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Table of Contents

1.0 Introduction ........................................................................................................................................... 1
  1.1 Purpose .................................................................................................................................................. 1
  1.2 Location ............................................................................................................................................... 1
  1.3 Land Ownership .................................................................................................................................. 1

2.0 Policy Context ......................................................................................................................................... 4
  2.1 Background .......................................................................................................................................... 4
  2.2 Capital Region Growth Plan .................................................................................................................. 4
  2.3 Intermunicipal Development Plan ......................................................................................................... 4
  2.4 Municipal Development Plan .............................................................................................................. 5
  2.5 Land Use Bylaw .................................................................................................................................. 5
  2.6 City of Leduc Fire & EMS Master Plan .................................................................................................. 5
  2.7 City of Leduc Transportation Master Plan ........................................................................................... 5
  2.8 West Area Structure Plan ..................................................................................................................... 6
  2.9 Outline Plan ......................................................................................................................................... 7

3.0 Site Context ............................................................................................................................................... 8
  3.1 Existing Site Features ............................................................................................................................ 8
  3.2 Wells and Utility Right of Ways ............................................................................................................ 8
  3.3 Surrounding Land Use .......................................................................................................................... 8
  3.4 Supporting Technical Documentation .................................................................................................. 9
    3.4.1 Biophysical Survey .......................................................................................................................... 9
    3.4.2 Geotechnical Assessment .............................................................................................................. 9
    3.4.3 Environmental Site Assessment Phase I .......................................................................................... 11
    3.4.4 Environmental Site Assessment Phase II ...................................................................................... 11

4.0 Land Use Concept ................................................................................................................................... 13
  4.1 Introduction .......................................................................................................................................... 13
  4.2 Low Density Residential ........................................................................................................................ 13
  4.3 Medium Density Residential ............................................................................................................... 15
  4.4 Commercial ........................................................................................................................................ 15
  4.5 Parks and Open Space .......................................................................................................................... 15
    4.5.1 Environmental Reserve .................................................................................................................. 17
    4.5.2 School/Park .................................................................................................................................... 17
    4.5.3 Greenways ..................................................................................................................................... 17
    4.5.4 Noise Attenuation .......................................................................................................................... 17
  4.6 Population and Student Generation Projections .................................................................................... 18

5.0 Transportation ........................................................................................................................................... 19
  5.1 50 Avenue .......................................................................................................................................... 19
  5.2 74 Street ............................................................................................................................................. 19
  5.3 Collector Road Network ....................................................................................................................... 19
  5.4 Local Road Network ............................................................................................................................. 20
5.5 Pedestrian Linkages .............................................................................................................................. 20

6.0 Servicing Infrastructure .......................................................................................................................... 22
  6.1 Water Servicing ...................................................................................................................................... 22
  6.2 Sanitary Servicing .................................................................................................................................. 22
  6.3 Stormwater Management System .......................................................................................................... 22
  6.4 Shallow Utilities ................................................................................................................................... 23

7.0 Implementation.......................................................................................................................................... 27
  7.1 Development Staging .............................................................................................................................. 27

List of Appendices
  Appendix A: Land Use ................................................................................................................................... 29

List of Figures
  Figure 1: Location Plan .......................................................................................................................... 2
  Figure 2: Ownership Plan ....................................................................................................................... 3
  Figure 3: Existing Site Features ............................................................................................................ 10
  Figure 4: Land Use Concept .................................................................................................................. 14
  Figure 5: Parks and Open Space ........................................................................................................... 16
  Figure 6: Transportation Plan ............................................................................................................... 21
  Figure 7: Water Servicing System ........................................................................................................ 24
  Figure 8: Sanitary Sewer Servicing ....................................................................................................... 25
  Figure 9: Stormwater Management Servicing ...................................................................................... 26
  Figure 10: Staging Plan ............................................................................................................................ 28
1.0 Introduction

1.1 Purpose

The West Area Structure Plan Bylaw 863-2014 was approved by the City of Leduc Council on January 12, 2015. This ASP requires that Outline Plan’s be prepared to provide more details to guide future subdivision and development of the four quarter-sections included in the ASP. The Outline Plan included in this document, specific to SW-33-49-25-W4, is not in conformance with the recently approved ASP so a West ASP amendment is submitted concurrently under separate cover. This Woodbend Outline Plan provides a detailed planning framework for the future land use districting and subdivision for lands abutting the north boundary of 50 Avenue.

