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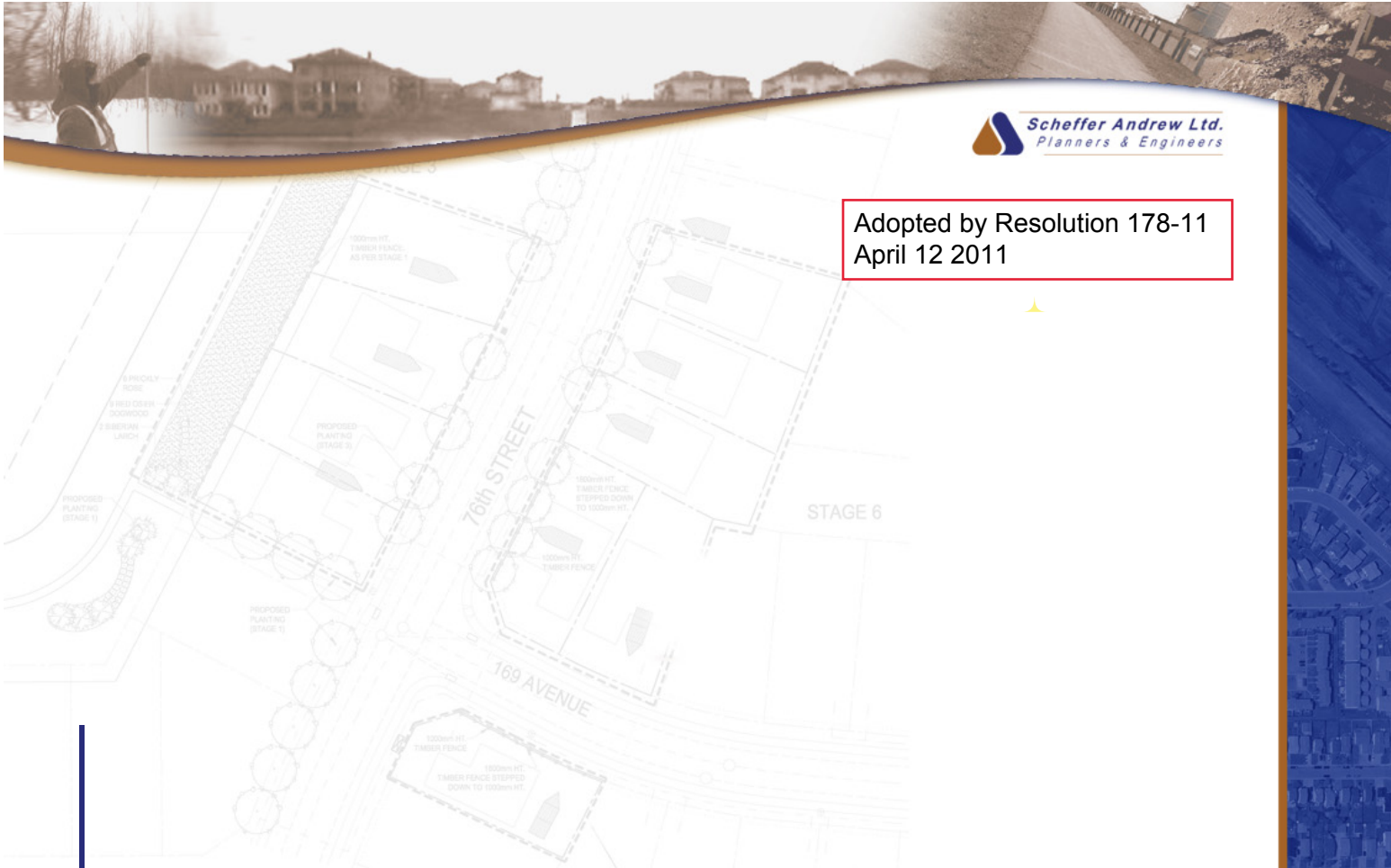
Adopted by Resolution 178-11
April 12 2011



Royal Oaks Estates

Outline Plan

Lot 1 Block 1 Plan 052-6699

Within the NE-32-50-24-W4

Leduc County

April 1, 2011

File #7540100

Contents

List of Figures

Appendices

1 Background information

1.1 Introduction

In response to the demand for residential urban style development that is readily accessible to Edmonton, the fringe area south of the city and other urban municipalities in the greater Capital region, the proponent of the Royal Oaks Estates Outline Plan is proposing to develop their parcel to meet this need. The staged development will provide a range of residential lot sizes and price points from single family to multifamily sites. There will also be a commercial remnant to be developed concurrently with the commercial land to the east. This parcel of land is situated within the East Vistas Local Area Structure Plan (East Vistas LASP) which is just east of Nisku Business Industrial Park in Leduc County and one miles west of the Town of Beaumont.

1.2 Purpose

The Royal Oaks Outline Estates Plan provides an overview of the land use concept and describes the subject area, services, transportation and servicing requirements needed to support the proposed development. This Outline Plan will support the submitted redistricting application.

The proponent's development will be situated totally on their title, however, the adjacent lands to the east will be included in the plan as reference in the conceptual layout. The quarter section development needs to be viewed as a whole in terms of development concept, transportation circulation, grading, servicing, park space and so on.

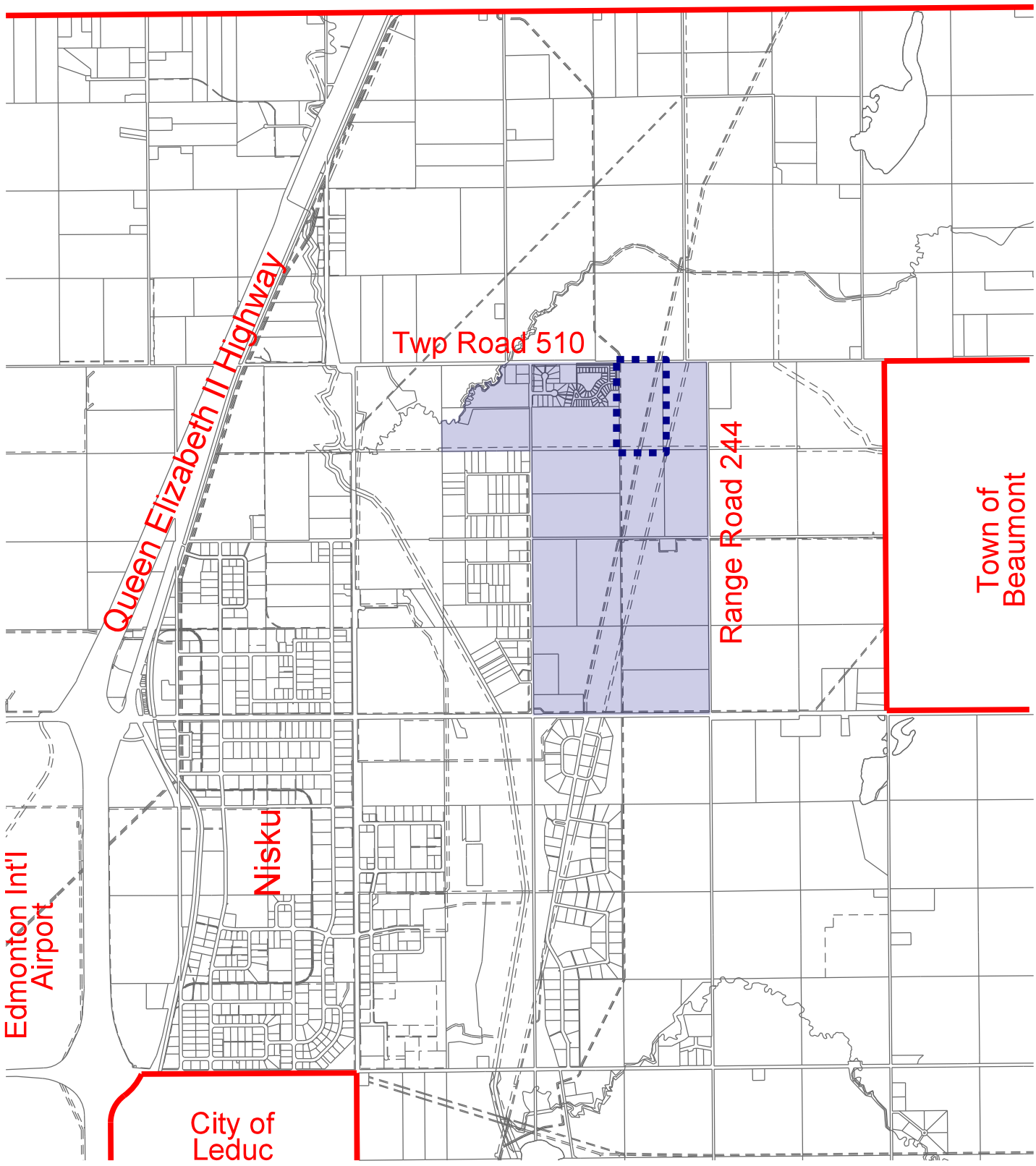
1.3 Plan Area and Location

The Outline Plan area is within the north portion of the East Vistas LASP plan adjacent to Township Road 510, east of the existing Lukas residential developments and ¼ mile west of Range Road 244. Figure 1 ***Location and Plan Area*** depicts the location of the parcel relative to the East Vistas LASP boundary and in context to the region.

Legal access to the Royal Oaks Estates site at this point of time is via the existing collector road connection in Lukas II Estates to the west. This is consistent with the approved LASP development concept and road scheme.

1.4 Ownership

This Outline Plan has been prepared on behalf of Cancom Development Ltd., the registered owner of the titled area. The parcel, Lot 1 Block 1 Plan 052-6699 is registered with an area of 31.9 ha (78.83 acres). The balance of the quarter section to the east is under one title.



Royal Oaks Outline Plan Boundary
East Vistas Local Area Structure Plan

FIGURE 1
LOCATION PLAN
ROYAL OAKS ESTATES OUTLINE PLAN

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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* which recognizes that urban growth areas in the Leduc-Beaumont-Devon sub-region are a major growth driver in the Edmonton capital region. That these growth areas will occur where ready access to municipal servicing and high order transportation corridors exist and be developed utilizing Smart Growth principles. The outline plan area is identified as being within an Urban growth area.

2.2 North Major Area Structure Plan

The proposed Outline Plan is consistent with the *North Major Area Structure Plan Bylaw No. 10-05.* The Outline Plan is within an identified Urban Growth area and proposes urban style development utilizing Smart Growth principles and municipal services.

2.3 East Vistas Local Area Structure Plan

The Royal Oaks Outline plan is located in the north half of the East Vistas plan area. The proposed densities, uses, servicing and development concept is consistent with the *East Vistas Local Area Structure Plan Bylaw No. 18-09*. The Outline Plan is being prepared as a requirement for redistricting and subdivision as per the LASP which was approved in fall 2010 by the Capital Region Board and Leduc County.

2.4 Land Use Bylaw

This Outline Plan is to support an amendment to *Leduc County Land Use Bylaw No. 7-08* redistricting the subject parcel into districts which are consistent with Figure 6 *Development Concept* in the East Vistas LASP. The land is currently zoned AG1 Agricultural and amendments to the bylaw to RU2 Residential Urban 2, RU3 Residential Urban 3, RM1 Residential Multi Family and UC2 Urban Commercial are being applied for.

