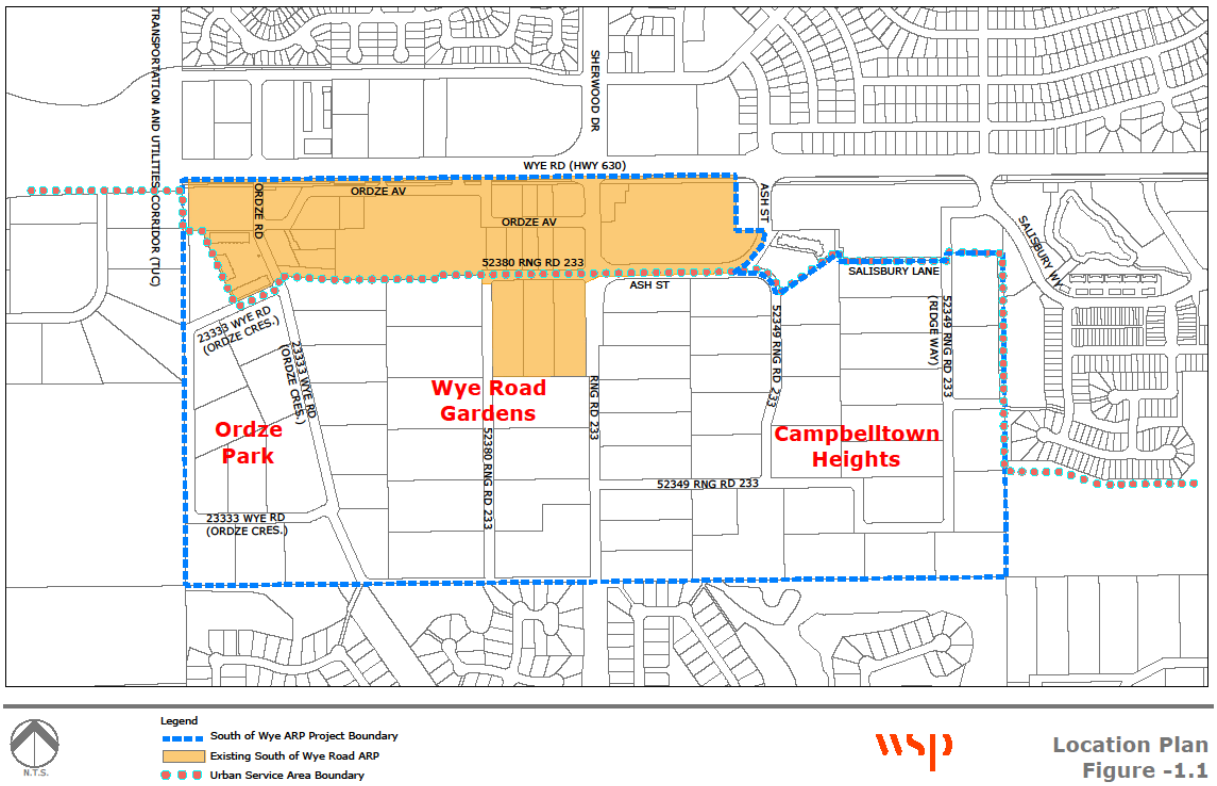


Figure 1.1: Location Plan

1.3 LAND USE

The current land use for ARP Project Area consists mostly of low-density country residential with the exceptions of the commercial area located south of Wye Road and small pockets of land in Ordze Park and Campbelltown Heights which are designated as Park/Open Space. While the commercial area located south of Wye Road falls within the boundary of the Urban

Service Area the rest of the project area is located with the Rural Service Area. Please refer to Figure 1.2 below for the existing land uses.