1.2 Location

Residential development is advancing west towards Woodbend from Deer Valley to the east. The west plan area is bounded by 74 Street which also forms the boundary between the City of Leduc and Leduc County. 50 Avenue forms the south boundary and lands to the north are under agricultural land use. (See Figure 1)

1.3 Land Ownership

Woodbend contains approximately 64.7 hectares and is within SW-33-49-25-W4 held under one certificate of title registered to 994881 Alberta Ltd. (See Figure 2)

A utility right of way owned by Alberta Products Pipeline Ltd. (URW Plan 4366 RA) extends north-south near the east boundary of the property.

A fibre optics right of way (Plan 952 0483) is located along the boundary of the north and east areas of Woodbend.
2.0 Policy Context

2.1 Background

The Woodbend Outline Plan complies with regional and City of Leduc policies.

2.2 Capital Region Growth Plan

An integrated growth plan was mandated by the Province of Alberta for the Capital Region which includes the City of Leduc, the City of Edmonton and 22 other surrounding municipalities. The resulting plan was the Growing Forward: The Capital Region Growth Plan (CRPG), which in Appendix 2 contained the Capital Region Land Use Plan (CRLUP) that provides the planning framework for guiding regional growth. This plan is based on six principles: protect environmental resources; minimize regional footprint; strengthen communities; increase transportation choice; ensure efficient provision of services; and support regional economic development. In October 2009, the Capital Region Growth Plan Addendum (CRGP Addendum) defined, in accordance with the Principles and Policies of the CRLUP, a map of Priority Growth Areas and density targets aimed at minimizing the regional development footprint.

The plan area is located within the CRGP Addendum Priority Growth Area E, which prescribes in Table 3 - Capital Region Density Targets a requirement to attain a target residential density of 25-30 dwelling units per net residential hectare (upnrha).

West ASP has a density of 28.80 upnrha. Woodbend has a higher density of 32.15 upnrha.

2.3 Intermunicipal Development Plan

The Intermunicipal Development Plan (IDP) was adopted by the City of Leduc as Bylaw 772-2011 on November 28, 2011 and amended by Bylaw 871-2014 on December 23, 2014. This document guides development on the common boundaries of the City of Leduc and Leduc County. The IDP is based upon five sustainability pillars:

- Smart Growth;
- Creating Vibrant Communities;
- Environmental Stewardship;
- Economic Development; and
- Responsible Governance.

Woodbend is located within the City of Leduc boundary. The land use within Woodbend is designated primary urban residential growth and mixed use transition along the south boundary adjacent 50 Avenue.
2.4 Municipal Development Plan

The Municipal Development Plan (MDP) Bylaw 773-2011 and amendment Bylaw 870-2014 is a statutory policy document to outline the framework for growth within the City of Leduc and how it will be managed. The MDP is based upon the results of the Imagine Leduc 2035 citizen engagement process, which provided the City of Leduc with a clear direction of how the community wants Leduc to grow and develop in the future. The City of Leduc’s MDP determines where growth is most feasible based on such factors as infrastructure, sustainable growth principles, and economic development opportunities. This MDP also addresses the environment; the economy and tourism; social wellness and safety; recreation and culture; governance; and the administration, monitoring, and implementation of the MDP policies.

Woodbend is currently listed as an approved/future residential ASP (Figure 4 Bylaw No. 870-2014). The MDP also illustrates a transitional residential mixed use policy area along the south boundary. An MDP amendment will not be required for Woodbend.

2.5 Land Use Bylaw

The City of Leduc Land Use Bylaw (LUB) 809-2013 is a planning tool that defines land use bylaw districts in Leduc and prescribes types of land uses allowed in each district. This LUB will be used to implement the Woodbend Outline Plan’s land use concept as appropriate.

