

TOWN OF EDSON

BYLAW NO. 2116

A BYLAW OF THE TOWN OF EDSON IN THE PROVINCE OF ALBERTA, PURSUANT TO THE PROVISIONS OF THE MUNICIPAL GOVERNMENT ACT, BEING CHAPTER M26 OF THE STATUTES OF ALBERTA 2000 AND AMENDMENTS THERETO, TO ADOPT THE PARKS IN EDSON AREA STRUCTURE PLAN (2011 HOSPITAL AMENDMENT).

WHEREAS Section 633 of the Municipal Government Act authorizes a Council to adopt an area structure plan to provide a framework for the subdivision and development of land within the municipality;

AND WHEREAS the Council of the Town of Edson requires that such a plan be prepared pursuant to Section 4.1.4 of the Town of Edson Municipal Development Plan Bylaw No. 1864;

AND WHEREAS the Council of the Town of Edson has properly notified all parties in accordance with Section 636 of the Municipal Government Act;

AND WHEREAS, the Council of the Town of Edson has held a public hearing pursuant to Section 692 of the Municipal Government Act after giving notice of it in accordance with 606 of the Municipal Government Act;

NOW THEREFORE the Municipal Council of the Town of Edson duly assembled, hereby enacts as follows:

PART I – PURPOSE

1. That this Bylaw shall be known as the "The Parks in Edson Area Structure Plan (2011 Hospital Amendment) Bylaw" (Part of NW 23-53-17-W5 and Part of SW23-53-17-W5) as shown in attached Schedule "A" which is a part of this document.
2. That this Bylaw shall have force and take effect from the final reading. That The Parks in Edson Area Structure Plan (2011 Hospital Amendment) Bylaw shall provide the framework for future subdivision and development of the lands described herein.

PART II -GENERAL

3. That this Bylaw shall have force and take effect from the final reading thereof.

READ a first time this 11th day of October A.D. 2011.

READ a second time this 1st day of November A.D. 2011.

READ a third time and finally passed this 1st day of November A.D. 2011.



Mayor



Director of Legislative Services



The Parks in Edson
Area Structure Plan
2011 Hospital Amendment

Part of NW $\frac{1}{4}$ Sec. 23, Twp. 53, Rge. 17, W.5M.
&
Part of SW $\frac{1}{4}$ Sec. 23, Twp. 53, Rge. 17, W.5M.

Edson, Alberta

The Parks in Edson - Area Structure Plan

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1.0 EXECUTIVE SUMMARY

The subject area is legally described as part of the NW¼ 23-53-17-5 and part of SW¼ 23-53-17-5, and contains approximately 40.1 hectares.

This Area Structure Plan (ASP) has been prepared as an amendment to the approved 2009 ASP entitled "The Parks in Edson Bylaw 2078." The amendment has been designed to facilitate the inclusion of a new hospital site within southern portions of the original ASP and to surround that site with compatible land uses and traffic patterns, while retaining or enhancing the general character of the original ASP to the extent reasonably possible.

In 2010 and 2011, Alberta Infrastructure took effort to identify a preferred location for a new hospital to serve Edson and area. The residential nature of The Parks in Edson, suitable access to both local roads and highways, and overall site characteristics led to the acquisition and planning of the site identified in this ASP amendment.

In light of the hospital amendment, local servicing has been re-examined. It appears that adequate servicing is available or can be readily made available for both deep utilities (storm and sanitary sewers) and franchise utilities (power, gas, telephone, etc) for the development. Stormwater management will be accomplished by building ponds, and the southern stormwater management pond is to be designed to route post-development runoff and control discharge to Poplar Creek.

This ASP is being submitted by Alberta Infrastructure with the support of 1348374 Alberta Ltd. and is intended to support development of both parcels. The ASP is meant to provide certainty while retaining enough flexibility for reasonable changes. The ASP should provide a context in which to view the development of the above-mentioned land and municipal infrastructure in the area.

The Parks in Edson ASP remains applicable in all respects, except where specifically amended by this document.

2.0 INTRODUCTION

2.1. Purpose and Background

The primary purpose of this ASP amendment is to facilitate the development of a hospital in Edson within The Parks in Edson ASP. Plan amendments include a preferred location for a hospital and re-design of surrounding lands to support the hospital site.

2.2. Policy Framework

The subject area is under the jurisdiction of the Town of Edson. This Plan must be consistent with the Land Use Bylaw (LUB) No. 2070 and the Municipal Development Plan (MDP) Bylaw No. 1864.

2.3. Plan Scope

The scope of the Plan includes all the lands bounded by the future 6th Avenue to the north, 40th Street to the west, Aspen industrial to the east, and a Canadian National railway to the south.

The Plan encompasses portions of the NW and SW quarters of Section 23, Township 53, Range 17, West of the 5th Meridian, and contains approximately 40.1 hectares.

3.0 POLICY FRAMEWORK

3.1. Conformity to the Municipal Development Plan (MDP)

The Town of Edson Municipal Development Plan (MDP) identifies this land as part of "Residential Expansion Area 1" and shows the future predominant use of this area to be residential and industrial. The MDP creates a balance between providing for growth and maintaining the community atmosphere that attracts people to the town.

The MDP strives to enhance the quality of life for residents, sustain economic viability of the community, and minimize the undesirable effects of change. Public and quasi-public uses such as hospitals, churches and schools are typically considered to be an integral part of residential districts and are also considered allowable within industrial areas. There is a typical discrepancy between the Land Use District map in the LUB (which identifies this area as UR) and Figure 4.1 of the MDP (which identifies this area as residential and industrial). This discrepancy will be remedied when the lands are subdivided and rezoned for development.

This submission alters the original Plan by including a hospital site but continues to provide a mix of residential, parks, trails and natural areas, as well as some industrial land.

3.2. Conformity to the Land Use Bylaw (LUB)

The Town of Edson LUB provides the general framework for implementing this Plan, and the ASP must conform to it. The LUB is specific and binding, and must be considered in the detailed level of planning that occurs in the subdivision and development permit processes.

The proposed land uses will conform to the LUB and will specify the creation of residential and industrial areas. Land will also be designated to be set aside for parks and open space.

4.0 EXISTING SITE CHARACTERISTICS

4.1. Legal Description and Ownership

The lands included in The Parks are owned by two different landholders. The applicable part of NW 23-53-17-W5 is owned by 1348374 Alberta Ltd. and the portion of SW 23-53-17-W5 in the

The Parks in Edson - Area Structure Plan

Plan is owned by Alberta Infrastructure. It is anticipated that land swaps will occur to consolidate development sites. A right-of-way for a municipal sanitary sewer line lies on the south end of the Plan area.

4.2. Land Use

At the present time, the land is undeveloped. It was previously used for agricultural and interim industrial purposes. One dwelling is located in the central-west side of the property.

4.3. Land Form and Vegetation

The topography of the site is provided in Appendix A, Figure 2.

The land generally slopes from the north to the south, with a maximum drop of up to approximately 12 metres from 6th Avenue to Poplar Creek. This parcel is also part of the watershed for Poplar Creek, which crosses this ASP in the southwest corner of the development.

There is a significant amount of vegetation on the site. The Plan area is treed, excepting: a dwelling site, a clearing in the northwest portion, and in the location of an industrial operator near Poplar Creek. Remaining site vegetation includes native and cultivated grasses.

4.4. Transportation and Access

The ASP area is located adjacent to the 6th Avenue right-of-way and existing 40th Street in Edson, and a proposed industrial pocket lies at the end of Aspen Drive to the east.

The hospital will optimally take access off of both 6th Avenue and 40th Street. These accesses should ensure hospital access in the event of a temporary closure of either access.

Roads servicing the Plan area should meet 40th Street at existing intersections, including 4th Avenue and 6th Avenue, in order to provide the optimum circumstances for traffic movement.

4.5. Geotechnical Considerations

A preliminary geotechnical assessment (PGA) was performed for the parcel owned by 1348374 Alberta Ltd. by EBA Engineering Consulting Ltd. The results of that testing are summarized in the original The Parks in Edson ASP. Additional geotechnical testing for the hospital site has not raised any new subsurface concerns.

4.6. Servicing & Infrastructure

Engineering considerations are addressed in Appendix B of this amendment. The existing servicing and infrastructure conditions have not changed since the original ASP.

5.0 PROPOSED DEVELOPMENT

Input regarding the planning concept has been received from the Town's Administration. The following are the development concepts as well as servicing concepts, including stormwater management, for the proposed development.

