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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 Plans 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 63.08 hectares within SW-33-49-25-W4 and is held under one certificate of title registered to 994881 Alberta Ltd. *(See Figure 2)* Registered 50 Avenue right-of-way on the south boundary is also included within our boundary.

A utility right-of-way operated by Alberta Products Pipeline Ltd. (URW Plan 4366 RA) extends north-south near the east boundary of the property. This right-of-way is retained within the Plan as a public utility lot.

An AGT Limited right-of-way (Plan 952 0483) containing fibre optics exists along the north and east boundaries of Woodbend. Relocation of the east line will be necessary.
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 28.81 upnrha. Woodbend has a lower density of 27.36 upnrha.

2.3 Intermunicipal Development Plan

The City of Leduc/Leduc County Intermunicipal Development Plan 2010-2044 (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 to 50 Avenue.
2.4 Municipal Development Plan

The City of Leduc 2012 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 on 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 generally designated as an Approved/Future Residential ASP policy area (Figure 4 Bylaw No. 870-2014) in the MDP but a Transitional Residential Mixed Use policy area is also designated 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 809-2013 (LUB) is a planning tool that defines land use districts in Leduc and prescribes the 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 constructed south of 50 Avenue immediately east of the APPL right-of-way. This Fire Hall, opened in October 2015, 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.

50 Avenue south of Deer Valley is identified as medium term capital planning in the TMP. 50 Avenue south of Woodbend is not currently identified within the 2012 capital plans. 74 Street on the west boundary is identified for long term capital planning and states that 74 Street will ultimately connect 65 Avenue with 50 Avenue and serve as a “Western Bypass”.

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
  - Adjust the north south major collector to accommodate a continuous connection north to south through the neighbourhood.

- Adjust land use statistics.
  - Due to market demands Low Density Residential and Commercial land use has decreased from the approved West ASP. Medium Density Residential land use has been removed from the Plan area entirely. SWMF and park (MR) have increased and a High Density Residential land use has been added to the south area of Woodbend.
2.9 Outline Plan

An Outline Plan is required to provide a 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 63.08 hectares.

Deer Creek runs diagonally across the northeast corner of Woodbend and a small tree stand is located along the west boundary.

Woodbend’s topography has a gentle slope with an approximate overall 5 metre change in elevation. A high elevation of 719 metres exists in the southeast and central Plan area to a low of 714 metres in the northeast. Drainage generally flows from the central Plan area southwest, northwest and northeast into Deer Creek. (See Figure 3)

3.2 Wells and Utility Rights-of-Way

ERCB identifies an abandoned well in the southeast Plan area. The well information states that Mallard Leduc Oils Ltd. abandoned the well on August 6, 1953. This well has been incorporated within the greenway north of the Commercial site so that requirements of Directive 079 of the Alberta Energy Regulator can be met.

An approximately 15 metre right-of-way operated by Alberta Products Pipeline Ltd. (URW Plan 4366 RA) extends north-south, 47 metres west of the east boundary of Woodbend. 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 is approximately 10 metres 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 eventually tie into Woodbend and ultimately to 74 Street. Deer Creek is located to the east and meanders through the northeast section of the Plan area continuing north.
A Fire Hall is located immediately south of 50 Avenue east of the Alberta Products Pipeline. The Fire Hall was 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 Pyrmont Development Biophysical Survey Proposed lands to be used for environmental reserve. This report was specific to the Woodbend quarter. This assessment identified an area in the northeast suitable to be classified as environmental reserve (ER) because it included Deer Creek and some remnant riparian habitat. The assessment recommended a development setback of 6 metres from the stream edge. As a result 1.51 hectares is designated as Environmental Reserve.

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 farmed. 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. Hoggan concluded that residential development is suitable within the assessment area due to the near surface native till-like clay.