Woodbend is currently districted Urban Reserve.

2.6 City of Leduc Fire & EMS Master Plan

The City of Leduc Fire and EMS Master Plan 2013-2016 guides medium to long term decision making, as well as operational decision making of Emergency Services for the next three to five years. Fire and EMS Master Plan gives recommendations on how to plan emergency services to service the growing needs of the City by assessing risk management, funding, response times, staffing, fire prevention, service demand and station location.

A fire hall is currently being constructed and expected to be operational in the fall of 2015 south of 50 Avenue and immediately east of the APPL right of way. This fire hall will actively serve the Woodbend neighbourhood.

2.7 City of Leduc Transportation Master Plan

The City of Leduc Transportation Master Plan (TMP) adopted by Council on September 9, 2013 includes recommendations for the short, medium, and long term changes to Leduc’s transit service, heavy vehicle traffic routes, pedestrian and bicycle transportation networks. The objectives for the TMP are:
Define the City’s transportation needs in terms of roadway and transit improvements for three population horizons: 30.5k, 35k, and 44k;

Estimate costs for the required roadway and transit improvements;

Recommend short, medium and long term capital plans; and

Develop key policy statements that conform to the City’s transportation directions, consistent with a number of policy documents.

The south east corner of Woodbend along 50 Avenue extending south of Deer Valley is identified as medium term capital planning in the TMP. The TMP also identifies 74 Street located along the west boundary of Woodbend as long term capital planning. This north south future roadway will connect 65 Avenue with 50 Avenue.

2.8 West Area Structure Plan

Lands included in the Woodbend Outline Plan are one of four quarter-sections that are presently approved under the West Area Structure Plan Bylaw No. 863-2014.

Woodbend is not in conformance with the West ASP. An ASP Amendment will be required to facilitate the updated changes to the plan area and will be submitted concurrently with this Outline Plan.

An ASP Amendment is necessary to:

- Reallocate stormwater management facilities;
  + Separate the one large SWMF into two separate facilities. One large SWMF will be located in the west with a smaller SWMF located in the north east.

- Redesignate the commercial land use;
  + Facilitate development of the commercial land use earlier in the process. The commercial land use has been relocated east of the future collector proposed north into Woodbend.

- Realign the collector road alignment; and
  + Adjustment of the north south major collector to accommodate a continuous connection north to south through the neighbourhood.

- Adjust land use statistics.
  + Low density residential and commercial area has decreased from the approved West ASP. Medium Density has been removed from the Plan area entirely. SWMF and park (MR) have increased. A medium density residential site has also been added to the south area of Woodbend.
2.9 Outline Plan

An Outline Plan is required to provide a statutory framework to guide the review and approval of development applications within a neighbourhood. It conceptually identifies land uses, the location of transportation routes, alignments for public utilities and servicing, and the anticipated sequence of development.

An Outline Plan is a non-statutory planning document approved by resolution of Council, not by Bylaw.

Woodbend Outline Plan provides a more detailed planning and preliminary engineering design than the approved West ASP. Residential land uses are clearly identified as well as location of roadways, parks and stormwater management facilities.
3.0 Site Context

3.1 Existing Site Features

Woodbend is currently cleared and used primarily for agricultural use. The total plan area is approximately 64.7 ha.

Deer Creek runs diagonally across the north east quadrant of Woodbend and a small tree stand is located along the west boundary.

Woodbend’s topography has a gentle slope with an approximately overall 5m change in elevation. A high elevation of 719m exists in the centre of the Plan area to a low of approximately 714m in the northeast. Drainage generally flows from the south east to the north-west. The north east drains north east into Deer Creek. (See Figure 3)

Two utility right of ways are located along the east and north boundary. An abandoned well is located in the south east area.

3.2 Wells and Utility Right of Ways

ERCB identifies an abandoned well in the south east plan area. The well is located within the greenway north of the commercial site. The well information states that Mallard Leduc Oils Ltd. abandoned the well on August 6, 1953.