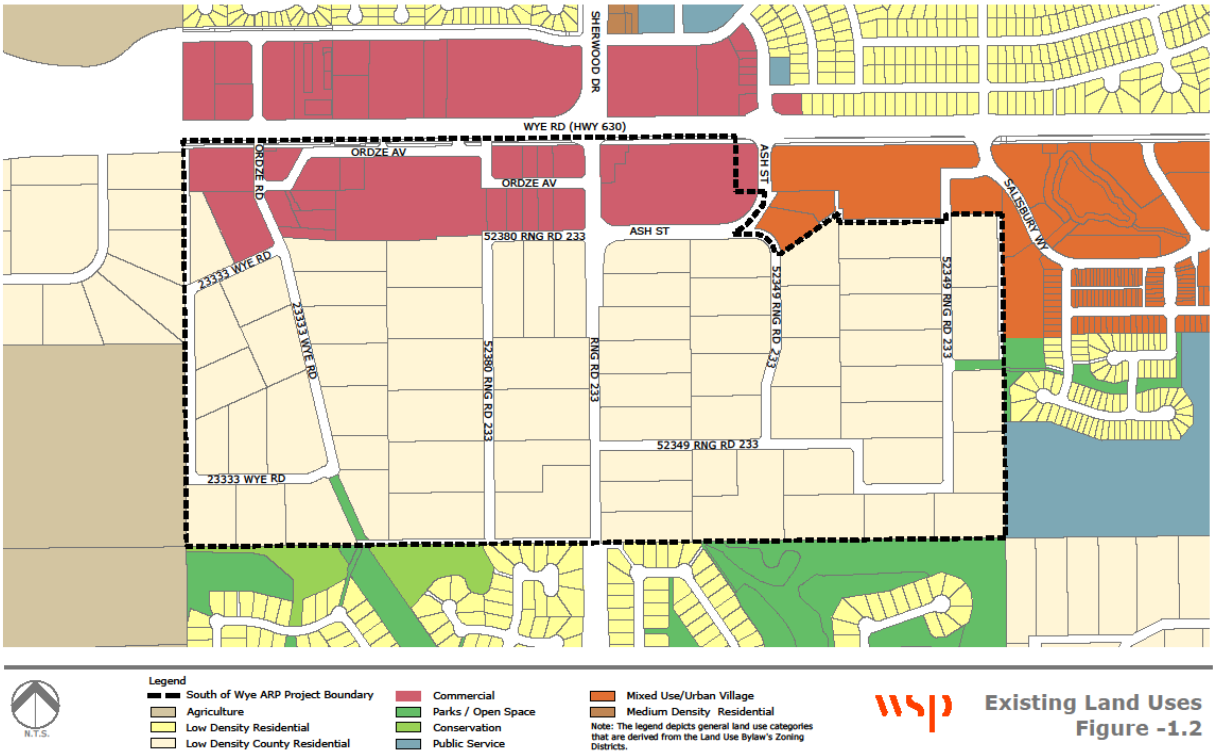


Figure 1.2: Existing Land Uses

1.4 EXISTING TOPOGRAPHY

The general topography of the ARP Project Area slopes from east to west with the southeast corner of Campbelltown Heights being the highest point and the northwest corner of Ordze Park being the lowest point. The total difference in elevation is 21.00 m. Please see Figure 1.3.