3 Site Features

3.1 Site Description

The subject land is presently undeveloped and utilized for agriculture. Figure 2 depicts ***Air Photograph*** for the plan area.

The topography at the site is generally undulating with maximum elevation differences of about 7 metres. Surface drainage at the site is towards the southwest. Figure 3 indicates the ***Topography*** of the plan area. Pipeline rights of ways are located on the west and south boundary of the site and traversing thru the center of the site.

Plan Boundary

FIGURE 2
AERIAL PHOTO
ROYAL OAKS ESTATES
OUTLINE PLAN

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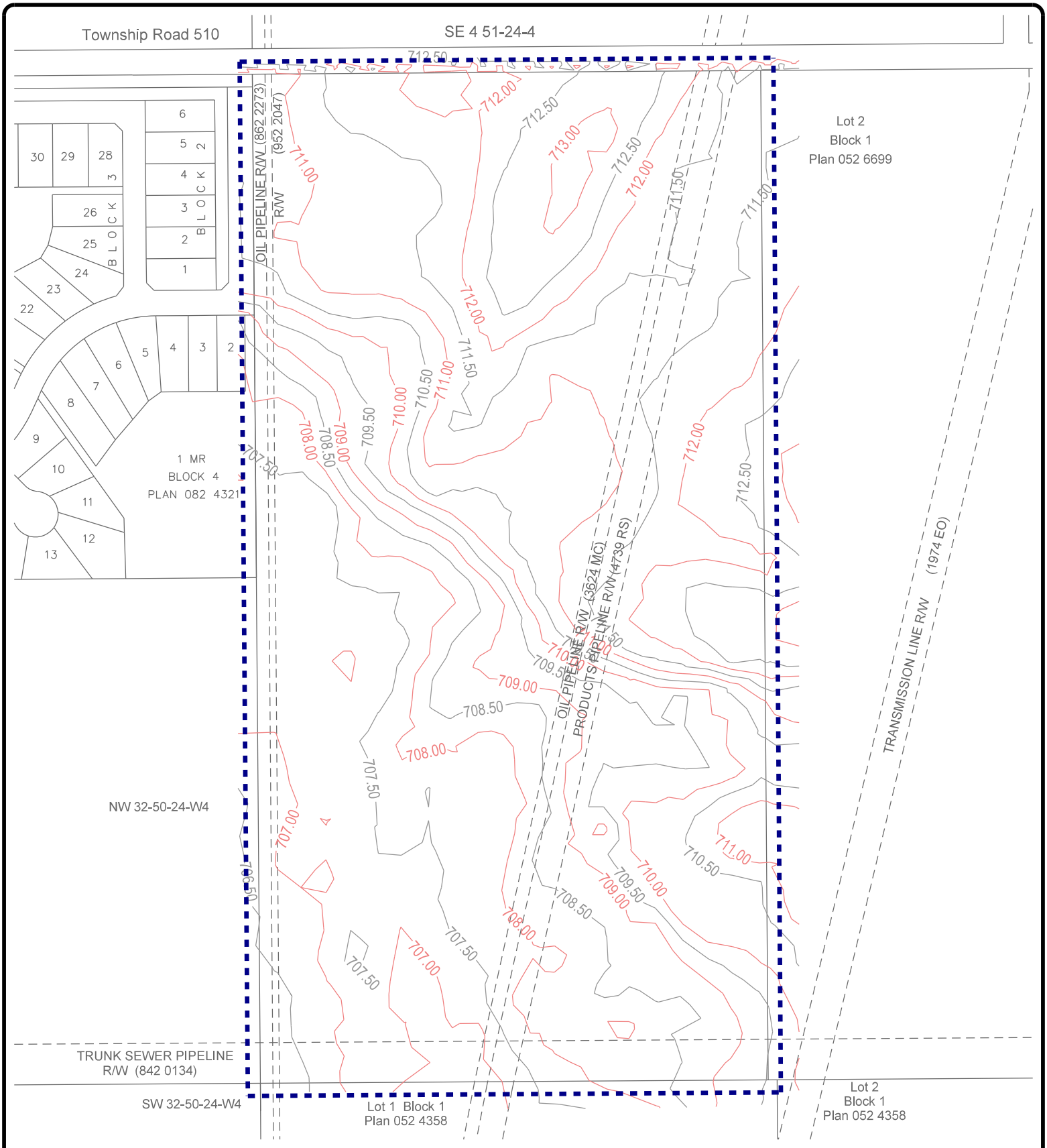

FIGURE 3
TOPOGRAPHY
ROYAL OAKS ESTATES
OUTLINE PLAN

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3.2 Adjacent Land Use

The balance of the quarter section to the east is current utilized for agricultural production and there is a home site facing Range Road 244. This eighty acre parcel has an overhead power transmission line transecting the site in a north south direction.

The north half of the quarter section west of the subject land is developed into estate residential lots. The south half of the quarter section is currently utilized as farmland with a home site fronting onto Range Road 245. This parcel is currently owned by a land development company and is slated for future development. The land south of the parcel is also in agricultural production. The land north of Township Road 510 is also being utilized for agriculture. This is outside of the East Vistas LASP boundary and not currently slated for intensive development.

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

An ***Environmental Impact Assessment*** report was prepared by Bruce Thompson and Associates Inc. dated September 2007 for the East Vistas plan. The report identifies important natural features in the Plan area such as tree stands, riparian areas, or wetlands that are worthy of conservation. There were six areas indicated of environmental concern. None of these areas are situated on the quarter section that this parcel is within.

3.5 Environmental Site Assessment

Based on the information from the Phase I Environmental Site Assessment completed by AMEC Earth and Environmental there is no evidence of contamination within the subject parcel. Accordingly, a Phase II environmental site assessment is not warranted.

The ***Phase I Environmental Site Assessment*** report prepared by Mr. Silvan Zorzut from AMEC Earth and Environmental dated March 2008, was submitted to Leduc County under separate cover. A letter dated November 18, 2010 from the applicant indicating that there has been no change in use since completion of the original report was submitted to the municipality along with AMEC's letter dated February 24, 2011 confirming no noticeable changes in land use compared to their original inspection in 2008.

3.6 Geotechnical Assessment

A ***Geotechnical Site Investigation Report*** was prepared by Mr. Merle Hagstrom, P.Eng. from Sabatini Earth Technologies Inc. dated December 2007 for the site. A supplemental to this report was prepared by Levelton Consultants Ltd. dated December 21, 2010. The subsurface conditions of the titled area are favourable for the proposed development. Groundwater conditions are not expected to pose significant design and/or constructions issues on this site.

These reports will be submitted under separate cover to the County.

3.7 Constraints to Development

Figure 4 ***Constraints to Development*** indicates the manmade constraints on this parcel and in the vicinity. On the subject parcel there are five utility rights of way. Crossings of all pipelines are to be minimized when possible. Two rights of way parallel and adjacent to the west boundary are for crude oil and natural gas. The regional sewer pipeline corridor is parallel to the south property line. These three rights of way will be registered as public utility rights of way. Two rights of way transect the parcel in a north south trending direction. Petroleum products are in the rights of ways. Walkways will be constructed on this corridor to enable walkability in a north south direction as per the East Vistas LASP.

The overhead power transmission line on the east 80 in this quarter section is a significant constraint as crossing of this right of way is determined by the pole location and height of power lines. This line transects the land in a north south trending direction parallel to the north south lines on the west 80. These rights of way set the development pattern for this quarter section as road crossings should be as close to ninety degrees as possible when crossing and not adjacent to power poles. Lots were designed so that the majority of the rear yards are facing these rights of ways which are green spaces.

A land development package dated March 15, 2007 was received from the Alberta Energy and Utilities Board. A review of the package indicates that there are no constraints to development on the quarter section, except for the above noted rights of ways, from sour gas facilities or abandoned wells.

- Plan Boundary
- Oil Pipeline Right of Way
- Regional Sewer Line
- Powerline Right of Way

FIGURE 4
CONSTRAINTS
ROYAL OAKS ESTATES OUTLINE PLAN

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4 Development Concept

Figure 5 depicts the ***Development Concept*** for the Royal Oaks Outline Plan and the balance of the quarter section.

4.1 Parcel Usage

The Royal Oaks Estates Outline Plan statistics for maximum capacity projections and proposed projections for the land use concept are as follows. It is noted that the East Vistas LASP targets a density of 27.3 units/net residential ha.

In conjunction with the submission of this outline plan, a proposed plan of subdivision for the first stage of subdivision will be submitted. This 29 lot proposed development will have building pockets in the range of 54 feet which is consistent with the lot size and width in the adjacent existing Lukas II development. The lots in the balance of the medium density district were assumed to be for the same market niche. These lots meet the parameters of the RU 2 district for minimum lot width, depth and not exceeding maximum allowed area.

The higher density lots (RU3) were designed with the initial assumption of building pocket widths of 28 to 30 feet. The proposed lots on the adjacent eighty acres were designed to have a building pocket of 26-28 feet. This transitioning of lot width to the east is consistent with the principals of the East Vistas LASP of providing a range of housing sizes and price points.

The below table indicates population projections and net unit density based on maximum densities of the RU2 and RU3 districts. Using the maximum densities, the density is 32.9 units/net residential ha. If the lot count in the conceptual plan is utilized where lots are not at the maximum density but the above lot widths are assumed, the units/net residential ha is calculated at 31.1. The maximum density for the multifamily sites were utilized as a development concept for the individual sites will be prepared by the future developer of the site. The RU 2 lands will have 83 instead of 100 units and the RU 3 lands will have 135 units instead of 149 units which is at the maximum density. Thus a total of 569 units will be developed instead of 600.

If the multifamily sites were developed at a density of 76 units/hectare the density for the outline plan area will be reduced to 27.3 units/net ha which is the target density of the East Vistas LASP. If the sites were developed at a density of 59 units/ha then the total density for the plan area will be 25.0 units/ha which is the Capital Region Board target for this growth area.

We note that market conditions change over time thus flexibility in lot width is required however the East Vistas LASP target density will be respected for the full build out of the parcel.