5.1. Development Concept

5.1.1. Hospital Land Use

- The hospital site has been designed to take advantage of the future high-volume corner of 6th Avenue and 40th Street. The hospital will seek to be on high ground with attractive view sheds, treed natural buffers, good drainage, and good access to sewer and water.
- Land uses surrounding the hospital will be controlled in part through ownership and in part through planning. Residential uses are the generally preferred neighbouring uses.
- The hospital should be located so as to allow for the possibility of a future helipad and appropriate flight path, if determined necessary.
- Accessibility for the hospital should be considered through pedestrian connections in order to allow for multi-modal transportation to the site, particularly for staff.
- The lands south of the hospital are presented as a "shadow plan" in order to allow for additional compatible development in the future. It is expected that these lands will be utilized for future hospital-related development or medium-density residential use. As indicated, development of these lands should be subject to additional review through an Outline Plan process. When the use of this area is reviewed, it may be necessary to amend the MDP which currently designates the land as industrial. However, until another specific use is actually proposed for these lands, it may be considered that there is no inconsistency between this ASP and the MDP. Services to the current site will be sized to allow for additional capacity to cover the shadow plan area.

5.1.2. Residential Land Use

- A variety of land use types is desirable for the Town. The Parks in Edson to the north will house a variety of low- to high-density uses. The lands east of the hospital should be considered for high-density development in order to maximize the available pocket.
- Once road alignments are settled, it may be worthwhile to reconfigure the residential pocket via road closures and land swaps at the discretion of the Town of Edson.

The Parks in Edson - Area Structure Plan

5.1.3. *Industrial Land Use*

- Industrial and commercial lands have been reduced in order to appropriately buffer the hospital from incompatible activity.
- Industrial traffic is to be physically separated from residential traffic.
- Industrial uses will be used in part to buffer the railway from residential lands.
- Industrial lands should have a treed buffer surrounding them to the north and west.
- These considerations are summarized in Appendix A, Figure 3.

5.2. **Land Use and Density**

A Land Use Plan (Appendix A, Figure 4) has been prepared for The Parks. It summarizes the proposed planning, including roads, parkland, residential areas, and an industrial park.

5.3. **Green Space**

Significant portions of wooded areas, though not all, will be preserved through park reserves and inclusion within the hospital site. A significant parkland buffer is necessary between residential areas and industrial parcels.

Pedestrian connections will be located through the site to adjoining lands such as the Weyerhaeuser buffer, the future Parks in Edson, and the existing walkways in developed portions of Edson. Open space in the hospital site may be used for public access, at the hospital's discretion.

The stormwater management facility should be designed to ensure public access and open space exists around the ponds and Poplar Creek.

5.4. **Population**

The proposed amendment will reduce the total residential population in the entire "Parks in Edson" ASP lands from the original of 3,425 people, including 1,069 school children, to an estimated 3,342 people and 1,043 school children. This number is a rough estimate broadly considering the changes in uses and density proposed in the ASP, but does not consider the possibility of additional population in the shadow plan area, which will be deferred to future study.

6.0 SUSTAINABILITY

The hospital design will target LEED Silver standards. Portions of the treed lands surrounding the site will be preserved in order to create a calm, healthy site plan. The hospital grounds and building should be interpreted as a place of health and healing, in order to create a pleasant environment for patients and visitors and a healthy workspace for staff.

The Plan amendment ensures multi-purpose trails will connect people within the development and also will provide connections to the Town's existing trail network. The network will connect to the remainder of the Parks in Edson ASP, the large parcel owned by Weyerhaeuser, and Public Utility Lots with residential ponds will be publically accessible.

Large areas are to be set aside for Environmental and Municipal Reserve, Public Utility Lots, and Community Services to reduce hard surfaced areas.

Stormwater management facilities are to provide detention for 1:100 year storms, releasing water to Poplar Creek at a pre-development flow rate and preserving the existing water shed.

7.0 TRANSPORTATION

Access to the hospital site will be from one new entrance along 40th Street (to be aligned with 4th Avenue) and one entrance off of an extension to 6th Avenue (also aligned as an intersection northbound into the remainder of The Parks in Edson). The spacing for these access points meets appropriate transportation guidelines. Ensured access (emergency route) for fire and ambulance trucks has also been taken into account within the design concept.

Access to the industrial area will be from Aspen Drive only. This is to ensure that industrial traffic does not access residential areas. The total length of the Aspen Drive cul-de-sac roadway has been shortened from the distance originally described in the first Parks in Edson ASP.

The road cross-sections and pavement structure will be as per the Town's standards. Ultimately left turn bays will be required at all intersections on 40th Street; each bay should be constructed coincidentally with whatever land development is using the access point. Along 6th Avenue, turning bays will not be required. Most roads will have typical urban cross-sections with curb and gutter. 40th Street may remain rural in the initial stages; the industrial cul-de-sac at the south end of the Plan area will likely remain rural. The roads are shown in Appendix A, Figure 5.

A Traffic Impact Assessment (TIA) will be provided for the Plan lands. At the time of this writing, the TIA identifies the intersection of 6th Avenue and 40th Street as requiring improvements. A roundabout is recommended because it provides the lowest delays and best suits the skewed nature of the intersection. Any improvements would attempt to minimize the amount of land required from adjacent owners by maximizing use of: existing rights-of-way, previously anticipated dedications, and the hospital site. In any scenario, a small corner cut will be required from the land to the northeast of the intersection to address intersection improvements.

The Parks in Edson - Area Structure Plan

Highway 748 will require upgrades at the 40th Street and 25th Street intersections due to the ASP generated traffic. The intersection involving Highway 16 and 2nd Avenue requires upgrades to address existing operational problems which will be exacerbated as the ASP builds out. However, the intersection configuration is awkward and an in-depth study is required to find an appropriate solution. The TIA, to be submitted under separate cover, identifies the nature of the problems and some possible (but no preferred) solutions. Because the problem is pre-existing, it is not easily solved by standard solutions.

The TIA also identifies improvements for active transportation users such as pedestrians and cyclists, allowing these users reasonable access to the hospital. Active transportation will be encouraged to improve citizens' health and to reduce their reliance on automobiles.

Parking for the hospital primarily will be on site. Parking will not be allowed on 40th Street but may be permitted on 6th Avenue, at the discretion of the Town of Edson.

8.0 UTILITY SERVICES

Utility and engineering considerations will be addressed in the Engineering Brief attached as Appendix B of this document.

9.0 PHASING AND DEVELOPMENT CHARGES

The first phase of the development lands is intended to be the hospital site, including construction of 6th Avenue to the easternmost hospital entrance. Other phases will likely occur subsequent to development of the hospital, based on road construction.

The development pocket to the south of the hospital should be interpreted as a shadow plan, and may require more detailed Outline Plans prior to development. These phases will remain uncertain until the full requirements of the hospital are determined.

The industrial areas have the ability to be developed independently of the residential areas, and may be considered a separate phase of the project.

Stormwater management on the site is a prime consideration. Although the ponds will ultimately be linked together, they can be designed so that they will function independently of each other for a certain period of time to allow separate phasing of the two areas.

All off-site costs directly associated with development of the Plan area will be recovered by the Town through development levies in a manner to be specified in development agreements required as a condition of subdivision or development approvals.

At the time of development or subdivision, the owners of the land being developed or subdivided will be required to pay their share of costs or receive fair compensation for their required contribution towards the public lands and infrastructure in the area. Where an existing lot contributes less than the 10% of the land required for municipal reserves, the

