

Approved by Resolution 168-16 April 12 2016

APPROVED APRIL 12, 2016

ROYAL WOODS

Outline Plan

Lot 2 Block 1 Plan 052-6699 &
Lot 3 Block 1 Plan 152-0635
within the E½ of NE 32-50-24-W4

East Vistas Local Area Structure Plan
Leduc County

March 10, 2016

File #11710100

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1 Background Information

1.1 Introduction

The *Royal Woods Outline Plan* is prepared in support of staged residential and commercial development within the *East Vistas Local Area Structure Plan* (EV LASP) in Leduc County which is situated between the Town of Beaumont and the Nisku Business Industrial Park. The East Vistas area is a prescribed growth area for the County which will contain urban residential, commercial and town center development that will provide local employment and commercial opportunities to residents. The *Royal Woods Outline Plan* will have a range of housing forms from single family to multi-family development along with a commercial site to serve the greater region.

1.2 Purpose

This Outline Plan has been prepared to provide a detailed framework for the future residential and commercial development of lands legally described as Lot 2 Block 1 Plan 052-6699 and Lot 3 Block 1 Plan 152-0635 within the East ½ of NE 32-50-24-4. It will provide an overview of the land use concept and describes the subject area, services, transportation and detailed servicing requirements needed to support the proposed development. Preliminary servicing of the plan area was included in the *Royal Oaks Estates Outline Plan* which had focused on detailed servicing of the west eighty acres of the quarter section.

This Plan supports the submitted redistricting application for the subject lands and to provide guidance for future subdivision applications.

1.3 Plan Area and Location

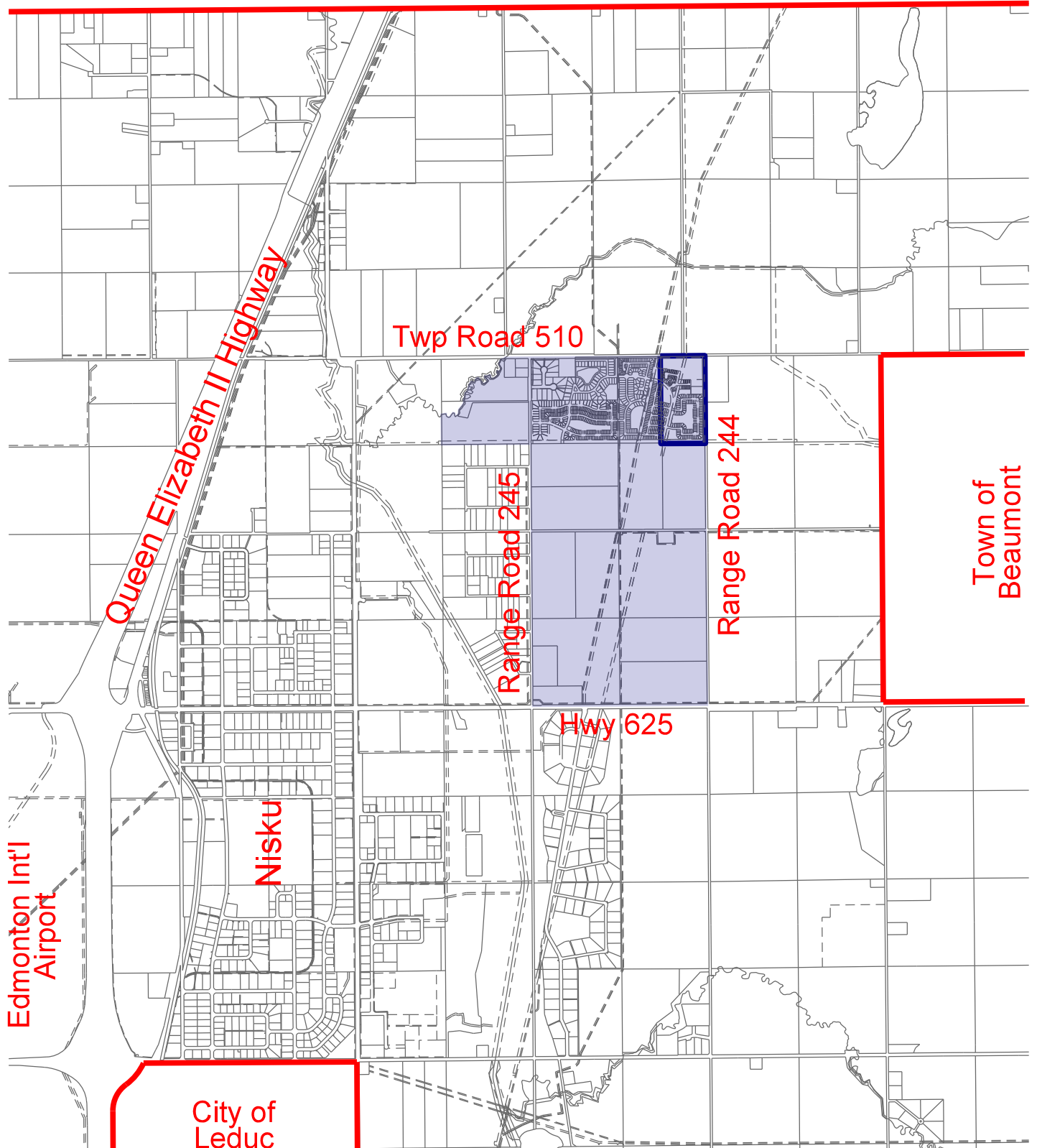
The subject land is located west of Range Road 244 and south of Township Road 510. It is the East ½ of the NE 32 quarter section which is in the northeast portion of the *East Vistas Local Area Structure Plan* and located within Capital Region Board Priority Growth Area “C_E”. The location of the parcel relative to the East Vistas plan boundary and in context to the region is shown in **Figure 1 Location Plan**.

1.4 Ownership

The plan area contains two parcels with a total area of 30.7ha (75.9 acres). The proponent of the Outline Plan, *1858811 Alberta Ltd.*, is the majority owner with a titled area of 29.9 ha (73.9 acres) and the remaining 0.80 ha (2.0 acres) is in private ownership.

The rights of way within the plan area are: the 32.0m (105 feet) wide regional sanitary sewer trunk line right of way adjacent to the south boundary of the parcel area orientated east west, and transecting the eighty acres from the south west to north east, overhead power transmission line rights of way totalling approximately 24.4m (80 feet) in width.

City of Edmonton



— ROYAL WOODS Outline Plan Boundary
 ■ East Vistas Local Area Structure Plan

Figure 1 LOCATION PLAN

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
 Lot 3 Block 1 Plan 152 0635
 within NE 32-50-24-W4, Leduc County

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2 Policy Context

2.1 Municipal Development Plan

The proposed Outline Plan is consistent with *Leduc County Municipal Development Plan Bylaw 35-99* (MDP) which was adopted by Council in October 1999. The MDP recognizes that urban growth areas in the Leduc-Beaumont-Devon sub-region are a major growth driver in the Edmonton capital region. These growth areas will occur where ready access to municipal servicing and high order transportation corridors exist and be developed utilizing Smart Growth principles. This outline plan area is identified as being within an Urban growth area.

2.2 North Major Area Structure Plan

The *North Major Area Structure Plan (ASP) Bylaw No. 25-05* was adopted by Council in November 2006 and further amended to support the adoption of the *East Vistas Local Area Structure Plan* and its plan area as an Urban Service area. The proposed Outline Plan is consistent with this ASP and as it proposes urban style development utilizing Smart Growth principles and municipal services.

2.3 East Vistas Local Area Structure Plan

This Outline Plan is located in the north east portion of the *East Vistas Local Area Structure Plan Bylaw No. 15-09 (EV LASP)*, which was adopted by Council in September 2010. The proposed densities, uses, servicing and development concept of the Outline Plan is consistent with the principles of the EV LASP. The Outline Plan is being prepared as a requirement for redistricting and subdivision as per the EV LASP. The proposed plan will meet the design requirements articulated in this plan including a walkable community, green space and municipal servicing.

2.4 Land Use Bylaw

This Outline Plan is to support an amendment to the *Leduc County Land Use Bylaw No. 7-08* for redistricting of the majority of the subject parcel into districts. The proposed delineation of the proposed districts is consistent in principle with the proposed *Development Concept* in the EV LASP. The land is currently designated A - Agricultural. A redistricting application has been submitted to the County concurrent with the Outline Plan submission to designate the lands to RU3 - Residential Urban 3 District, RM1 - Residential Multi Family District and UC2 – Urban Commercial 2 District.

2.5 Capital Region Board

The Outline Plan area falls within the Priority Growth Area C_e of the Capital Region Plan. Target densities for this growth area are 25 to 35 units/net hectare. The overall EV LASP is targeted to have a density of 27.3 units/net ha which will be met at the time of full development of the East Vistas plan. Each outline plan will demonstrate with its projected densities how the overall target density will be met.

3 Site Features

3.1 Site Description

The homestead parcel, containing a house and accessory farm buildings, is flanking the east boundary in the central area of the plan area. The site is surrounded by cultivated farm land and some relatively small tree stands surrounding the house. There are accessory buildings west of the homestead parcel on the numbered company parcel. An overhead power transmission line transects the center of the plan area in a south west to north east direction.

The site topography is gently undulating with a central high point west of the homestead with an elevation change of approximately 8 metres to the low point in the southeast corner.

An aerial view of the site dated August 2012 is shown in **Figure 2 Aerial Photo** and the contours of the land are depicted in **Figure 3 Topography**. All existing improvements from previous uses will be removed at the time of development of those areas.

3.2 Adjacent Land Use

West of the plan area in the adjacent eighty acres is the **Royal Oaks** community containing residential lots, both occupied and unoccupied, a storm water management facility and park space on the west portion. The land adjacent to the west boundary of the plan area, and east of the pipeline corridor transecting the Royal Oaks plan area, has a conditional subdivision approval in place however no development has commenced at this time.

South, east and north of the plan area are agricultural parcels, some with homesteads. The southerly lands are proposed to be developed for urban style development as per the East Vistas LASP.

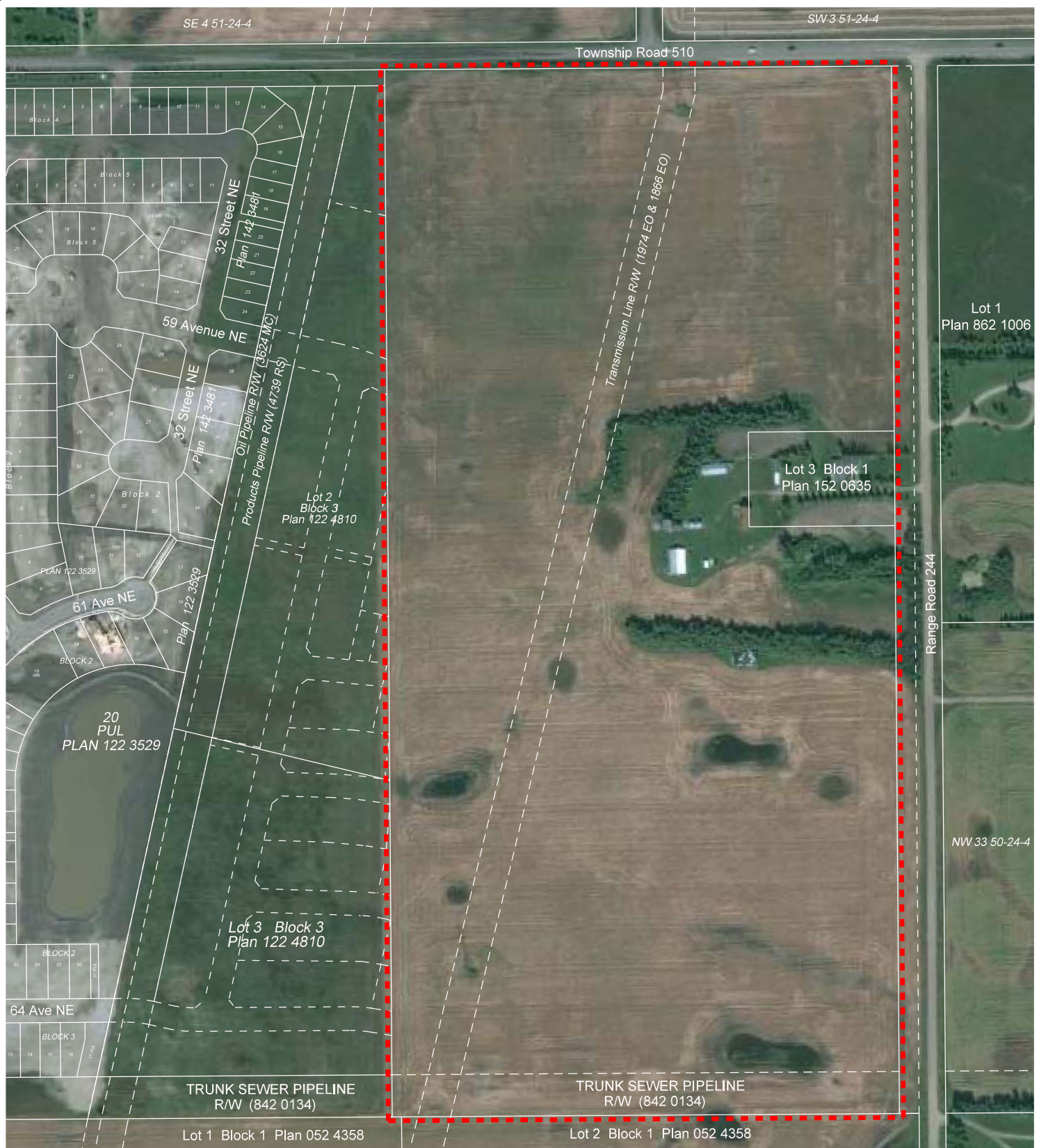
3.3 Historical Resources Impact Assessment

The *Historic Resources Act Clearance* letter from *Government of Alberta Historic Resources Management* was received May 4, 2007 indicating that clearance for the East Vistas LASP was granted and that a Historical Resources Impact Assessment is not required for any development within the plan area. This document is included in the Appendices of the East Vistas LASP.

3.4 Biophysical Assessment

A **Biophysical Assessment** was prepared for the East Vistas LASP by *Bruce Thompson and Associates Inc.* in September 2007 and updated in October 2012. No recognized key vegetation areas within the plan area were identified, however, two Class 2 and one Class 3 wetlands were delineated (Stewart and Kantrud classification system). The Class 3 wetland (waypoint 432) is described as slough grass dominant with some cattails, bulrushes, marsh reed grass and spike rushes occupying an area of 0.21 hectares. The first Class 2 wetland (waypoint 544), with a total area of 0.10 hectares, is described as marsh reed and slough grass, a few cattails and some standing water. The second Class 2 wetland (waypoint number 559) is a roadside marsh with marsh reed grass and a few cattails in an area of 0.10 ha. Approval must be granted by *Alberta Environment and Sustainable Resource Development*, under the *Water Act, R.S.A. 2000, c.W-3*, to infill these wetlands for development.

Existing tree stands surrounding the homestead site were not identified as warranting preservation given their limited size.



--- Plan Boundary

Figure 2 AERIAL PHOTO

ROYAL WOODS OUTLINE PLAN

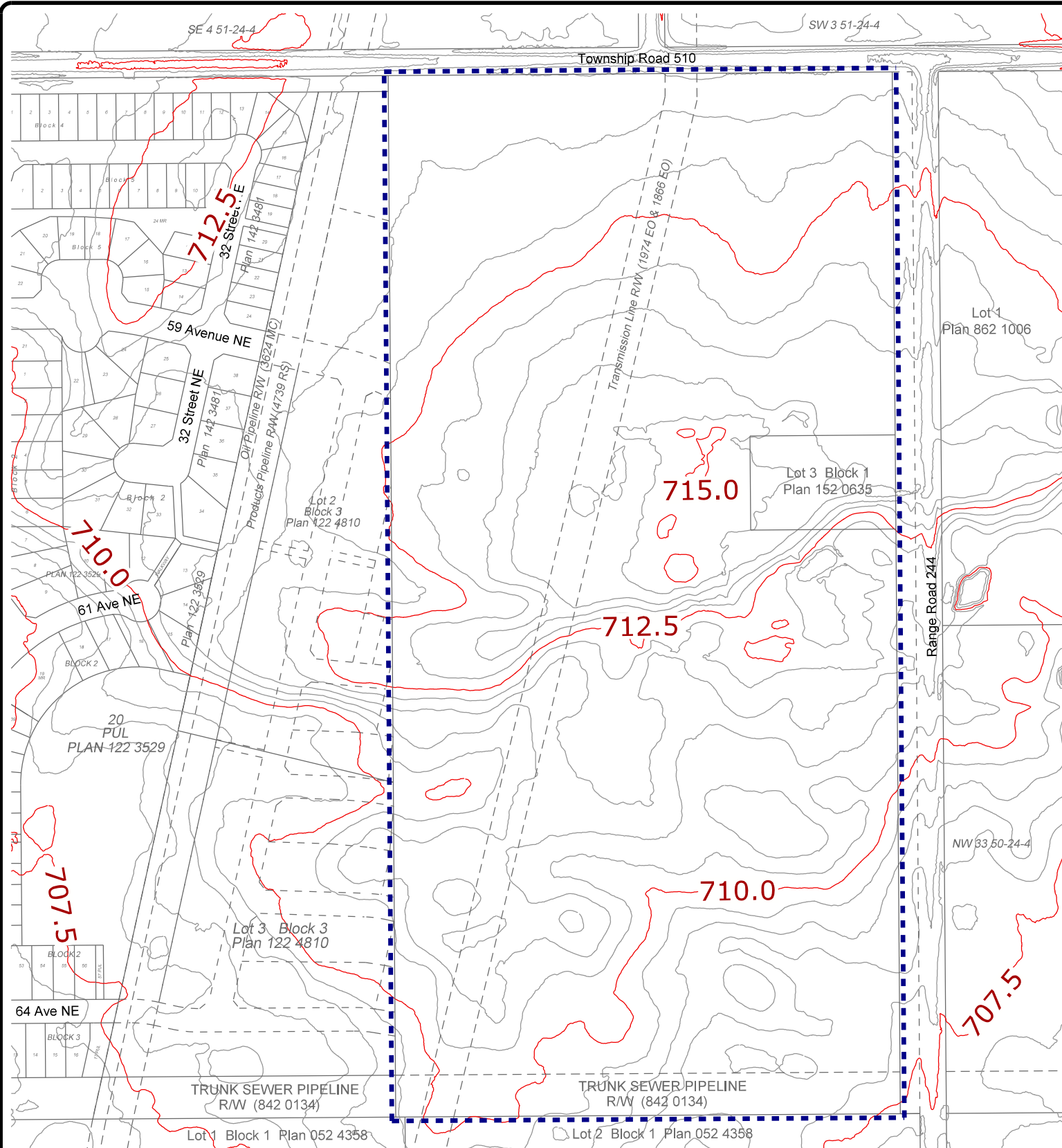
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Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

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--- Plan Boundary

Figure 3 TOPOGRAPHY

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

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3.5 Environmental Site Assessment

A **Phase I Environmental Site Assessment East Half of the NE1/4, 32-50-24-W4M** was prepared by *CT & Associates Engineering Inc.* dated September 2013. A copy of this report will be submitted under separate cover. There were no environmental concerns from current and historical uses of the plan area and adjacent lands. The subject property is free of contamination and no further investigation is required.

3.6 Geotechnical Assessment

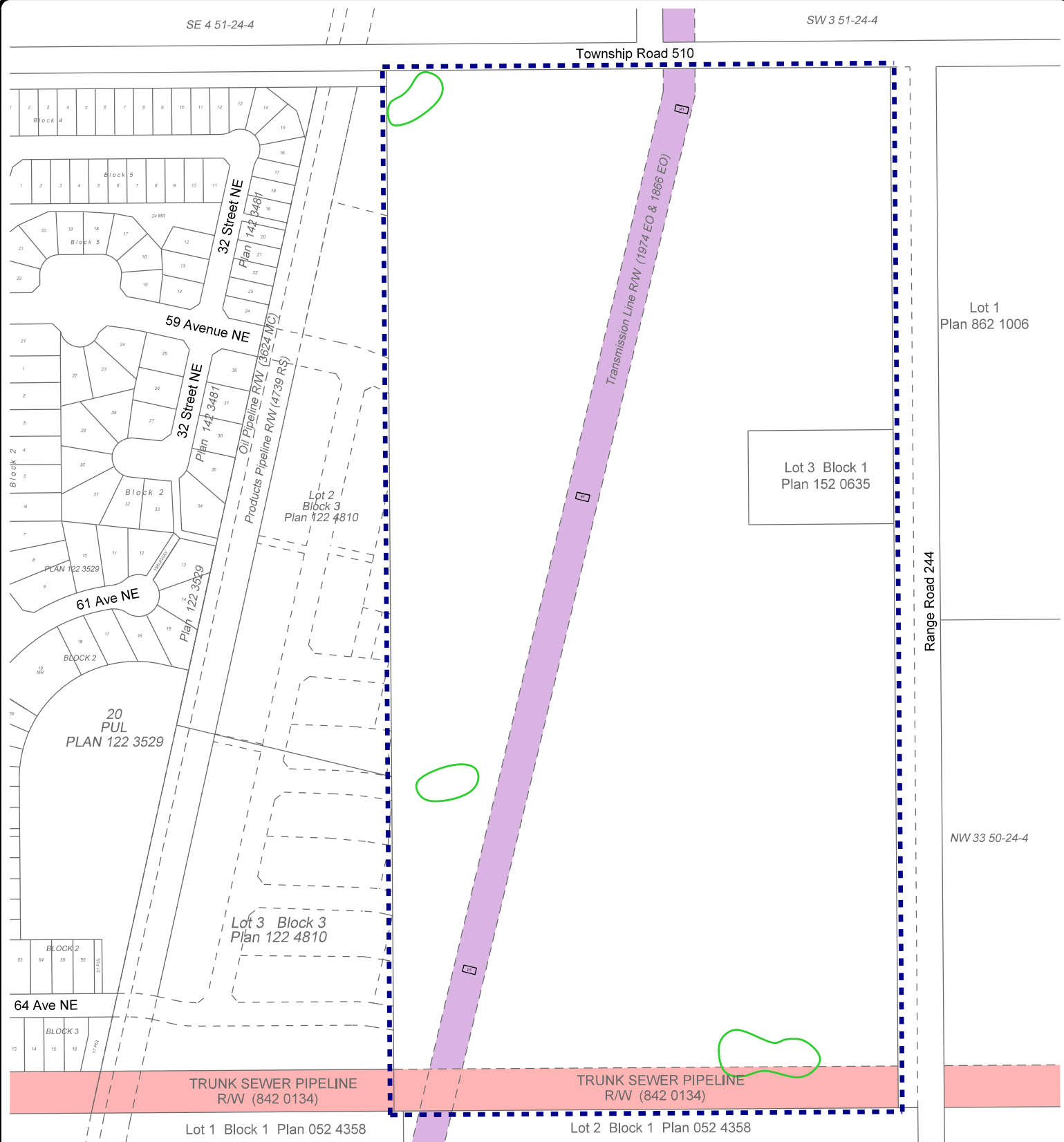
A site specific geotechnical investigation was conducted by *CT & Associates Engineering Inc.* in September 2013. The proposed uses are feasible on the subject site based upon the soil and groundwater conditions. Standard construction practices are generally applicable for site grading, utilities installation, building foundation and road construction. The report, **Geotechnical Evaluation East Half of the NE1/4, 32-50-24-W4M** dated October 2013 will be submitted under separate cover.