Land Use Distribution

	Area (ha)	Net Area (ha)	%GDA
Total Plan area	**31.9**		
Environmental Reserve	**0.0**		
Gross Developable Area	**31.9**		
Park		3.2	10.0%
Stormwater Lake		2.2	6.9%
Public Utility Lots		2.3	7.2%
Circulation		5.6	17.5%
Infrastructure and Parks Area		**13.3**	
Urban Commercial		0.4	1.3%
Commercial Developable Area		**0.4**	
Medium Density Residential		8.3	26.0%
Higher Density Residential		6.2	19.5%
Multi Dwelling Residential		3.7	11.6%
Residential Developable Area		**18.2**	
Total		**31.9**	**100.0%**

Population

Land Use	Area (ha)	%	Maximum DU/ ha	Maximum DU	PPDU	Maximum Pop'n
Medium Density Residential (RU 2)	8.3	45.6%	12.0	100	2.6	260
Higher Density Residential (RU 3)	6.2	34.1%	24.0	149	2.6	387
Multi Dwelling Residential (RM1)	3.7	20.3%	95.0	351	2.6	913
Total	**18.2**	**100%**		**600**		**1560**
Maximum Density		**32.9**	**units / net residential ha**			

Land Use	Area (ha)	%	Proposed DU	Proposed Pop'n
Medium Density Residential (RU 2)	8.3	45.6%	83	216
Higher Density Residential (RU 3)	6.2	34.1%	135	351
Multi Dwelling Residential (RM1)	3.7	20.3%	351	913
Total	**18.2**	**100.0%**	**569**	**1480**
Proposed Density		**31.1**	**units /net residential ha**	

FIGURE 5
DEVELOPMENT CONCEPT

ROYAL OAKS ESTATES
OUTLINE PLAN

Lot 1 Block 1 Plan 052-6699
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4.2 Parks

All municipal reserve owing for the subject parcel will be dedicated as land. Figure 6 depicts the ***Parks Concept*** for the subject parcel and adjoining 80 acres. The centrally located north-south pipeline corridor will contain a walkway and be landscaped. This will be the predominant developed linear park feature on this parcel and the intent that municipal reserve credit be granted for this as per the East Vistas LASP. This main trail will provide connectivity to future school sites, the town center and other neighborhoods which is consistent with Smart Growth principals for a healthy community. The rights of way along the west and south boundary will be left as undeveloped green spaces. The green areas, developed and undeveloped, will also provide linkages for wildlife. All parks will be developed in accordance with Leduc County Park Development standards and a Parks Plan will be submitted in the detailed engineering set.

Internal pocket parks will provide focal points for neighborhoods and linkages to green spaces in adjacent developments such as the Lukas II subdivision park. An internal pocket park is located in close proximity to the northwest multifamily sites on our subject parcel. This corner park will encourage socialization between residents of the higher density development with the single family development as the open space in the multifamily site is privately owned and provide a focal point for walkers on the trail network. A trail network will also be provided surrounding the proposed storm water management facility which will connect to the main north south trail.

The municipal reserves for the east 80 acre parcel is also shown with a main central green park in the center in close proximity to the north multifamily sites and surrounding higher density residential development. A municipal reserve strip is proposed between the commercial site in the north and the residential development which will allow for walkability to the commercial site and across the parcel to the main north south walking trail on the west 80. Trails will be developed around the storm water management facility in the south east corner of this parcel.

The power transmission line is not proposed to be developed and will be left in a green state and registered as a Public Utility Lot (PUL). It was suggested in the East Vistas LASP that this corridor may allow for the extension of the Waskahegan Trail north from Saunders Lake along this power corridor. This would be developed by the trail association and not be part of the developer's responsibility. This green concept for the quarter section is consistent with the East Vistas LASP.

FIGURE 6
PARKS CONCEPT
ROYAL OAKS ESTATES OUTLINE PLAN

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5 Public Input

As this is an outline plan, a formal public process is not required under the *Municipal Government Act*. The landowner to the east was contacted and the outline plan process was explained to the owner. At this point, this landowner has no intent to develop however the outline plan indicates how they may develop and be serviced. A meeting was held with the developer's representative for the lands south of the Lukas developments. Coordination for the future road connection and storm water management were discussed and will be followed up on. The land owner directly south of the subject parcel was not contacted as the properties are separated by the SERTS line and the collector road alignment was not changed from what was proposed in the East Vistas LASP.

At the request of Leduc County, an open house was held on March 1, 2011 at the Nisku Recreation Centre by the developer. Notification was made by direct mail out to adjacent landowners, advertising for two consecutive weeks in the local community paper and notice on the County website. Approximately twenty people attended the open house and there were no significant concerns with the proposed outline plan and first stage of development. A summary of the comments in ***Appendix A.***

6 Implementation and Amendment

6.1 Development Sequence

Staging is indicated in Figure 7 ***Development Sequence***. All stages may be developed concurrently or in singular or plural as the market demands. Legal road access must be provided to each stage in order to proceed. Stages 6 and 7 cannot proceed until the collector road is developed on the east eighty acres.

6.2 Approval Process

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

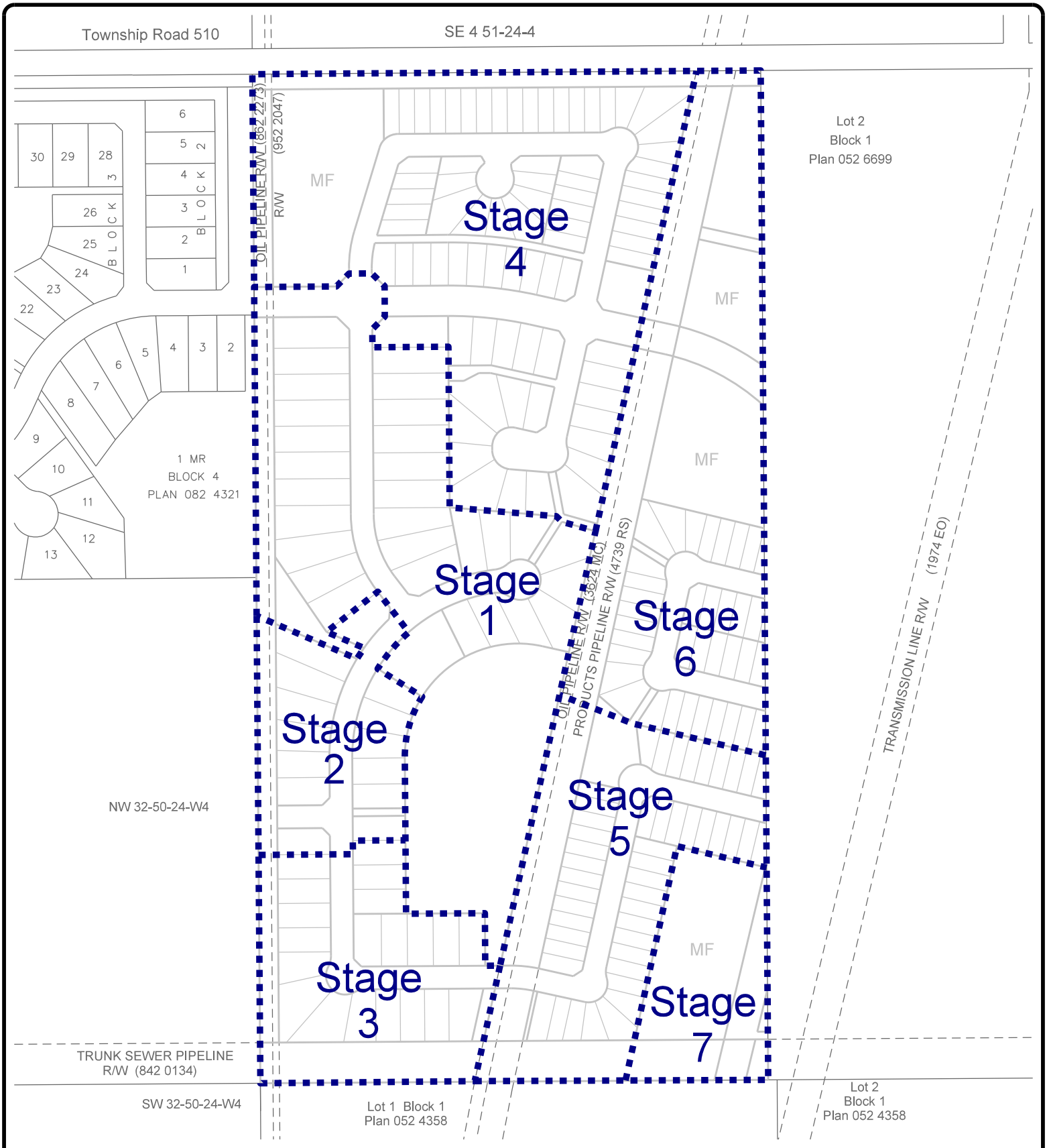

FIGURE 7
DEVELOPMENT SEQUENCE

ROYAL OAKS ESTATES
OUTLINE PLAN

Lot 1 Block 1 Plan 052-6699
Leduc County

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7 Infrastructure

7.1 Circulation & Access

The overall transportation and circulation patterns are shown on Figure 8 ***Transportation Network*** for the quarter section. The constraint of the rights of way for crossing angles and power pole locations drives the development pattern for this quarter section. The Outline plan area has a convenient direct access to Township Road 510, which is identified as a major arterial roadway by Leduc County to provide a link between the Nisku Business Industrial Park and Highway 814 and Beaumont. To accommodate the future road widening of Township Road 510, a road widening of 12.1m will be provided from this planning area.

For the first stage of subdivision, our proposed collector (B) will line up with the existing road west in the Lukas II subdivision (A), forming a simple T-intersection with the collector road connecting to Township Road 510. To address the issue of access on to the subject parcel, a second temporary (emergency) access to Township Road 510 may be required at such a time that the development in the planning area exceeds one hundred residential lots if access to other adjacent parcels is not available. This temporary emergency access would be blocked off by bollards. This emergency access may not be warranted if road connections are made to adjacent developments. The location of the emergency access is shown on Figure 8 in the northeast corner of the subject parcel west of the diagonal pipelines. A second permanent access will be developed to connect to Range Road 244 thru the collector road system (C). Ultimately, the proposed Collector (B) will be looped, as shown in the East Vistas Local Area Structure Plan. Traffic calming on the collector road will be provided by a traffic circle at the first intersection of the collector and local road system on our parcel (D).

The concept plan has been developed so as to provide some residential development direct access onto the collector road so that the main thoroughfare is not disconnected from the balance of the neighbourhood by a wall of rear fences and will be attractive and conducive for walking. The majority of the lots are on internal local roads with side yards flanking onto the collector road. Lots have been sited when possible so that they are backing onto green spaces. Lanes have been provided on the rear of single family development fronting onto the collector road.

The plan area provides a good local circulation by dispersing local traffic quickly onto the collector road. All local roads serving more than twenty five lots are connected by at least two accesses, which results in all annual average daily traffic (AADT) of the proposed local roads being under 1000 trips per day. Future connection on Local E with adjacent land will provide additional traffic paths to improve overall circulation.

The local and collector roads will be developed as per the proposed cross sections in the East Vistas LASP. Sidewalk will be one side of the local roads and on both sides of the collector road. Figure 6 *Parks Concept* depicts the integration of the local collector sidewalk with the collector and park walkway system. The collector road will also facilitate public transport when available. A *Traffic Impact Assessment* (TIA) report update to the East Vistas LASP TIA prepared by Iris Ye, P.Eng. of Scheffer Andrew Ltd.

will be submitted to the County under separate cover. A *Noise Impact Assessment* prepared by Iris Ye, P.Eng. of Scheffer Andrew Ltd. will be submitted under separate cove. Appendix B indicates cross sections being utilized by this outline plan as approved in the East Vistas Local Area Structure Plan adopted September 2010.