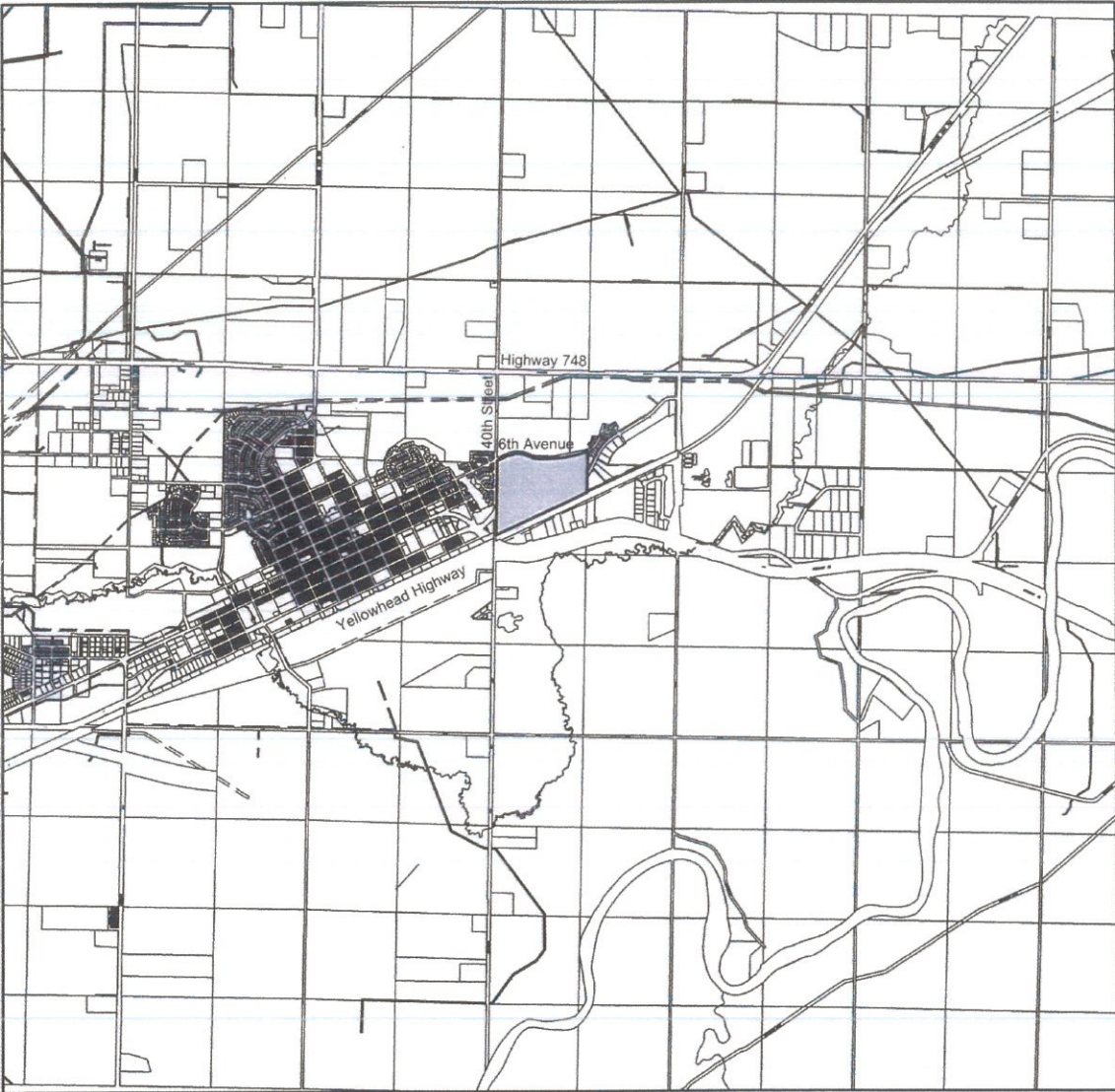
The Parks in Edson - Area Structure Plan

balance will be required as a cash payment into the Town's municipal reserve fund; and where a lot contributes more than the required 10% of land for municipal reserve, the owner will be compensated with a payment from the municipal reserve fund.

Due to the Crown's authority to subdivide without reserve dedications, some dedications by the Crown may simply be through consultation with The Town of Edson.

10.0 NOTES

The concept drawings do not show the specific dimensions of required engineered structures and systems. These are subject to the detailed design as well as the minimum sizes stipulated by the Town of Edson. The Town's engineering standards are to be followed in the detailed design for the development.



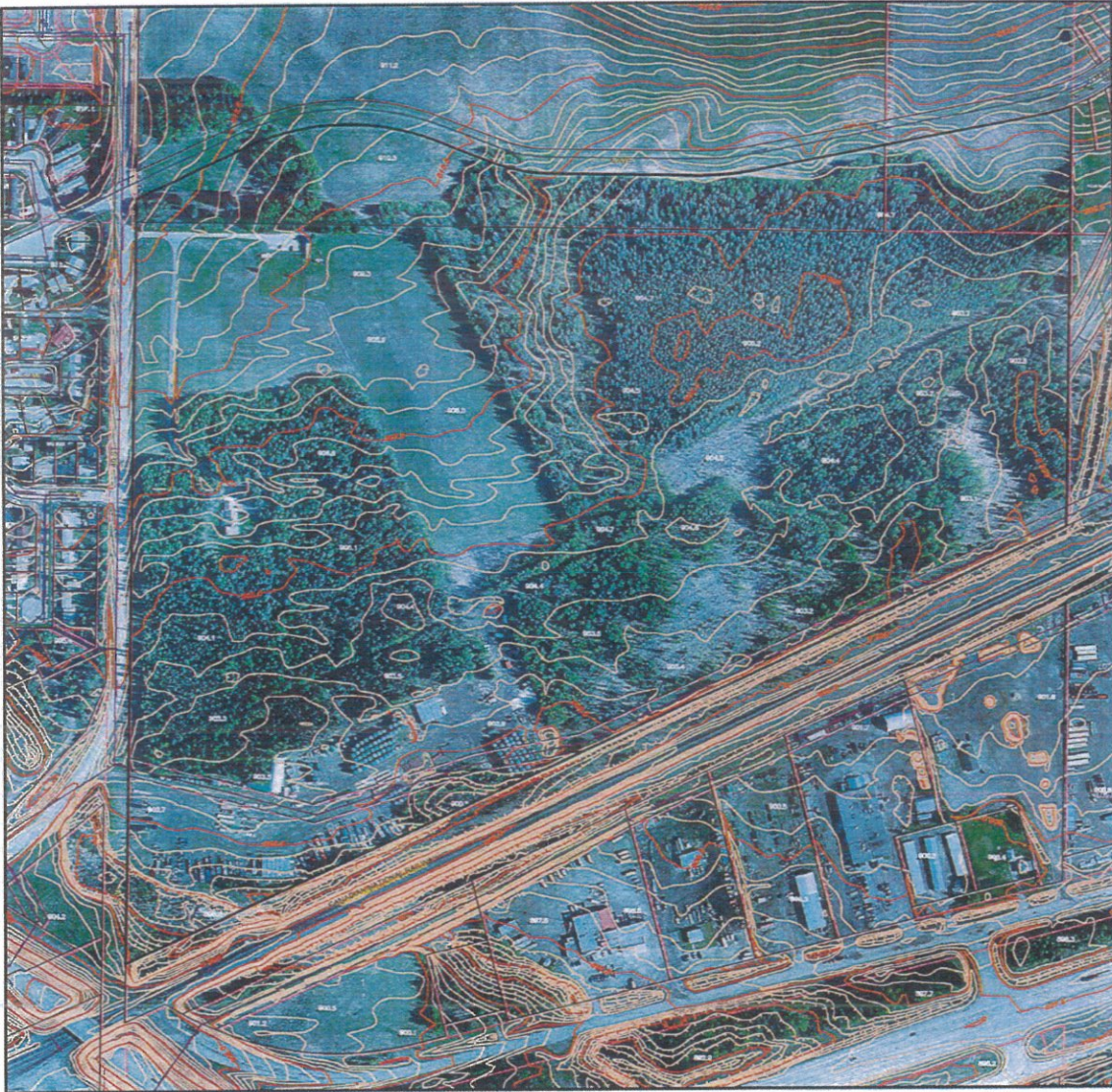
Appendix A



The Parks In Edson
W 1/2 23-53-17-5

Figure 1
Location Plan

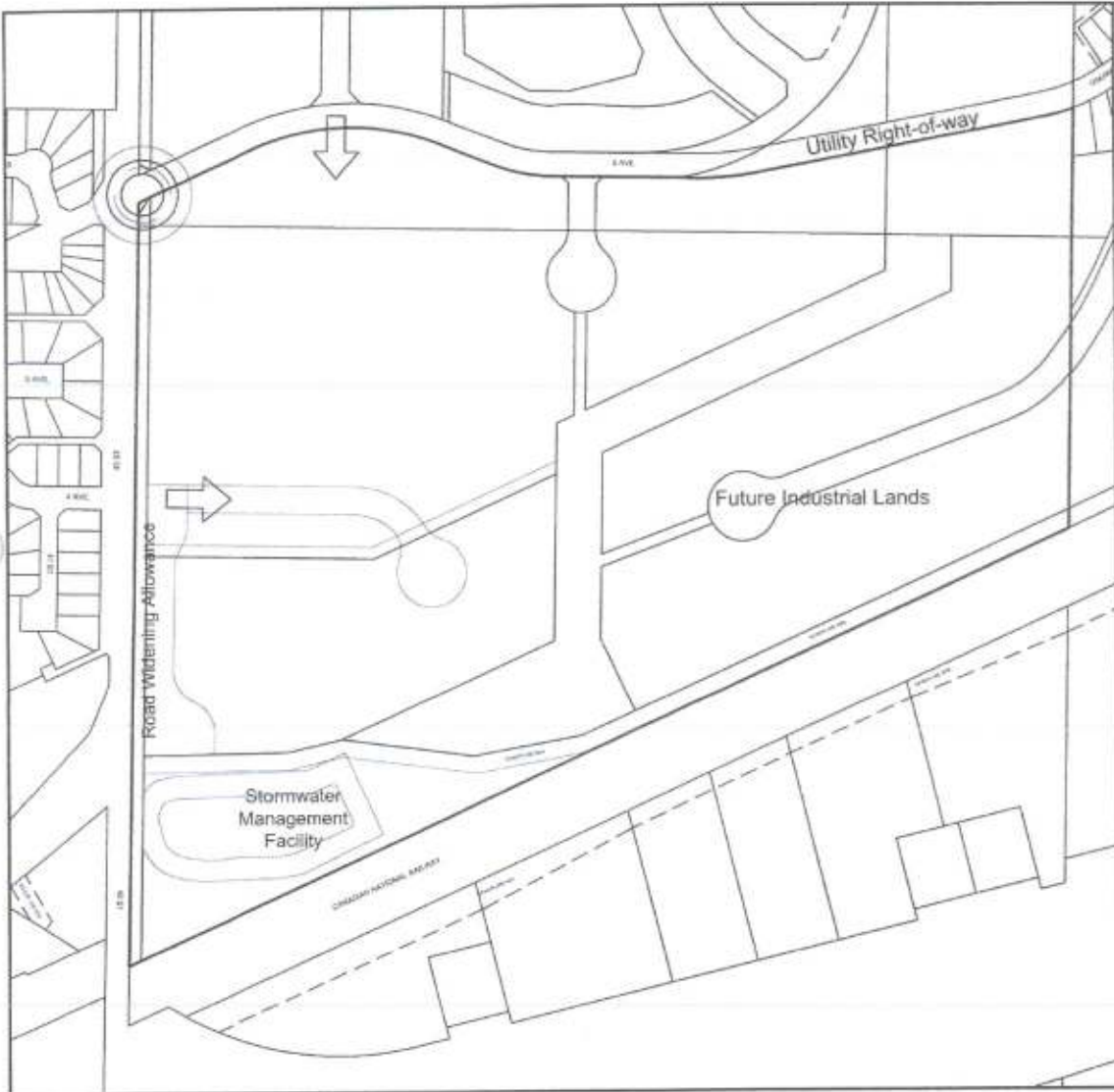
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The Parks In Edson
W 1/2 23-53-17-5