3.7 Constraints to Development

According to the Alberta Energy Regulator (previously the Energy Resources Conservation Board (ERCB)), the land development package for the subject lands indicates that there are no activities by the oil and gas sector including sour gas facilities on or near the parcel that would constrain the proposed development. As well, an online assessment via the abandoned wells viewer site indicates that there are no abandoned wells in close proximity to the plan area that will affect the proposed development. A copy of the **Alberta Abandoned Well Locations Map** dated July 14, 2015 is included in **Appendix A**.

On the south boundary of the parcel, there is the regional sanitary sewer utility right of way totaling 32.0m in width (SERTS line). An overhead power transmission line contained within two rights of way crosses the site diagonally. Transmission tower locations have been identified and future development pattern needs to minimize crossing of the rights of way and be as close to ninety degrees as possible. No additional setbacks above and beyond Leduc County standards from the boundary of the rights of way are required to development.

Three wetlands have been identified on the subject land. Avoidance of these wetlands in the future development was reviewed however given the location of one wetland partially on the regional sewer line, the second partially in the future road widening for Township Road 510 and the third under the future internal collector road avoidance was not possible. As such, Water Act clearance has been applied for the proposed removal. **Figure 4** depicts the **Constraints** to the plan area.



- Plan Boundary
- Regional Sewer Line
- Power Transmission Line Right of Way
- Wetlands
- Transmission Towers

Figure 4 CONSTRAINTS

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

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4 Development Concept

4.1 Parcel Usage

The proposed development concept for the *Royal Woods Outline Plan* is depicted in **Figure 5 Development Concept**. This concept is in concurrence with the **Royal Oaks Estates Outline Plan Amendment** adopted by resolution on January 13, 2015 with respect to the collector road alignment, open space and commercial site. The number and area of multi-dwelling residential complexes (multifamily sites) have been maintained in order to maintain density and concurrence with the EV LASP however the sites have been spatially readjusted.

This concept is based on the spatial distribution of densities depicted in the development concept figure within the East Vistas LASP. Higher density development (RU3 district) is proposed for the majority of the residential development (74.2%) with multi-family (RM1) proposed for the balance. The higher density residential development has been placed as to optimize utilization of the proposed walkway/open space system with placement of proposed lots backing onto open space such as the municipal reserve and public utility lot for the storm water management system where ever possible. Two of the multifamily sites are adjacent to the commercial site to enable resident convenience for local shopping opportunities. The third site is located west of the proposed Municipal Reserve adjacent to the collector road still within easy walking distance of the local commercial. The fourth site is located adjacent to the open space and trail system in the south adjacent to the proposed public utility lot containing the sanitary sewer right of way. The placement of open space will be discussed in the Section 4.2.

The commercial sites are located adjacent to the arterial roads (Township Road 510 and Range Road 244) in compliance with the EV LASP. Access to the site will be from both the arterial roads and an internal access from the Royal Woods Outline Plan road system for convenience to residents. It is noted that timing of development of the commercial sites is independent of the residential development to the south and will be subject to market demand. Proposed staging is representative only and staging may occur out of sequence if servicing and market needs warrant.

This Outline Plan does not preclude potential alternative land uses for the commercial block in the future, should the need arise due to market conditions. The proposed servicing infrastructure has inherent flexibility to allow for RM1 multi-family use and alternative commercial use such as shopping center (such as City of Edmonton CSC zone), should it be proposed in the future. This includes including water, sanitary, storm, and transportation.

The blocks delineating lots, as proposed in the Outline Plan, are in compliance with the approved Land Use Bylaw for the respective districts. It is noted that a conditional subdivision approval may contain multiple stages or phases which may be registered singularly or in plural over time, dependent on market conditions.

It is noted that the East Vistas LASP targets a density of *27.3 units/net residential ha* for the total local area structure plan area. It is recognized that each parcel/outline plan may not meet the targeted density dependent upon its spatial location within the plan area and proposed land use.

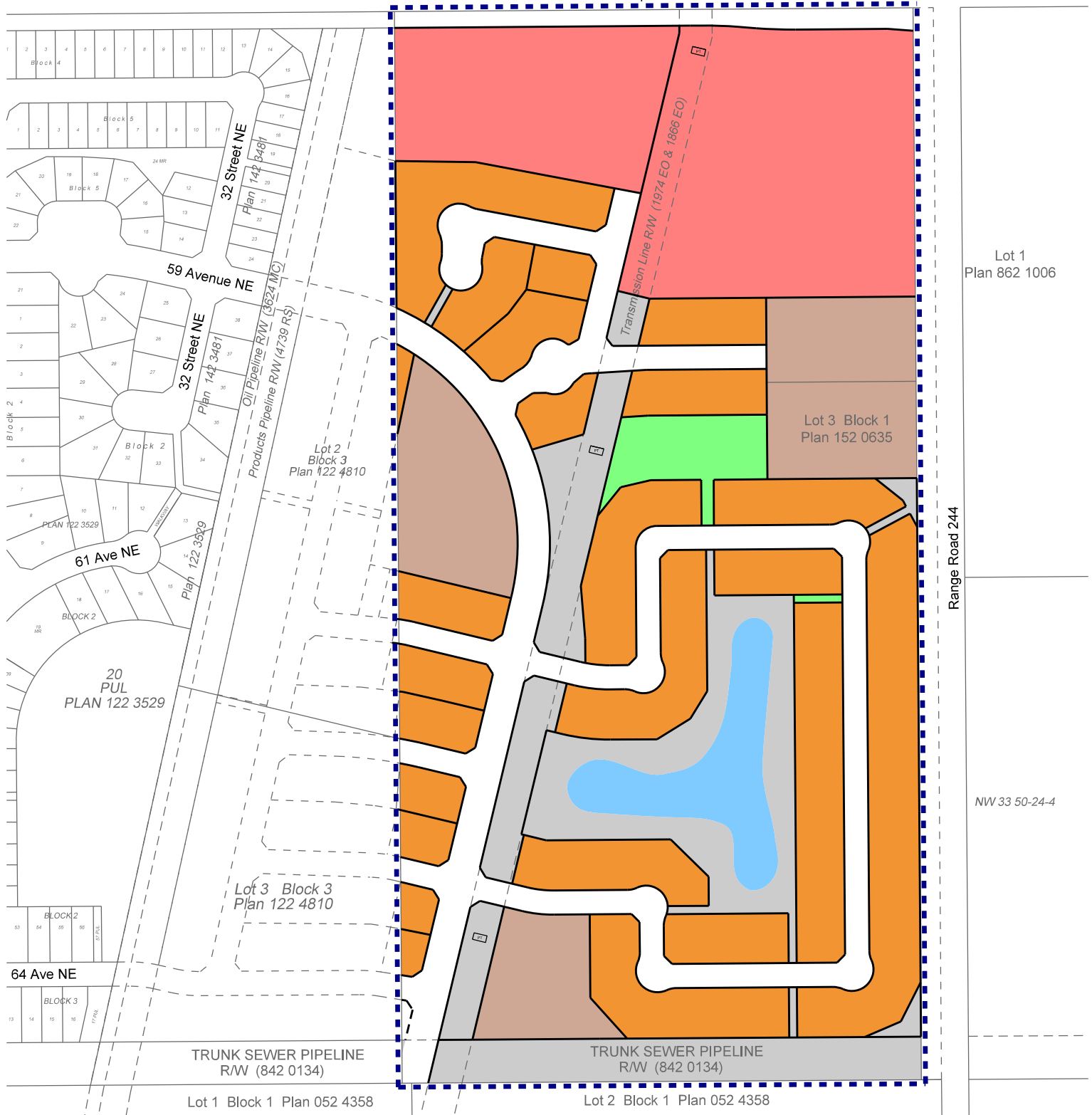
We note that the overall density of the full buildout of the EV LASP will need to meet this target to fulfill the requirements of this Priority Growth Area.

The Outline Plan statistics for capacity projections for the proposed land use concept in the Outline Plan area and for the full quarter section are shown in **Table 1: Land Use Statistics**. This table also indicates population generation based upon the maximum density allowed under the current County Land Use Bylaw. This proposed density is subject to change, however all proposed lots must meet the requirements of the applicable district of the approved County Land Use Bylaw. The proposed density for the Royal Woods Outline Plan is 42.2 units/net residential ha.

Table 1: Proposed Land Use Statistics

Land Use Distribution in Outline Plan						
	Area (ha)					
Total Plan area	30.7					
Environmental Reserve	0.0					
Gross Developable Area	30.7	Net				
		Area (ha)	%GDA			
Municipal Reserve		0.6	2.0%			
Public Utility Lots		5.5	17.8%			
Circulation		5.2	16.9%			
Infrastructure and Parks Area		11.3				
Higher Density Residential (RU3)		9.9	32.1%			
Multi Dwelling Residential (RM1)		3.4	11.1%			
Residential Developable Area		13.3				
Commercial Developable Area		6.1	20.1%			
Total		30.7	100.0%			
Land Use – As proposed in Outline Plan Area (OP)	Area (ha)	%	Maximum DU/ ha	DU	PPDU	Proposed Pop’n
Higher Density Residential (RU3)	9.9	74.4%	24.0	238	2.6	618
Multi Dwelling Residential (RM1)	3.4	25.6%	95.0	323	2.6	840
Total	13.3	100%		561		1458
Proposed Density		42.2	units / net residential ha			
Land Use – As Proposed and Existing in Quarter Section	Area (ha)	%		DU	PPDU	Proposed Pop’n
Medium Density Residential (RU2)	7.9	25.7%		89	2.6	231
Higher Density Residential (RU3)	17.8	57.7%		381	2.6	991
Multi Dwelling Residential (RM1)	5.1	16.6%		404	2.6	1050
Total	30.8			874		2272
		100%				
Proposed Density for quarter section		28.4	units /net	residential	ha	

Township Road 510



- Plan Boundary
- Higher Density Residential - RU3 District
- Multi Family Residential - RM1 District
- Municipal Reserve
- Storm Water Management Facility (Public Utility Lot)
- Commercial - UC2 District
- Public Utility Lot

Figure 5 DEVELOPMENT CONCEPT

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

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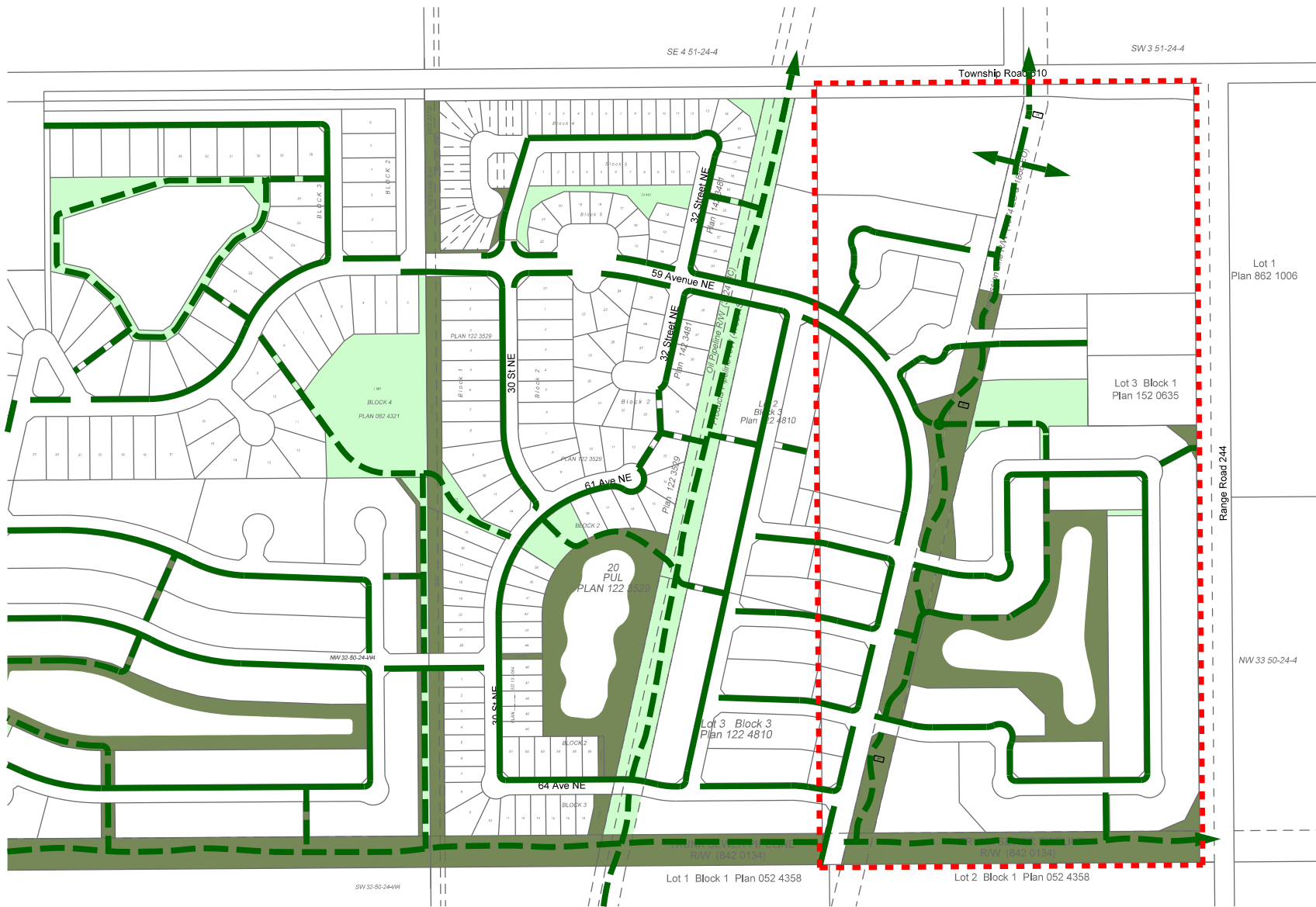


4.2 Open Space

Figure 6 depicts the ***Parks & Open Space Concept*** for the plan area. Residential development has been located as to maximize exposure and accessibility to open/green space for residents in both the higher density and multi-dwelling complexes. Open space will be a combination of both Municipal Reserve and Public Utility Lots. Open space will be developed in accordance with Leduc County Park Development standards with the Landscaping Plan submitted in the detailed engineering drawing set providing details on development.

A north south trail connection in conjunction with the southerly east-west trail connection will provide accessibility and linkages to regional trail networks and other communities within the EV LASP area. The sidewalk on internal roads will provide additional opportunities for connectivity and walkability. Other trail connections are to provide internal linkages to the central open space containing the storm water management facility where a trail will partially circumscribe the water feature.

All Municipal Reserve owing shall be in accordance with the East Vistas LASP and the Municipal Government Act. At the discretion of the Subdivision Authority, municipal reserve credit may be granted for trail development within public utility lots.



- Plan Boundary
- Municipal Reserve
- Public Utility Lot
- Trail Network
- Sidewalks

Figure 6 PARKS & OPEN SPACE CONCEPT

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

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5 Public Input

An open house was held August 18, 2015 at the *Nisku Recreation Center* to garner feedback from adjacent landowners and interested parties with respect to the proposed outline plan and redistricting application to be submitted to Leduc County for consideration. **Appendix B Open House Summary** summarizes the feedback from the open house. Eighteen people attended the open house and no negative feedback was received on the proposal. Notification of the open house was by direct mailout to residents in the area by Leduc County and via advertising for two weeks in the **County Market** prior to the meeting date.

The private owners of the homestead parcel have provided written support to the proponent of the *Royal Woods Outline Plan* with respect to the proposed land use on their parcel.

6 Implementation

6.1 Development Sequence

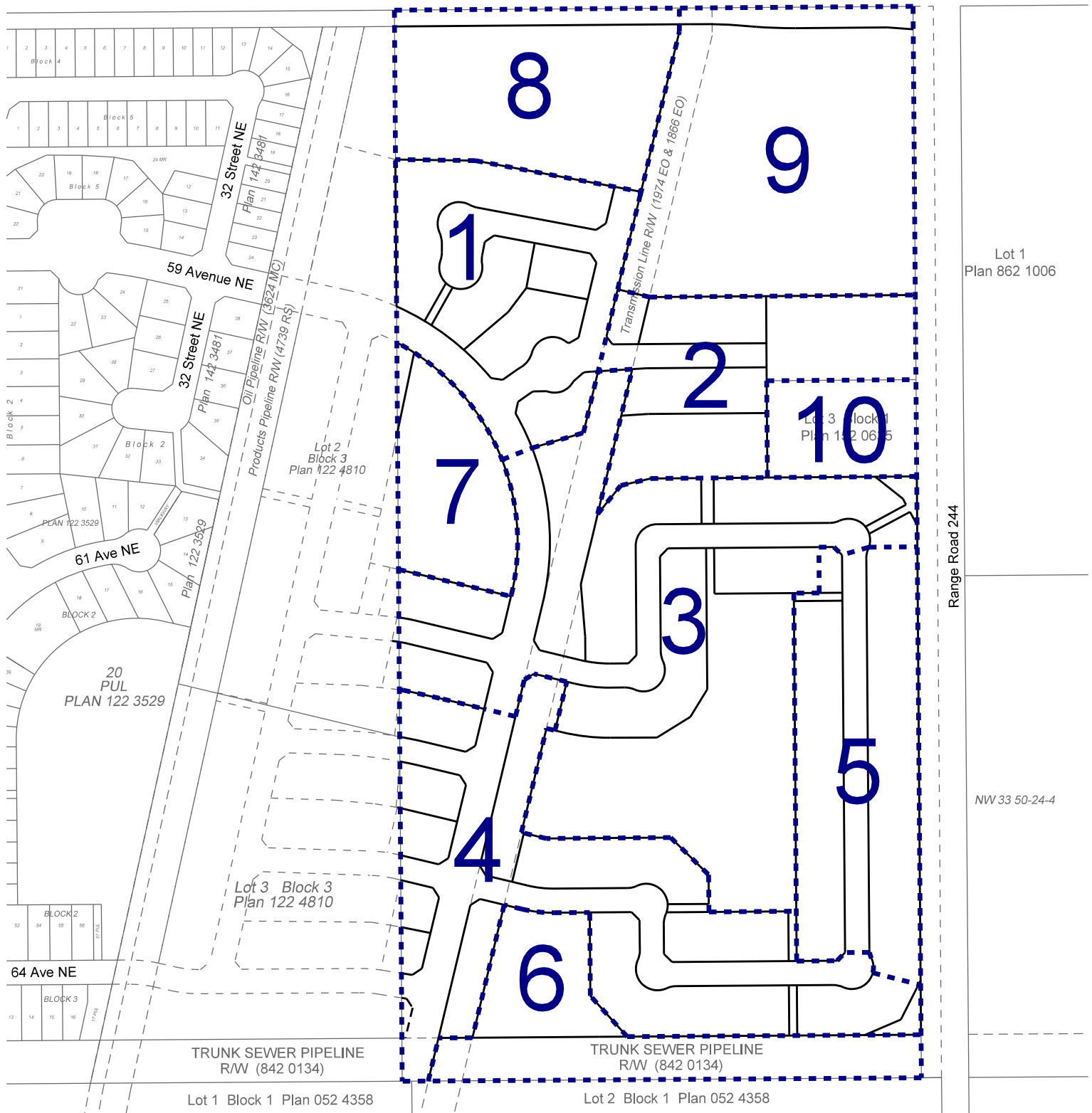
Proposed staging is indicated in **Figure 7 Development Sequence**. All stages may be developed concurrently, singular, plural or out of sequence as the market demands. The commercial staging order can occur non-sequentially to the residential stages if servicing is available and market demand warrants.

A conditional subdivision approval may contain multiple phases which may be registered singularly or in plural over time. Legal road access must be provided to each stage in order to proceed.