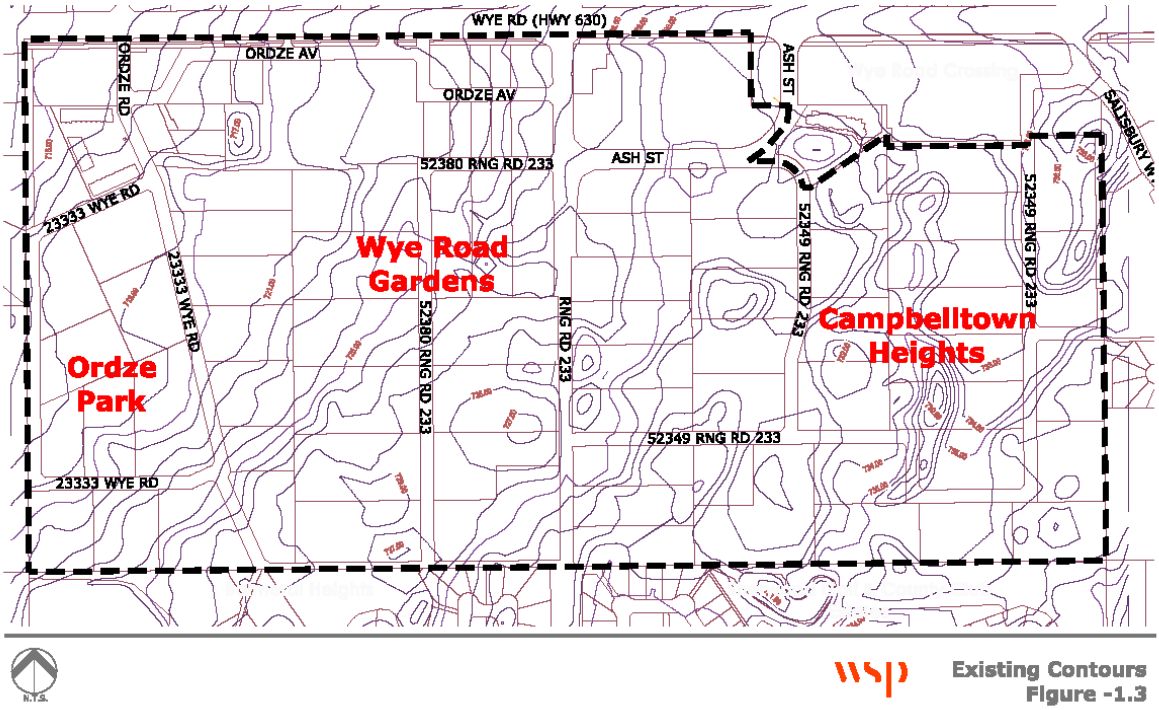


Figure 1.3: Existing Contours

2 WATER DISTRIBUTION SYSTEM

2.1 EXISTING WATER DISTRIBUTION SYSTEM

Potable water within the ARP Project Area is supplied from three connection points across Wye Road; connection point 1 is located west of Ordze Road, connection point 2 is located at Sherwood Drive and connection point 3 is located at Salisbury Way. These connection points provide water and fire flow protection for the commercial area located south of Wye Road and the proximity subdivisions. Some properties within Ordze Park receive full pressure water servicing, while other properties have rural trickle fill water servicing, and others have no water servicing. Campbelltown Heights currently has full pressure water servicing. Wye Road Gardens does not have piped water servicing. There are currently no fire hydrants in the country residential within the ARP Project Area. See Figure 2.2 below for the existing water distribution system configuration.