Figure 2
Topography

July 27, 2011

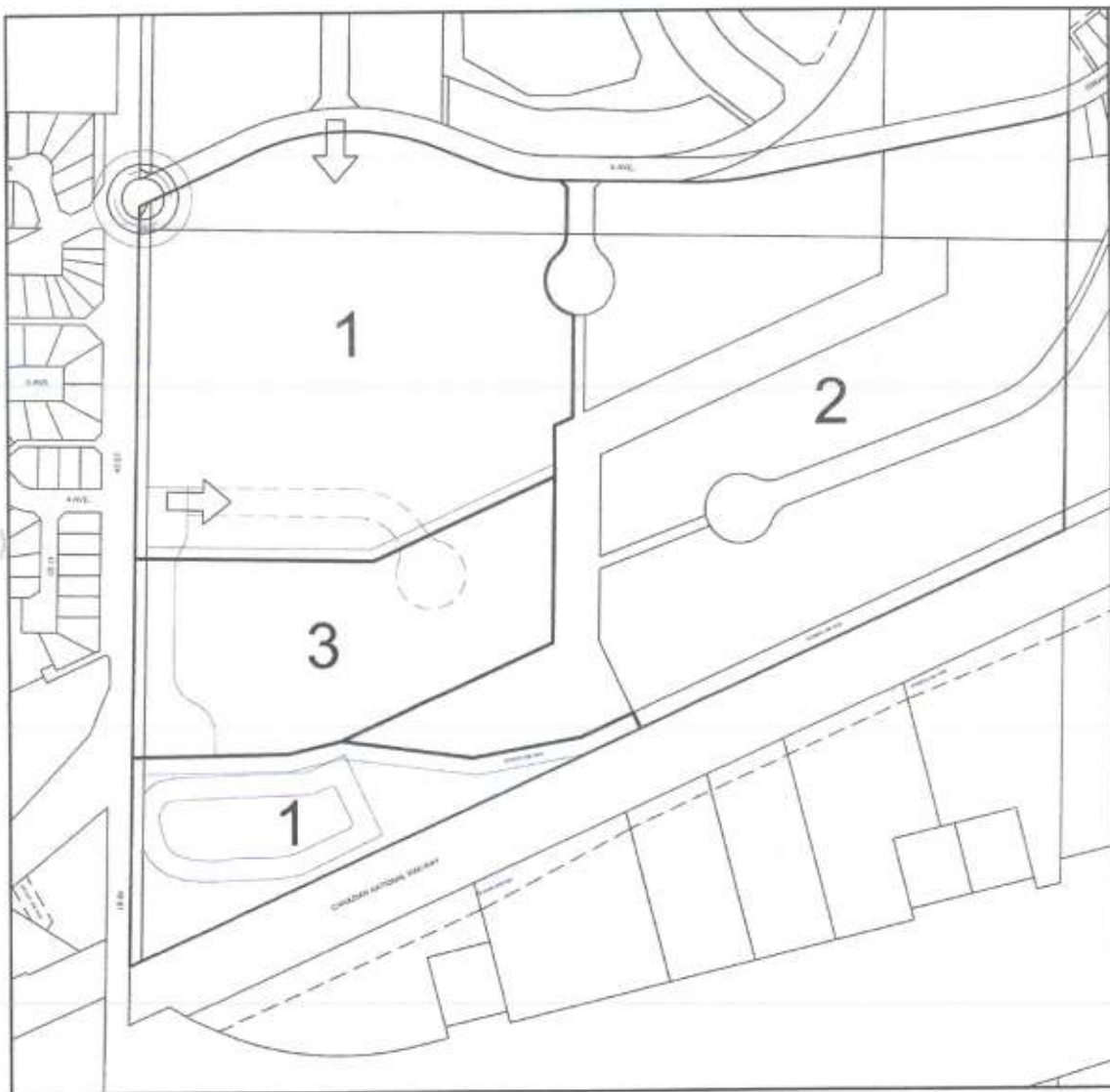


The Parks In Edson
W 1/2 23-53-17-5

Figure 3
Development
Constraints

August 04, 2011





The Parks In Edson
W 1/2 23-53-17-5

Figure 6
Phasing

August 04, 2011

The Parks in Edson and Proposed Healthcare Facility

1.0 Municipal Servicing

1.1 Water Servicing

1.1.1 Introduction

Alberta Infrastructure is looking to develop a healthcare facility south of 6th Avenue, east of 40th Street in Edson, Alberta. The facility will provide 78 beds, with 130 staff, 200 patient visits per day and an estimated 30 visitors per day.

The following outlines a water distribution system servicing scheme for The Parks in Edson proposed subdivision development, and an initial stage of the water system required to service the proposed healthcare facility development, anticipated to be the first stage of development within the subdivision. The proposed water distribution system servicing concept must be cost-effective, meet the needs of Alberta Infrastructure, and can be integrated into the Town of Edson's existing and planned water distribution systems.

1.1.2 Background

Edson's Existing Water Supply, Treatment and Distribution System

The Town retained a consultant (AECOM) to undertake a "Water Distribution System Analysis", 2005, and a "Municipal Servicing Plan Update", 2010. These studies were undertaken to update the Town's 1982 Municipal Servicing Plan. These studies; assess the Town's existing water supply, treatment, storage and distribution systems; make recommendations for upgrades; and identify system expansions required to service future development. The Town's system is supplied from up to 12 groundwater wells in which only 7 are currently operating. The wells supply four storage reservoirs that feed a distribution system in two pressure zones.

The existing system was found to be generally adequate, but not able to provide adequate fire flows to some commercial and industrial sites. Various system improvements were recommended in the 2010 report to improve the system's capability to provide adequate fire flow protection for existing development conditions. Cost estimates for these improvements were not provided. \$77 million in improvements and system expansions were identified to service growth to the year 2025.

The nearest existing water mains to the proposed healthcare facility site include:

- a 350 mm main running east-west on the 6th Avenue ROW, and
- a 150 mm main stub immediately east of the intersection of 4th Avenue and 41st Street.

The Parks in Edson Proposed Subdivision Development

Planning is currently underway for a proposed subdivision to be called The Parks in Edson. The 100 ha subdivision is shown on Figure 1, and is generally located on NW¼ 23-53-17-W5 and the north portion of SW¼ 23-53-17-W5, which are east of 40 Street and north of the CNR to the Town boundary. An Area Structure Plan (ASP) was prepared for the overall parcel by the owner of the south half of the NW¼ 23-53-17-W5 (1348374 Alberta Ltd.) in July 2009 to facilitate the development of the lands owned by 1348374 Alberta Ltd. The inclusion of servicing concepts for the adjacent lands in the ASP was intended to be conceptual in nature to provide context in which to review the development of the above mentioned lands and the municipal infrastructure in the area. The ASP is currently being revised and updated to recognize the proposed land uses in the SW¼ 23-53-17-W5.

The Parks in Edson and Proposed Healthcare Facility Municipal Servicing

The proposed healthcare facility is to be located on approximately an 11.4 ha parcel, south of 6 Avenue and east of 40 Street. The proposed land use plan for The Parks in Edson subdivision, including the proposed healthcare facility, is shown on Figure 1.