6.2 Approval Process

Amendments to the *Royal Woods Outline Plan* may be brought forward to Leduc County by the developer for the County's consideration.

Township Road 510



--- Stage Boundary

Note: Timing of development of the commercial sites (8 & 9) is independent of the residential development to the south and will be subject to market demand. Proposed staging is representative only and staging may occur out of sequence if servicing and market needs warrant.

Figure 7 DEVELOPMENT SEQUENCE

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within NE 32-50-24-W4, Leduc County

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7 Infrastructure

7.1 Circulation and Access

The **Transportation Network** plan is shown on **Figure 8**.

Royal Woods is proposed to have two collector roadway connections, one local roadway connection, and one or more emergency access connections (depending on staging). The first collector roadway connection will be to the existing Royal Oaks Stage 2 development in the northwest. If Royal Woods is to develop before Royal Oaks Stage 5, the section of 59 Ave NE road within Stage 5 will be built with Royal Woods. The second collector road connection will extend south through Royal Woods to “Collector C”, which will connect east to Range Road 244. A local road connection from Royal Woods to Royal Oaks Stage 3 will be constructed as part of Royal Oaks Stage 5 development. Finally, an emergency access will be provided northeast of the SWMF and will connect east to Range Road 244.

The primary access to the Stage 8 commercial site will be located onto Township Road 510, with the exact location to be determined during Stage 8 development. Access to the Stage 9 commercial site will be located at the southeast corner of the commercial site, via Range Road 244. An access easement to Range Road 244 will be registered on the commercial site in favour of the multifamily site directly south of the site.

The roadway network within Royal Woods will have an urban cross section, meaning a 24m wide right-of-way for the collector road, 20m for the minor collector, and 18m wide right-of-ways for the local roads. Prior to the time of conditional subdivision approval for ultimate development, additional roadway dedication for Range Road 244 and Township Road 510 beyond what is currently dedicated/proposed within the Outline Plan is to be ascertained.

A **Traffic Impact Assessment (TIA)** (February 2016) report for Royal Woods was prepared by Scheffer Andrew Ltd. and has been submitted to the County under separate cover.

The TIA does not preclude potential alternative land uses for the commercial block in the future, should the need arise due to market conditions. The proposed transportation infrastructure has inherent flexibility to allow for RM1 multi-family use and alternative commercial use such as shopping center (such as City of Edmonton CSC zone), should it be proposed in the future.

Based on the findings of the TIA, the following roadway improvements and mitigations are expected to be necessary into the future based on projected background traffic growth and development in the East Vistas neighbourhood:

Short Term (2015 – 2019)

It is assumed that by 2019, Stages 1 through 3 (as shown on **Figure 7**) will have been developed.

- All analysed intersections will be operating at good level of service. As there are no identified problems in the operation of the considered intersections, their current layout and traffic control system ensure safe and reliable operation when accommodating post development traffic projected in 2019.
- It is recommended to illuminate all intersections along Township Road 510 once it is widened to a four lane urban arterial.
- All internal roadways within the Royal Woods development are recommended to be constructed as urban roadways ensuring pedestrian connectivity within the development and at the future connection to the new non-motorized pathway network built along Township Road 510 and Range Road 245, planned as part of the arterial roadway upgrades.

Mid Term (2019 – 2021)

It is assumed that by 2021, Stages 4 through 6 (as shown on **Figure 7**) will have been developed.

- Based on the analyses, the intersections of Township Road 510 with Range Road 245 and Collector A both warrant signalization prior to 2021. According to the East Vistas LASP, however, more collectors will be constructed to serve future development which is expected to result in lower traffic volume at the intersection of Township Road 510 and Collector A in the long term. As a result of the construction of additional collectors, a traffic signal control may not be warranted in the 2021 horizon year.
- The capacity analyses indicate all considered intersections will operate at an acceptable level of service when accommodating post development traffic in 2021 horizon, except intersection of Township Road 510 with Range Road 245 and Collector A. When analysing possible improvement scenarios, the introduction of an auxiliary right turn lane on the west approach and an auxiliary left turn lane on the east approach of the intersection of Township Road 510 and Range Road 245 was found to will improve the intersection operation. In the case of Township Road 510 and Collector A, the introduction of an auxiliary left turn lane on the east approach will improve the operation of the intersection.
- It is recommended to illuminate all intersections along Township Road 510 and Range Road 245 once they are widened to four lane urban arterials.
- As mentioned above, it is recommended to ensure pedestrian connectivity within all new developments to eventually connect with the new non-motorized pathway network built along Township Road 510 and Range Road 245, planned as part of their upgrading works to the arterial roadways.

Mid Term (2021 – 2025)

It is assumed that by 2025, Stages 7 and 10 (as shown on **Figure 7**) will have been developed.

- Based on the analyses, installation of traffic signals will be warranted at the following intersections prior to 2025:

- Township Road 510 & Range Road 245;
- Township Road 510 & Collector A and;
- Township Road 510 and Access 1/Range Road 243N.

According to the East Vistas LASP, however, more collectors will be constructed to serve future development which is expected to result in lower traffic volume at the intersection of Township Road 510 and Collector A in the long term. As a result of the construction of additional collectors, a traffic signal control may not be warranted in the 2025 horizon year.

- The following intersections improvements are recommended to ensure their operation at an expected level of service:

- Intersection of Township Road 510 & Range Road 244N:
 - Introduction of an EB auxiliary left turn lane;
- Intersection of Township Road 510 & Range Road 245:
 - Installation of traffic signals (recommended after Twp. Rd. 510 widening);
 - Introduction of WB left, EB right and NB left turn lane;
- Intersection of Township Road 510 & Collector A:
 - Installation of traffic signals (recommended after Twp. Rd. 510 widening);
 - Introduction of WB left, EB right and NB left turn lane;
- Intersection of Township Road 510 & Commercial Access 1/Range Road 243N:
 - Installation of traffic signals (recommended after Twp. Rd. 510 widening and location of commercial access has been determined);
 - Introduction of WB left and EB left turn lane or;

It is recommended to re-visit traffic volumes and patterns at all intersections and conduct traffic counts (at least 12 hours) at the site full built out stage (prior to 2025) to confirm if any intersection improvement works are required.

- As mentioned above, it is recommended to illuminate all intersections along Township Road 510 and Range Road 245, and the Commercial Access 2 intersection on Range Road 244 once roadways are widened to four lane urban arterials.
- As mentioned in previous horizons, it is recommended to ensure pedestrian connectivity within all new developments to eventually connect with the new non-motorized pathway network built along Township Road 510 and Range Road 245, planned as part of their upgrading works to the arterial roadways.

- Township Road 510 could remain a rural two-lane arterial roadway before 2025. However, widening of Township Road 510 to a four lane major arterial should be considered shortly after that year.

Long Term (2025 – 2035)

- Township Road 510 should be widened to a four lane arterial roadway before 2035 as per plans included in the Township Road 510 Functional Planning Study.
- Township Road 510 from Range Road 244 to the Town of Beaumont can accommodate the expected traffic volume under two lane undivided roadway conditions. However, traffic volumes are anticipated to increase to the point that twinning of this section of Township Road 510 should be considered as contemplated in the Township Road 510 Functional Planning Study.
- It is expected that the intersection of Township Road 510 and Range Roads 245/244N will be reconfigured as contemplated in the Township Road 510 Functional Planning Study before 2035. A traffic control signal is warranted before 2035, and upon the recommended improvements this intersection will operate at LOS C or better.
- It is expected that the intersection of Township Road 510 and Range Roads 244/243N will be reconfigured as contemplated in the Township Road 510 Functional Planning Study before 2035. A traffic control signal is warranted before 2035, and upon the recommended improvements this intersection will operate at LOS C or better.
- A traffic control signal will be warranted before 2035 at this intersection of Township Road 510 and Collector A. No exclusive right turn or left turn lane is required on Township Road 510 at this intersection.

In discussions with Leduc County planning and engineering departments, it was identified that the local road in Stage 1 leading to Stage 8 and 9 commercial sites should be widened to from 9m to 11.5m to allow for safer road operation and street side parking next to personal residences and the adjacent park space. The widened roadway is shown on **Figure 8**. However, it was also identified that there should also be traffic calming measures implemented on this road. Such measures may include curb extensions (i.e. bump-outs, neckdowns), or any other appropriate measures identified and designed at the detailed engineering design stage.

A public transportation node is shown schematically along Twp Rd 510 on **Figure 8**, consistent with the East Vistas LASP. Although there is no current public transportation service in the East Vistas LASP, including Royal Woods, the LASP does provision for future service and identifies the need for transportation nodes within the plan area, including one shown on **Figure 8**. At this time it is not known if this node at Royal Woods will be a local or regional transportation link, and its size requirements are not known. This Outline Plan and TIA assumes that the node will be a bus stop with possibly with one or a few routes assigned to it, located on the south side of Twp Rd 510 adjacent to Royal Wood plan area and in proximity to the commercial area. The internal major collector road will also support a future public transit service with future bus stops.

7.2 Noise Impact Assessment

A **Noise Impact Assessment (NIA)** for Royal Woods was prepared by Scheffer Andrew Ltd. and has been included in the TIA (February 2016) report. Based on the findings of the NIA, the following improvements and mitigations are expected to be necessary into the future:

- A new standard noise barrier (1.80m high) on top of the 1.0m high berm along east and north Royal Woods property line should be constructed. This approach is similar to the mitigation measures proposed for other residential sites within East Vistas LASP and should provide adequate noise attenuation from Range Road 244.

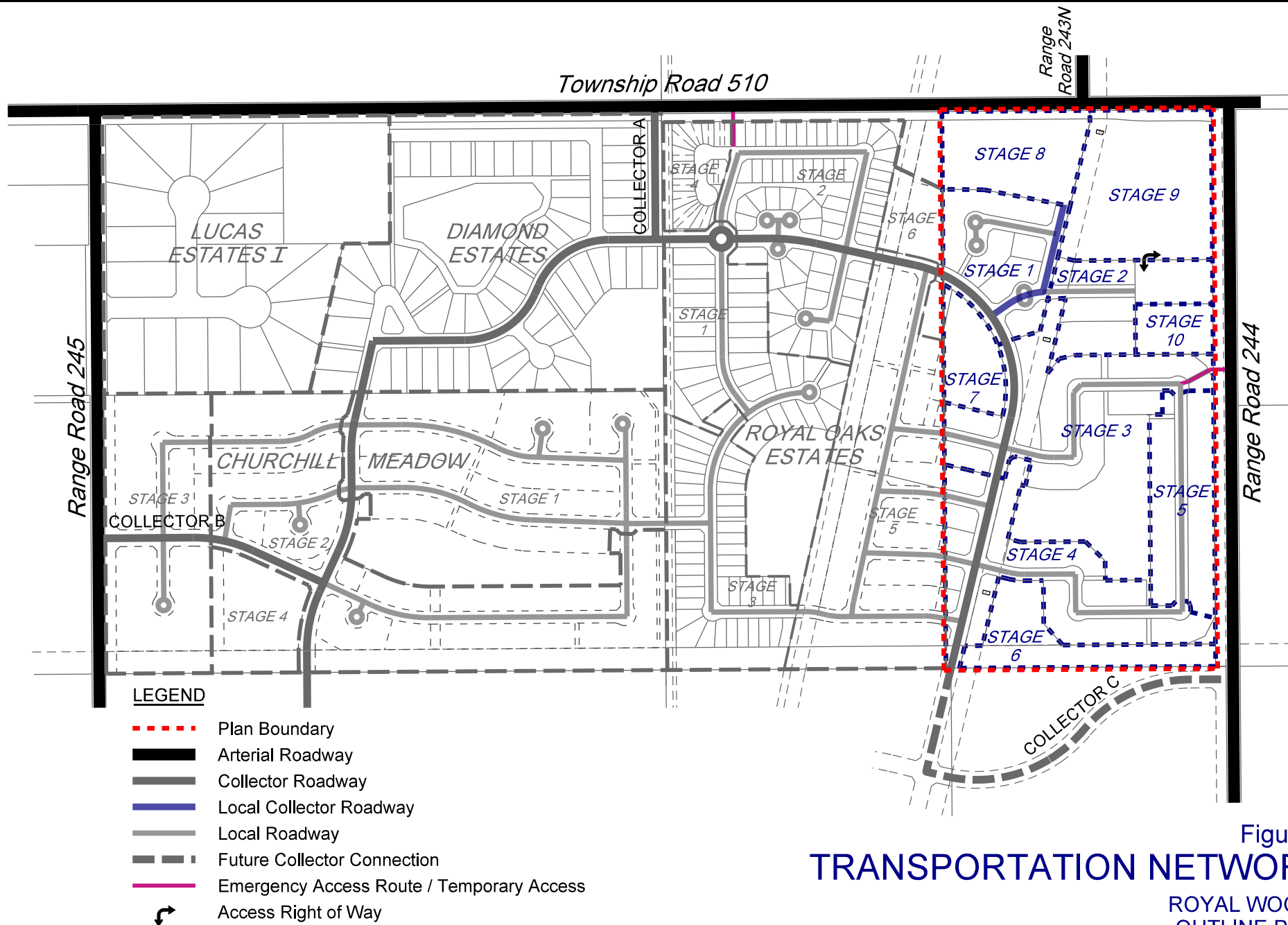


Figure 8
TRANSPORTATION NETWORK
ROYAL WOODS
OUTLINE PLAN

Note:

Commercial Access 1 Shall be Located on Twp Rd 510 - Exact Location to be Determined at Stage 9 & 10 Subdivision Approval
 Commercial Access 2 Shall be Located on Rge Rd 244 - Exact Location to be Determined at Stage 9 & 10 Subdivision Approval

-

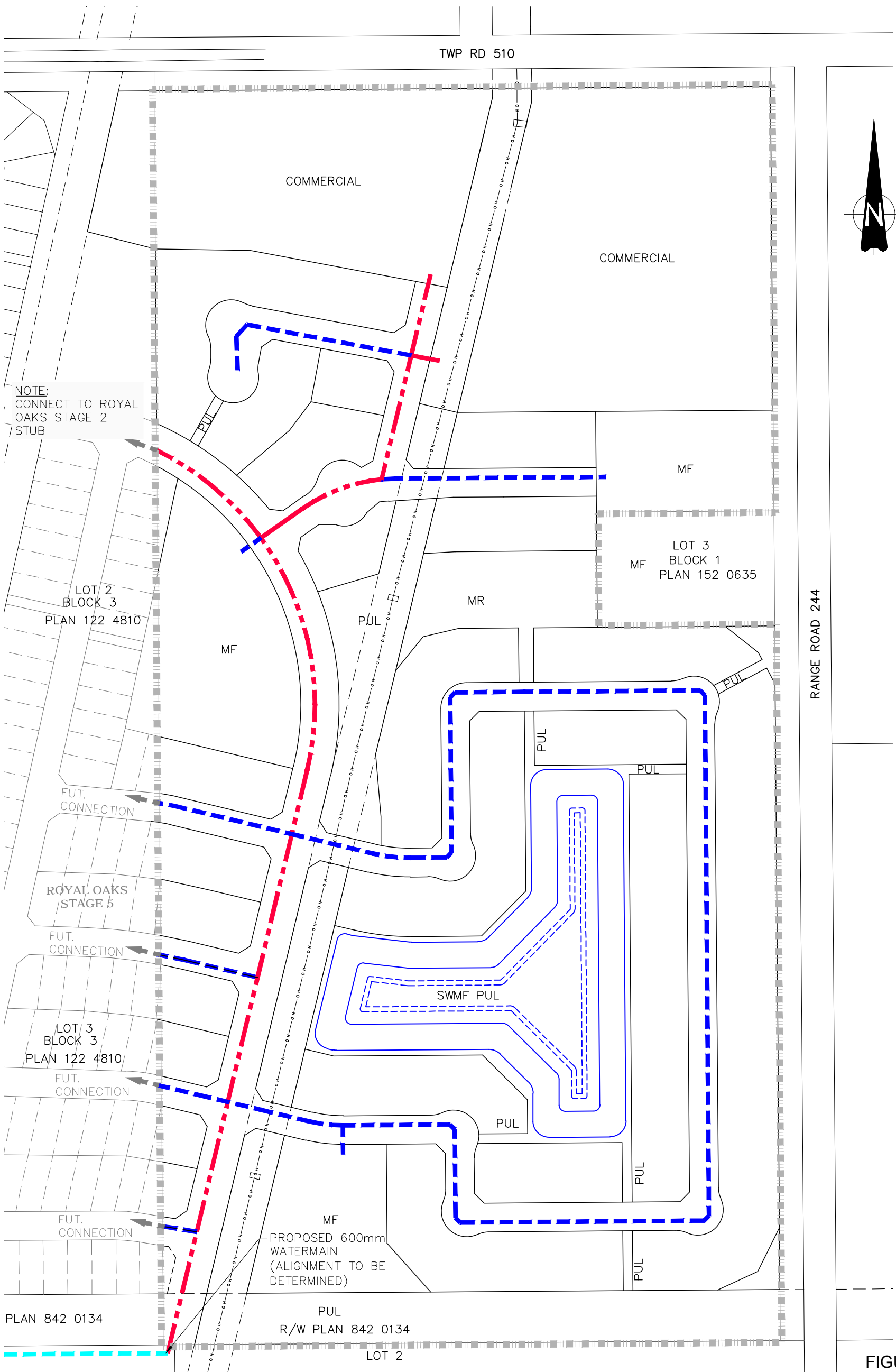
7.3 Water Servicing

The proposed water distribution network is shown on **Figure 9 Proposed Ultimate Water Distribution Network**.

Initially, the main water supply to the plan area will be from the existing 300mm municipal water main located at the east end of 59 AVE NE in Royal Oaks Stage 2. This existing watermain will be extended as required with the construction of subdivision stages. A network of smaller water mains will service the proposed residential development. Commercial development will be serviced via the 300mm main from the south, through local roads in the plan area.

In addition, a connection to the plan area will be made via future 200mm water main stubs proposed in the future Royal Oaks Estates Stage 5 subdivision, located immediately west of the plan area.

The future 600mm watermain is proposed to extend from the East Vistas Area Structure Plan area to the existing Leduc County East Pump house. The 600mm off-site watermain is necessary for water and fire flow servicing of the greater East Vistas neighbourhood as described in the East Vistas Municipal Servicing Study prepared by Challenger Engineering, dated January 2010. However, construction of the 600mm off-site watermain is expected to be triggered by the multi-family sites and/or commercial sites in the plan area that require sufficiently greater fire flows than what the current infrastructure can supply. Preliminary water network analysis indicates that residential development can be serviced from the existing infrastructure, including provision of 100 L/s fire flow, without requiring the construction of the 600mm off-site watermain. This will be verified at each stage of subdivision to determine that the water servicing and fire flow requirements are being met by the water distribution system.



NOTE
PROPOSED PIPE
SIZES SUBJECT TO
DETAILED DESIGN.

LEGEND

- PROPOSED 200mm WATERMAIN
- PROPOSED 300mm WATERMAIN
- PROPOSED 600mm WATERMAIN
- STUDY AREA BOUNDARY

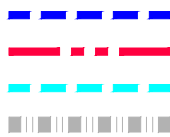


FIGURE 9
ROYAL WOODS
OUTLINE PLAN
E 1/2 OF NE 32-50-24-W4
LEDUC COUNTY
Scale = 1:2500
March 10, 2016
117101

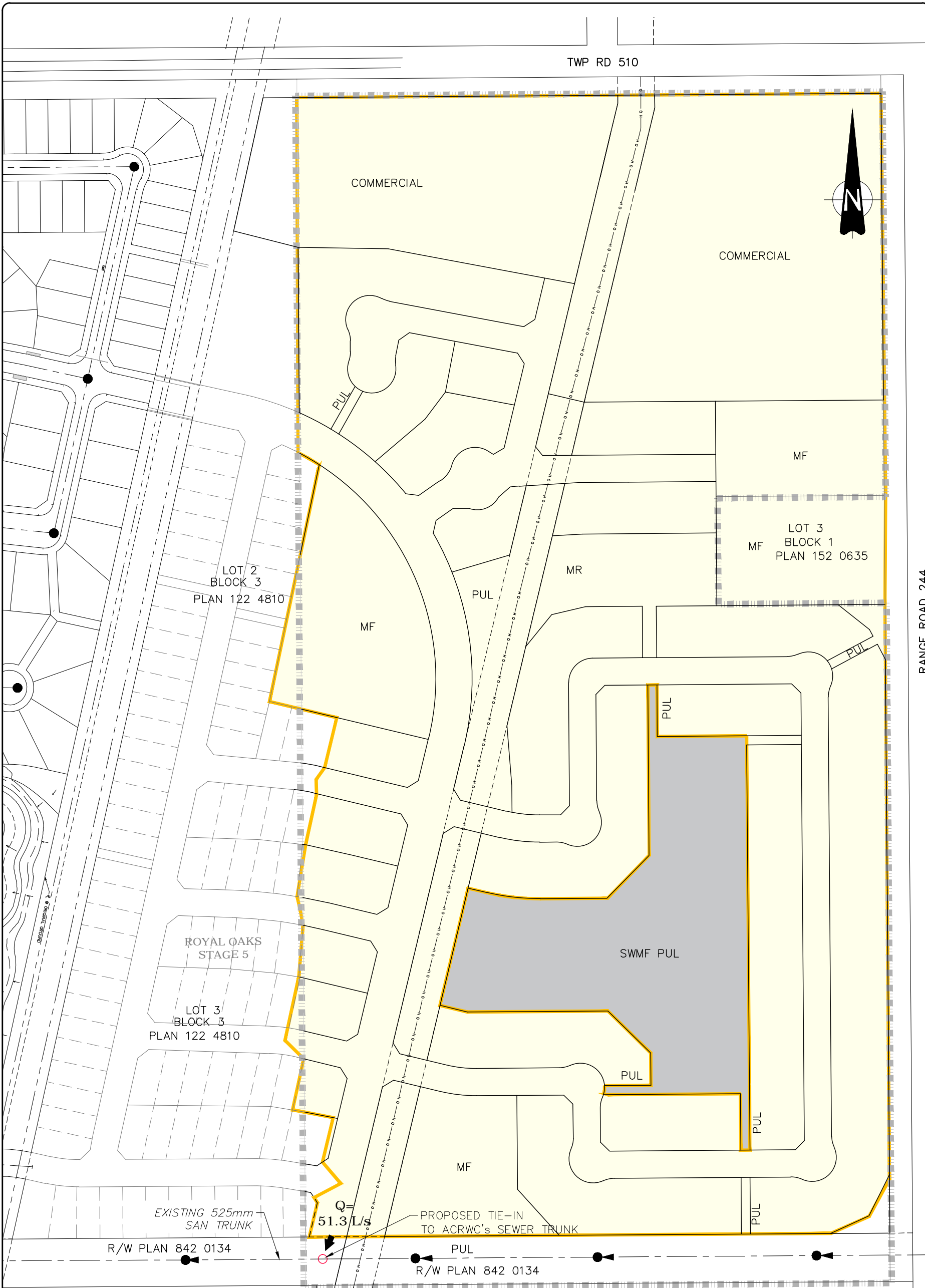
7.4 Sanitary Servicing

The **Proposed Sanitary Basin Plan** is shown on **Figure 10**.