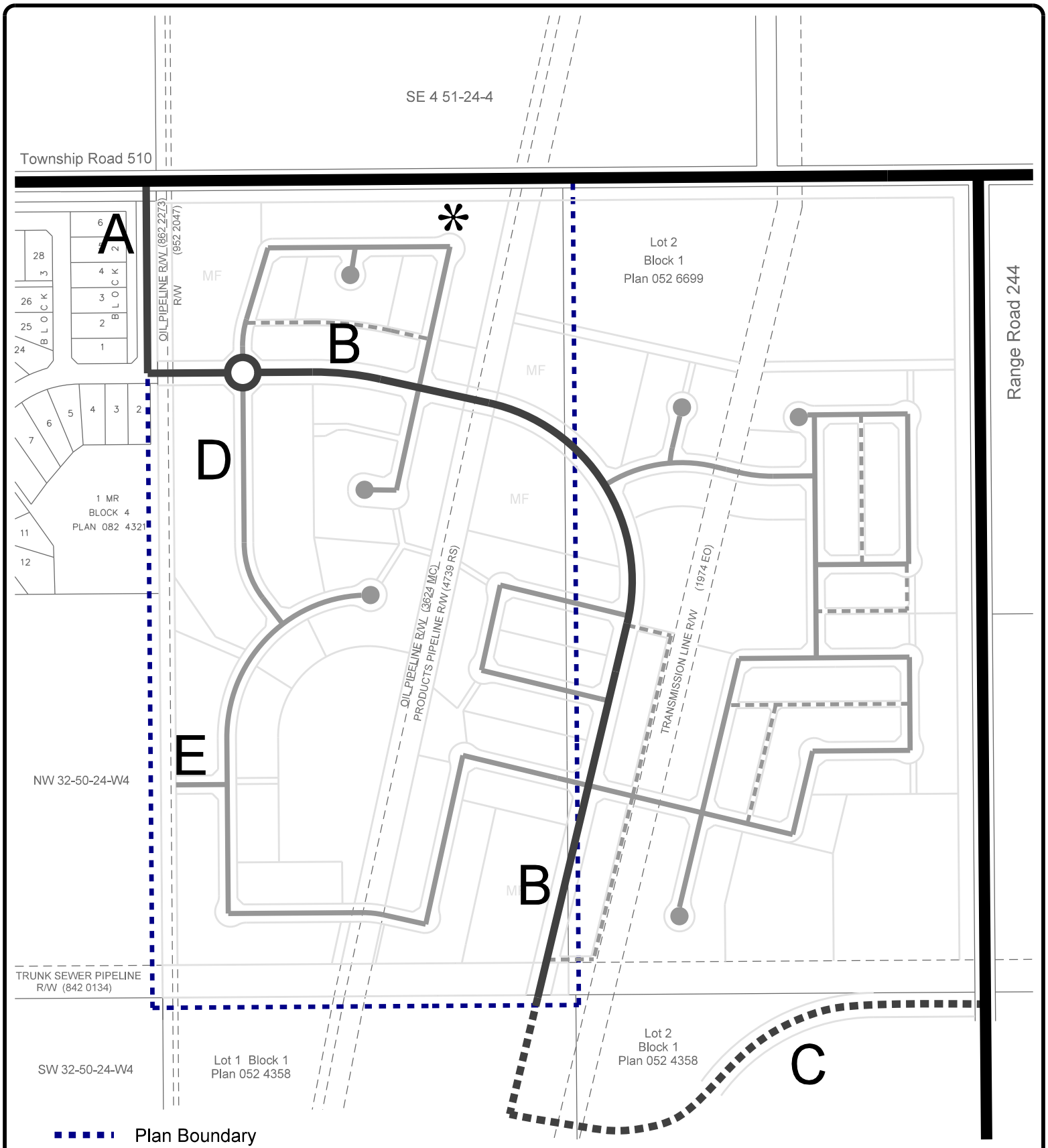

FIGURE 8
TRANSPORTATION NETWORK
ROYAL OAKS ESTATES OUTLINE PLAN

Lot 1 Block 1 Plan 052-6699
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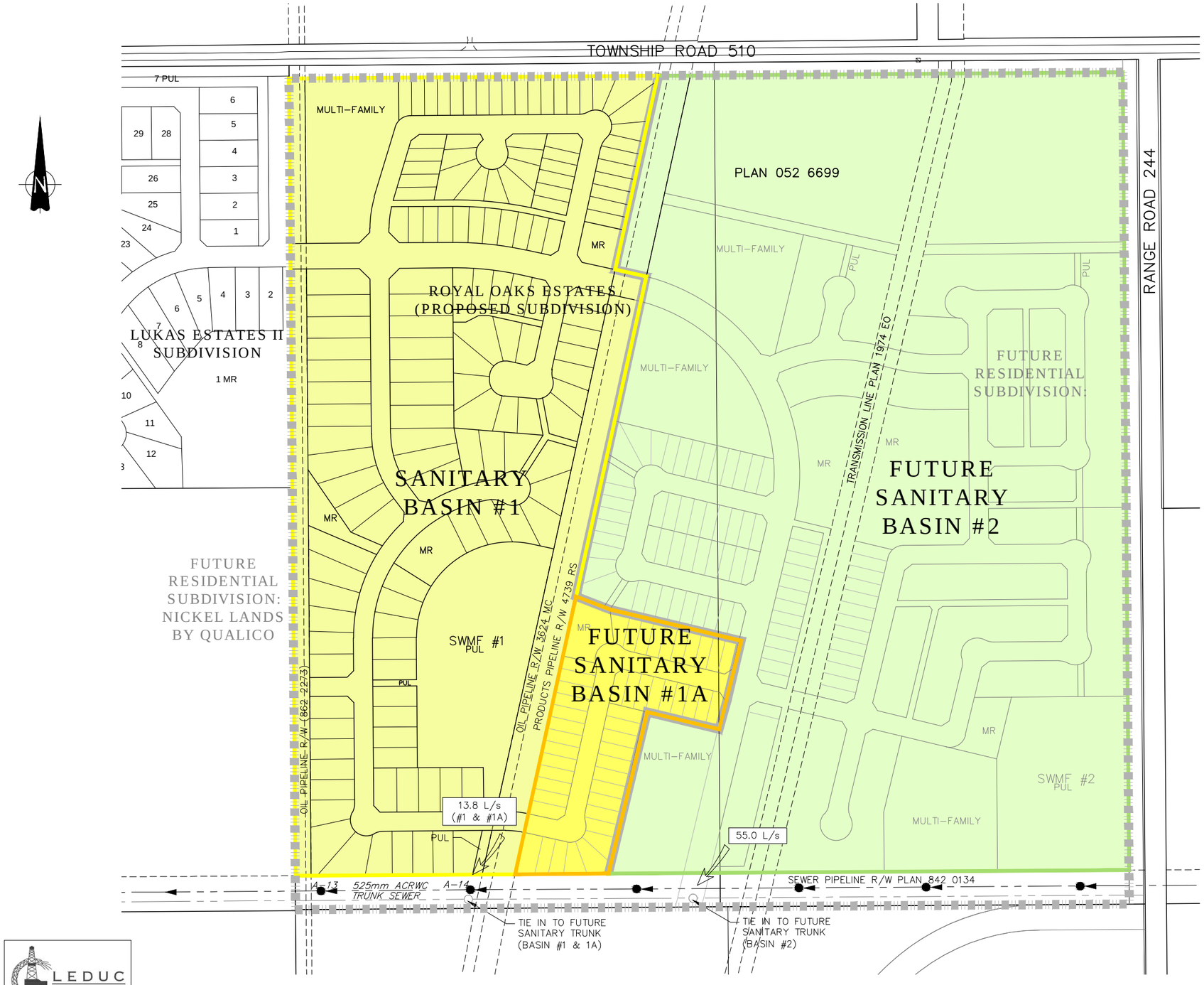
7.2 Waste Water

The ***Proposed Sanitary Basin Plan*** for the Outline Plan study area is shown on Figure 9. The sewer collection basins #1, #1A, and #2 will direct sewage flows to the future 900 mm twinned Beaumont sewer trunk. The proposed tie-in locations and the anticipated design sewage flows are shown on Figure 9A ***Proposed Sanitary System*****.** The sanitary system sub-basins, pipe alignments, and pipe sizes are shown on Figure 9A. Supporting detailed sanitary sewer design calculations are enclosed in **Appendix C**.

Consultation with Alberta Capital Region Wastewater Commission (ACRWC) reviled that the 2nd Beaumont sewer trunk may be installed in 2013. On interim basis, a connection to the existing 525 mm sanitary trunk is proposed to service Stage 1 (29 lots) of Royal Oaks Estates in 2011, prior to the twinning of the Beaumont trunk. Connection details are shown on Figure 9B. ***Stage 1 Sanitary System Connection***. Supporting detailed sanitary sewer design calculations for the interim tie-in are enclosed in **Appendix C**.

The wastewater collection system was designed to meet Leduc County and ACRWC standards.



LEGEND

EXISTING SANITARY SEWER

FUTURE SANITARY SEWER

STUDY AREA BOUNDARY

SANITARY BASIN BOUNDARY

TOTAL CATCHMENT AREA

21.5 ha	BASIN #1
2.8 ha	FUTURE BASIN #1A
34.9 ha	FUTURE BASIN #2

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FIGURE 9

PROPOSED SANITARY BASIN PLAN

ROYAL OAKS ESTATES OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

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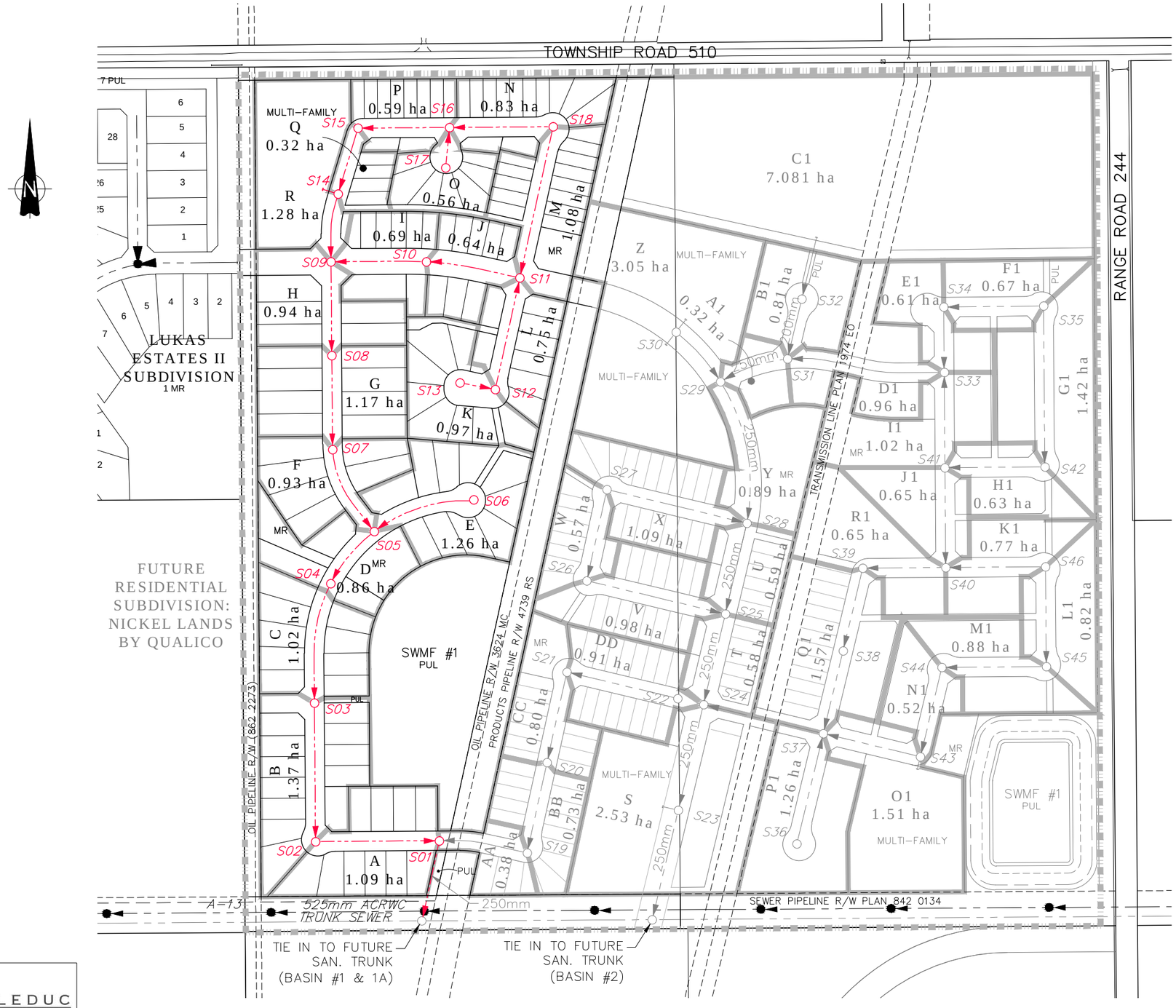