The proposed healthcare facility is expected to be the first development within The Parks in Edson subdivision.

1.1.3 Design Considerations

Water Consumption Rates

Water consumption rates for the proposed healthcare facility are estimated as follows:

Units	Unit Rates	Demand
78 beds	1500 L/bed/day	1.36 L/s
130 staff	60 L/person/day	0.09 L/s
	ADD :	1.45 L/s
	MDD (1.5 x ADD) :	2.2 L/s
	PHD (2.0 x ADD) :	3.0 L/s

where: ADD – Average Day Demand, MDD – Maximum Day Demand, PHD – Peak Hour Demand

Fire Flows

The 2010 Municipal Servicing Plan Update calls for 130 L/s fire flow to be provided to institutional facilities. This value is relatively low in comparison to municipal standards in other jurisdictions, some examples of which are as follows:

Municipality	Institutional Fire Flow Requirement (L/s)	Comments
Edson	130	
Edmonton	300	
Westlock	114 – 227	227 recommended for larger facilities
Beaumont	180	
St. Albert	114 – 227	
Grande Prairie	225	
Fort Saskatchewan	114 – 227	

It should be noted that most communities base their fire flow requirements upon the Insurer's Advisory organization (IAO) standards. It can also be noted that the IAO standards allow a 50% reduction in required fire flows to buildings that have sprinkler systems. As the proposed healthcare facility is to be designed with a sprinkler system, the Edson fire flow standard of 130 L/s is in-line with the level of service provided in other communities.

Security of Supply

'Security of supply' is a consideration for facilities in which a water supply system disruption could have significant impacts. A single connection to the municipal water distribution system can pose a risk of supply disruption should a disruption occur from that source. For the proposed healthcare facility, two connections to the municipal system are recommended, with each connection to a different part of the system. Therefore, in the event of a system disruption, water can be supplied from the second connection, reducing the risk of a disruption to water supply to the facility.

The Parks in Edson and Proposed Healthcare Facility Municipal Servicing

Capacity of Municipal System

The performance capabilities of the existing municipal distribution system to service the healthcare facility were determined from the 2010 Municipal Servicing Plan Update report as follows:

- system pressures during PHD conditions were 544 KPa and 509 KPa at the above two proposed connection points – well above the design minimum of 280 KPa;
- available flow from the 350 mm main during MDD + FF conditions, with a minimum system pressure of 140 KPa, is 238 L/s – well above the 130 L/s required; and
- available flow from the 150 mm main during MDD + FF conditions, with a minimum system pressure of 140 KPa, is 145 L/s – also above the 130 L/s required.

Note that the above data assumed a single connection to either the 150 mm main or the 350 mm main with the service pipe being 250 mm diameter. The water services will be looped through the site to provide service redundancy and an uninterrupted service to the healthcare facility.

1.1.4 Proposed Design Concept

The Parks in Edson Subdivision

A water distribution system servicing concept for the proposed Parks in Edson subdivision development is shown on Figure 2. For portions of the subdivision north of 6th Avenue, looped systems are proposed with connections to the existing Town system along 6th Avenue, and at 18th Avenue and 40th Street, and are reflective of the previous water distribution system planning developed by Development Solutions on behalf of the owner of the south half of NW¼ 23-53-17-W5 (1348374 Alberta Ltd.) in 2009/10. Looped systems south of 6th Avenue are reflective of the proposed developments in that area, and of long range planning outlined in the 2010 Municipal Servicing Plan Update report.

Stage 1 – The Proposed Healthcare Facility

Two connections to the municipal water distribution system are proposed for the healthcare facility (Figure 3):

- one connection to the existing 350 mm main on 6th Avenue, and
- one connection to the existing 150 mm watermain stub immediately east of 41st Street at 4th Avenue.

Approximately 95 m of off-site main will be required on 4th Avenue to connect to the existing 150 mm main near 41st Street. 250 mm diameter mains are recommended for these connections to minimize head loss. The on-site healthcare facility distribution system will need to be designed to be fully serviced by either of the two off-site connections should a disruption occur on one connection.

These two connections are to different parts of the Town's distribution system, which will minimize the risk of a disturbance in supply to the hospital should supply be disrupted to any one of the connection points. As discussed in the previous section, either connection in isolation can provide the projected peak hour demand flows and the maximum day demand plus fire flow needs of the proposed facility. Together, the two connections would provide a strong and secure water supply.

The Parks in Edson and Proposed Healthcare Facility Municipal Servicing

1.2 Wastewater Servicing

1.2.1 Introduction

Alberta Infrastructure is looking to develop a healthcare facility south of 6th Avenue, east of 40th in Edson, Alberta. The facility will provide 78 beds, with 130 staff, 200 patient visits per day and an estimated 30 visitors per day.

The following outlines a wastewater servicing scheme for The Parks in Edson proposed subdivision development, and an initial stage of the wastewater system required to service the proposed healthcare development, anticipated to be the first stage of development within the subdivision. The proposed wastewater servicing concept must be cost-effective, meet the needs of Alberta Infrastructure, and can be integrated into the Town of Edson's existing and planned wastewater systems.

1.2.2 Background

Edson's Existing Wastewater Collection System

The Town retained a consultant (AECOM) to undertake a "Municipal Servicing Plan Update", 2010, updating the 1982 Municipal Servicing Plan. This study: assessed the Town's existing wastewater collection systems; makes recommendations for upgrades; and identifies system expansions required to service future development. The Town's system is comprised of gravity sewers draining to lagoons at the east end of Town, which discharge treated water to the McLeod River. \$29 million in upgrades were identified.

The nearest existing wastewater sewers to the proposed healthcare facility site include:

- a 375 mm sewer running adjacent to the site, south on 40th Street; and
- a 525 mm sewer running east from 40th Street along the north side of the CNR line.

The Parks in Edson Proposed Subdivision Development

Planning is currently underway for a proposed subdivision to be called The Parks in Edson. The 100 ha subdivision is shown on Figure 1, and is generally located on NW¼ 23-53-17-W5 and the north portion of SW¼ 23-53-17-W5, which are east of 40 Street and north of the CNR to the Town boundary. An Area Structure Plan (ASP) was prepared for the overall parcel by the owner of the south half of the NW¼ 23-53-17-W5 (1348374 Alberta Ltd.) in July 2009 to facilitate the development of the lands owned by 1348374 Alberta Ltd. The inclusion of servicing concepts for the adjacent lands in the ASP was intended to be conceptual in nature to provide context in which to review the development of the above mentioned lands and the municipal infrastructure in the area. The ASP is currently being revised and updated to recognize the proposed land uses in the SW¼ 23-53-17-W5.

The proposed healthcare facility is to be located on approximately an 11.4 ha parcel, south of 6th Avenue and east of 40th Street. A potential land use plan for The Parks in Edson subdivision, including the proposed healthcare facility, is shown on Figure 1.

The proposed healthcare facility is expected to be the first development within The Parks in Edson subdivision.

**The Parks in Edson and Proposed Healthcare Facility
Municipal Servicing**

1.2.3 Design Considerations

Flow Estimate

Wastewater flow rates for the proposed healthcare facility were estimated as follows:

Units	Unit Rates	Flow
Dry Weather Flows		
78 beds	1500 L/bed/day	1.36 L/s
130 staff	60 L/person/day	0.09 L/s
	Average Dry Day Flow:	1.45 L/s
P.F. = 2.0	Peak Dry Day Flow:	2.90 L/s
Wet Weather Flows		
11.4 ha	I/I @ 0.28 L/s/ha	3.19 L/s
2 sag manholes	0.4 L/s per sag MH	0.80 L/s
	Peak Wet Weather Flow	6.9 L/s

Site Topography

The proposed healthcare facility site slopes from north to south. As a result, gravity servicing would generally be off the south end of the site, either into the 375 mm sewer on 40th St. south of 4th Avenue, or south to the 525 mm sewer along the CNR line.

Capacity of Municipal System

One potential location in the existing system that the proposed healthcare development could connect into is manhole N459 on the existing 375 mm sewer running south on 40th Street, just south of 4th Avenue. From the 2010 Servicing Plan Update report, the capacities and current utilization of the two downstream lengths of existing 375 mm sewer on 40th Street are:

From MH	To MH	Length (m)	Diameter (mm)	Slope (%)	Capacity (L/s)	Existing Flow (L/s)
N459	N322	100	375	1.42	207	0
N322	N321	100	375	0.61	137	50

Note that the above estimated existing flows are based on a worst case wet weather scenario involving a 1:25 year, 4 hour design storm event. From this information it is apparent that the existing sewer system is currently underutilized, and has capacity to convey the estimated design flow of 6.9 L/s from the proposed healthcare facility. In addition, the 2010 Servicing Plan Update report identified the proposed healthcare site as Area 3, expected to develop at the 2025 year horizon, and identified to be serviced by the existing 375 mm 40th Street sewer.