All residential development within the plan area will be serviced by gravity flow sewers. The sanitary basin (approx. 26.27 ha) is proposed to discharge sewage flows directly to the existing 525mm Beaumont sewer trunk operated by Alberta Capital Region Wastewater Commission (ACRWC). The trunk runs within R/W Plan 842 0134 and has been designed by ACRWC to accommodate the proposed flows from the plan area.

The proposed tie-in location and the calculated design flows are shown on **Figure 10**. The preliminary location of sanitary system catchments, pipe alignments and pipe sizes are illustrated on **Figure 11 Proposed Sanitary System**. Supporting detailed sanitary sewer design calculations are enclosed in **Appendix C**. Sanitary sewer calculations will have to be verified at each subdivision stage and adjusted as necessary.

The remaining lot within the plan area, described as Lot 3 Block 1 Plan 152-0635 has been provisioned to be serviced via the proposed sanitary sewer network. Servicing of this lot is subject to a cost recovery (to be determined/calculated with the applicable Development Agreement).



LEGEND

SANITARY BASIN BOUNDARY

OVERALL SANITARY BASIN AREA (SEE FIG 11 FOR DETAILED CATCHMENT AREAS)

STUDY AREA BOUNDARY



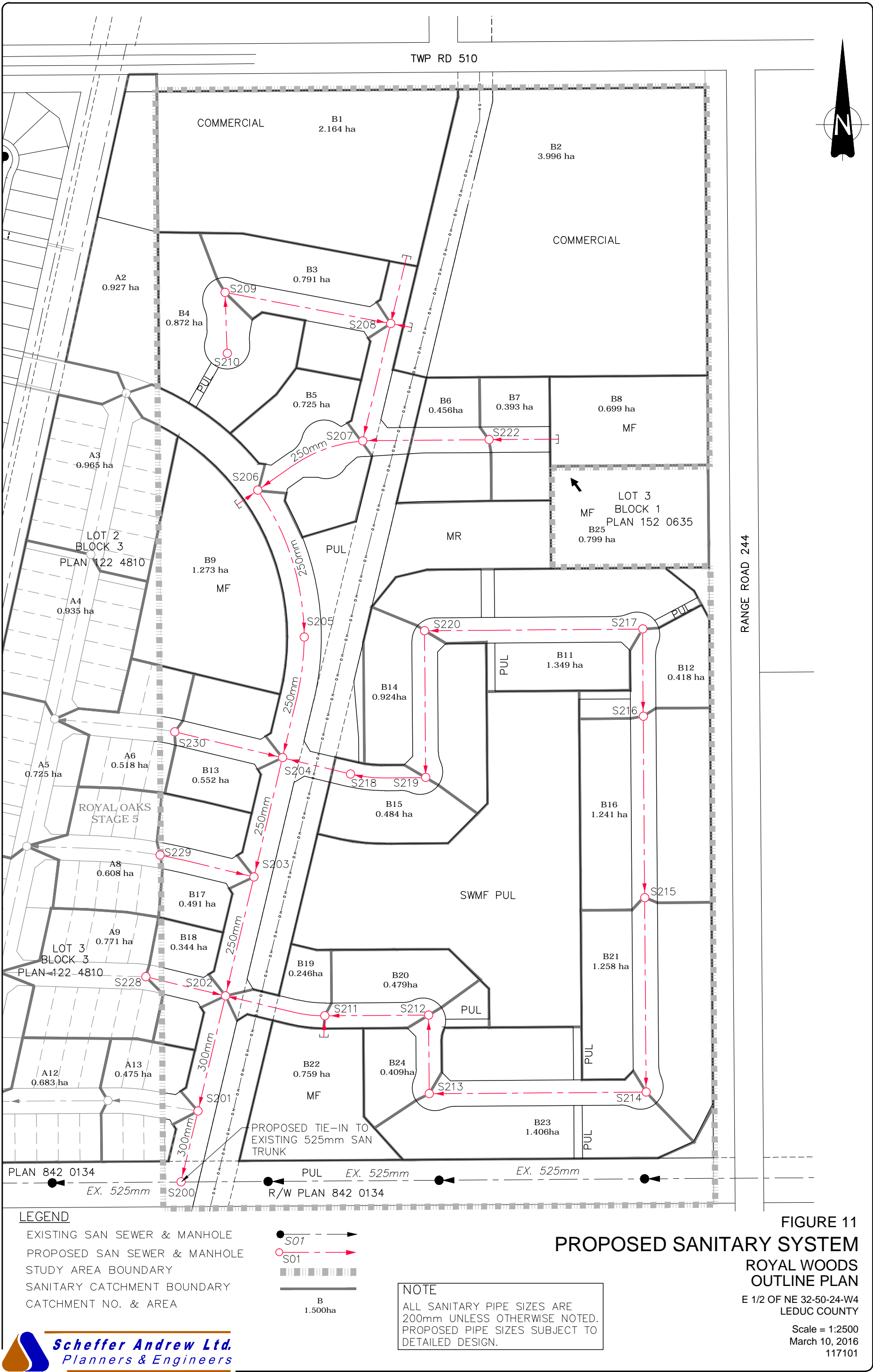
26.27 ha



FIGURE 10
PROPOSED SANITARY BASIN PLAN
ROYAL WOODS
OUTLINE PLAN

E 1/2 OF NE 32-50-24-W4
LEDUC COUNTY

Scale = 1:2500
March 10, 2016
117101



7.5 Storm water Management

The proposed drainage system for the plan area consists of storm pipes, catch basins, ditches, roadside gutters, and a constructed storm water management facility (SWMF). The proposed SWMF is designed to store the post-development runoff from the plan area (approx. 31.2 ha catchment) during critical storm events with a controlled discharge into the downstream system. The proposed SWMF will provide the necessary water storage and flood control measures for the plan area. **Figure 12 Proposed Storm System** shows the proposed SWMF catchment area.

During a 1-in-5 year storm, the storm pipes will collect and direct the flows to SWMF. The proposed post-development catchment areas are shown on **Figure 13 Proposed Minor Storm System**. Storm pipes have been sized to accommodate minor flows from all residential, multi-family, and commercial lots. Supporting calculations are attached in **Appendix D**.

Major storm flows exceeding the 1-in-5 year intensity will be drained by the roadway system to the pond. **Figure 14 Proposed Grading Plan** shows the major drainage flow routing.

The SWMF is proposed to discharge storm water at a controlled flow rate to the existing Royal Oaks Stage 1 storm pond located west of the plan area. The discharge of the pond will be via 450mm storm outfall pipes which will connect the two ponds. A detailed storm modeling report will be required prior to SWMF construction to confirm the final design elevations of the SWMF, design volumes, discharge rates, and other design parameters and considerations related to the proposed discharge and flow through of storm water to the existing Royal Oaks SWMF.

The proposed SWMF has been designed to accommodate the 1-in-100 year storm event in accordance with the Leduc County Design Guidelines and Construction Standards for Developments dated May 2005 and Alberta Environment regulations. The 1-in-100 year SWMF storage requirements are summarized in the table below.

Table 2: Stormwater Management Requirements for 1-in-100 Year, 24-Hour Storm Event

Facility	Storage Function	Allotted Area (ha)	Freeboard Elev. (m)	HWL Elev. (m)	NWL Elev. (m)	Bottom Elev. (m)	Active Storage Vol. (m ³)	Max. Controlled Release Rate (L/s)
Royal Oaks SWMF	Retention	2.2	706.60	705.83	704.00	Varies	20,873	Max. 156 L/s release to Range Road 245 Outfall (2.71 L/s/ha)
Royal Woods SWMF	Retention	2.4	707.96	706.46	705.50	Varies	33,595	Max. 106 L/s to Royal Oaks Pond

It is anticipated the SWMF construction may be staged. This will be determined through the planning and engineering design for the initial development phase.

The remaining lot within the plan area, described as Lot3, Block 1, Plan 152 0635 has been provisioned to be serviced via the proposed storm sewer network. Servicing of this lot is subject to a cost recovery (to be determined/calculated with the applicable Development Agreement).

An emergency spillway system has been designed in the event that successive significant storms occur. If the SWMF is at capacity and another storm occurs before it has had time to draw down, water will spill through the storm overflow pipes into a ditch at the south side of the plan area. If water in the SWMF rises above the freeboard elevation of 707.22m, water will spill over a highpoint in the ditch matching the freeboard elevation and flow south along the existing ditch on the west side of Range Road 244. This emergency spillway design is preliminary and subject to detailed design.

7.5.1 Block Grading Plan

Preliminary roadway elevations and block-by-block lot grades are shown on **Figure 14 Proposed Grading Plan**.

The grading plan has been designed to provide frost cover for utilities and to minimize the volume of earthworks. Detailed lot grading plans will be required with each subdivision stage.

Major storm water flow conveyance routes are indicated on the grading plan. As per City of Edmonton standards and best engineering practice, the proposed roadway grades prevent ponding in the roadway in excess of 0.35m during a major storm event.

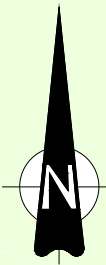
7.6 Shallow Utilities

Underground natural gas in the plan area will be supplied by AltaGas. Gas mains are located and can be extended from east end of 59th AVE NE.

Telephone, cable TV, internet service is provided by both Telus and Shaw. These services are available from 59th AVE NE.

Power for services and roadway lighting will be supplied from 59th AVE NE by Battle River REA.

TWP RD 510



COMMERCIAL

COMMERCIAL

MF

LOT 3
BLOCK 1
PLAN 152 0635

MR

LOT 2
BLOCK 3
PLAN 122 4810

MF

D228

D229

D230

D231

D226

D227

226A

D225A

D225

D220

D218

D219

D217

INLET 1

D223

D222

D221

TO ROYAL
OAKS STAGE 1

D200

D201

D202

D224

D204

D203

ROYAL OAKS
STAGE 5

D209

D208

D204A

OUTLET

SWMF PUL

BOTTOM 703.5

NWL 705.5

HWL 706.72

FB 707.22

D216

INLET 2

PUL

D207

D206

D205

EMERGENCY
OVERFLOW OUTLET

D212

D213A

PUL

D214

D215

LOT 3
BLOCK 3
PLAN 122 4810

D211

D210

R/W PLAN 842 0134

PUL
R/W PLAN 842 0134

OUTLET/MAJOR
OVERFLOW

LEGEND

- PROPOSED STORM SEWER OR FOUNDATION DRAIN & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- STUDY AREA BOUNDARY
- STORM WATER MANAGEMENT FACILITY (SWMF)
- BASIN BOUNDARY
- OVERALL STORM BASIN AREA (SEE FIG 13
FOR DETAILED CATCHMENT AREAS)