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 were 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) for 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

On Behalf of Avillia Developments Ltd. Thurber Engineering Ltd. conducted a *Phase II Environmental Site Assessment* (ESA) specific to the oilfield well site and Alberta Products Pipeline Ltd in September 2013. Based upon the inspections, assessments and information reviewed in the Thurber engineering report, the Phase II ESA concluded that ESRD 2010 tier 1 residential and agricultural guidelines were not met, however, it is Thurber’s experience that elevated calcium and sulphate levels in Leduc County’s groundwater are common. It is Thurber’s opinion that groundwater constituents within the conductivity anomaly match those that are naturally occurring in ESRD tier 1 guidelines and are these are not typically met within the entire region. Full copies of all the sub-consultant environmental reports will be submitted under separate cover.
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 pedestrian routes and dedicated greenways.

Woodbend will accommodate Low and High 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 townhouse dwelling units are permitted in areas designated for Low Density Residential development. Low Density Residential units will be accessed by either a front drive garage or a rear lane.

Townhouse will generally be designated adjacent to collector roadways but it may also be developed along local roads. Townhouse may be accessed by a front drive garage or a rear lane. Street orientation created by a rear lane can eliminate backing issues and create a more interactive street front. All townhouses will be fee simple. They will 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 with front drive garages and 20 foot pocket sizes with rear detached garages accessible by a lane.

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

The High Density Residential (HDR) land use is conveniently located next to the collector entrance and the Commercial area. This HDR site will accommodate a 1 to 4 storey apartment or 4 plus storeys. Dedicated greenways to the south and east provide a transition between the HDR site and the Commercial and Low Density Residential land uses adjacent. The close proximity of the HDR site to the greenway will encourage and support pedestrian access to shopping and services provided in the Commercial area. Development in this area would be implemented by a MUC - Mixed Use Comprehensive 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 shopping and services to future residents in the neighbourhood and surrounding area. The Commercial 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.

A greenway that varies in width from 6-15 metres provides a transition between the Commercial, High Density Residential and Low Density Residential housing to the north.

4.5 Parks and Open Space

The City of Leduc has a comprehensive network of parks, open space and multiways that allow residents to explore the community and it contributes to a better overall quality of life for everyone. The combination of parks and open space proposed in Woodbend will expand this network and be unique in the City of Leduc. Open space in Woodbend consists of a combination of municipal reserve, environmental reserve and stormwater management facilities.

4.5.1 Municipal Reserve

Municipal Reserve in Woodbend is designated for the south portion of a shared school park site, dedicated greenways and pocket parks. The Woodbend neighbourhood is currently dedicated 5.31 hectares or 8.6% Municipal Reserve.

Overall municipal reserve throughout the West ASP will remain at 10% of the total gross developable area.
4.5.1.1 School/Park

Woodbend is designating approximately 3.12 hectares of its municipal reserve allocation to facilitate development of a future school and park site in the north central Plan area. This joint site will have excellent access from the north-south collector road that is also a future transit route.

4.5.1.2 Greenways and Pocket Parks

Dedicated greenways wind north, south, east and west through the Plan area. These greenways open up in several areas and create small pocket parks which will provide opportunities for both active and passive recreation for residents and visitors. These greenways allow for a well-defined, easily accessible and walkable network in the neighbourhood. Greenways are also located in the southeast Plan area to transition Commercial and High Density Residential land uses to Low Density Residential land uses. The greenways also provide a connection to the stormwater management facility and the Environmental Reserve adjacent to it in the northeast corner of the Plan area.

A small park area is designated in the southeast Plan area immediately east of the Commercial site and Albert Products Pipe Line. Due to its unusual shape and restricted access the City has indicated their preference to retain this park in a natural state. This pocket park will also provide a transition between Commercial development proposed in Woodbend and future residential development in Deer Valley to the east. (See Figure 5)

A multiway is proposed north-south within the APPL right-of-way in the east Plan area. APPL approval will be required to construct the multiway and landscaping within their right-of-way. Should the multiway and/or landscaping not be acceptable, one standard on-street walk can still be provided along the east boundary within the local road right-of-way to maintain the north-south link.