A second potential location that the proposed healthcare facility could connect to is the existing 525 mm sewer running east from 40th Street. The capacities and current utilization of several downstream lengths of sewer on this line are:

From MH	To MH	Length (m)	Diameter (mm)	Slope (%)	Capacity (L/s)	Existing Flow (L/s)
N321	N487	177	525	0.08	122	170
N487	N488	144	525	0.18	182	170
N488	N489	94	525	0.18	182	170
N489	N490	90	525	0.18	182	160
N490	N491	151	525	0.18	182	160

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Note that the above estimated existing flows are based on a worst case wet weather scenario involving a 1:25 year, 4 hour design storm event. It should be noted that the 525 mm pipe between MH N321 and MH N487 was identified in the 2010 Servicing Plan Update for upsizing to a 675 mm, with an increased capacity of 238 L/s. From the above data, it can be concluded that the 525 mm existing sewer system running east from 40th Street has capacity to convey the additional design flows expected from the proposed healthcare development. This conclusion was supported in the 2010 Servicing Plan Update, as no additional upgrades were identified for this sewer for the future development scenarios investigated.

1.2.4 Proposed Design Concept

The Parks in Edson Subdivision

A wastewater sewer system servicing concept for the proposed Parks in Edson subdivision development is shown on Figure 4. A gravity system is proposed to drain the majority of the subdivision south to the existing 525 mm Town sewer running east in the north ditch of the CNR. This servicing scheme is driven by the site ground contour elevations in relation to the proposed roadway network and differs somewhat from the previous ASP and Master Plan documents that proposed connecting areas north of 6th Avenue to the 375 mm sewer on 40th Street (a gravity connection to 40th Street was determined to not be feasible).

Stage 1 – The Proposed Healthcare Facility

It is proposed that the healthcare facility wastewater collection system is discharged into manhole N459 on the existing 375 mm sewer running south on 40th Street (Figure 5), as the lowest cost alternative. The existing municipal sewer system currently has capacity to accept discharges expected from the proposed healthcare facility development, and the Town's 2010 Municipal Servicing Plan Update report also identifies this connection for future development at this site.

The Parks in Edson and Proposed Healthcare Facility Municipal Servicing

1.3 Stormwater Management

1.3.1 Introduction

Alberta Infrastructure is looking to develop a healthcare facility south of 6th Avenue, east of 40th in Edson, Alberta. The facility will provide 78 beds, with 130 staff, 200 patient visits per day and an estimated 30 visitors per day. The design of the site is currently being developed; however, current planning has the building complex located centrally on about an 11.4 hectare parcel, with parking to the north and a service road with some parking to the south.

The following outlines a stormwater servicing scheme for The Parks in Edson proposed subdivision development, and an initial stage of the stormwater system required to service the proposed healthcare facility development, anticipated to be the first stage of development within the subdivision. The proposed stormwater servicing concept must be cost-effective, environmentally sustainable, meet the needs of Alberta Infrastructure, meet the requirements of Alberta Environment and can be integrated into the Town of Edson's existing and planned stormwater drainage systems.

1.3.2 Background

Edson's Existing Stormwater Drainage System

The Town retained a consultant (AECOM) to undertake a "Municipal Servicing Plan Update", 2010, updating the 2005 Stormwater Management Plan and the 1982 Municipal Servicing Plan. This study: assessed the Town's existing storm drainage systems; makes recommendations for upgrades; and identifies system expansions and storage ponds required to service future development. Stormwater management facilities with controlled release rates were identified for all future development areas. A maximum release rate of 9 L/s/ha was identified for all future SWM facilities discharging into Poplar Creek. \$25 million in system upgrades were identified, along with \$42 million in future stormwater management facilities.

The Parks in Edson Proposed Subdivision Development

Planning is currently underway for a proposed subdivision to be called The Parks in Edson. The 100 ha subdivision is shown on Figure 1, and is generally located on NW¼ 23-53-17-W5 and the north portion of SW¼ 23-53-17-W5, which are east of 40 Street and north of the CNR to the Town boundary. An Area Structure Plan (ASP) was prepared for the overall parcel by the owner of the south half of the NW¼ 23-53-17-W5 (1348374 Alberta Ltd.) in July 2009 to facilitate the development of the lands owned by 1348374 Alberta Ltd. The inclusion of servicing concepts for the adjacent lands in the ASP was intended to be conceptual in nature to provide context in which to review the development of the above mentioned lands and the municipal infrastructure in the area. The ASP is currently being revised and updated to recognize the proposed land uses in the SW¼ 23-53-17-W5.

The proposed healthcare facility is to be located on approximately an 11.4 ha parcel, south of 6th Avenue and east of 40th Street. The proposed land use plan for The Parks in Edson subdivision, including the proposed healthcare facility, is shown on Figure 1.

The proposed healthcare facility is expected to be the first development within The Parks in Edson subdivision.

1.3.3 Design Considerations

Provincial Requirements

It is recognized that increased runoff quantities and reduced runoff quality result from urbanization. As a result, Alberta Environment requires all new developments in the Province to implement measures to control both the quantity and quality of site runoff for purposes of protecting downstream ecosystems.

The Parks in Edson and Proposed Healthcare Facility Municipal Servicing

Runoff quantities must be controlled to predevelopment levels for all design storm events up to the 1:100 year event. Appropriate measures are required to be taken to treat runoff to achieve reasonable water quality. Best Management Practices (BMPs), Low Impact Development (LID) stormwater quality control measures and multi-barrier approaches are encouraged. In addition, Alberta Environment has identified the following water quality enhancement requirement as a means of establishing minimum measures for each site:

- 85% removal of particles 75 microns in size or larger

South SWM Facility Live Storage Requirement

A conservative Rational Method spreadsheet analysis was used to develop an estimate of the required design live storage volume for the pond. An XP-SWMM computer simulation modelling exercise will be undertaken to develop a refined live storage volume requirement once the land use planning for the site is complete. The live storage requirement is the storage volume expected based on the 1:100 year design runoff less the allowable discharge rate, and is to be contained in the pond between normal water level (NWL) and high water level (HWL).

As two rainfall patterns are generally experienced in Alberta, the following two design rainfall events were assessed:

- 1:100 year, 24 hour, Huff distribution; and
- 1:100 year, 4 hour, Chicago distribution.

For this project, with the relatively low allowable release rate, the 24 hour event governed, providing the higher storage requirement of about 12,500 m³.

Proposed Wetland Design

A constructed/engineered wetland is proposed for the south SWM facility as wetlands are recognized as being the most effective, and therefore favoured urban water quality treatment measure. Wetlands can be designed to remove contaminants through the processes of settlement, filtering and plant uptake. The treatment capabilities of wetlands are designed to target runoff from common, small events, as those events account for the majority of runoff through the season. Constructed wetlands are also designed to include large storage volumes to control peak discharge rates during infrequent, large events.

The water quality treatment features of a constructed wetland are generally located below normal water level (NWL) of the facility as follows:

- a deeper open water area at the inlet end for collection of sediments from the incoming flows;
- a deeper open water area at the outlet to provide for a submerged outlet that will allow floatable materials to be contained in the facility and not washed downstream; and
- a large, circuitous, shallow section between the inlet and outlet pools in which common, normally occurring low flows can be routed through emergent and submergent vegetation that can provide filtering and plant uptake to remove contaminants.

A common design approach is to design the deep, open water areas to be no more than 25% of the pond surface area at NWL.

Proposed Pond Configuration

The proposed south SWM wetland is shown on Figure 5, and has the following key features:

- NWL = 899.5 m
- HWL = 900.5 m
- freeboard = 0.3 m
- sideslopes = 7:1 H:V above NWL, 3:1 H:V below NWL
- live storage = 12,500 m³
- maximum discharge rate = 900 L/s (100 ha x 9 L/s/ha)
- discharge control orifice = 550 mm (invert at NWL)

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- emergency overflow weir in outlet manhole at HWL
- area of utility lot = 2.5 ha
- inlet sedimentation pool and outlet pool depths = 2.5 m
- wetland marsh area depth = 0.3 m

The final configuration of the south stormwater pond will depend on further site planning of the lands within the south pond service area. It is recognized that some fill may be required to raise the industrial lands in the southeast adjacent to the CNR to achieve positive drainage (both piped and overland) west to the proposed storm pond. An effort will be required during detailed design to refine the configuration of the proposed pond and develop a minor (sewer) and major (overland) drainage system to service the southeast industrial lands in a manner that results in:

- a minimal amount of fill required in the southeast industrial area to achieve drainage to the pond;
- a minor (sewer) and major (overland) drainage system that can provide positive drainage of the southeast industrial lands to the pond;
- an outlet system for the pond that can achieve positive drainage into Poplar Creek during small and large events; and
- a pond configuration that can achieve design storage requirements within the PUL lot designated.