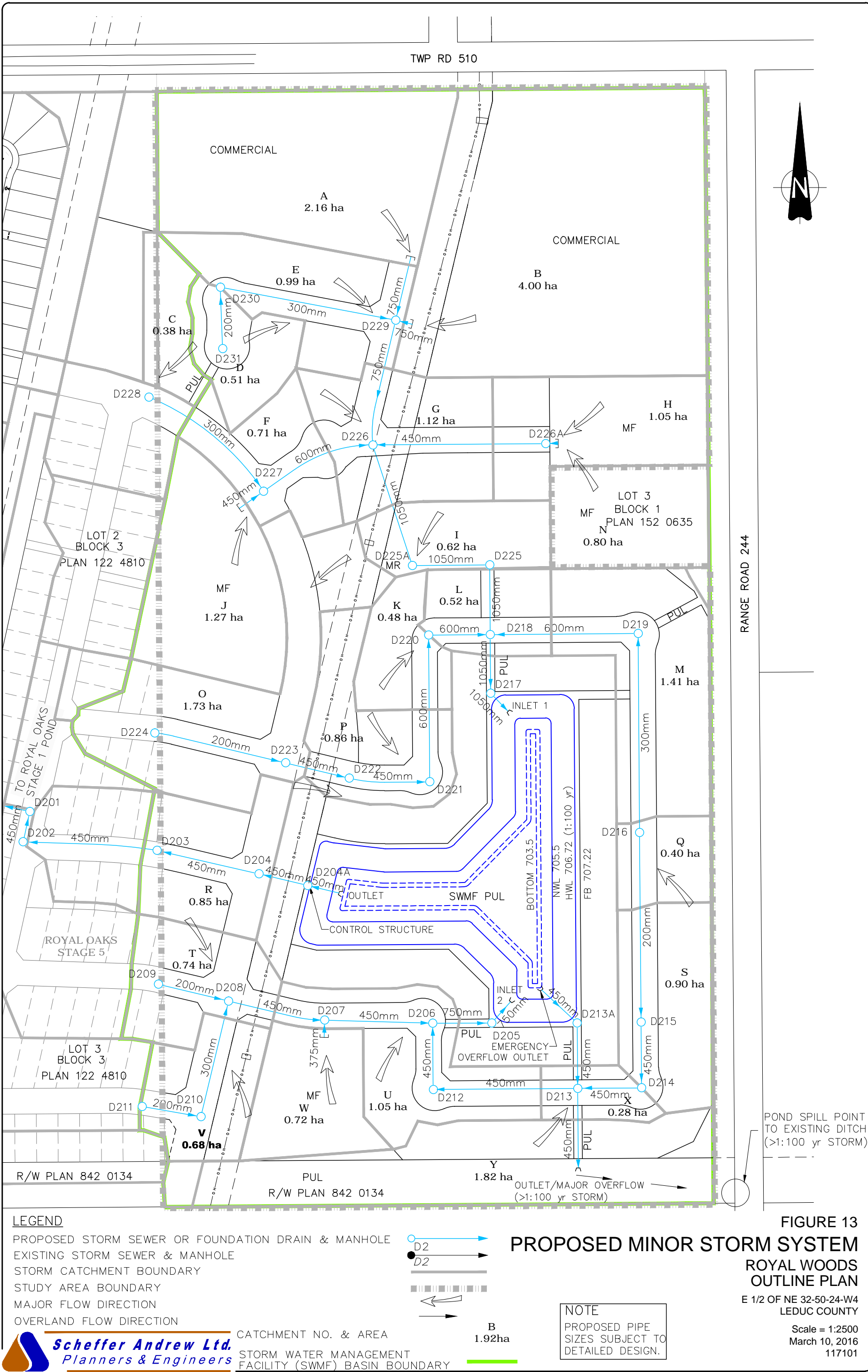
31.2 ha

FIGURE 12

PROPOSED STORM SYSTEM EAST VISTA COMMUNITIES OUTLINE PLAN

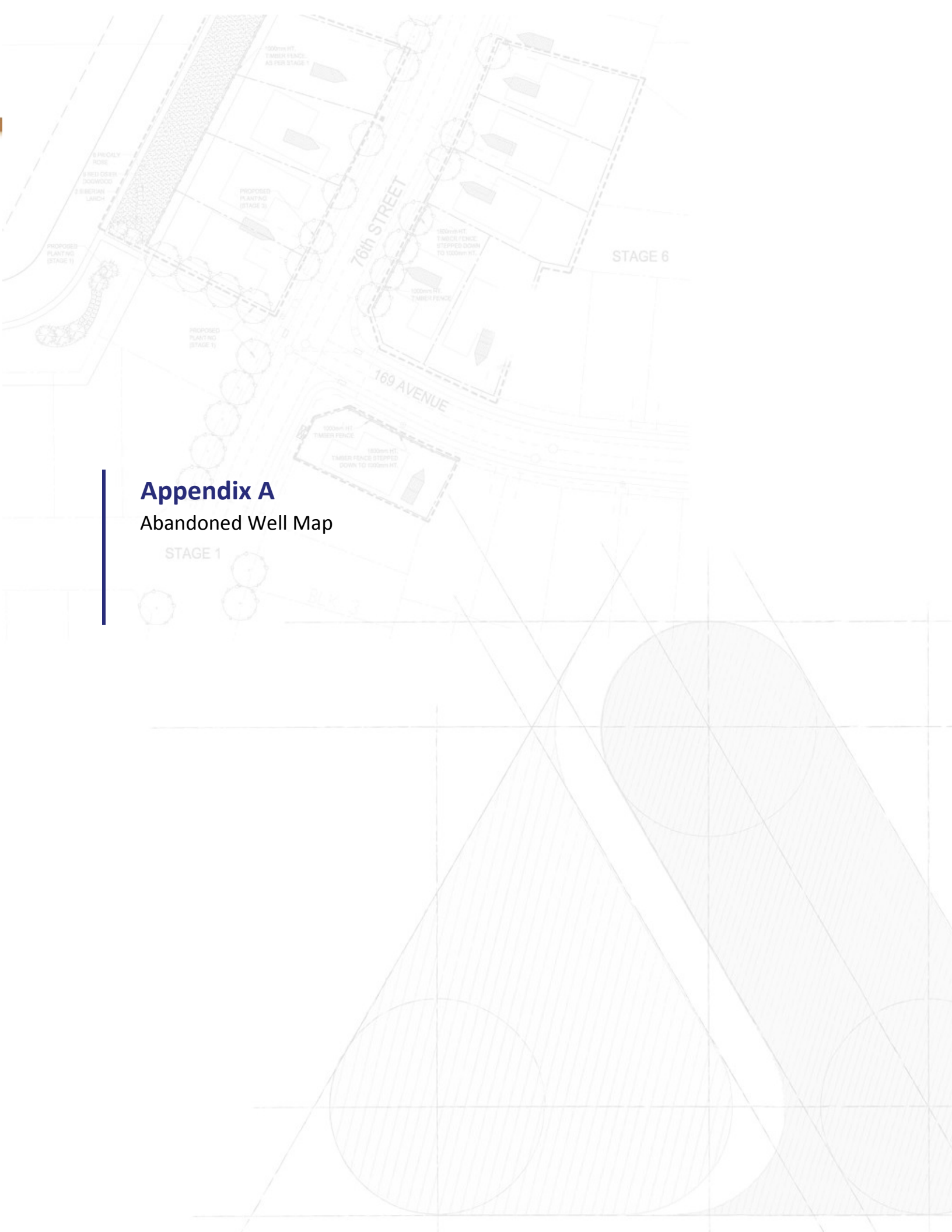
E 1/2 OF NE 32-50-24-W4
LEDUC COUNTY

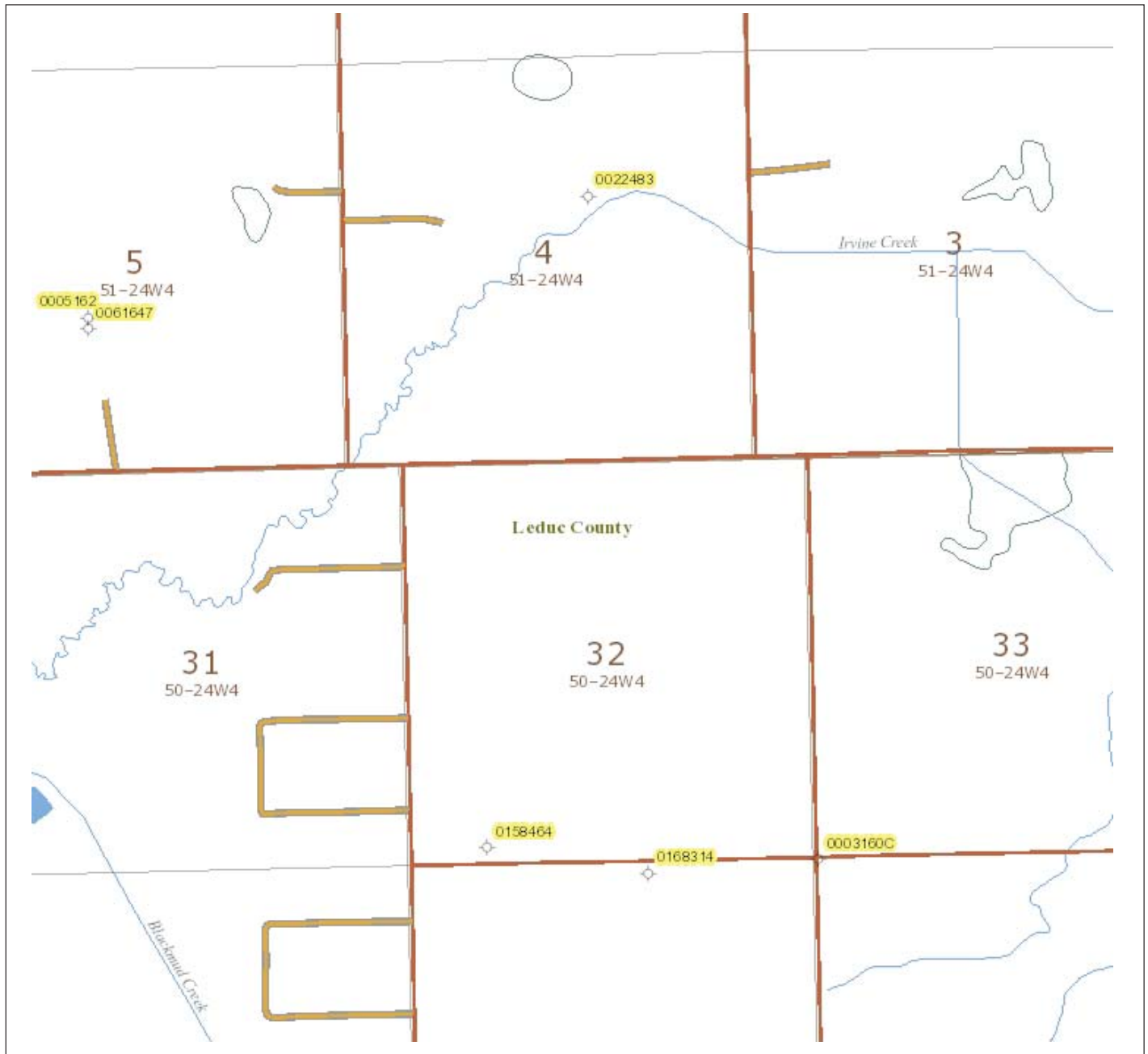
Scale = 1:2500
March 9, 2016
117101



Appendix A

Abandoned Well Map



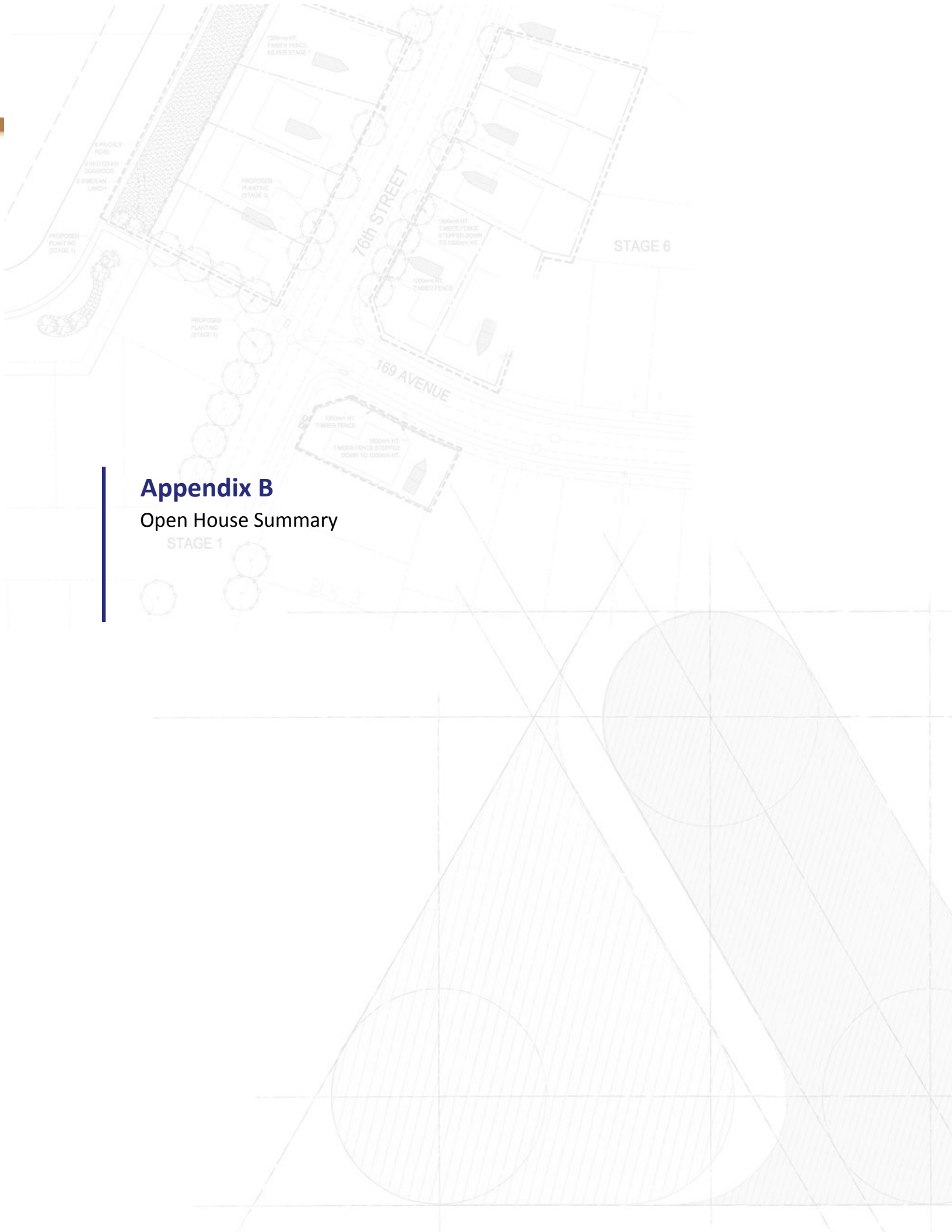


AER Abandoned Well Map		Base Data provided by Spatial Data Warehouse Ltd	
Legend ♦ Abandoned Wells (large scale) Railways ≡ Multiple Track Rail Line + Double Track Rail Line + Single Track Rail Line + Rail Line Spur .+ Abandoned Rail Line + Former Rail Line roads 20k — ROAD-PAVED-DIV — ROAD-PAVED-UNDIV-4L; ROAD-PAVED-UNDIV-2L;		Author	XXX
		Printing Date:	7/14/2015
		Date (if applicable)	
		Scale:	22,162.10 0.34 Kilometers 0
		Projection and Datum:	10TM AEP Forest, NAD83
		The AER does not warrant the accuracy or completeness of the information contained in this map and is not responsible for any errors or omissions in its content and accepts no liability for the use of this information	

Appendix B

Open House Summary

STAGE 1



Royal Woods

August 18, 2015 Open House

Summary of Comments and Responses

Number of Persons in Attendance (according to the sign-in sheet): 18

Number of Survey Responses: 7

A) Royal Woods Outline Plan

1. The development concept in the outline plan shows an appropriate future land use scenario that is consistent with the intent of the approved East Vistas Local Area Structure Plan (ASP).		
Agree	Neither Agree or Disagree	Disagree
7	0	0
If disagree, please explain why:		
<ul style="list-style-type: none"> No responses disagree 		
2. There is an appropriate distribution of commercial and residential land uses in the concept.		
Agree	Neither Agree or Disagree	Disagree
4	3	0
If disagree, please explain why:		
<ul style="list-style-type: none"> No responses disagree 		
3. There is an appropriate distribution of high and multifamily residential uses in the concept.		
Agree	Neither Agree or Disagree	Disagree
5	2	0
If disagree, please explain why:		
<ul style="list-style-type: none"> No responses disagree 		
4. The location of the multi family site in the concept plan is appropriate.		
Agree	Neither Agree or Disagree	Disagree
5	2	0
If disagree, please explain why:		
<ul style="list-style-type: none"> No responses disagree 		
5. Proposed trails and greenways, linking parks and recreational areas are well located relative to approved and existing green space.		
Agree	Neither Agree or Disagree	Disagree
4	3	0
If disagree, please explain why:		
<ul style="list-style-type: none"> No responses disagree 		



6. Please indicate which one of the following most closely applies to you:

- a) Resident landowner within Outline plan area **(3)**
- b) Non-resident landowner within East Vistas ASP area **(1)**
- c) Developer/Consultant representing lands in the East Vistas ASP area **(2)**
- d) Local Resident outside of East Vistas ASP area **(1)**
- e) Other

7. Please provide any additional comments that you have regarding this Development Concept.

- Only concern is with the Emergency Outlet. It is way too close to our property. The comments were people do not use this exit very often, but I disagree. More people use it for short cuts (gates or no gates)
- It appears to be proportional as far as single and multifamily dwellings. Quite similar to Royal Oaks so it should (be)fine as far (as) streets and paths etc.



Appendix C

Detailed Sanitary Sewer Calculations

PRELIMINARY SANITARY SEWER DESIGN CALCULATION																																
PROJECT: Royal Woods										Per Capita Flow = 320 L/c/d										Peaking Factor = 2.6[(P/1000) ^{1/4} -C (minimum 3.0)												
JOB #: 1171-01										Low Density Residential (LD) = 5 DU/ha 3.5 P/DU 18 P/ha										nflow/Infiltration Allowance = 0.28 L/s/ha												
DATE: 28-Jul-14										Medium Density Residential (MD) = 10 DU/ha 3.5 P/DU 35 P/ha										Sag Manhole Allowance = 0.40 L/s/MH												
DESIGN BY: A.L.										Higher Density Residential (HD) = 20 DU/ha 3.5 P/DU 70 P/ha																						
CHECKED BY: A.L.										Multi Dwelling Residential(MDR)= 95 DU/ha 3.5 P/DU 332.5 P/ha										Manning's "n" = 0.01												
REVISED BY: C.S.										REVISED DATE 10-Mar-16																						
All data/calculations subject to change, and is subject to detailed design and review at the time of engineering drawing submission(s) to Leduc County																																
Location	From	To	Area	Added Res. Area (ha)	Total Res. Area (ha)	Added Non-Res. Area (ha)	Total Non-Res. Area (ha)	Res. Lots Added (if known)	Land Use	Population		Residential		Non-Residential		Total Peak Flow (L/s)	Inflow/ Infiltr. (L/s)	Added Sag MH	Total Sag MH	Sag MH Inflow (L/s)	Design Flow (L/s)	Pipe			Req'd Cap. (L/s)	Pipe Cap. (L/s)	Partial Velocity (m/s)	Full Vel. (m/s)	U/S Inv Elev	D/S Inv Elev	U/S Road Elev	U/S Road Depth to Inv (m)
										Added	Total	Average Flow (L/s)	Peaking Factor	Average Flow (L/s)	Peaking Factor							Length (m)	Size (mm)	Slope (%)								
NW Commercial - Future	W PLUG	S227		0.00	0.00	1.35	1.35		Non-resident	0	0	0.00	0.00	1.07	9.70	10.4	0.4	0	0	0.0	10.80	12.000	200	2.00	12.6	46.5	1.20	1.48	709.203	708.963	712.72	3.52
	S227	S226		0.00	0.00	0.00	1.35		Non-resident	0	0	0.00	0.00	1.07	9.70	10.4	0.4	1	1	0.4	11.20	70.000	200	0.40	13.0	20.7	0.67	0.66	708.933	708.653	712.72	3.79
	N PLUG	S226		0.00	0.00	0.43	0.43		Non-resident	0	0	0.00	0.00	0.34	16.25	5.5	0.1	0	0	0.0	5.60	10.500	200	2.00	6.5	46.5	1.00	1.48	708.893	708.683	712.50	3.61
	S PLUG	S226		0.00	0.00	0.31	0.31		Non-resident	0	0	0.00	0.00	0.24	19.01	4.6	0.1	0	0	0.0	4.70	16.500	200	2.00	5.5	46.5	0.95	1.48	709.013	708.683	712.50	3.49
	S226	S209		0.00	0.00	0.00	2.09		Non-resident	0	0	0.00	0.00	1.65	7.98	13.2	0.6	0	1	0.4	14.20	20.000	200	0.40	16.5	20.7	0.71	0.66	708.623	708.543	712.50	3.88
NE Commercial - Future	N PLUG	S225		0.00	0.00	0.34	0.34		Non-resident	0	0	0.00	0.00	0.27	18.03	4.9	0.1	0	0	0.0	5.00	10.500	200	2.00	5.8	46.5	0.97	1.48	709.413	709.203	712.83	3.42
	S225	S224		0.00	0.00	0.00	0.34		Non-resident	0	0	0.00	0.00	0.27	18.03	4.9	0.1	0	0	0.0	5.00	95.000	200	0.40	5.8	20.7	0.54	0.66	709.143	708.763	712.83	3.69
	N PLUG	S224		0.00	0.00	0.46	0.46		Non-resident	0	0	0.00	0.00	0.36	15.84	5.7	0.1	0	0	0.0	5.80	10.500	200	2.00	6.7	46.5	1.01	1.48	708.973	708.763	712.39	3.42
	S PLUG	S224		0.00	0.00	2.39	2.39		Non-resident	0	0	0.00	0.00	1.89	7.51	14.2	0.7	0	0	0.0	14.90	15.000	200	2.00	17.3	46.5	1.31	1.48	709.063	708.763	712.59	3.53
	S224	S207		0.00	0.00	0.00	3.19		Non-resident	0	0	0.00	0.00	2.52	6.60	16.6	0.9	0	0	0.0	17.50	40.000	200	0.40	20.3	20.7	0.74	0.66	708.703	708.543	712.39	3.69
	S207	S208		0.00	0.00	0.00	5.28		Non-resident	0	0	0.00	0.00	4.17	5.26	21.9	1.5	0	1	0.4	23.80	100.000	200	0.75	27.7	28.3	1.01	0.90	708.483	707.733	712.41	3.93
	S210	S209	B4	0.87	0.87	0.00	0.00	15	MD	53	53	0.20	3.49	0.00	0.00	0.7	0.2	0	0	0.0	0.90	42.913	200	1.00	1.0	32.7	0.46	1.04	708.727	708.298	712.36	3.63
	S209	S208	B3	0.79	1.66	0.00	0.00	18	MD	63	116	0.43	3.22	0.00	0.00	1.4	0.5	0	0	0.0	1.90	118.627	200	0.40	2.2	20.7	0.41	0.66	708.238	707.763	712.59	4.35
	S208	S207	-	0.00	1.66	0.00	5.28		MD	0	116	0.43	3.22	4.17	5.26	23.3	1.9	1	2	0.8	26.00	84.932	200	1.00	30.2	32.7	1.16	1.04	707.703	706.854	712.30	4.60
	E PLUG	S222	B7	0.39				8	MD	28																						
	E PLUG	S222	B8+B25	1.50	1.50	0.00	0.00		MDR	142	170	0.63	3.10	0.00	0.00	2.0	0.4	0	0	0.0	2.40	48.977	200	2.00	2.8	46.5	0.78	1.48	708.219	707.239	712.99	4.77
	S222	S207	B6	0.46	1.95	0.00	0.00	9	MD	32	202	0.75	3.05	0.00	0.00	2.3	0.5	1	1	0.4	3.20	88.856	200	0.40	3.7	20.7	0.48	0.66	707.209	706.854	713.25	6.04
	S207	S206	B5	0.73	4.34	0.00	5.28	12	MD	42	360	1.33	3.00	4.17	5.26	25.9	2.7	0	3	1.2	29.80	82.747	250	0.40	34.7	37.8	0.85	0.77	706.794	706.463	712.23	5.44
	SW PLUG	S206	B9	1.27	1.27	0.00	0.00		MDR	121	121	0.45	3.21	0.00	0.00	1.4	0.4	0	0	0.0	1.80	18.000	200	2.00	2.1	46.5	0.71	1.48	706.853	706.493	712.03	5.18
	S206	S205	-	0.00	5.62	0.00	5.28		MD	0	481	1.78	3.00	4.17	5.26	27.3	3.1	1	4	1.6	32.00	110.056	250	0.40	37.2	37.8	0.86	0.77	706.433	705.993	712.03	5.60
	S205	S204	-	0.00	5.62	0.00	5.28		MD	0	481	1.78	3.00	4.17	5.26	27.3	3.1	1	5	2.0	32.40	86.385	250	0.40	37.7	37.8	0.86	0.77	705.963	705.617	712.04	6.08
	S217	S220	B11	1.35	1.35	0.00	0.00	18	MD	63	63	0.23	3.43	0.00	0.00	0.8	0.4	1	1	0.4	1.60	153.345	200	0.40	1.9	20.7	0.39	0.66	706.763	706.149	709.82	3.06
	S220	S219	B14	0.92	2.27	0.00	0.00	13	MD	46	109	0.40	3.25	0.00	0.00	1.3	0.6	0	1	0.4	2.30	103.240	200	0.40	2.7	20.7	0.44	0.66	706.089	705.676	710.10	4.01
	S219	S218	B15	0.48	2.76	0.00	0.00	5	MD	18	127	0.47	3.20	0.00	0.00	1.5	0.8	1	2	0.8	3.10	53.162	200	0.40	3.6	20.7	0.47	0.66	705.616	705.404	710.14	4.52
	S218	S204	-	0.00	2.76	0.00	0.00		MD	0	127	0.47	3.20	0.00	0.00	1.5	0.8	0	2	0.8	3.10	49.121	200	0.40	3.6	20.7	0.47	0.66	705.374	705.177	710.54	5.17
	S217	S216	B12	0.42	0.42	0.00	0.00	5	MD	18	18	0.07	3.89	0.00	0.00	0.3	0.1	0	0	0.0	0.40	61.293	200	1.00	0.5	32.7	0.36	1.04	707.463	706.850	710.46	3.00
	S216	S215	B16	1.24	1.66	0.00	0.00	20	MD	70	88	0.33	3.32	0.00	0.00	1.1	0.5	0	0	0.0	1.60	127.681	200	0.40	1.9	20.7	0.39	0.66	706.820	706.309	710.05	3.23
	S215	S214	B21	1.26	2.92	0.00	0.00	16	MD	56	144	0.53	3.16	0.00	0.00	1.7	0.8	0	0	0.0	2.50	136.626	200	0.40	2.9	20.7	0.45	0.66	706.249	705.703	710.60	4.35
	S214	S213	B23	1.41	4.32	0.00	0.00	18	MD	63	207	0.77	3.04	0.00	0.00	2.3	1.2	0	0	0.0	3.50	152.600	200	0.40	4.1	20.7	0.49	0.66	705.643	705.033	710.71	5.07
	S213	S212	B24	0.43	4.75	0.00	0.00	5	MD	18	225	0.83	3.02	0.00	0.00	2.5	1.3	0	0	0.0	3.80	55.318	200	0.40	4.4	20.7	0.50	0.66	704.973	704.751	709.91	4.94
	S212	S211	B20	0.48	5.23	0.00	0.00	6	MD	21	246	0.91	3.00	0.00	0.00	2.7	1.5	0	0	0.0	4.20	73.043	200	0.40	4.9	20.7	0.52	0.66	704.691	704.399	709.40	4.71
	S PLUG	S211	B22	0.85	0.85	0.00	0.00		MDR	80	80	0.30	3.35	0.00	0.00	1.0	0.2	0	0	0.0	1.20	18.000	200	2.00	1.4	46.5	0.63	1.48	704.789	704.429	709.84	5.05
	S211	S202	B19	0.25	6.32	0.00	0.00	2	MD	7	333	1.23	3.00	0.00	0.00	3.7	1.8	0	0	0.0	5.50	71.342	200	0.40	6.4	20.7	0.56	0.66	704.369	704.084	709.84	5.47
	S230	S204	B13	0.55	0.55	0.00	0.00	9	MD	32	32	0.12	3.67	0.00	0.00	0.4	0.2	0	0	0.0	0.60	77.903	200	1.00	0.7	32.7	0.40	1.04	707.896	707.117	713.04	5.14
	S204	S203	-	0.00	8.92	0.00	5.28		MD	0	640	2.37	3.00	4.17	5.26	29.0	4.0	0	7	2.8	35.80	86.216	250	0.60	41.6	46.1	1.04	0.94	705.117	704.600	711.52	6.40
	S229	S203	B17	0.49	0.49	0.00	0.00	7	MD	25	25	0.09	3.76	0.00	0.00	0.3	0.1	0	0	0.0	0.40	67.779	200	1.50	0.5	40.2	0.41	1.28	706.586	705.570	711.20	4.61
	S203	S202	-	0.00	9.42	0.00	5.28		MD	0	665	2.46	3.00	4.17	5.26	29.3	4.1	0	7	2.8	36.20	86.000	250	0.60	42.1	46.1	1.04	0.94	704.570	704.054	710.27	5.70
	S228	S202	B18	0.34	0.34	0.00	0.00	5	MD	18	18	0.07	3.89	0.00	0.00	0.3	0.1	0	0	0.0	0.40	57.718	200	1.50	0.5	40.2	0.41	1.28	706.890	706.024	711.20	4.31
	S202	S201	-	0.00	16.08	0.00	5.28		MD	0	1016	3.76	3.00	4.17	5.26	33.2	6.0	0	7	2.8	42.00	83.319	300	0.30	48.8	53.0	0.83	0.75	704.024	703.774	710.27	6.25
	S201	S200	-																													

Appendix D

Detailed Storm Sewer Calculations

STAGE 1



PRELIMINARY ON-SITE STORM SEWER DESIGN SHEET FOR 1:5 YEAR EVENT

PROJECT:	Royal Woods	LAND US	"C"	
JOB # :	1171-01	Medium Density	0.50	Initial Time of Concentration = 8.0 min
DATE:	18-Aug-14	High Density	0.65	Mannings' 'n' = 0.013
DESIGN BY:	L.C.	Multi-Family	0.65	(County min. = 0.50)
CHECKED BY:	A.L.	Commercial	0.90	
REVISED DATE:	09-Mar-16	Landscape	0.20	All data/calculations subject to change, and is subject to detailed design and review at the time of engineering drawing submission(s) to Leduc County
		REVISED BY: CS		