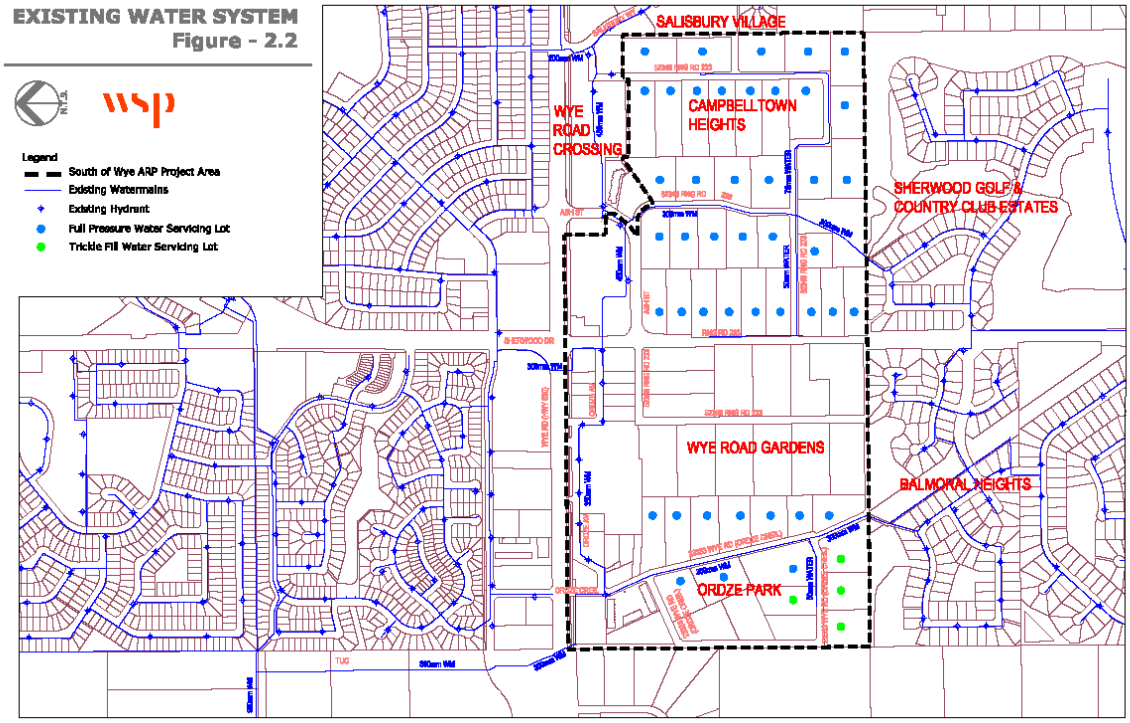


Figure 2.2: Existing Water Distribution System

2.2 WATER SERVICING SYSTEM SUMMARY

Strathcona County's water distribution system contains several independent pressure zones. Based on the hydraulic review of the County's existing WaterCAD model, water distribution servicing within the pressure zone and ARP Project Area is acceptable according to Strathcona County Design and Construction Standards. Servicing pressures within the pressure zone tend to decrease as elevation increases in the areas south of Wye Road.

The modelled servicing pressures and available fire flows within the ARP Project Area are in accordance with Strathcona County Design and Construction Standards, based on existing demands and current land uses. As mentioned above, Campbelltown Heights is an exception as it is a modified full pressure service area with no municipally-piped fire flow. The levels of service within the entire Project Area will need to be revisited during later phases of the redevelopment assessment, in accordance with the recommended land use concept.

Existing watermain sizes for the ARP Project Area and the proximity subdivisions is sufficient based on the current levels of service and complies with the current land use.

3 SANITARY SEWER SYSTEM

3.1 EXISTING SANITARY SEWER SYSTEM

The sanitary sewer collection system within the ARP Project Area is provided by two main sewer collection lines, as shown on Figure 3.2.

- Line 1: Is a gravity sanitary sewer located along Ordze Crescent that provides full gravity sanitary servicing for some lots along Ordze Crescent, as well as connections to the existing rural sewage tank effluent pumping (STEP) sewer for other lots within the south of Ordze Park. This sewer collection line also picks up flows from the proximity subdivisions including Balmoral Heights, Fountain Creek Estates and Sherwood Golf and Country Club Estates, with full gravity servicing.

- Line 2: Is a gravity sewer located along Ordze Avenue, within the commercial area south of Wye Road, that provides full gravity servicing for developments within the commercial area south of Wye Road, as well as proximity developments including Wye Road Crossing commercial and Salisbury Village.

Flows from Campbelltown Heights connect to Line 2 at Ridgeway and Salisbury Lane junction point as well as on Ash Street and at the Walmart parking lot. Currently, Campbelltown Heights is serviced by a low-pressure sanitary sewer system.

Line 1 and Line 2 join at Ordze Avenue and Ordze Crescent intersection with the combined flows collected by the South Sub Trunk Relief sewer that runs north along the TUC.