An approximately 15m right of way owned by Alberta Products Pipeline Ltd. (URW Plan 4366 RA) extends north-south 47m west of the east boundary of the property. No building structures will be permitted within the right of way. Alberta Products Pipeline Ltd. currently handles development requirements within the right of way on a case by case basis. Exact requirements will be confirmed at the time of subdivision.

An AGT Limited fibre optics right of way (Plan 952 0483) extends along the north and east boundaries of Woodbend. This fibre optics line extends approximately 10m from both the north and east boundaries. (See Figure 2)

3.3 Surrounding Land Use

Woodbend is currently surrounded by cultivated farmland to the north, west and south.

Associated farm related buildings are located within the plan area and adjacent to the north and west plan area.

Development is moving west towards Woodbend from the existing Deer Valley neighbourhood to the east. Approximately 50% of Deer Valley is constructed. An extension of Ameena Drive through Deer Valley will be required to tie into Woodbend and ultimately to 74th
Street. Deer Creek is located to the east and meanders through the north east section of the Plan area continuing north.

An Alta Gas utility right of way (URW Plan 2121 HW) is located north of Woodbend and extends diagonally from the southeast to northwest.

Alberta Products pipeline right of way (URW Plan 4366 RA) runs north and south of Woodbend along the east boundary.

A Fire Hall is currently under construction immediately south of 50 Avenue south of the commercial land use proposed in Woodbend. The Fire Hall is expected to be completed in the fall of 2015. (See Figure 3)

3.4 Supporting Technical Documentation

Several professional and technical studies have been completed to support the Woodbend Outline Plan. These include:

3.4.1 Biophysical Survey

In May 2013 Klohn Crippen Berger Ltd. conducted an assessment called the Prymont Development Biophysical Survey (Proposed lands to be used for environmental reserve). This report was specific to the Woodbend quarter. This report identified an area in the northeast plan area suitable to be classified as environmental reserve (ER) because it included Deer Creek and some remnant riparian habitat. The report recommended a development setback of 6m from the stream edge. As a result approximately 1.59 ha is designated as Environmental Reserve in the plan area.

The historical photo review identified multiple wet areas within the property some with nearly complete cultivation. These wet areas were designated as Class-I and none contained water and all had been plowed over. Compensation for these wetlands will not be required.

3.4.2 Geotechnical Assessment

Hoggan Engineering and Testing (1980) Ltd. performed a Preliminary Geotechnical Assessment of SW 33-49-25-W4 in June 2013. This assessment generally described soil conditions and provided preliminary comments on subdivision design and construction.

Topsoil, clay, sand, and bedrock were encountered on site. Topsoil in general, was considered clayey and black. Clay material was generally silty, sandy, medium plastic, moist to very moist, brown mottled grey, and contained traces of coal, oxide, and gravel. Sand layers found in test holes 2013-6, 2013-7, and 2013-10 and was considered fine to medium grained, clayey, and very moist. Bedrock (clay and sandstone) was encountered at all but one test hole. The clayshale was considered silty, sandy, medium to high plastic, damp to moist, grey, and was ground up with limited sampling.
3.4.3 Environmental Site Assessment Phase I

Thurber Engineering Ltd. (Thurber) conducted a Phase I Environmental Site Assessment (ESA) on the SW ¼ of 33-49-25 W4M in May 2013. The Phase I included a historical review of the Woodbend property, a site inspection and documentation from various regulatory agencies. Generally the site inspection did not encounter any historical evidence indicating that the subject property had been impacted by contaminants above generally accepted levels associated with sites of this nature. However an abandoned natural gas well located in the southeast area of the subject property was identified as an area of environmental concern. In order to assess the potential environmental impact arising from the abandoned natural gas well a Phase II Environmental Site Assessment was conducted.

3.4.4 Environmental Site Assessment Phase II

The Phase II Environmental Site Assessment (ESA) found that soil at test hole locations (drilled on June 24, 2013) within the former oilfield well site and near the Alberta Products Pipeline Ltd (APPL) pipeline met Environmental and Sustainable Resources Development (ESRD) Tier 1 residential and agricultural guidelines, with the exception of one pH value. The low pH value identified in the surface soils at TH13-8 is likely related to the organic soils present and is not considered to be a remedial target. Should buried drilling sump materials be identified during site grading activities, it was recommended that these materials be segregated and stockpiled for further characterization.