Location of Line	From MH	To MH	Incr. Area #	Added Area (ha)	Total Area Added (ha)	Runoff Factor "C"	Equiv. Area (ha)	Total Eq. Area (ha)	Conc. Time,Tc (min)	5 yr I (mm/h)	Calculated Flow,Q (L/s)	Trunk Safety Factor	Design Flow (L/s)	Slope (%)	Actual Dia. (mm)	Nominal Dia. (mm)	Vel. (m/s)	Length (m)	Flow Time (min)	Pipe Capacity (L/s)	U/S Inv Elev	D/S Inv Elev	U/S Grnd Elev	U/S Cover To OBV (m)	
NW Commercial - Future	W STUB	S236		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				1.350	1.350	0.900	1.215	1.215																	
					1.350			1.215	8.0	77.0	260	1.00	260	1.00	448	450	1.79	12.000	0.1	282	709.803	709.683	712.72	2.47	
	D236	D235		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				0.000	1.350	0.900	0.000	1.215																	
					1.350			1.215	8.1	76.0	257	1.00	257	0.50	597	600	1.53	70.000	0.8	428	709.533	709.183	712.72	2.59	
	N STUB	D235		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				0.430	0.430	0.900	0.387	0.387																	
					0.430			0.387	8.0	77.0	83	1.00	83	1.00	298	300	1.36	10.500	0.1	95	709.588	709.483	712.50	2.61	
	S STUB	D235		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				0.310	0.310	0.900	0.279	0.279																	
					0.310			0.279	8.0	77.0	60	1.00	60	1.00	298	300	1.36	16.500	0.2	95	709.648	709.483	712.50	2.55	
	D235	D232		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				0.250	2.340	0.900	0.225	2.106																	
					2.340			2.106	8.2	76.0	445	1.00	445	0.60	597	600	1.68	20.000	0.2	469	709.183	709.063	712.50	2.72	
NE Commercial - Future	N STUB	D234		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				0.340	0.340	0.900	0.306	0.306																	
					0.340			0.306	8.0	77.0	66	1.00	66	1.00	298	300	1.36	10.500	0.1	95	709.873	709.768	712.83	2.66	
	D234	D233		0.000	0.000	0.200	0.000	0.000																	
				0.000	0.000	0.500	0.000	0.000																	
				0.000	0.000	0.650	0.000	0.000																	
				0.100	0.440	0.900	0.090	0.396																	
					0.440			0.396	8.1	76.0	84	1.00	84	0.30	448	450	0.98	95.000	1.6	154	709.618	709.333	712.83	2.76	
	N STUB	D233		0.000	0.000	0.200	0.000	0.000																	

PRELIMINARY ON-SITE STORM SEWER DESIGN SHEET FOR 1:5 YEAR EVENT

PROJECT:	Royal Woods	LAND US	"C"	
JOB # :	1171-01	Medium Density	0.50	Initial Time of Concentration = 8.0 min
DATE:	18-Aug-14	High Density	0.65	Mannings' 'n' = 0.013
DESIGN BY:	L.C.	Multi-Family	0.65	(County min. = 0.50)
CHECKED BY:	A.L.	Commercial	0.90	
REVISED DATE:	09-Mar-16	Landscape	0.20	All data/calculations subject to change, and is subject to detailed design and review at the time of engineering drawing submission(s) to Leduc County
REVISED BY: CS				

Location of Line	From MH	To MH	Incr. Area #	Added Area (ha)	Total Area Added (ha)	Runoff Factor "C"	Equiv. Area (ha)	Total Eq. Area (ha)	Conc. Time,Tc (min)	5 yr I (mm/h)	Calculated Flow,Q (L/s)	Trunk Safety Factor	Design Flow (L/s)	Slope (%)	Actual Dia. (mm)	Nominal Dia. (mm)	Vel. (m/s)	Length (m)	Flow Time (min)	Pipe Capacity (L/s)	U/S Inv Elev	D/S Inv Elev	U/S Grnd Elev	U/S Cover To OBV (m)
	S STUB	D233	B	0.000	0.000	0.500	0.000	0.000	8.0	77.0	89	1.00	89	1.00	298	300	1.36	10.500	0.1	95	709.588	709.483	712.39	2.50
				0.000	0.000	0.650	0.000	0.000																
				0.460	0.460	0.900	0.414	0.414																
					0.460			0.414																
				0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				2.390	2.390	0.900	2.151	2.151																
					2.390			2.151																
				0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				0.300	3.590	0.900	0.270	3.231																
					3.590			3.231																
				0.000	0.000	0.200	0.000	0.000																
				0.280	0.280	0.500	0.140	0.140																
				0.000	0.000	0.650	0.000	0.000																
				0.000	5.930	0.900	0.000	5.337																
					6.210			5.477	10.2	67.0	1020	1.00	1020	0.80	762	750	2.28	100.000	0.7	1039	708.913	708.113	712.41	2.75
FD	D231	D230	-	0.000	0.000	0.200	0.000	0.000	8.0	77.0	0	1.00	0	0.40	200	200	0.66	43.179	1.1	21	709.308	709.135	712.36	2.85
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
					0.000			0.000																
				0.000	0.000	0.200	0.000	0.000																
				0.510	0.510	0.500	0.255	0.255																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
					0.510			0.255																
				0.000	0.000	0.200	0.000	0.000	9.1	71.0	50	1.00	50	0.40	298	300	0.86	125.538	2.4	60	709.035	708.533	712.59	3.26
				0.990	1.780	0.500	0.495	0.890																
				0.000	0.000	0.650	0.000	0.000																
				0.000	5.930	0.900	0.000	5.337																
					7.710			6.227																
				0.000	0.000	0.200	0.000	0.000	11.5	63.0	1091	1.00	1091	0.90	762	750	2.42	89.590	0.6	1102	708.083	707.277	712.30	3.47
				0.380	0.380	0.500	0.190	0.190																
				0.000	0.000	0.650	0.000	0.000																
	D228	D227	C	0.000	0.000	0.200	0.000	0.000																
				0.380	0.380	0.500	0.190	0.190																
				0.000	0.000	0.650	0.000	0.000																

PRELIMINARY ON-SITE STORM SEWER DESIGN SHEET FOR 1:5 YEAR EVENT

PROJECT:	Royal Woods	LAND US	"C"	
JOB # :	1171-01	Medium Density	0.50	Initial Time of Concentration = 8.0 min
DATE:	18-Aug-14	High Density	0.65	Mannings' 'n' = 0.013
DESIGN BY:	L.C.	Multi-Family	0.65	(County min. = 0.50)
CHECKED BY:	A.L.	Commercial	0.90	
REVISED DATE:	09-Mar-16	Landscape	0.20	All data/calculations subject to change, and is subject to detailed design and review at the time of engineering drawing submission(s) to Leduc County
REVISED BY: CS				

Location of Line	From MH	To MH	Incr. Area #	Added Area (ha)	Total Area Added (ha)	Runoff Factor "C"	Equiv. Area (ha)	Total Eq. Area (ha)	Conc. Time,Tc (min)	5 yr I (mm/h)	Calculated Flow,Q (L/s)	Trunk Safety Factor	Design Flow (L/s)	Slope (%)	Actual Dia. (mm)	Nominal Dia. (mm)	Vel. (m/s)	Length (m)	Flow Time (min)	Pipe Capacity (L/s)	U/S Inv Elev	D/S Inv Elev	U/S Grnd Elev	U/S Cover To OBV (m)
	SW STUB	D227	J	0.000	0.000	0.900	0.000	0.000	8.0	77.0	41	1.00	41	0.60	298	300	1.06	105.000	1.7	74	709.263	708.633	712.54	2.98
					0.380			0.190																
				0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
	D227	D226	F	1.270	1.270	0.650	0.826	0.826	8.0	77.0	177	1.00	177	1.00	448	450	1.79	21.003	0.2	282	708.633	708.423	712.03	2.95
				0.000	0.000	0.900	0.000	0.000																
					1.270			0.826																
				0.000	0.000	0.200	0.000	0.000																
	E STUB	D226A	H + N	0.710	1.090	0.500	0.355	0.545	9.7	69.0	263	1.00	263	1.00	448	450	1.79	84.550	0.8	282	708.423	707.577	712.03	3.16
				0.000	1.270	0.650	0.000	0.826																
				0.000	0.000	0.900	0.000	0.000																
					2.360			1.371																
	D226A	D226	-	0.000	0.000	0.200	0.000	0.000	8.0	77.0	257	1.00	257	1.00	448	450	1.79	9.000	0.1	282	708.883	708.793	713.00	3.67
				0.000	0.000	0.500	0.000	0.000																
				0.000	1.850	0.650	1.203	1.203																
				0.000	0.000	0.900	0.000	0.000																
	D226	D225A	G		1.850			1.203	8.1	76.0	254	1.00	254	1.00	448	450	1.79	121.600	1.1	282	708.793	707.577	712.99	3.75
				0.000	0.000	0.200	0.000	0.000																
				1.120	3.990	0.500	0.560	1.995																
				0.000	3.120	0.650	0.000	2.028																
	D225A	D225	I	0.000	5.930	0.900	0.000	5.337	12.1	61.0	1587	1.00	1587	0.40	1067	1050	2.02	89.249	0.7	1803	706.977	706.620	712.23	4.20
					13.040			9.360																
				0.620	0.620	0.200	0.124	0.124																
				0.000	3.990	0.500	0.000	1.995																
	D225	D218	-	0.000	3.120	0.650	0.000	2.028	12.8	59.0	1556	1.00	1556	0.30	1067	1050	1.75	54.388	0.5	1561	706.620	706.457	711.20	3.53
				0.000	5.930	0.900	0.000	5.337																
					13.660			9.484																
				0.000	0.620	0.200	0.000	0.124																
				0.000	3.990	0.500	0.000	1.995	13.3	57.0	1503	1.00	1503	0.30	1067	1050	1.75	49.000	0.5	1561	705.857	705.710	711.00	4.09
				0.000	3.120	0.650	0.000	2.028																
				0.000	5.930	0.900	0.000	5.337																
					13.660			9.484																

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	D218	D217	L	0.000	1.100	0.200	0.000	0.220	13.8	56.0	1874	1.00	1874	0.50	1067	1050	2.25	42.003	0.3	2015	705.710	705.500	709.82	3.06
	0.520	8.910		0.500	0.260	4.455																		
	0.000	3.120		0.650	0.000	2.028																		
	0.000	5.930		0.900	0.000	5.337																		
		19.060				12.040																		
	D217	Inlet 1	-	0.000	1.100	0.200	0.000	0.220	14.1	56.0	1874	1.00	1874	0.75	1067	1050	2.76	20.000	0.1	2469	705.500	705.350	708.00	1.45
	0.000	8.910		0.500	0.000	4.455																		
	0.000	3.120		0.650	0.000	2.028																		
	0.000	5.930		0.900	0.000	5.337																		
		19.060				12.040																		
FD	D224	D223	-	0.000	0.000	0.200	0.000	0.000	8.0	77.0	0	1.00	0	0.60	200	200	0.81	94.433	1.9	25	708.512	707.945	713.00	4.29
	0.000	0.000		0.500	0.000	0.000																		
	0.000	0.000		0.650	0.000	0.000																		
	0.000	0.000		0.900	0.000	0.000																		
		0.000				0.000																		
	D223	D222	O	0.000	0.000	0.200	0.000	0.000	9.9	68.0	164	1.00	164	0.40	448	450	1.13	46.119	0.7	178	707.195	707.011	711.52	3.87
	1.730	1.730		0.500	0.865	0.865																		
	0.000	0.000		0.650	0.000	0.000																		
	0.000	0.000		0.900	0.000	0.000																		
		1.730				0.865																		
	D222	D221	-	0.000	0.000	0.200	0.000	0.000	10.6	66.0	159	1.00	159	0.40	448	450	1.13	56.891	0.8	178	706.951	706.723	710.54	3.14
	0.000	1.730		0.500	0.000	0.865																		
	0.000	0.000		0.650	0.000	0.000																		
	0.000	0.000		0.900	0.000	0.000																		
		1.730				0.865																		
	D221	D220	P	0.000	0.000	0.200	0.000	0.000	11.4	63.0	227	1.00	227	0.20	597	600	0.97	103.240	1.8	271	706.513	706.307	710.14	3.03
	0.860	2.590		0.500	0.430	1.295																		
	0.000	0.000		0.650	0.000	0.000																		
	0.000	0.000		0.900	0.000	0.000																		
		2.590				1.295																		
	D220	D218	K	0.480	0.480	0.200	0.096	0.096	13.2	58.0	224	1.00	224	0.20	597	600	0.97	43.345	0.7	271	706.247	706.160	710.10	3.25
	0.000	2.590		0.500	0.000	1.295																		
	0.000	0.000		0.650	0.000	0.000																		
	0.000	0.000		0.900	0.000	0.000																		
		3.070				1.391																		
	D216	D219	Q	0.000	0.000	0.200	0.000	0.000																
				0.400	0.400	0.500	0.200	0.200																

PRELIMINARY ON-SITE STORM SEWER DESIGN SHEET FOR 1:5 YEAR EVENT

PROJECT:	Royal Woods	LAND US	"C"	
JOB # :	1171-01	Medium Density	0.50	Initial Time of Concentration = 8.0 min
DATE:	18-Aug-14	High Density	0.65	Mannings' 'n' = 0.013
DESIGN BY:	L.C.	Multi-Family	0.65	(County min. = 0.50)
CHECKED BY:	A.L.	Commercial	0.90	
REVISED DATE:	09-Mar-16	Landscape	0.20	All data/calculations subject to change, and is subject to detailed design and review at the time of engineering drawing submission(s) to Leduc County
REVISED BY: CS				

Location of Line	From MH	To MH	Incr. Area #	Added Area (ha)	Total Area Added (ha)	Runoff Factor "C"	Equiv. Area (ha)	Total Eq. Area (ha)	Conc. Time,Tc (min)	5 yr I (mm/h)	Calculated Flow,Q (L/s)	Trunk Safety Factor	Design Flow (L/s)	Slope (%)	Actual Dia. (mm)	Nominal Dia. (mm)	Vel. (m/s)	Length (m)	Flow Time (min)	Pipe Capacity (L/s)	U/S Inv Elev	D/S Inv Elev	U/S Grnd Elev	U/S Cover To OBV (m)
	D219	D218	M	0.000	0.000	0.650	0.000	0.000	8.0	77.0	43	1.00	43	0.25	298	300	0.68	140.000	3.4	47	707.018	706.668	710.50	3.18
				0.000	0.000	0.900	0.000	0.000																
					0.400			0.200																
				0.000	0.000	0.200	0.000	0.000																
				1.410	1.810	0.500	0.705	0.905																
FD	D216	D215	-	0.000	0.000	0.200	0.000	0.000	8.0	77.0	0	1.00	0	0.40	200	200	0.66	111.195	2.8	21	707.508	707.063	710.50	2.79
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
					0.000			0.000																
	D215	D214	S	0.000	0.000	0.200	0.000	0.000	10.8	65.0	81	1.00	81	0.25	448	450	0.89	46.205	0.9	141	706.813	706.697	710.13	2.87
				0.900	0.900	0.500	0.450	0.450																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
	D214	D213	-	0.000	0.000	0.200	0.000	0.000	11.7	62.0	78	1.00	78	0.25	448	450	0.89	59.822	1.1	141	706.637	706.487	710.42	3.33
				0.000	0.900	0.500	0.000	0.450																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
	D213	D212	X + Y	1.820	1.820	0.200	0.364	0.364	12.8	59.0	156	1.00	156	0.35	448	450	1.06	86.778	1.4	167	706.457	706.153	710.30	3.39
				0.280	1.180	0.500	0.140	0.590																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
	D212	D206	-	0.000	1.820	0.200	0.000	0.364	14.2	55.0	146	1.00	146	0.30	448	450	0.98	43.370	0.7	154	706.093	705.963	709.91	3.37
				0.000	1.180	0.500	0.000	0.590																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
FD	D211	D210	-	0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																

PRELIMINARY ON-SITE STORM SEWER DESIGN SHEET FOR 1:5 YEAR EVENT

PROJECT:	Royal Woods	LAND US	"C"	
JOB # :	1171-01	Medium Density	0.50	Initial Time of Concentration = 8.0 min
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CHECKED BY:	A.L.	Commercial	0.90	
REVISED DATE:	09-Mar-16	Landscape	0.20	All data/calculations subject to change, and is subject to detailed design and review at the time of engineering drawing submission(s) to Leduc County
REVISED BY: CS				

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					0.000			0.000	8.0	77.0	0	1.00	0	0.60	200	200	0.81	57.846	1.2	25	707.565	707.218	711.83	4.06
	D210	D208	-	0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
					0.000			0.000	9.2	71.0	0	1.00	0	0.60	298	300	1.06	83.556	1.3	74	707.118	706.617	711.21	3.79
FD	D209	D208	-	0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
					0.000			0.000	8.0	77.0	0	1.00	0	0.60	200	200	0.81	50.688	1.0	25	707.021	706.717	711.11	3.89
	D208	D207	T + V	0.000	0.000	0.200	0.000	0.000																
				1.420	1.420	0.500	0.710	0.710																
				0.000	0.000	0.650	0.000	0.000																
				0.000	0.000	0.900	0.000	0.000																
					1.420			0.710	10.5	66.0	130	1.00	130	0.40	448	450	1.13	69.063	1.0	178	706.467	706.191	710.27	3.35
	S STUB	D207	W	0.000	0.000	0.200	0.000	0.000																
				0.000	0.000	0.500	0.000	0.000																
				0.720	0.720	0.650	0.468	0.468																
				0.000	0.000	0.900	0.000	0.000	8.0	77.0	100	1.00	100	1.00	365	375	1.56	15.000	0.2	163	706.356	706.206	710.00	3.27
					0.720			0.468																
	D207	D206	-	0.000	0.000	0.200	0.000	0.000																
				0.000	1.420	0.500	0.000	0.710																
				0.000	0.720	0.650	0.000	0.468																
				0.000	0.000	0.900	0.000	0.000	11.5	63.0	206	1.00	206	0.30	527	525	1.09	76.121	1.2	238	706.056	705.828	709.85	3.27
					2.140			1.178																
	D206	D205	U	0.000	1.820	0.200	0.000	0.364																
				1.050	3.650	0.500	0.525	1.825																
				0.000	0.720	0.650	0.000	0.468																
				0.000	0.000	0.900	0.000	0.000	12.7	59.0	436	1.00	436	0.20	762	750	1.14	41.448	0.6	519	705.603	705.520	709.40	3.05
					6.190			2.657																
	D205	Inlet 2	-	0.000	1.820	0.200	0.000	0.364																
				0.000	3.650	0.500	0.000	1.825																
				0.000	0.720	0.650	0.000	0.468																
				0.000	0.000	0.900	0.000	0.000	13.3	57.0	421	1.00	421	1.10	762	750	2.67	20.000	0.1	1218	705.520	705.300	709.34	3.07
					6.190			2.657																

LEDUC COUNTY

[illegible]

Approved by Resolution 396-17 September 5 2017

Amendment **Royal Woods Outline Plan**

Within the E ½ of NE-32-50-24-W4

East Vistas Local Area Structure Plan
Leduc County

May 10, 2017

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1 Introduction

The purpose of the Royal Woods Outline Plan (RW OP) amendment is to reduce the total area of the commercial development, revise the type of commercial from neighborhood to convenience commercial uses and to increase the area of Higher Density Residential. This will result in a plan that creates a viable commercial development and additional affordable residential development. This amendment reflects changes in regional planning which has occurred since the adoption of the ***East Vistas Local Area Structure Plan*** in September 2010.

The subject land is located entirely on proposed blocks 5 and 6 with a total area of 6.1 ha. A redistricting application is being submitted concurrent with this amendment to support the proposed changes in land uses. An amendment to the *Royal Woods Outline Plan* to the east to revise the type of commercial to be coincidental in type has been submitted concurrently with this application.

2 Background

2.1 East Vistas Area Structure Plan

The *East Vistas Area Local Area Structure Plan* (EV LASP) was adopted in September 2010 to provide guidance for the future redistricting and subdivision within the plan area. It was subsequently amended in July 2015 with a text amendment allowing cash in lieu for Municipal Reserve owing. An amendment to this plan has been submitted concurrent with this plan amendment. The proposed densities, uses, servicing and development concept in the outline plan are consistent with the EV LASP.

2.2 Royal Woods Outline Plan

The *Royal Woods Outline Plan* is located in the northeast corner of the East Vistas plan area within the E ½ NE 32-50-24-4. This Plan was adopted in April 12, 2016 to provide a more specific planning framework for an area within the local area structure plan. It conforms with the general principles and concepts established in the EV LASP. In order to proceed with the proposed development, an amendment to the *Royal Woods Outline Plan* is proposed that reflects changes in proposed and actual commercial development that has occurred in the greater region.

2.3 Redistricting and Subdivision

An amendment to the current districting for the revised area has been submitted to the County for review concurrent with this application. The proposed change for uses will be from *UC-2 Urban Commercial 2 District* to *UC-1 Urban Commercial 1 District* west of the north south utility and from *UC-2* to *RU3-Residential Urban 3 District*.

A conditional block subdivision approval (County file number #SD15-038) for the RW OP area has been approved. The proposed amendment is wholly contained within proposed blocks 5 and 6 with a total area of 6.1 ha. A subdivision application to further divide the plan area into developable lots will be submitted in the future.