LEGEND

PROPOSED SANITARY SEWER & MANHOLE NO. S01

EXISTING SANITARY SEWER & MANHOLE NO. S01

FUTURE SANITARY SEWER & MANHOLE NO. S01

STUDY AREA BOUNDARY BOUNDARY

SANITARY CATCHMENT BOUNDARY

CATCHMENT NO. & AREA — B 1.92ha

FUTURE CATCHMENT NO. & AREA — B 1.92ha

ALL SANITARY MAINS ARE 200mm UNLESS OTHERWISE NOTED

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FIGURE 9A

PROPOSED SANITARY SYSTEM

ROYAL OAKS ESTATES OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale = 1:4000
April 2011
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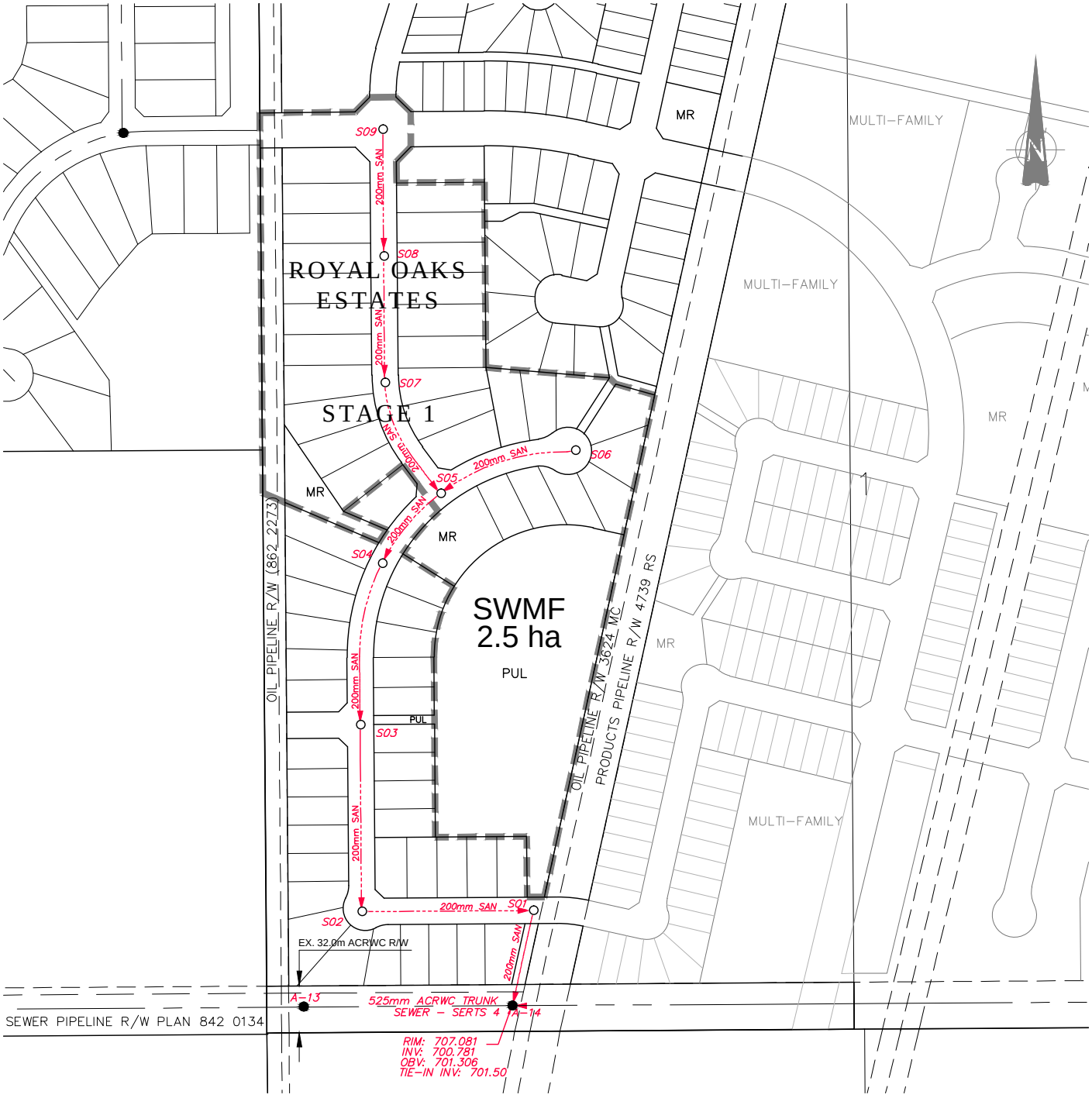

NOTE:

1. STAGE 1 DESIGN SANITARY FLOW = 1.7L/s.

LEGEND

PROPOSED SANITARY SEWER — S01

SUBDIVISION STAGE 1 BOUNDARY

FIGURE 9B

STAGE 1 SAN. SYSTEM CONNECTION

ROYAL OAK ESTATE OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale 1:4000
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7.3 Stormwater Management System

The ***Royal Oaks Estates Residential Subdivision Stormwater Management Design Report*** prepared by Scheffer Andrew Ltd., was submitted to the Leduc County and Alberta Environment in March 2009 under separate cover. The report includes the Royal Oaks Estates development area and part of the developable area to the east.

In addition to the report, a supplementary analysis was carried out to evaluate the stormwater management (SWM) options for the remaining east area within the Outline Plan boundary that was not covered in the March 2009 report. The following plan provides stormwater management framework to the Outline Plan Area, including Royal Oaks Estates subdivision and the adjacent 80 acres of developable land laying directly to the east.

It was determined that the east lands are best serviced by a stormwater management facility (SWMF) in the southeast area of the site as shown on Figure 10 ***Proposed Storm Drainage Basin Plan*** (SWM Basin #2, SWMF #2). As described in the March 2009 report, the Royal Oaks Estates subdivision area will be serviced by SWMF #1 (SWM Basin #1).

The proposed SWM facilities will provide the necessary water quantity and flood control measures for proposed and future development. The 1-in-100 year storage requirements are summarized in the table below.

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

Facility	Storage Function	Allotted Area (ha)	HWL Elev. (m)	NWL Elev. (m)	Bottom Elev. (m)	Active Storage Vol. (m^3)	Drainage Area (ha)	Controlled Release Rate (L/s)
SWMF-1	Retention	2.2	706.0	704.0	702.0	27,200	36.1	180 (5 L/s/ha)
SWMF-2	Retention	2.0	708.7*	707.2*	705.2*	14,900*	16.9*	85* (5L/s/ha)

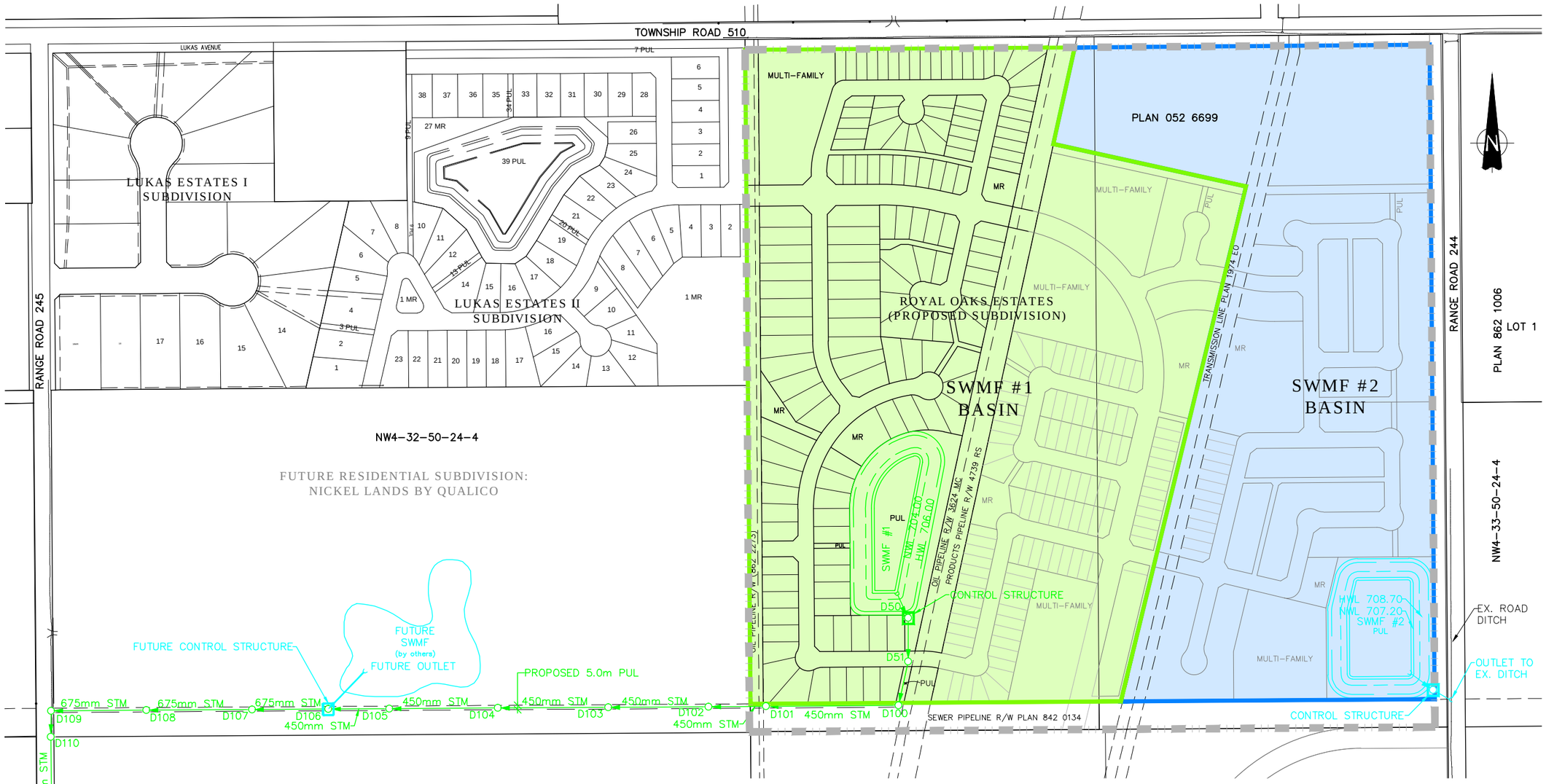
Note: asterisk (*) indicates preliminary results.