The TH13-2 well installation is located within the conductivity anomaly defined by geophysical survey, and groundwater analyses from well TH13-2 indicated concentrations of manganese, nitrite, sodium, sulfate and TDS did not meet ESRD Tier 1 residential and agricultural guidelines. The chloride concentration in the sample met the residential guideline, but not the agricultural guideline.

A regional groundwater survey indicated that regional groundwater does not meet ESRD 2010 Tier 1 residential and agricultural guidelines. On average, 16 groundwater samples from ESRD’s water well data base, via Abadata, from wells up to 91m deep and 1.6 km from the site did not meet ESRD 2010 Tier 1 residential and agricultural guidelines for nitrite, sodium, and TDS, and selected wells did not meet ESRD 2010 Tier 1 residential and agricultural guidelines for chloride and sulphate. In some of the regional groundwater wells, the constituents of concern ranged up to concentrations that were similar for the shallow groundwater at the site. The available ESRD water well records did not contain manganese data.

It is Thurber’s experience with shallow well completions in northern and central Alberta that TDS and manganese typically do not meet ESRD Tier 1 guidelines. High TDS is generally attributable to the inability of most filterpacks to screen out suspended sediment from clay till. Manganese is common in shallow groundwater as it tends to solubilize from decaying plant material in the spring and infiltrate after ground thaw in northern and central Alberta (Akena, 1979).

Elevated calcium and sulphate in shallow groundwater of Leduc County is commonly attributed to gypsum beds within the Horseshoe Canyon Formation. Surficial drift deposits from reworked bedrock can generate groundwater sulphate concentrations from 0 to 10,000 mg/L (Ceroici, 1979). Both calcium and sulphate in TH13-2 are relatively high compared to regional groundwater wells.
Although there is a conductivity anomaly, 33m northwest of the former oilfield well site, it is Thurber’s opinion that the groundwater constituents within the conductivity anomaly match those that are naturally-occurring and do not meet ESRD Tier 1 guidelines in the region.
4.0 Land Use Concept

4.1 Introduction

Woodbend will be a fully integrated residential community where people can live, learn, work, shop and play. The services and amenities required to meet the day to day needs of residents are all located within the community and connected by dedicated pedestrian routes and greenways.

Woodbend will accommodate low and medium density residential land uses suitable for a wide range of people. (See Figure 4) Commercial land use is designated in the southeast plan area immediately north of 50 Avenue.

To more accurately establish density and housing forms this Outline Plan defines a wider range and more specific densities. Land use statistics and student generation projections are included in Appendix A.

4.2 Low Density Residential

Low density residential is the primary land use proposed within the Outline Plan area. Single detached, duplex side by side and/or townhouse dwelling units are permitted in areas designated for low density residential development.

The majority of the low density residential units will be accessed by front drive garages. Lanes are incorporated in the plan area where higher traffic volumes warrant.

Townhouse in the Plan area is generally designated adjacent to major roadways and accessed by a lane. This street orientation eliminates backing issues and creates a more interactive street front. All townhouses will be fee simple. They have a maximum height of 3 storeys and may have a maximum of 6 units per building.

Several residential districts are available in the existing Land Use Bylaw 809-2013 that may be utilized to implement a variety of low density residential forms. We intend to utilize RNL, RSD, RSL and MUR existing districts. A Direct Control District may be implemented to accommodate 26 foot pocket sizes. This DC District would only be used for single detached dwellings with front drive garages.

Both ownership and rental opportunities may be available within the Woodbend neighbourhood.
4.3 Medium Density Residential

The one medium density residential (MDR) site designated in the plan area is conveniently located next to the collector entrance and the commercial site. This medium density residential site will accommodate a 4 storey apartment. Dedicated greenways to the south and east provide separation between the MDR site and the commercial and low density residential land uses adjacent. The close proximity of the MDR to the greenways will encourage and support pedestrian access to amenities such as shopping, restaurants and other entertainment services. Development in this area would be implemented by MUC - Mixed Use Comprehensive land use district in the Land Use Bylaw.