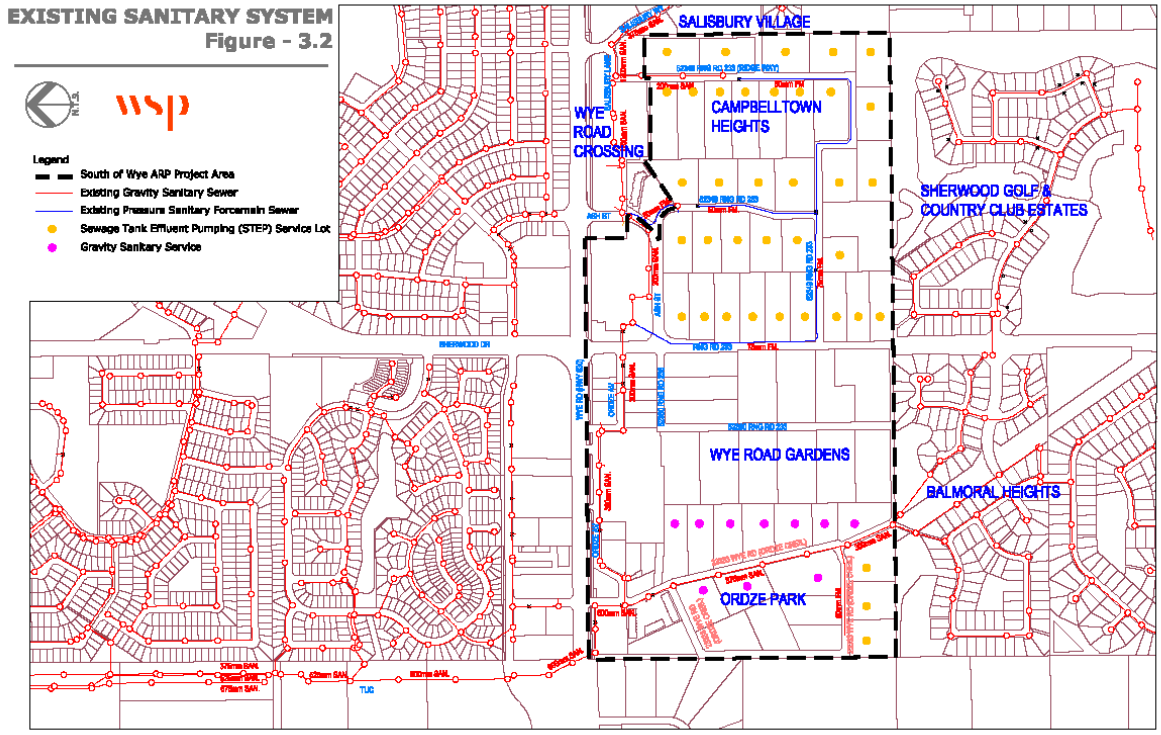


Figure 3.2: Existing Sanitary System

3.2 SANITARY SEWER SYSTEM SUMMARY

WSP conducted an initial sanitary system assessment for the ARP Project Area based on the provided MIKE URBAN model developed by Strathcona County. Two simulation scenarios were investigated including the 4-hour 5-year and 24-hour 25-year design storms. Simulation results and hydraulic analysis of the sanitary system revealed that the existing sanitary system may have some capacity issues within the ARP Project Area, especially in the trunk sewer running north on Ordze Crescent. As the current sanitary system was built

to the standards at the time, it is understandable that the adoption of the new standards can show some deficiencies and limitations. The hydraulic modelling identified no flooding issues within the ARP Project Area. With lower velocity in many pipes in the system, there are concerns about the deposition of solids in the pipes. The feasibility of different improvement and mitigation options can be estimated with further investigations.

4 STORMWATER MANAGEMENT SYSTEM

4.1 EXISTING STORMWATER MANAGEMENT SYSTEM

The stormwater management system within the ARP Project Area consists of a storm sewer servicing the commercial area south of Wye Road, and roadside ditches in the country residential area. Gold Bar Creek historically runs through the ARP Project Area, draining from east to west. An unnamed natural drainage course, which flows from south to north, connects into Gold Bar Creek at 52349 Range Road 233. Flows from Gold Bar Creek are then intercepted by the storm sewer on 52380 Range Road 233, conveyed across Wye Road and finally discharged back to an unnamed tributary of Gold Bar Creek in the TUC. The storm sewers in the ARP Project Area and the drainage course are shown in Figure 4.2.