2.4 Regional Planning Changes

Since the adoption of the EV LASP in 2010, there have been changes in the long-range planning within the greater region with respect to proposed uses and transportation linkages. *Thomas Consultants Inc.* prepared a report dated January 18, 2017 to analyse the viability of the type and size of commercial proposed in the amendment area. It was concluded, that based on the changes as outlined below, that the commercial center as proposed was no longer viable. The change in type of commercial development from neighborhood to convenience commercial was recommended along with the decrease in overall size of the commercial site.

Examples of regional changes that affect the viability of the commercial site include the construction of the 41 Avenue interchange with the QE II Highway and a proposed commercial center east along the avenue two miles north of the EV plan area; realignment of the proposed extension of 66 Street from the City of Edmonton to Beaumont 1 mile east of the EV LASP plan area which will funnel traffic directly into the proposed commercial site area east of this plan also on Township Road 510, and the proposed outlet collection and Costco at the Edmonton International Airport. In response to this analysis, the proposed amendment is triggered to respond on the change in the region for commercial needs. A copy of the report will be submitted under separate cover.

3 Proposed Amendment

This proposed amendment reduces the overall area and type of commercial development from neighborhood to convenience commercial uses, increases the area of Higher Density Residential development and increases open space by creating a green buffer between the two uses. The **Current Development Concept** is illustrated in **Figure 5**, and the **Amended Development Concept** for the Royal Woods Estates plan area is illustrated in **Figure 5A**. The OP figures and tables in the amendment have been numbered as per the currently approved OP.

3.1 Commercial Site

The commercial site is currently proposed to be approximately 6.1 ha in size. The amendment proposed to decrease the developable commercial site to approximately 2.7 ha in this plan and amend 0.6 ha containing the linear north south power transmission line right of way to a public utility lot instead of parking and drive lanes as originally proposed. The site will be west of this

proposed public utility lot and will be amended to convenience commercial for daily and basic needs versus neighborhood commercial designed for the drive by public.

The districting, as per the *County Land Use Bylaw*, will be *UC-1 – Urban Commercial 1 District* with a maximum lot size of 2.0 ha. The current commercial districting (UC-2) has a minimum lot size of 2.0ha. It is anticipated that the area will be designed with an access to Township Road 510 and access to the neighborhood via a major local roadway.

3.2 Residential

East of the public utility lot, the commercial area will be amended to Higher Density Residential development. The additional 2.5ha of residential development will have a potential range of building forms that can range from single family to townhouse units. The proposed density is concurrent with the intention of the EV LASP of higher density on the east portion of the plan area. There is a projected additional sixty units added to the plan with a population of 156 people. There is no anticipated change in the ability of service providers to provide community services with this amendment. There are 32 additional students projected.

3.3 Open Space

The area previously part of the commercial development containing the linear overhead power transmission lines will become part of the open space plan and provide a buffer between the two uses. A shared use path can be developed in this buffer to connect to the proposed trail network within the plan area.

Figure 6 Parks and Open Space Concept and **Figure 6A Amended Parks and Open Space Concept** has been included for reference indicating the connectivity of the proposed trail network and green space for the full quarter section.

4 Land Use Statistics

Table 1 Approved Land Use Statistics and **Table 1A Proposed Land Use Statistics** indicate that the projections for the amended land use concept for the quarter section meets the intent of the EV LASP density target and provides a mix of building forms. The projected sixty units added to the outline plan does not affect the overall EV LASP density; however, on a smaller scale, the density projection for the RW OP area decreases by 2.2 units/ha and the quarter section density decreases by 0.3 units/ha. The explanation for this is that the projected density utilized for the calculations is 24.0 units/ha and the EV LASP density target is 27.3 units/ha.

5 Transportation Network and Servicing

5.1 Transportation

Overall, this amendment will have negligible effects on transportation. The north access to Township Road 510 for the commercial site will provide access both in and out to the site and internal drive lanes within the site will provide access to the major local road in the residential area. It is noted that the terminology of the local collector has been revised to major local compared to the original plan. The proposed cross section does not change, only the labelling.

The residential area in the north-east corner will have a local road cross-section. An emergency access is proposed to connect to the adjacent arterial road system and an emergency access for the multifamily site south of the area will be provided to this local road system. The emergency access locations will also be utilized for walkway connections internally and externally to the arterial roads and bus stops. A Traffic Impact Assessment update was not completed to support this application as the decrease in commercial area will result in an overall reduced trip generation for this area.

5.2 Utility Servicing

The proposed amendment to the RW OP will have no significant effect on municipal and franchise servicing. The decrease in commercial area results in less demand for water and sanitary capacity and storm water management systems will be designed accordingly to the basin areas. Franchise utilities will be extended as required. A technical memo regarding the servicing will be submitted under separate cover.

6 Staging

The staging plan has been revised to reflect the development of the new residential area earlier in the buildout of the plan area given its proximity to the collector road thru the neighborhood. The timing of the commercial development is independent of the residential development to the south. It will be triggered by market needs and servicing availability. Access to this site is from the Township Road 510, so connection to the internal neighbourhood road system is not initially required. The **Current Staging Plan** is illustrated in **Figure 7** and the **Amended Staging Plan** as **Figure 7A**.

7 Public Input

The developer driven February 1, 2017 open house was held at the Holiday Inn Conference Center in Nisku. The open house was held to garner feedback from adjacent landowners and interested parties with respect to the proposed East Vistas LASP amendment and proposed amendments to the respective outline plans for the reduced area and type of commercial use and increased residential area. **Appendix A Open House Summary** presents the summary of the feedback from the open house. The summary is included in the amendment submission. Seventeen people attended the open house and eleven surveys were returned. Feedback was both for and against the proposed amendment however there was definite support for convenience commercial in the location versus neighborhood commercial which will be developed sooner than a neighborhood commercial center due to the prescribed lot sizes and proposed uses. Notification of the open house was via advertising for two weeks in the *County Market* prior to the open house date and by direct mail out.

8 Rationale

The proposed Royal Woods Outline Plan amendment is consistent with the overall vision of the *East Vistas Local Area Structure Plan* and the *Capital Region Board*. A viable convenience commercial development is proposed in conjunction with additional residential development which can have a mix of housing types and price points consistent with the intent of the governing statutory plans. This amendment will have no constraints with provision of municipal utilities or community services.

Table 1: Approved Land Use Statistics

Land Use Distribution in Outline Plan			
	Area (ha)		
Total Plan area	30.7		
Environmental Reserve	0.0		
Gross Developable Area	30.7	Net	
		Area (ha)	%GDA
Municipal Reserve		0.6	2.0%
Public Utility Lots		5.5	17.8%
Circulation		5.2	16.9%
Infrastructure and Parks Area		11.3	
Higher Density Residential (RU3)		9.9	32.1%
Multi Dwelling Residential (RM1)		3.4	11.1%
Residential Developable Area		13.3	
Commercial Developable Area		6.1	20.1%
Total		30.7	100.0%

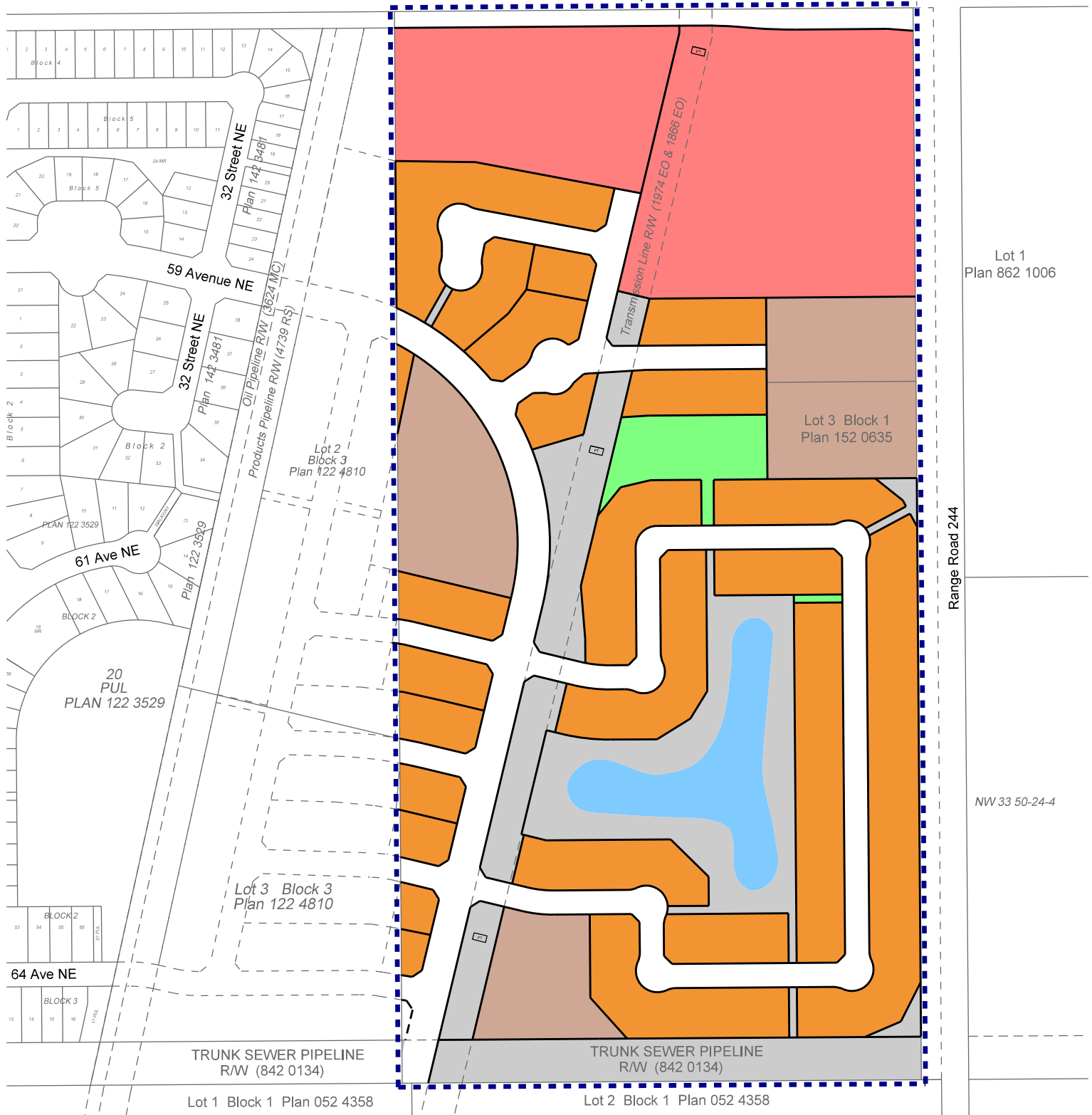
Land Use – As proposed in Outline Plan						
Area (OP)	Area (ha)	%	Maximum DU/ ha	DU	PPDU	Proposed Pop’n
Higher Density Residential (RU3)	9.9	74.4%	24.0	238	2.6	618
Multi Dwelling Residential (RM1)	3.4	25.6%	95.0	323	2.6	840
Total	13.3	100%		561		1458
Proposed Density		42.2	units / net residential ha			

Land Use – As Proposed and Existing in Quarter Section						
	Area (ha)	%		DU	PPDU	Proposed Pop’n
Medium Density Residential (RU2)	7.9	25.7%		89	2.6	231
Higher Density Residential (RU3)	17.8	57.7%		381	2.6	991
Multi Dwelling Residential (RM1)	5.1	16.6%		404	2.6	1050
Total	30.8			874		2272
		100%				
Proposed Density for quarter section		28.4	units /net	residential	ha	

Table 1A: **Proposed** Land Use Statistics as per this Amendment

Land Use Distribution in Outline Plan						
	Area (ha)					
Total Plan area	30.7					
Environmental Reserve	0.0					
Gross Developable Area	30.7					
	Net					
	Area (ha)	%GDA				
Municipal Reserve	0.6	2.0%				
Public Utility Lots	6.1	19.9%				
Circulation	6.1	19.9%				
Infrastructure and Parks Area	12.8					
Higher Density Residential (RU3)	12.3	40.0%				
Multi Dwelling Residential (RM1)	3.4	11.1%				
Residential Developable Area	15.7					
Commercial Developable Area	2.2	7.1%				
Total	30.7	100.0%				
Land Use – As proposed in Outline Plan						
Area (OP)	Area (ha)	%	Maximum DU/ ha	DU	PPDU	Proposed Pop’n
Higher Density Residential (RU3)	12.3	78.3%	24.0	298	2.6	774
Multi Dwelling Residential (RM1)	3.4	21.7%	95.0	323	2.6	840
Total	15.7	100%		621		1614
Proposed Density		40.0	units / net residential ha			
Land Use – As Proposed and Existing in Quarter Section						
	Area (ha)	%		DU	PPDU	Proposed Pop’n
Medium Density Residential (RU2)	7.9	23.7%		89	2.6	231
Higher Density Residential (RU3)	20.3	61.0%		411	2.6	1147
Multi Dwelling Residential (RM1)	5.1	15.3%		404	2.6	1050
Total	33.3			934		2428
		100%				
Proposed Density for quarter section		28.1	units /net	residential	ha	

Township Road 510



- Plan Boundary
- Higher Density Residential - RU3 District
- Multi Family Residential - RM1 District
- Municipal Reserve
- Storm Water Management Facility (Public Utility Lot)
- Commercial - UC2 District
- Public Utility Lot

Figure 5 DEVELOPMENT CONCEPT

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

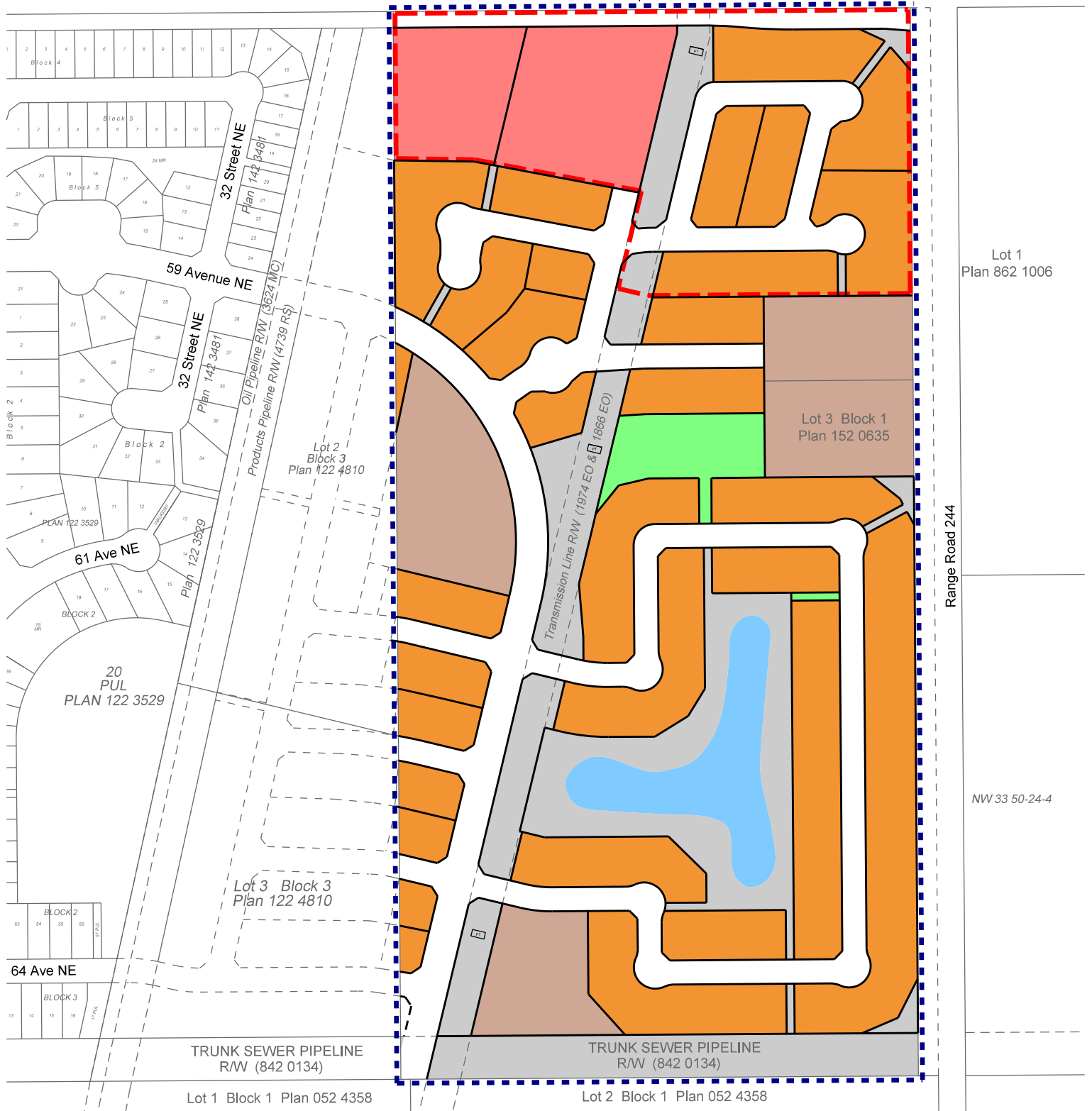
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March 10, 2016

117101000pt6.dgn



Township Road 510



- Plan Boundary
- Higher Density Residential - RU3 District
- Multi Family Residential - RM1 District
- Municipal Reserve
- Storm Water Management Facility (Public Utility Lot)
- Commercial - UC1 District
- Public Utility Lot
- Amendment Area

Figure 5A AMENDED DEVELOPMENT CONCEPT

ROYAL WOODS OUTLINE PLAN

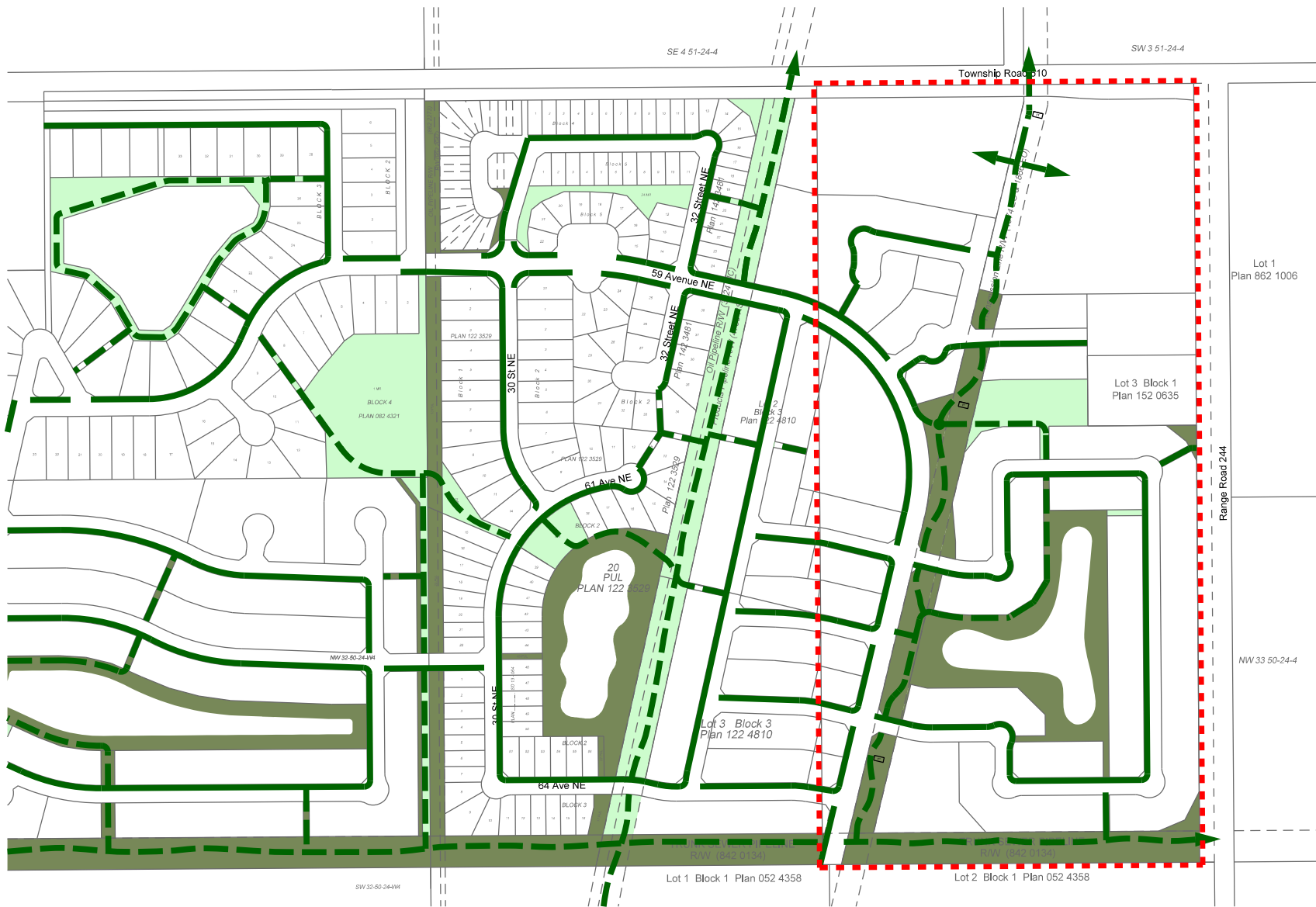
Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

1:4000

May 10, 2017

117101000pt8.dgn





- Plan Boundary
- Municipal Reserve
- Public Utility Lot
- Trail Network
- Sidewalks

Figure 6 PARKS & OPEN SPACE CONCEPT

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

1:6000

March 10, 2016
117101000p16.dgn





- Plan Boundary
- Municipal Reserve
- Public Utility Lot
- Trail Network
- Sidewalks