Wastewater Sewer Relocation

It can be seen on Figure 7 that the proposed SWM pond is to be located on a site that is in conflict with an existing 525 mm wastewater sewer. As a result, to accommodate the proposed pond, it is proposed that about 321 m of existing wastewater sewer between MH's N321 and N488, is relocated to north of the proposed pond site, as shown on Figure 7. As well, it is proposed that the relocated sewer is upsized to a 675 mm sewer to achieve the desired capacity increase identified in the 2010 Municipal Servicing Plan Update, thus helping the Town achieve some of its system upgrade goals.

1.3.4 Proposed Design Concept

The Parks in Edson Subdivision

A regional stormwater servicing scheme is proposed for The Parks in Edson development (Figure 6), in which lands north of 6th Avenue are to be serviced by a central SWM pond, and lands south of 6th Avenue are to be serviced by a south SWM pond. All runoff (piped and overland) within each pond service area is to be directed to the respective SWM pond. The central pond is to discharge at a controlled rate of 9 L/s/ha, into the south pond, which in turn, is to discharge into Poplar Creek at the same rate, as per the 2010 Servicing Plan Update.

Stage 1 – The Proposed Healthcare Facility

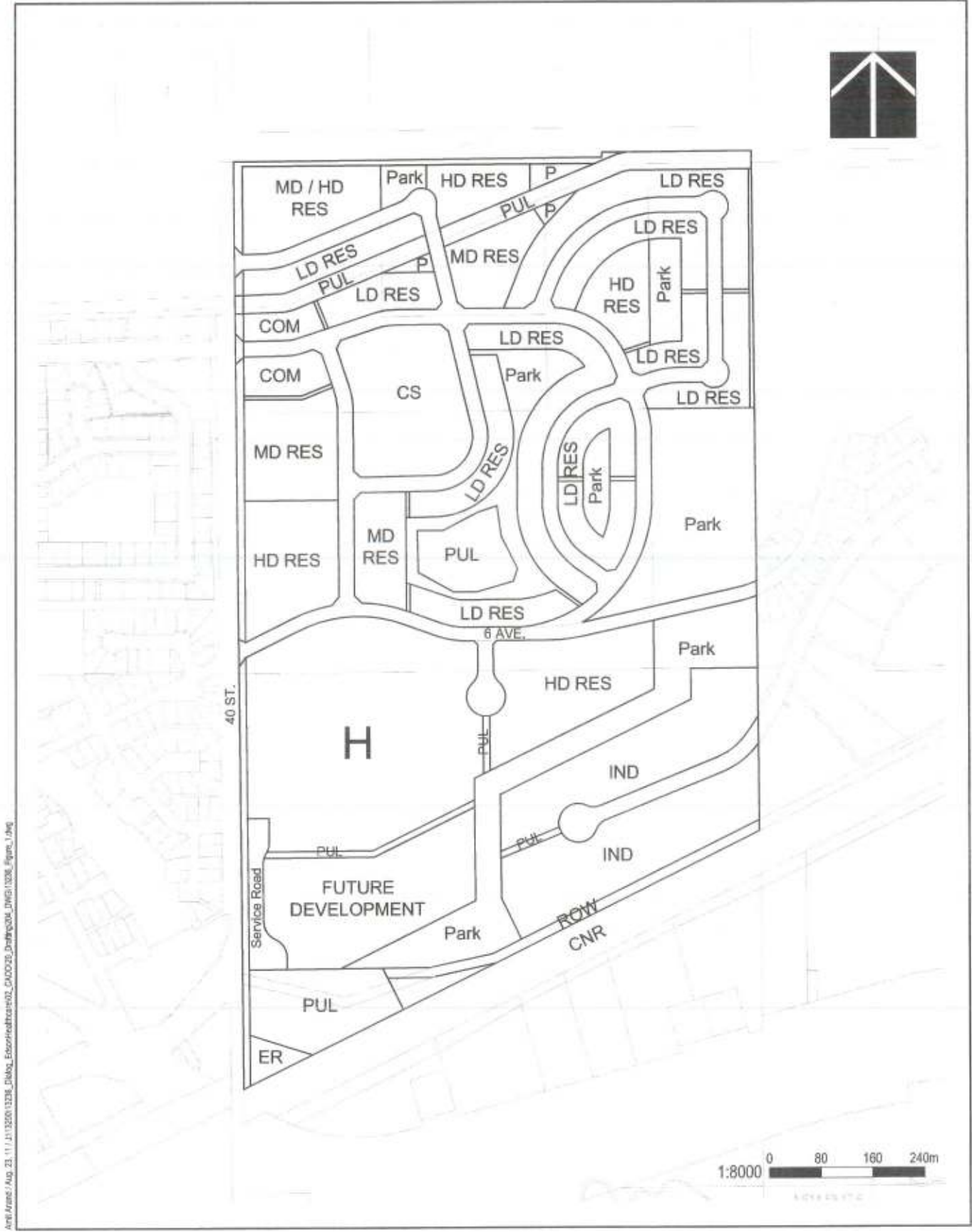
As it is expected that the healthcare facility will be the 1st to develop in the subdivision, it is proposed that AI construct:

- an on-site storm sewer and overland drainage system that directs flows to the southeast corner of the lot;
- a portion of the central SWM pond outlet piping from the southeast corner of the healthcare site, south in the park area discharging southwest into the southwest SWM pond, with the sewer sized to accommodate controlled discharges from the future central pond, along with runoff from the hospital site and other adjacent contributing properties;
- a swale along the route of this sewer to accommodate runoff in excess of the capacity of the sewer;
- the ultimate south SWM pond and outlet control structure; and
- relocate two lengths of existing sanitary sewer as shown on Figure 7, to provide land for the south SWM pond facility.

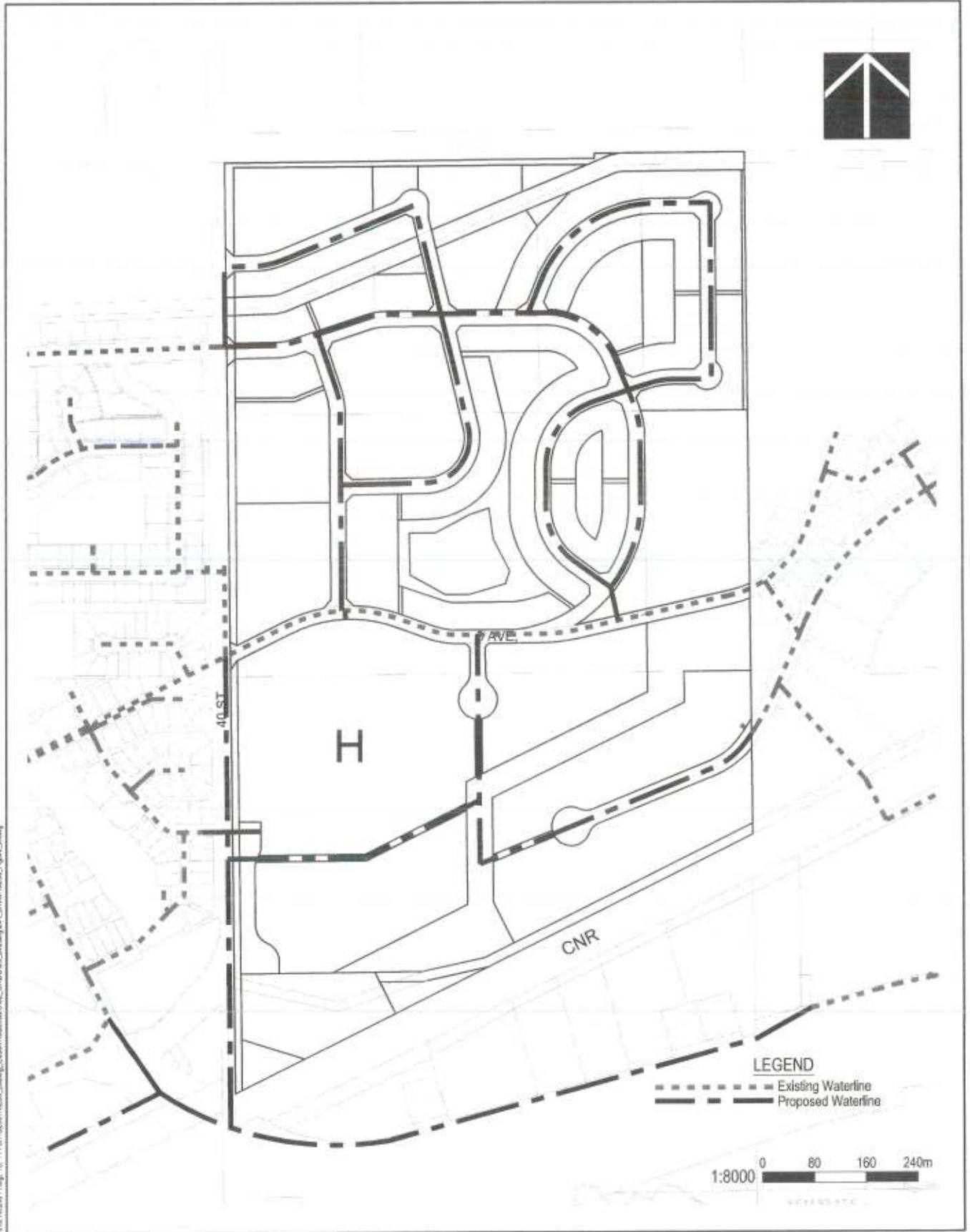
**The Parks in Edson and Proposed Healthcare Facility
Municipal Servicing**