7.3.1 Design Summary

- SWMF #1 will collect major and minor stormwater flow from Basin #1.
- SWMF #2 will collect major and minor stormwater flow from Basin #2.
- SWMF #1 & #2 (wet ponds) are sized to accommodate the 1-in-100 year storm event as required by the Leduc County Design Guidelines and Alberta Environment laws and regulations.
- The post-development stormwater release rate from Basin #1 and #2 will be limited to the pre-development rate of 5.0 L/s/ha during a 1-in-100 year storm event as per East Heritage Valley Area Master Plan.
- SWMF #1 is proposed to have a piped off-site outfall to Range Road 245 roadside ditch. Figure 10 shows the proposed piped outfall. Supporting analysis of the ditch capacity and proposed improvements is enclosed with **Appendix D**.
- In consultation with Leduc County and Alberta Capital Region Wastewater Commission a 5.0m Public Utility Lot (PUL) is proposed for the offsite stormwater outfall.
- The west section of the proposed off-site outfall is oversized (675mm dia.) to accommodate 3.4 L/s/ha (100 L/s) design flow from the future SWMF in the residential subdivision west of Royal Oaks (Nickel Lands). Preliminary location of the future tie-in is shown on the Figure 10. The developer of Royal Oaks will collect recoveries once the neighbouring subdivision connects its stormwater management facility to the oversized storm outfall.
- SWMF #2 will discharge directly to Range Road 244 west roadside ditch.
- The proposed minor stormwater collection system is shown on Figure 10A ***Proposed Minor Storm System***. Storm pipes have been sized to accommodate minor flows from all residential multi-family lots.
- The proposed minor stormwater collection system is shown on Figure 10A. Storm pipes have been sized to accommodate 1-in-5 year minor flows from all residential, multi-family, and commercial lots. Supporting detailed storm sewer design calculations are enclosed with **Appendix D**.
- The stormwater collection system was designed to meet Leduc County standards.

7.3.2 Block-by-block Grading

Preliminary roadway elevations and block-by-block lot grades are shown on Figure 10B ***Proposed Road Grading Plan*****.** Roadway grades were calculated such that all major flows are directed to the SWM facilities. As per City of Edmonton standards, ponding in the roadway will not exceed 0.35 m during a major storm event.



NW4–32–50–24–4

FUTURE RESIDENTIAL SUBDIVISION:
NICKEL LANDS BY QUALICO

NOTES:

1. SWMF #1 & #2 SIZED BASED ON 5.0L/s/ha ALLOWABLE RELEASE RATE.
2. OUTFALL PIPE SIZED FOR 5.0L/s/ha (180L/s) FLOW FROM SWMF #1 AND 20L/s FLOW FROM AREA "AA" AND 12L/S FROM AREA "YY" (SEE FIGURE 10A)
3. OUTFALL PIPE IS OVERSIZED (675mm) FOR THE ADDED FLOWS FROM QUALICO'S RESIDENTIAL SUBDIVISION AT 3.4L/s/ha (100l/s).
4. OUTFALL PIPE IS OVERSIZED BY 25% IN ACCORDANCE WITH COUNTY STANDARDS (6.3.4.2 viii).

STORM WATER MANAGEMENT FACILITY (SWMF) BASIN BOUNDARY

36.0 ha	SWMF #1 BASIN
23.2 ha	FUTURE SWMF #2 BASIN

LEGEND

- PROPOSED OFFSITE STORM SEWER & MANHOLE NO. D2
- EXISTING STORM SEWER & MANHOLE NO. D2
- FUTURE STORM SEWER & MANHOLE NO. D2
- STUDY AREA BOUNDARY

FIGURE 10

PROPOSED STORM DRAINAGE BASIN PLAN

ROYAL OAKS ESTATE OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale = 1:5000
April 2011
75401-FIG 10.dwg

LEDUC COUNTY

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J:\ROYAL\75401 ROYAL OAKS\01 PRELIMINARY\FIGURES\DRAINAGE PLAN\75401-FIG 10.DWG PLOTTED: 4/7/2011 BY: DESMOND CHONG

TOWNSHIP ROAD 510

RANGE ROAD 244

PLAN 052 6699

LUKAS ESTATES II SUBDIVISION

1 MR

7 PUL

MULTI–FAMILY

A 1.17 ha

B 0.53 ha

C 0.29 ha

D 1.03 ha

E 1.55 ha

F 1.33 ha

G 0.65 ha

H 0.55 ha

I 1.24 ha

J 1.52 ha

K 0.86 ha

L 1.40 ha

T1 1.10 ha

M 0.85 ha

N 0.71 ha

AA 0.62 ha

O 0.57 ha

P 3.51 ha

Q 1.16 ha

R 0.23 ha

S 0.63 ha

T 1.33 ha

U 0.94 ha

V 0.88 ha

W 0.91 ha

X 0.85 ha

Y 0.73 ha

Z 1.84 ha

R1 3.39 ha COMMERCIAL

S1 2.90ha COMMERCIAL

A1 1.20 ha

B1 2.03 ha

C1 0.65 ha

D1 1.68 ha

E1 0.54 ha

F1 0.93 ha

G1 0.52 ha

H1 1.27 ha

J1 0.96 ha

Q1 0.46 ha

M1 0.44 ha

K1 0.30 ha

L1 0.25 ha

N1 0.37 ha

O1 1.04 ha

P1 1.21 ha

U1 0.73 ha

YY 0.37 ha

1:5 YR STORM SERVICE

SWMF #1 PUL

SWMF #2 PUL

PRODUCTS PIPELINE R/W 4739 RS

OIL PIPELINE R/W 3624 MC

SEWER PIPELINE R/W PLAN 842 0134

1:5 YR RUNOFF "I" COLLECTED BY CB D04A

NW4–32–50–24–4

1:5 YR RUNOFF "AA" COLLECTED BY CB AT D101

1:5 YR RUNOFF "YY" COLLECTED BY D100

FUTURE RESIDENTIAL SUBDIVISION: NICKEL LANDS BY QUALICO

LEGEND

- PROPOSED STORM SEWER & MANHOLE NO. (D2)
- EXISTING STORM SEWER & MANHOLE NO. (D2)
- FUTURE STORM SEWER & MANHOLE NO. (D2)
- STUDY AREA BOUNDARY
- STORM WATER MANAGEMENT FACILITY BASIN BOUNDARY (SEE FIG 11)
- STORM BASIN BOUNDARY
- CATCHMENT NO. & AREA — B 1.92ha

NOTE: ALL FOUNDATION DRAINS ARE 200mm ø.

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FIGURE 10A

PROPOSED MINOR STORM SYSTEM

ROYAL OAKS ESTATE OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale = 1:4000
April 2011
75401-FIG 10A.dwg

J:\DGN\75401 ROYAL OAKS\01 PRELIMINARY\FIGURES\OUTLINE PLAN\75401–FIG 10A.DWG PLOTTED: 4/7/2011 BY: DESMOND CHONG

LEGEND

PROPOSED PRELIMINARY ROAD AND LOT CORNER GRADE SHOWN THUS	+710.47
PROPOSED SWALE GRADES SHOWN THUS	+<710.47>
FUTURE ROAD GRADE SHOWN THUS	+710.47
EXISTING GROUND ELEVATION	+(710.47)
STUDY AREA BOUNDARY	
PONDING DEPTH AT SAG LOCATION	0.28m
DIRECTION OF OVERLAND FLOW	
PREDEVELOPMENT CONTOUR (GROUND SURVEY)	707.00
PREDEVELOPMENT CONTOUR (AERIAL)	707
PROPOSED CATCH BASIN MANHOLE	

FIGURE 10B

ROYAL OAKS ESTATES

PROPOSED ROAD GRADING PLAN OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale = 1:2000
April 2011
75401-FIG 10B.DWG

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7.4 Water Servicing

The preliminary water distribution network is shown on Figure 11 ***Proposed Water System***.

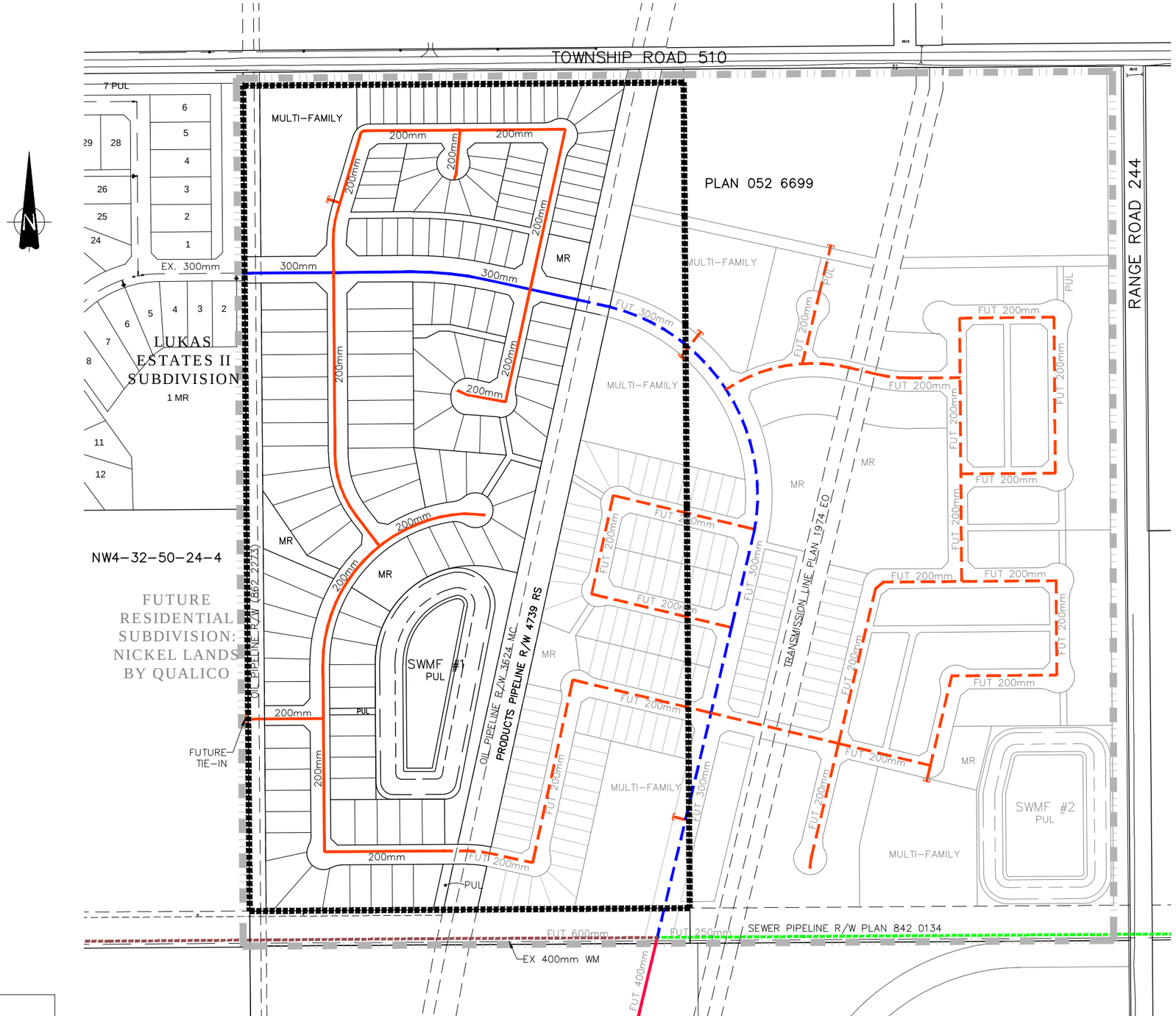
The main water supply to the Royal Oaks Estates area will be from the existing 300mm municipal water main located at Lukas Estates II. The existing watermain will be extended to service the Royal Oaks Estates subdivision. Further development within the Outline Plan study area may require construction of a 600mm off-site watermain as described in the approved East Vistas *Municipal Servicing Study* prepared by Challenger Engineering, dated January 2010.