Figure 6A

AMENDED PARKS & OPEN SPACE CONCEPT

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

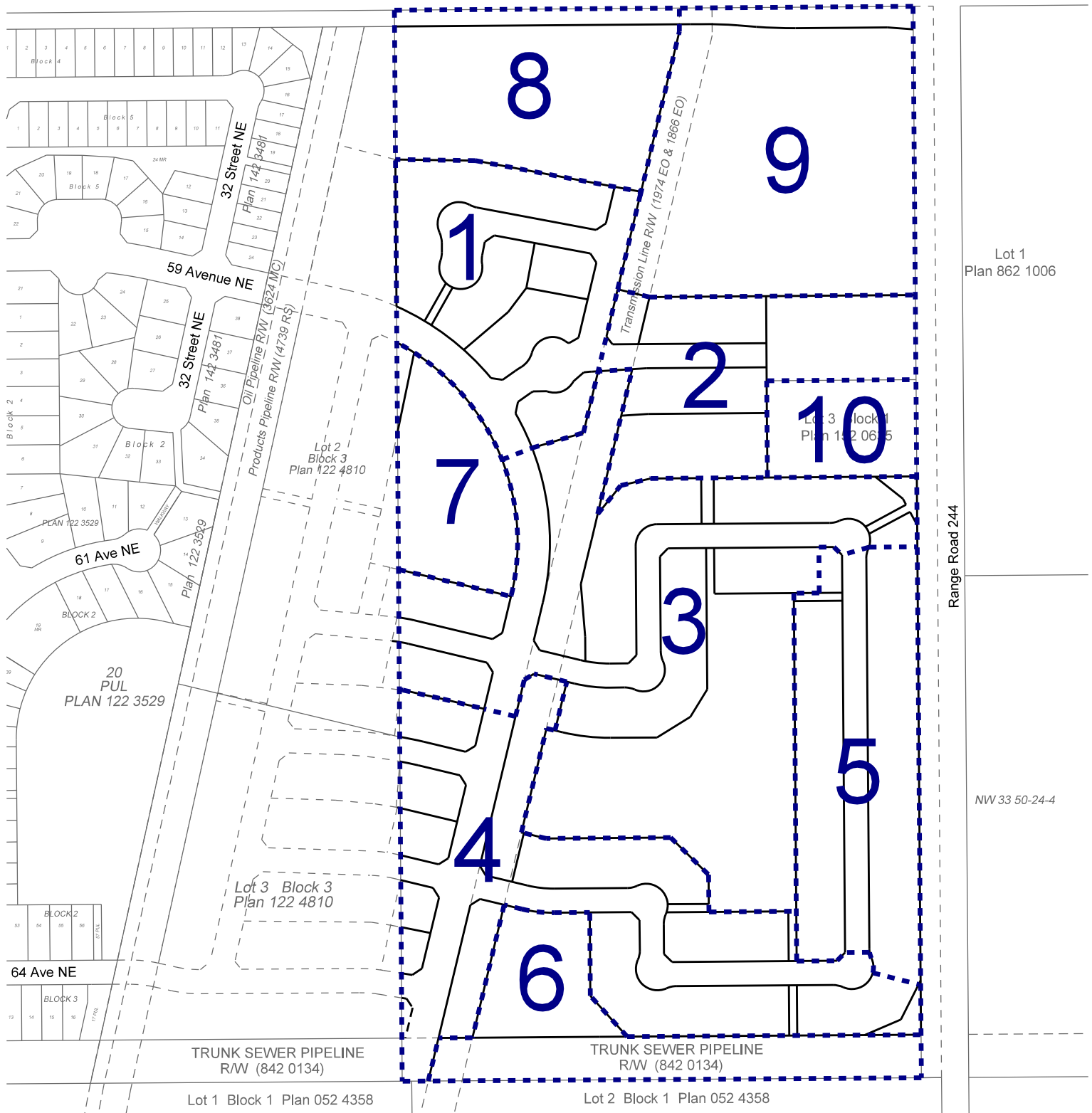
1:6000

May 9, 2017

117101000op18.dgn



Township Road 510



--- Stage Boundary

Note: Timing of development of the commercial sites (8 & 9) is independent of the residential development to the south and will be subject to market demand. Proposed staging is representative only and staging may occur out of sequence if servicing and market needs warrant.

Figure 7 DEVELOPMENT SEQUENCE

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

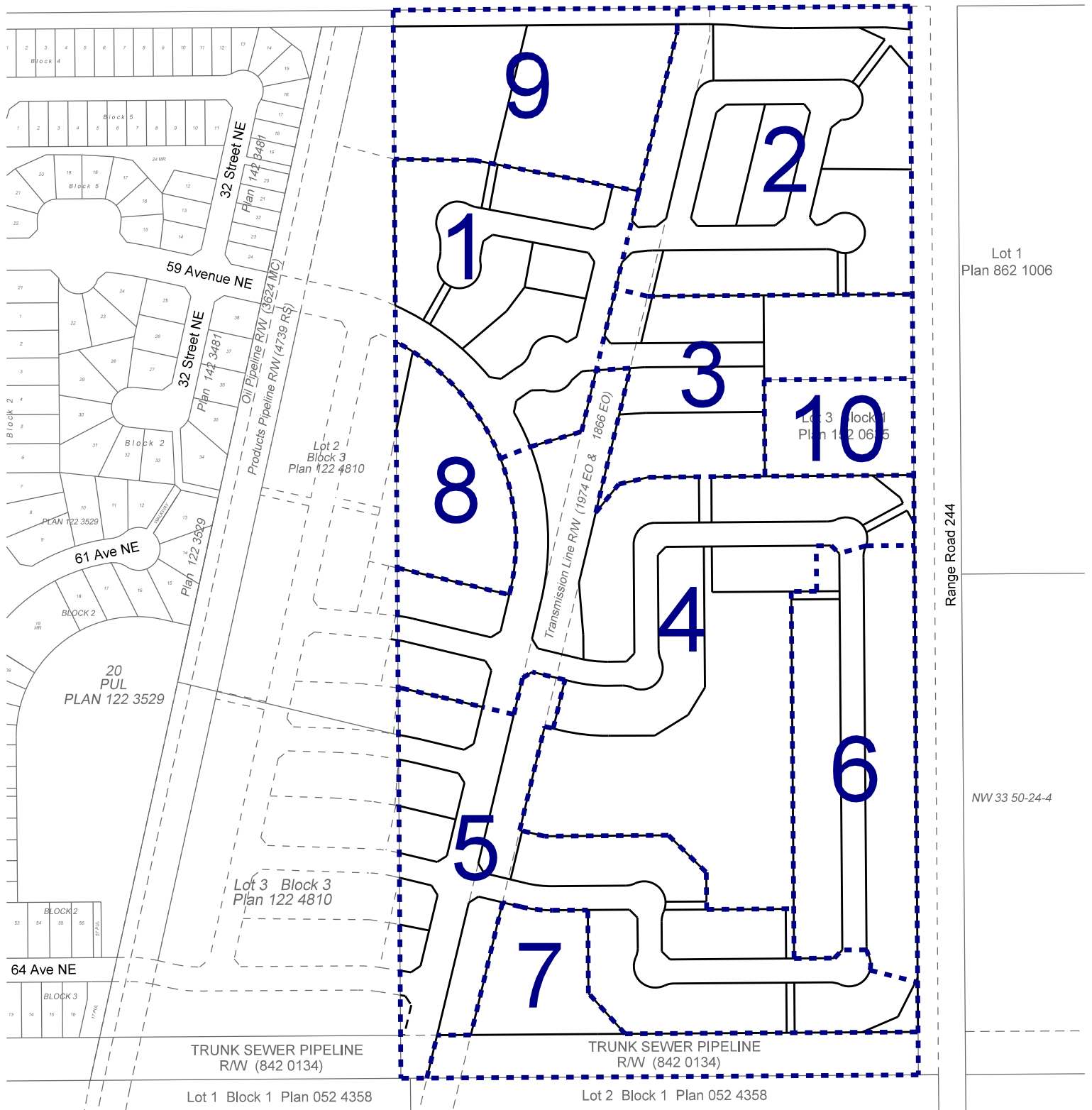
1:4000

March 10, 2016

117101000pt16.dgn



Township Road 510



--- Stage Boundary

Note: Timing of development of the commercial site (9) is independent of the residential development to the south and will be subject to market demand. Proposed staging is representative only and staging may occur out of sequence if servicing and market needs warrant.

Figure 7A AMENDED DEVELOPMENT SEQUENCE

ROYAL WOODS OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

1:4000

May 9, 2017

117101000pt18.dgn



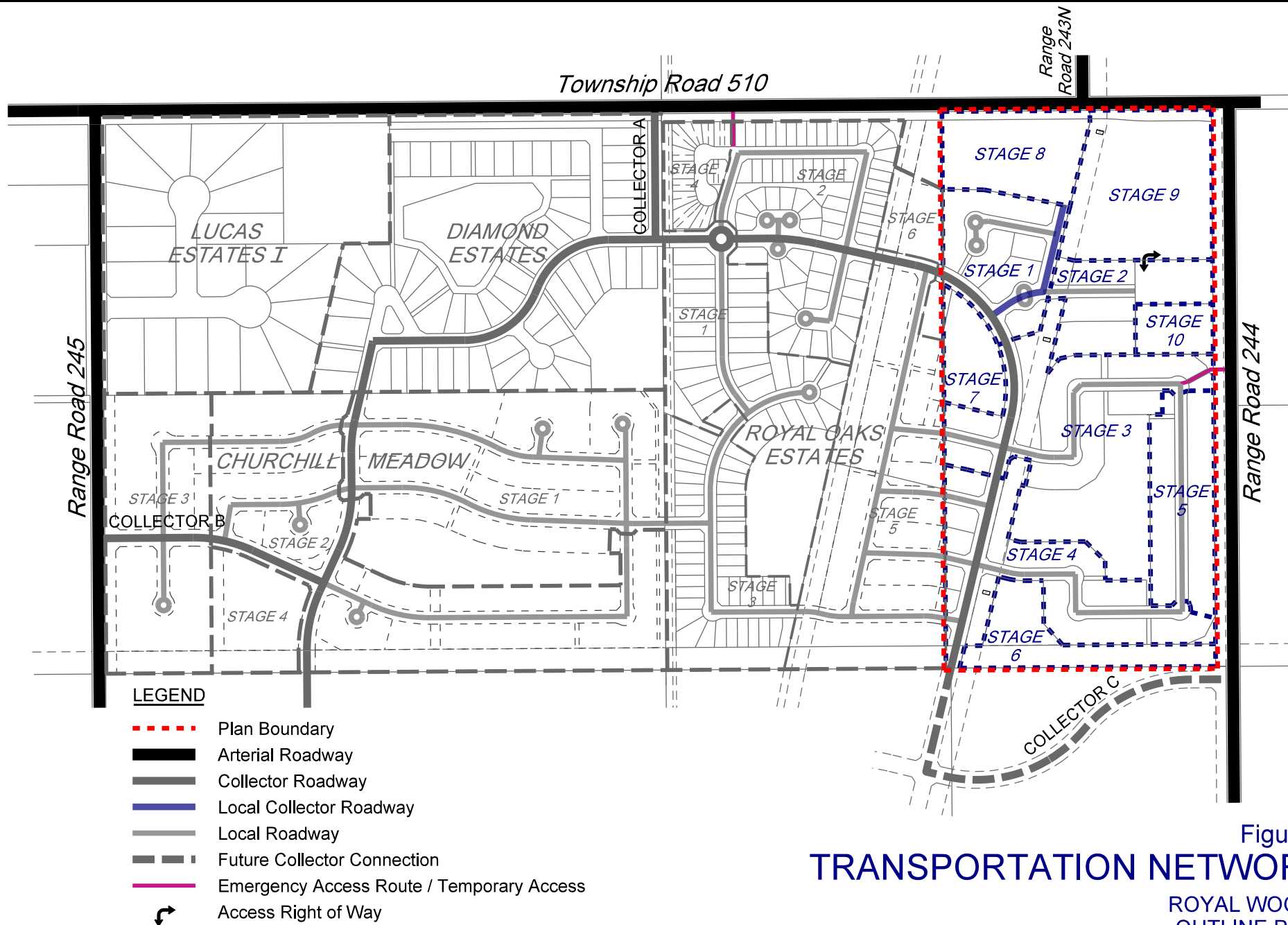


Figure 8
TRANSPORTATION NETWORK
 ROYAL WOODS
 OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
 Lot 3 Block 1 Plan 152 0635
 within NE 32-50-24-W4, Leduc County

1:7500
 March 10, 2016
 117101000p16.dgn



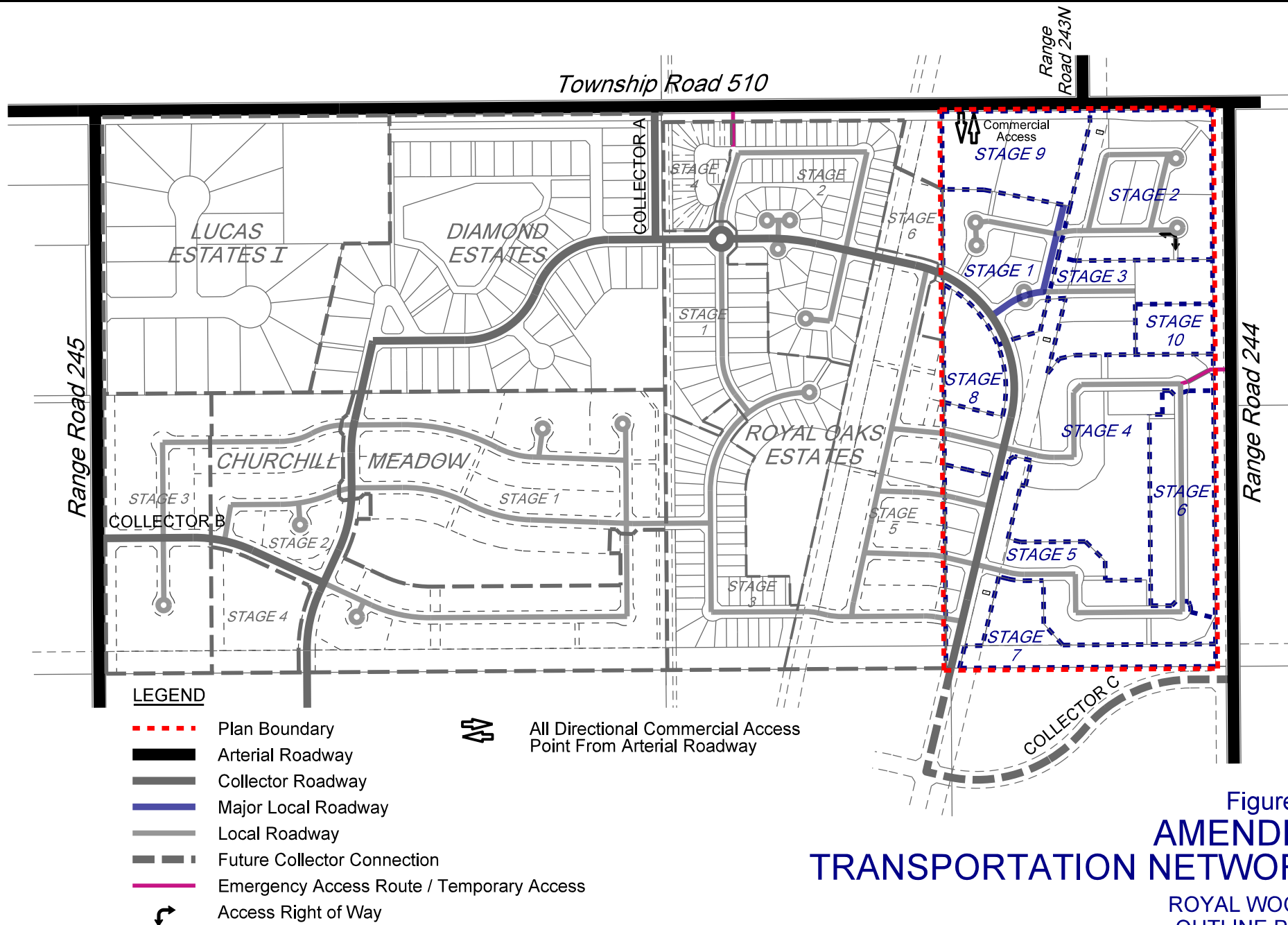


Figure 8A
AMENDED
TRANSPORTATION NETWORK
ROYAL WOODS
OUTLINE PLAN

Lot 2 Block 1 Plan 052 6699 &
Lot 3 Block 1 Plan 152 0635
within NE 32-50-24-W4, Leduc County

1:7500
May 10, 2017
117101000op18.dgn



East Vistas Local Area Structure Plan Proposed Amendments & Outline Plan Open House

February 1, 2017 Open House

Summary of Comments and Responses

Number of Persons in Attendance (according to the sign-in sheet): 17

Number of Survey Responses: 11

Amendment #1 – A change in the nature and amount of commercial development in the Northeast Quadrant of the East Vistas Plan, along with an increase in the amount of higher density residential lands.

1. A change to the type of commercial use in the northwest corner of the East Vistas Local Area Structure Plan is being proposed. The proposed amendment will change the use:
 - from Neighborhood Commercial (UC2), which provides for a range of commercial uses to serve the broader Leduc County community on a minimum lot size of 2.0 ha;
 - to Convenience Commercial (UC1), which will provide for a range of uses to meet the basic and daily needs of local residents in the community on a maximum lot size of 2.0 ha.

Is convenience commercial development important to you in the location proposed?

Agree	Neither Agree or Disagree	Disagree
8	1	2

Further Comments:

- *"Change is just a matter of life. We all must learn to adapt and progress."*
- *"Commercial development will provide a convenience to local residents and for workers travelling to the industrial park."*
- *"It is important that all developments be in accord with the applicable Local Area Structure Plan."*
- *Neighborhood commercial is for town center. Convenience commercial is needed now. Good idea.*
- *Makes sense. All walking distance from Royal Oaks*
- *Yes, we want this.*

2. The Proposed amendment will reduce the amount of commercial development in the northeast quadrant of the East Vistas plan from approximately 6 ha to 1.5 ha. The reduced area will now support convenience commercial in the northeast quadrant. All four quadrants of the East Vistas plan area will now contain convenience commercial. The overall effect of this change will support large scale commercial development in the East Vistas Towne Center.

Do you support the reduction in the amount of commercial development in this location?



Agree	Neither Agree or Disagree	Disagree
7	1	3
Further Comments:		
<ul style="list-style-type: none"> • <i>"Convenience Commercial is a great idea. It would accommodate individual area as growth happens. Also a better idea due to proximity to larger centres that are easily accessible from the development."</i> • <i>"It is important that all developments be in accord with the applicable Local Area Structure Plan."</i> • <i>"My other concern is the proposal to replace 5.4 ha of commercial with RU3 residential. This would increase the # of residential lots by 80 lots – 15% more than the approved Outline Plan. This would negatively impact traffic & infrastructure. This is <u>not</u> what East Vistas residents want."</i> • <i>Large commercial is for Town Center. We want convenience commercial. Now please</i> • <i>Large commercial is better suited to Towne Centre</i> • <i>Better to have less commercial so less traffic in plan area</i> 		

3. The proposed amendment increases the RU3 residential use that is already approved in the plan area. The increase in residential will further support development of convenience commercial in the northeast quadrant of the East Vistas plan.

Is this amendment an appropriate land use for this area of the plan?

Agree	Neither Agree or Disagree	Disagree
7	1	3
If disagree, please explain why:		
<ul style="list-style-type: none"> • <i>"I feel whatever can benefit the County to grow and develop works for me."</i> • <i>"This amendment increases density more than necessary."</i> • <i>"This questionnaire is both vague, leading and in my view is not doing service to the residents."</i> • <i>"Royal Woods does NOT need more residential land. It is important that the East Vistas buildout follows the approved LASP, which is essentially the blueprint to achieve the target density for this Priority Growth area."</i> • <i>If there are no people, there will be no commercial. Agree with revisions.</i> • <i>Glad we are being updated. Sounds reasonable.</i> • <i>I am business owner. Advise when I can lease a building space.</i> 		

4. Please indicate which one of the following most closely applies to you:	
a) Resident landowner within East Vistas LASP area	10
b) Non-resident landowner within East Vistas LASP area	
c) Developer/Consultant representing lands in the East Vistas LASP area	
d) Local Resident outside of East Vistas LASP area	1
e) Other:	

Please provide any additional comments that you have regarding this Proposed Amendment and Development Concept.

- *"Commercial development will be required to support the East Vistas."*
- *"Not amendment related, but this exit questionnaire is incredibly poorly worded. The answers are "agree," "neither agree nor disagree" and "disagree" but the stems are all questions. You can't "agree" with a question that starts with "do you support." This causes a lack of clarity and may bias responses, which is incredibly counterproductive. It also comes across as extremely unprofessional."*
- *"Almost every new proposed development has proposed to work outside of the EV LASP.
If these proposals are accepted the East Vistas will not "work" since the infrastructure that is considered in the EV LASP is not and cannot be reconsidered on a piecemeal basis.
Either stick with the EV LASP or Revisit the EV LASP as a whole."*
- *"This questionnaire is vague and poorly written. Answers to questions should be "Yes/No/Unsure." The Agree/Disagree options are only appropriate responses for a statement not a questions.
It is premature for these proposed amendments. The Royal Woods outline plan was just approved less than 10 months ago. There is no market demand for any commercial development currently, and likely not for the next 5 years. Until there are indications of market demand for commercial development in this area, the zoning should remain as it is to allow greater flexibility as the need arises. When the East Vistas is fully development we will likely need the commercial zoning as it currently is."*