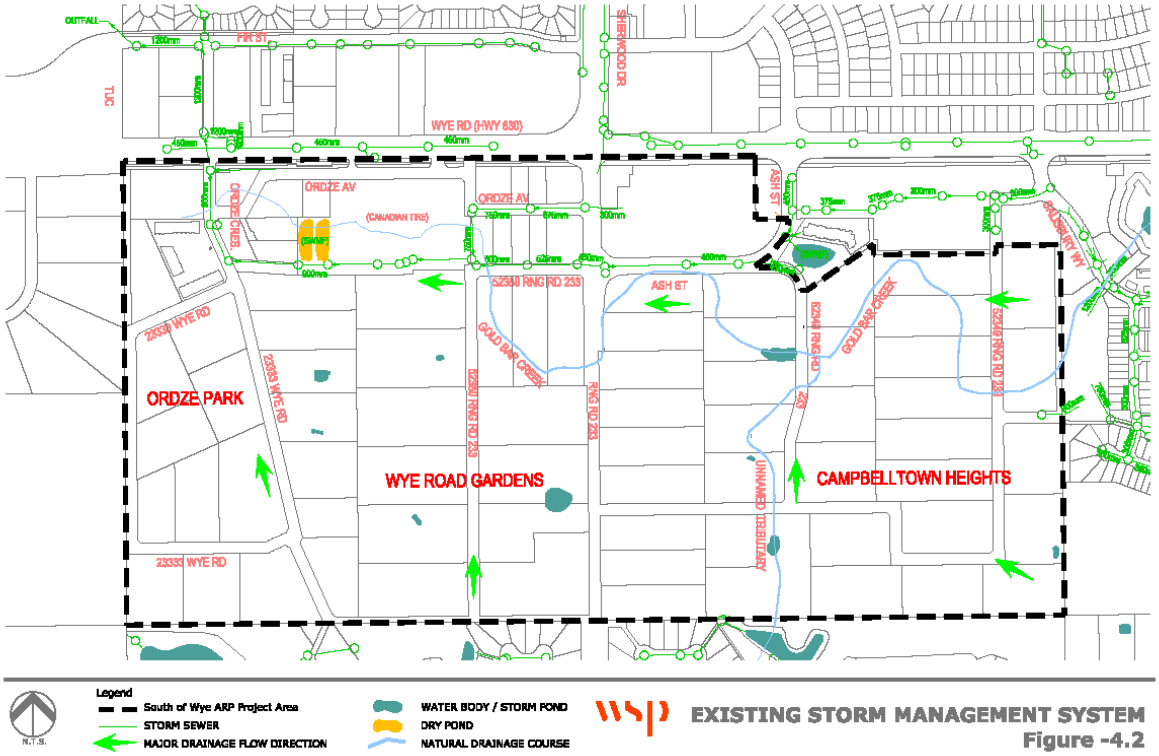


Figure 4.2: Existing Storm Management System

There are two dry ponds located in the western part of the commercial area south of Wye Road, immediately west of the Canadian Tire parking lot, as shown in Figure 4.2. One pond receives runoff from the Canadian Tire site and the second pond acts as a surge pond for the storm sewer immediately south of the pond.

4.2 STORMWATER MANAGEMENT SYSTEM SUMMARY

The onsite stormwater system is typical of country residential developments. Stormwater is collected and conveyed using surficial system elements (natural channels, ditches, and culverts). Cross lot drainage appears to occur, which is commonplace in country residential developments. Furthermore, it is possible that the properties being drained through may be subject to flooding. Although there is no historical information provided for confirmation, this should be investigated in detail prior to new developments taking place. As per Alberta Environment and Parks, when transitioning to more intensive/urban land uses, downstream effects must be accounted for. Solutions for stormwater management will be revisited during later phases, once a recommended land use concept has been established.