A 200 mm watermain is proposed to be extended west (stub to NW4-32-50-24-4) as shown on Figure 11. Future development west of Royal Oaks Estates (Nickel Lands subdivision) will connect to the proposed 200 watermain stub. Ultimately, the watermain will be looped through the Nickel Lands subdivision to the existing 200 mm watermain at Range Road 245.

Water Network Analysis prepared by Scheffer Andrew Ltd. for Royal Oaks Stage 1 (29 lots) will be submitted to Leduc County under a separate cover prior to subdivision.

7.5 Shallow Utilities

Underground natural gas, telephone and power will be provided to the site by the extension of existing services. Gas service will be brought up from the south of the parcel area and also provide connection to the Lukas II development. Street lights will be provided throughout the development and will utilize light fixtures that adhere to “Dark Sky” principals to reduce light pollution.



LEGEND

- PROPOSED 200 WATERMAIN
- PROPOSED 250 WATERMAIN
- PROPOSED 300 WATERMAIN
- PROPOSED 400 WATERMAIN
- PROPOSED 600 WATERMAIN
- FUTURE 200 WATERMAIN
- FUTURE 250 WATERMAIN
- FUTURE 300 WATERMAIN
- FUTURE 400 WATERMAIN
- FUTURE 600 WATERMAIN
- EXISTING WATERMAIN
- STUDY AREA BOUNDARY BOUNDARY
- ROYAL OAKS ESTATES DEVELOPMENT BOUNDARY

LEDUC COUNTY

Scheffer Andrew Ltd.
Planners & Engineers

FIGURE 11

PROPOSED WATER SYSTEM

ROYAL OAKS ESTATE OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale = 1:4000
April 2011
75401-FIG 11.dwg

J:\YDN\75401 ROYAL OAKS\01 PRELIMINARY\FIGURES\OUTLINE PLAN\75401–FIG 11.DWG PLOTTED: 4/7/2011 BY: RAYMOND CHONG

Appendix A

Open House Summary

Scheffer Andrew Ltd.
Planners & Engineers

12204 – 145 Street NW
Edmonton, AB T5L 4V7
Phone (780) 732-7800
Fax (780) 732-7878

www.schefferandrew.com

ROYAL OAKS ESTATES OUTLINE PLAN
March 1, 2011 Open House
Summary of Comments and Responses
Number of Persons in Attendance (according to the sign-in sheet): 20
Number of Survey Responses: 9

1: The development concept in the outline plan shows an appropriate future land use scenario that is consistent with the East Vistas Local Area Structure Plan:

Agree	Neither Agree or Disagree	Disagree
6	0	1

Reasons for disagreeing:

- No reasons given

2: There is an appropriate distribution of residential uses:

Agree	Neither Agree or Disagree	Disagree
6	1	0

Reasons for disagreeing:

- No reasons given

3: There is an appropriate proportion of residential densities (lot sizes):

Agree	Neither Agree or Disagree	Disagree
6	0	1

Reasons for disagreeing:

- All acreage size

4: Trails and greenways, linking parks and recreational areas are well located:

Agree	Neither Agree or Disagree	Disagree
7	1	0

Reasons for disagreeing:

- Seems low on the amount of rec. areas
- The placement of the NW MR along this busy collector might be an issue

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

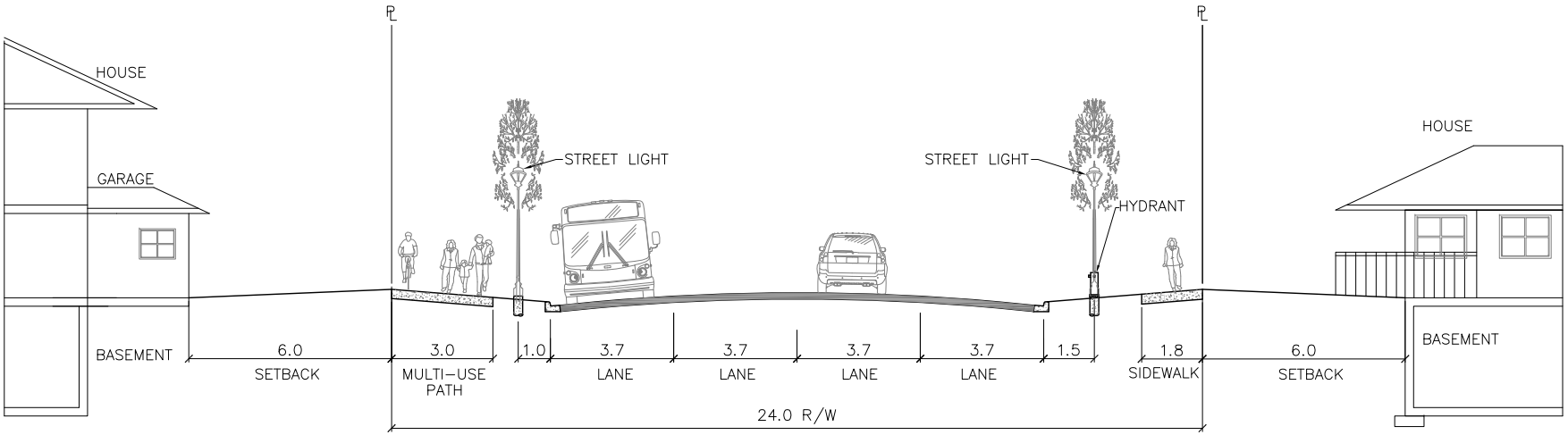
Resident landowner within the ASP area	**3**
Non-resident landowner within the ASP area	**1**
Developer/Consultant representing lands in the ASP area	**0**
Local resident outside of ASP area	**4**
Did not respond	**0**
Other	**1**

Additional comments regarding the concept

- I think it's a desirable concept plan for today's urban community.
- We like it.
- Concept seems fine according to respondent's knowledge.
- Question: any thought given to seniors housing? Very scarse in the area.
- Reminder about potentially naming a park, road, etc. with the Gobeil name as three of the quarters have been farmed by the Gobeil (sp) family since the land has been broken.
- Good concept.
- Locating the NW MR along a quieter roadway would be a safer decision and more enjoyable for users.
- Not in favour of East Vistas period.
  Too much pressure on Beaumont's facilities and schools.
- Question: has anything been planned for Beaumont's facilities and schools?
- This will be a good place to live.
- Nice green space around the pond.