4.4 Commercial

Commercial land use is designated along the southeast boundary of the plan area all the way up to the central collector roadway. This commercial area will provide a full range of service and retail uses to future residents in the neighbourhood and the surrounding area. The commercial uses here would be implemented by use of the CSC - Commercial Shopping Centre District. The commercial site will have two accesses designated north from 50 Avenue and one from the internal collector roadway. The eastern access to the commercial site from 50 Avenue will align with the existing Fire Hall access.

An approximately 15.0m wide greenway provides a buffer between the commercial site and medium and low density residential housing to the north. This buffer creates a pedestrian corridor that links the residents of the neighbourhood to the commercial site and beyond.

4.5 Parks and Open Space

The City of Leduc already has a comprehensive network of parks, open space and trails that allow residents to fully explore the community and contributes to the overall quality of life for everyone in the community. The extensive greenway and parks and open space system proposed in Woodbend will expand this network.

The major park and open space and greenway system proposed in Woodbend will be unique in the City of Leduc. Dedicated greenways wind north, south, east and west through the plan area. Trails constructed within these greenways will provide pedestrian links to all corners of the plan area. These greenways open up to small pocket parks and stormwater management facilities along the way which will provide opportunities for both active and passive recreation for residents and visitors. These active linear parks allow for a well-defined, easily accessible and walkable network in the neighbourhood. (See Figure 5)

Greenways have also been utilized in the southeast plan area to transition commercial and medium density residential land uses to lower density residential land uses. The greenways also provide a connection north to the stormwater management facility and the environmental reserve adjacent to it in the northeast corner of the plan area.

The site provides safe and convenient access by vehicle or non-motorized transportation.
4.5.1 Environmental Reserve

Approximately 1.51 ha of land in the north east corner of Woodbend will be dedicated as environmental reserve.

Deer Creek runs along the east side of the area and then curves north, bisecting the north east corner. The natural creek area provides an excellent opportunity for managing storm water for residential purposes.

4.5.2 School/Park

To allocate municipal reserve fairly a large school/park site in Woodbend is shared with and expanded into the north lands. The school/park provides excellent access from the north-south collector road that is also a future transit route.

Municipal Reserve within Woodbend is under dedicated by 0.93 ha or 2.5%. The under dedication will be paid to the City of Leduc as cash in lieu.

4.5.3 Greenways

The area’s remaining park land is provided in a system of interconnected linear park spaces (i.e. stormwater management facilities, creek, and pipeline right of way). Greenways will provide a continuous off street pedestrian system linking residential areas within the neighbourhoods to parks, schools, and transit as well as provide a buffer between the commercial and residential areas.

The linear MR will enhance pedestrian connectivity in the neighbourhood by providing a strong east-west and north-south connection. All trails will be constructed utilizing 3m asphalt in accordance with the City’s Minimum Engineering Design Standards. Exact trail location will be determined at the time of subdivision.

4.5.4 Noise Attenuation

Noise abatement from arterial routes will be provided as per City policy (City of Leduc E1 - Part 1: Minimum Engineering Standards section 1.15) which generally requires noise abatements for any arterial roadway that passes through a development.

A Traffic Noise Impact Assessment for the Woodbend Neighbourhood and specifically for 50 Avenue and 74 Street was completed by Acoustical Consultants Inc. (ACI) in December 2015. This Traffic Noise Impact Assessment has been utilized in consensus with the City of Leduc to confirm that road widths and berm requirements within our plan area can be achieved to meet noise attenuation requirements.
4.6  Population and Student Generation Projections

Student generation count for the City of Leduc is as follows:

<table>
<thead>
<tr>
<th>Student Generations</th>
<th>Public</th>
<th>Separate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>269</td>
<td>54</td>
</tr>
<tr>
<td>Junior High</td>
<td>135</td>
<td>27</td>
</tr>
<tr>
<td>Senior High</td>
<td>135</td>
<td>27</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>540</strong></td>
<td><strong>108</strong></td>
</tr>
</tbody>
</table>
5.0 Transportation

The transportation network for Woodbend accommodates the movement of automobiles, pedestrians, bicycles and transit. A network of arterial, collector and local roads will be utilized to accommodate traffic activity efficiently and effectively. (See Figure 6) A Transportation Impact Assessment (TIA) was completed to support the West Area Structure Plan. Because the internal road alignment is modified slightly from the ASP an addendum to the TIA is included with this Outline Plan under separate cover. This addendum also looked at the details of intersection spacing and capacity and the operation of the roundabout proposed in the central plan area.