Multiways will be constructed in accordance with the City’s Minimum Engineering Design Standards. The type and exact location of these multiways will be determined at the time of subdivision.

4.5.2 Environmental Reserve

Deer Creek runs along the east side of Woodbend and curves north, bisecting the northeast corner. This results in 1.51 hectares of environmental reserve being dedicated in this area.

4.5.3 Stormwater Management Facility

Stormwater management facilities (SWMF) are located in the west central and northeast Plan areas. Due to the natural topography of the overall drainage basin as well as the elevation of Deer Creek two interconnected SWMF’s are required. These stormwater management facilities will provide visual amenity in the community and provide for a variety of passive recreational activities.
Multiway is subject to approval from Alberta Products Pipeline Ltd.

Variance on Roadway will be Determined at Subdivision.
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>Catholic</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. 50 Avenue and 74 Street will both incorporate an enhanced entrance to alleviate traffic congestion and queuing issues entering/exiting the neighbourhood.

5.1 50 Avenue

The south boundary of Woodbend is formed by 50 Avenue and ultimately ties into Queen Elizabeth II Highway east of the Plan area. Primary access to the Woodbend neighbourhood is provided from 50 Avenue past the Commercial and HDR sites along the north/south major collector. All directional access will be allowed into the commercial area opposite the access to the Fire Hall south of 50 Avenue. An additional right-in right-out access will also be permitted a little further west along 50 Avenue.

5.2 74 Street

The west boundary of Woodbend is formed by 74 Street. Currently the City of Leduc is in the planning process of upgrading this roadway to a 4 lane divided Arterial. 74 Street is identified in the City of Leduc Transportation Master Plan (2012) as a long term capital planning objective aimed at alleviating internal City congestion however the timing of these improvements is uncertain. Another all directional access is provided at 74 Street. This access ties into to the internal east/west minor collector within Woodbend in the central Plan area.

5.3 Collector Road Network

Primary access within Woodbend is provided by two collector roadways which intersect near the centre of the neighbourhood. A roundabout proposed at this intersection will provide traffic calming and create a focal point in the Plan area. The 20 metre wide east/west minor collector will ultimately extend east from Deer Valley via Ameena Dr. and tie into the central intersection and onto 74 Street at the west boundary.

The 24 metre wide major collector that extends north from 50 Avenue, past the school/park site, will become the primary north south link through Woodbend.
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.

Due to the location of the Alberta Products Pipeline Ltd. right-of-way, the north-south local roadway in the east Plan area may require a variance from the City’s standard. The difference in the road right-of-way will be taken from the west boulevard and not the road surface, which will conform to a local road standard. This variance will still allow for residential development abutting the east boundary of Woodbend.

5.5 Pedestrian Linkages

Non-vehicular transportation (pedestrians, bicycles, etc.) will be able to utilize the dedicated greenway system in the Plan area as well as the sidewalks fronting and flanking residential lots. Pedestrian links will be designed to allow efficient and accessible connections and access points for neighbourhood residents to parks, school site, the commercial area and adjacent neighbourhood amenities.

5.6 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.

An Environmental 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 Assessment was utilized to confirm road widths and berm requirements within the Plan area and ensure that City of Leduc noise attenuation requirements can be met.
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 boundary of Woodbend at Deer Valley. The existing water main was constructed as part of the Deer Valley development and is located on the west end of Ameena Drive. The 350mm water main will ultimately be installed along the east/west minor collector roadway and the north/south major collector roadway. Water main 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 Awentia Street within the Deer Valley development. (See Figure 7) These 2 connections will allow for water looping for 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 in the Woodbend neighbourhood. (See Figure 8) This lift station will provide sanitary servicing for the Woodbend neighbourhood and the whole WASP basin. It also includes a forcemain from the proposed lift station to the east 750 / 900mm trunk sewer connection point at manhole 89-7. The 750mm sanitary trunk sewer for WASP is planned to cross 50 Avenue from the south 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. An alternate route may be required from the future collector in Woodbend west to 74 Street via 50 Avenue. Exact location of the sewer trunk will be confirmed by the City at detailed design.