Figures

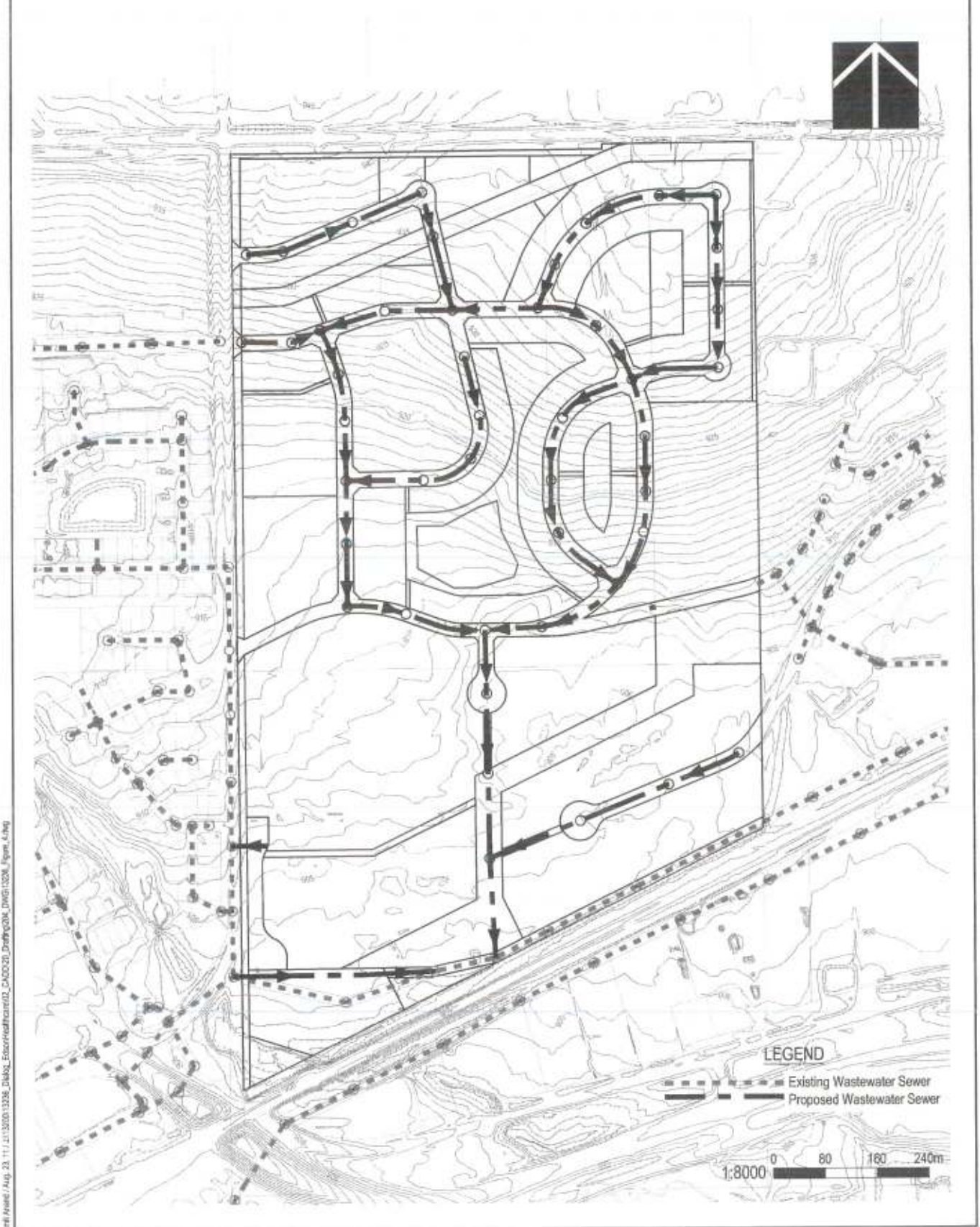
- Figure 1 Potential Land Use**
- Figure 2 Water Servicing – The Parks in Edson**
- Figure 3 Water Servicing – Healthcare Facility**
- Figure 4 Wastewater Servicing – The Parks in Edson**
- Figure 5 Wastewater Servicing – Healthcare Facility**
- Figure 6 Stormwater Servicing – The Parks in Edson**
- Figure 7 Stormwater Servicing – Healthcare Facility**

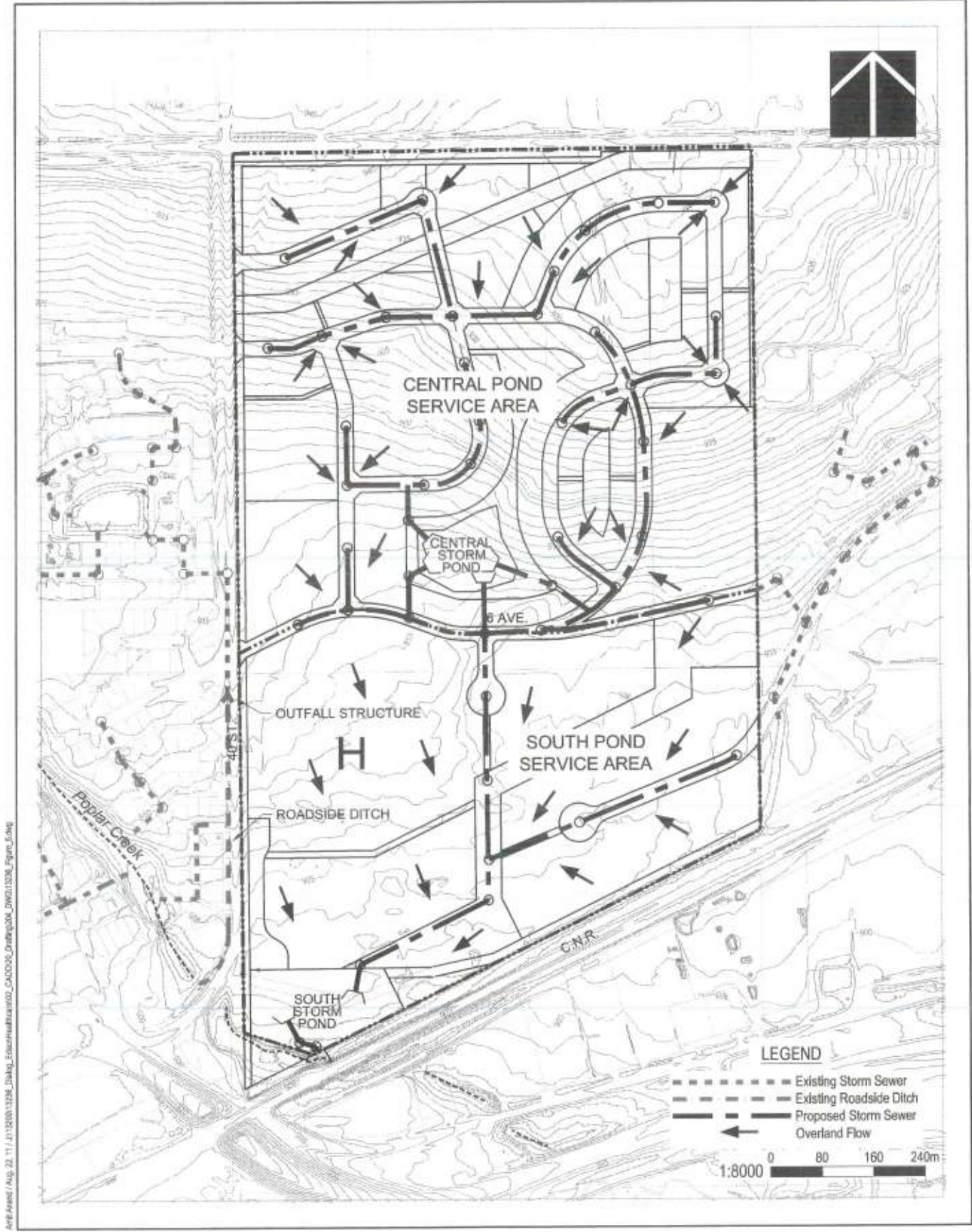


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