5.1 50 Avenue

50 Avenue forms the south boundary of Woodbend and ultimately ties into Queen Elizabeth II Highway east of the plan area. All directional access will be allowed into the commercial area opposite the access approved into the Fire Hall south of 50 Avenue. An additional right in right out access will also be permitted north into the commercial area a little further west along 50 Avenue.

Primary access to the low density residential component of the neighbourhood from 50 Avenue is provided. This access will allow residents to easily access the commercial site from 50 Avenue as well as from the west along the north south major collector.

5.2 74 Street

74 Street forms the west boundary of Woodbend. Currently the City of Leduc is in the process of upgrading this roadway to a 4 lane divided Arterial. 74 Street is illustrated in the Leduc Transportation Master Plan (2012) under exhibit 3 as a long term plan and will alleviate internal congestion by diverting traffic around the city centre. All directional access will connect 74 Street to the east west minor collector within Woodbend.

5.3 Collector Road Network

Primary access is provided from two collector roadways which intersect near the center of the Woodbend neighbourhood. A roundabout proposed at this intersection will provide traffic calming and create a focal point in the plan area. The 20m wide east west minor collector will be extended east through Deer Valley via Ameena Dr. and ultimately tie into 74 Street at the west boundary.

The 24m wide major collector that extends north from 50 Avenue, past the school/park site, will become the primary north south link through Woodbend and the entire ASP area in the future.
5.4 Local Road Network

The internal road network will be designed to meet the City of Leduc standards for local roads, lanes and cul-de-sacs. These standards will ensure safe and easy access for emergency and public service vehicles as well as garbage collection.

A north-south local roadway will be located adjacent the east side of the Alberta Products Pipeline and may be built not to standard due to the variance of the APPL right of way. The difference in the road right of way will be taken from the boulevard itself and not the road surface, which will remain to a local road standard.

5.5 Pedestrian Linkages

Non-vehicular transportation (pedestrians, bicycles, etc.) will be able to utilize the well-integrated greenway system in the plan area as well as the sidewalks fronting and flanking residential lots.
6.0 Servicing Infrastructure

6.1 Water Servicing

Water service in Woodbend will be provided by initially connecting to an existing 350mm diameter water main stub along the east portion of Woodbend at Deer Valley. The existing water main was constructed part of the Deer Valley development and is located on the West end of Ameena Drive. The 350mm waterman will ultimately be installed along the east/west minor collector roadway and the north/south major collector roadway. Watermain stubs will be provided to the land west of 74 Street, south of 50 Avenue and north of 65 Avenue to allow for future connections. The 350mm water main system will become part of the City of Leduc’s overall distribution network conforming to the 2014 Water Master Plan. A secondary connection will be made to the existing 200mm distribution main which is located at the south end of Aventia Street within the Deer Valley development. (See Figure 7) These 2 connections will allow for water looping during stage 1 construction.

6.2 Sanitary Servicing

The City and AMEC are currently underway with the design of a sanitary sewer lift station to service the “West Area Structure Plan” (WASP). The location of this permanent lift station will be located within the Woodbend Outline Plan (See Figure 8). This lift station will service the whole WASP basin. It also includes the design of a forcemain from the proposed lift station to the east 750 / 900mm trunk sewer connection point at manhole 89-7. The lift station within Woodbend will provide sanitary servicing for this neighborhood. Figure 8 illustrates the servicing strategy for the basin. The 750mm sanitary trunk sewer for WASP is planned to cross 50 Avenue at 74 Street and enter Woodbend at the proposed collector roadway. It will follow the collector roadway system within Woodbend to the proposed lift station location within the school/park site.