The trunk sewer will be of sufficient depth that there will be no anticipated cover issues.

6.3 Stormwater Management System

The stormwater management system will consist of two stormwater 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 stormwater management 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 stormwater lift station will be installed in the northeast corner of pond 1, and will discharge via a forcemain into Pond 2.
The stormwater management system will also be designed to provide for a 1:5 Year flow rate for 50 Avenue road rights-of-way as well as a 1:100 Year flow rate for half of the 74 Street right-of-way. Alberta Transportation requires that no increased storm flows will be permitted from the planned development to enter Highway 39 (50 Avenue) ditches. There are no requirements to receive storm flows from lands directly south of Woodbend (NW-28-49-25-4). This has been confirmed through their Consultant ISL Engineering.

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 stormwater 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 stormwater lift station provides the ability to lift the storm flows to a more manageable level and is the proposed option to the stormwater 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 with in 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 Wood bend (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. An AGT Limited fibre optics line currently runs along the eastern and northern boundaries of Wood bend.
Location of Water Looping Through The Commercial Site Subject To Onsite Development.
Deer Creek allowable discharge rate at 1.9 L/s/ha Inclusive of both SWMF (Based on Deervalley Allowable Discharge Rate)

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

Note: No storm flows from lands to the south are anticipated.
7.0 Implementation

7.1 Development Staging

The Outline Plan has been divided into six 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 2-6 may see development to suit housing needs, servicing strategies and requirements.

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

<table>
<thead>
<tr>
<th>Land Uses</th>
<th>Ha</th>
<th>%</th>
<th>Units</th>
<th>%</th>
<th>Pop.</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td><strong>GROSS AREA</strong></td>
<td>64.70</td>
<td>100.0%</td>
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<tr>
<td>Environmental Reserve</td>
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<td>50 Avenue</td>
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<tr>
<td>Subtotal</td>
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<tr>
<td><strong>GROSS DEVELOPABLE AREA</strong></td>
<td>61.57</td>
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<tr>
<td><strong>LAND USES</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Municipal Reserve @ 10%</td>
<td>6.157</td>
<td>10.0%</td>
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<tr>
<td>Commercial</td>
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<td>9.6%</td>
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<tr>
<td>Municipal Reserve</td>
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<td>8.6%</td>
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<tr>
<td>Stormwater Management Facility</td>
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<td>9.4%</td>
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<td>Collector Road</td>
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<td>Arterial Roadway Dedication</td>
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<tr>
<td>Pipeline Right-of-Way</td>
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<td>1.9%</td>
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<tr>
<td><strong>SUBTOTAL - LAND USES</strong></td>
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<td>52.3%</td>
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<tr>
<td><strong>RESIDENTIAL</strong></td>
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<tr>
<td>Low Density Residential</td>
<td>28.15</td>
<td>45.7%</td>
<td>563</td>
<td>70.1%</td>
<td>1,463</td>
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<td>29.9%</td>
<td>480</td>
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<tr>
<td><strong>SUBTOTAL - RESIDENTIAL</strong></td>
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<td>1,943</td>
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<td><strong>Units /Net Residential Hectare</strong></td>
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<tr>
<td><strong>Residential Density</strong></td>
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</tr>
<tr>
<td>Low Density Residential</td>
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<td></td>
<td>20 units / hectares</td>
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</tr>
<tr>
<td>High Density Residential</td>
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<td>200 units / hectares</td>
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<tr>
<td><strong>Population Density</strong></td>
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<tr>
<td>Low Density Residential</td>
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<td>2.6 persons / unit</td>
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<tr>
<td>High Density Residential</td>
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<td></td>
<td>2.0 persons / unit</td>
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</tbody>
</table>