The trunk sewer will be of sufficient depth that there will be no anticipated cover issues. Initial comments are that the developers will be required to install all trunk sewers. A funding model is currently in the works between the development industry and the City.

6.3 Stormwater Management System

The storm water management system will consist of two storm water management facilities (SWMF) and an associated minor storm sewer system, ultimately discharging at a controlled rate to Deer Creek located in the northeast corner of Woodbend. (See Figure 9) Due to the natural topography of the overall drainage basin as well as the elevation of Deer Creek, two interconnected SWMF’s will be required. One storm water facility will be located on the west central portion of the plan area (Pond 1), with a second smaller facility to be located in the north east corner adjacent Deer Creek (Pond 2). A proposed storm water lift station will be installed in the north east corner of pond 1, and will discharge via forcemain into pond 2.
The storm water management system will also be designed to provide for a 1:5 Year flow rate for 50 Avenue road right of way as well as a 1:100 Year flow rate for half of the 74 Street right of way. There are no requirements to receive flows from lands directly south of Woodbend (NW-28-49-25-4). This has been confirmed through their Consultant WSP Engineering – Vaughn Shears.

Select Engineering completed a review of elevation constraints with adjacent ditches and Deer Creek. Based on this analysis the existing elevations / depths would not provide acceptable storm water discharge points unless the servicing basin was filled to an excessive amount of fill which would basically stall development within Woodbend. The use of a storm water lift station provides the ability to lift the storm flows to a more manageable level and is the proposed option to the storm water servicing strategy.

The controlled flow rate for Deer Creek was obtained from the SWMF design for Deer Valley. That SWMF release rate to Deer Creek was based on 1.9 l/s/Ha. We assume this will also be the same release rate for Woodbend.

6.4 Shallow Utilities

Power to the Woodbend neighbourhood will be supplied off of an existing power line which runs north-south along 74 Street and / or a combination of connections ultimately to Deer Valley.

AltaGas currently has a high pressure transmission main which runs in northwest to southeast and is located entirely within the ¼ section north of Woodbend. There are 2 rural distribution lines which are currently within the Woodbend neighborhood. The first distribution main runs east-west along the south boundary of Woodbend (north of 50 Avenue). The second distribution line runs north-south along the west side of Woodbend (east of 74 Street). Options for relocating these distribution lines as well as servicing Woodbend will be discussed with AltaGas prior to any development. We expect there will also be gas servicing through Deer Valley.

Communication lines are also available within the adjacent areas. A Telus fibre line currently runs along the eastern and northern boundaries of Woodbend.
Note: No storm flows from lands to the south are anticipated.

Deer Creek allowable discharge rate at 1.9 L/s/ha Inclusive of both SWMF

Q = 1:5 YR Flow Rate Only
Q = 1:100 YR Flow for 1/2 Right of Way

Outline Plan Boundary
Storm Water Management
Medium Density Residential
Commercial
Pond 1
Pond 2
DEER VALLEY

Legend:
- Outline Plan Boundary
- Storm Water Management
- Pipeline Right of Way/Easement
- Public Utility Lot
- Lift Station - Storm

Forcemain Proposed Stormwater Servicing and Major Overland Flow Route
7.0 Implementation

7.1 Development Staging

The Outline Plan has been divided into three staging boundaries. *(See Figure 10)*

Stage 1 is planned for development in 2016 with potential plans to grade the site in the fall of 2015. Stage 2 and 3 may see development in both of these areas to suit housing needs, servicing strategies and requirements.

It’s expected that the northern areas would be the final stages of development as roads are extended to those areas.
### Table 1: Proposed Land Use Statistics

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<tr>
<th>Land Uses</th>
<th>Ha</th>
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<th>Units</th>
<th>%</th>
<th>Pop.</th>
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<td><strong>LAND USES</strong></td>
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<td>Low Density Residential</td>
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</table>

**Residential Density**

- Low Density Residential: 25 units / hectares
- Medium Density Residential: 200 units / hectares

**Population Density**

- Low Density Residential: 2.6 persons / unit
- Medium Density Residential: 2.0 persons / unit