Appendix B

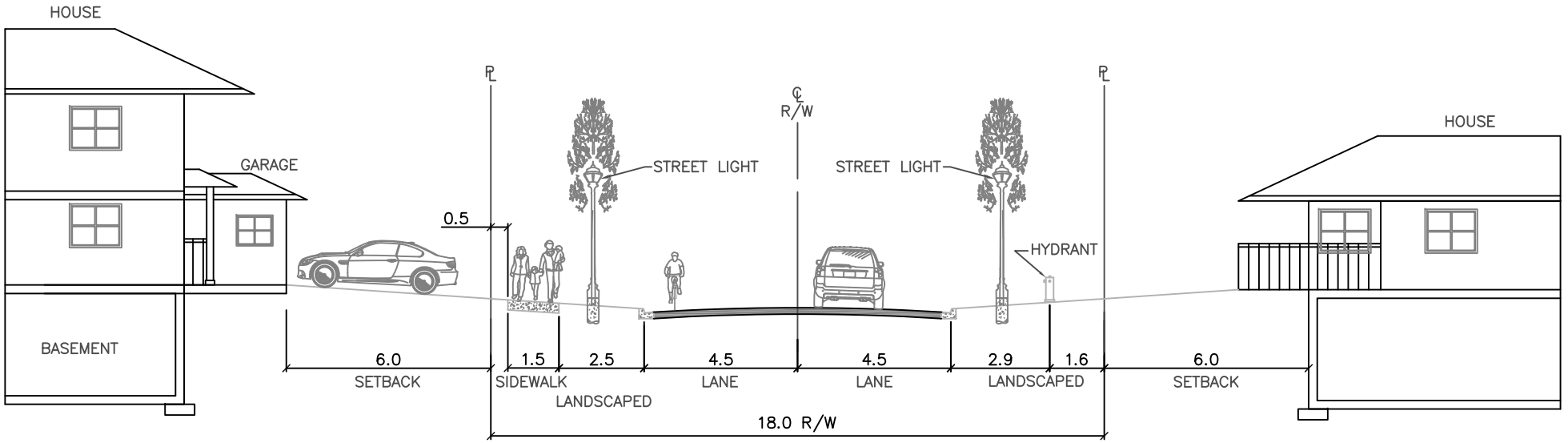
Road Cross Sections



24.0m TYPICAL RESIDENTIAL COLLECTOR

SCALE: NTS

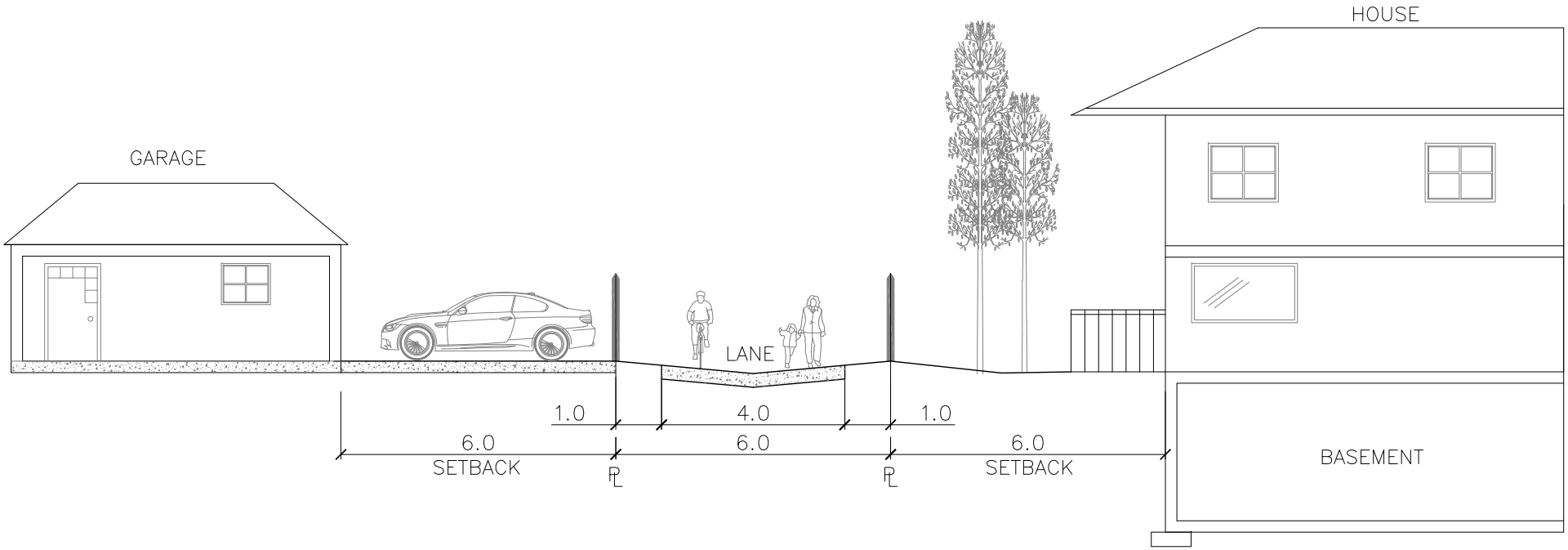
NOTE: ALL DISTANCES ARE IN METERS



18.0m TYPICAL RESIDENTIAL LOCAL

SCALE: NTS

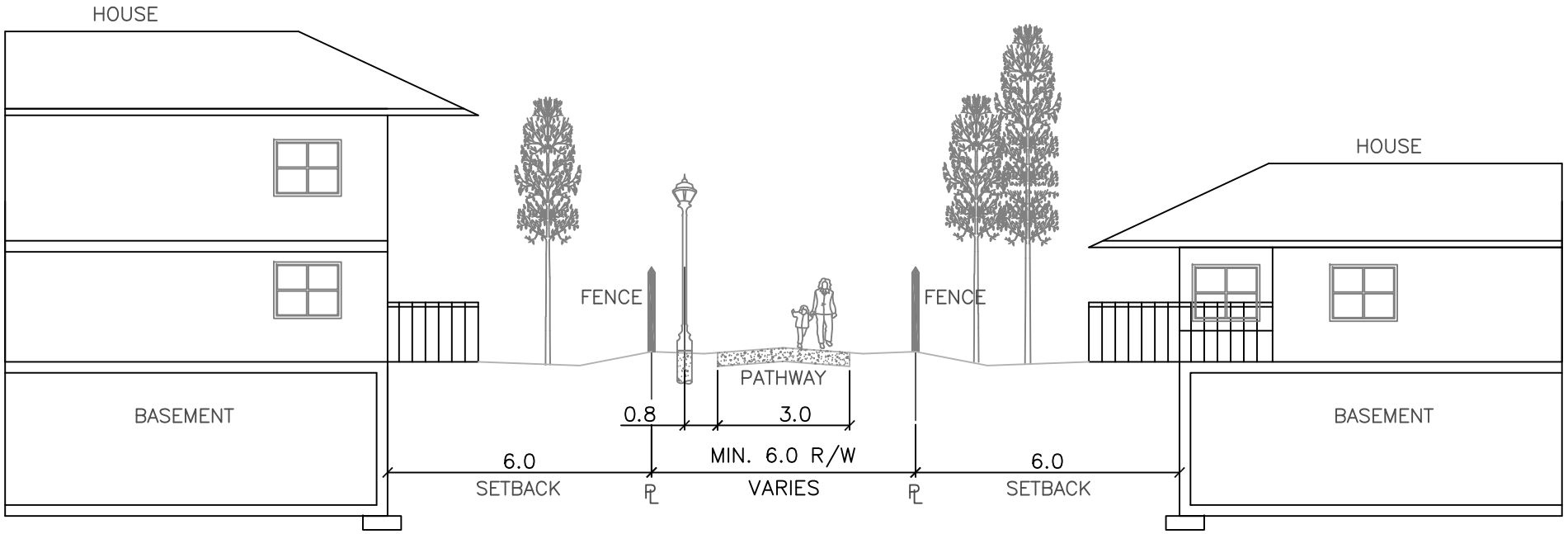
NOTE: ALL DISTANCES ARE IN METERS



6.0m TYPICAL RESIDENTIAL LOCAL ALLEY PAVED

SCALE: NTS

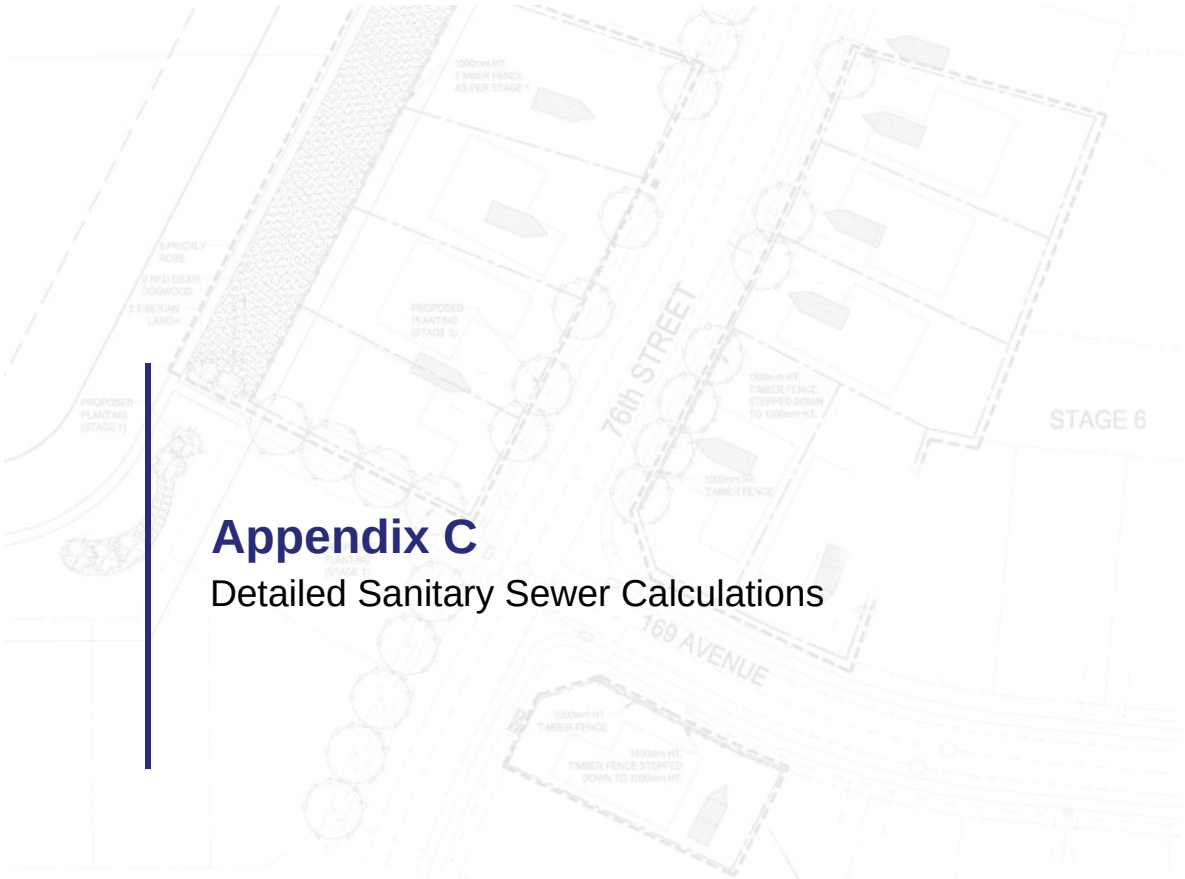
NOTE: ALL DISTANCES ARE IN METERS



6.0m TYPICAL RESIDENTIAL MULTI USE PATH

SCALE: NTS

NOTE: ALL DISTANCES ARE IN METERS



Appendix C

Detailed Sanitary Sewer Calculations

SANITARY SEWER DESIGN CALCULATION

PROJECT: **Royal Oaks Estates**
JOB # : 754-01
DATE: 1-Apr-11
DESIGN BY: A.L.
CHECKED BY: J.M.

Per Capita Flow = 320 L/c/d
Low Density Residential (LD) = 5 DU/ha 3.5 P/DU 18 P/ha
Medium Density Residential (MD) = 10 DU/ha 3.5 P/DU 35 P/ha
Higher Density Residential (HD) = 20 DU/ha 3.5 P/DU 70 P/ha
Multi Dwelling Residential = 38 DU/ha 3.5 P/DU 133 P/ha

Peaking Factor = 2.6[(P/1000)^(-0.1)] (minimum 1.5)
Inflow/Infiltration Allowance = 0.28 L/s/ha
Sag Manhole Allowance = 0.40 L/s/MH
Manning's "n" = 0.013

Non-Residential Flows: (Commercial/Industrial&Institutional)
Sewage Generation= 0.79 L/s/ha (68 m³/ha/day)
Peaking Factor = 10*(Q)^(-0.45) (Min=2.5, Max=25)

Location	From MH	To MH	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 Added	Population Total	Residential Average Flow (L/s)	Residential Peaking Factor	Non-Residential Average Flow (L/s)	Non-Residential Peaking Factor	Total Peak Flow (L/s)	Inflow/ Infilt. (L/s)	Added Sag MH	Total Sag MH	Sag MH Inflow (L/s)	**Design Flow (L/s)**	Pipe Length (m)	Pipe Size (mm)	Pipe Slope (%)	**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)
Basin #1																																
Royal Oaks	S18	S16	N	0.83	0.83	0.00	0.00	12	HD	42	42	0.16	3.57	0.00	0.00	0.6	0.2	0	0	0.0	**0.80**	95.400	200	0.80	**0.9**	**29.2**	0.41	0.93	707.820	707.056	711.13	3.31
Royal Oaks	S17	S16	O	0.56	0.56	0.00	0.00	8	HD	28	28	0.10	3.72	0.00	0.00	0.4	0.2	0	0	0.0	**0.60**	37.300	200	1.00	**0.7**	**32.7**	0.40	1.04	707.026	706.653	710.73	3.70
Royal Oaks	S16	S15	P	0.59	1.98	0.00	0.00	10	HD	35	105	0.39	3.26	0.00	0.00	1.3	0.6	0	0	0.0	**1.90**	84.200	200	0.60	**2.2**	**25.4**	0.48	0.81	706.593	706.088	710.47	3.88
Royal Oaks	S15	S14	Q	0.32	2.30	0.00	0.00	4	HD	14	119	0.44	3.22	0.00	0.00	1.4	0.6	0	0	0.0	**2.00**	63.300	200	0.60	**2.3**	**25.4**	0.48	0.81	706.028	705.648	709.96	3.93
Royal Oaks	S14	S09	R	1.28	3.58	0.00	0.00	0	Multi	170		1.07	2.94	0.00	0.00	3.1	1.0	0	0	0.0	**4.10**	63.250	200	0.60	**4.8**	**25.4**	0.59	0.81	705.618	705.239	709.58	3.96
											289																					
Royal Oaks	S13	S12	K	0.97	0.97	0.00	0.00	8	MD	28	28	0.10	3.72	0.00	0.00	0.4	0.3	0	0	0.0	**0.70**	33.100	200	1.00	**0.8**	**32.7**	0.42	1.04	707.258	706.927	710.57	3.31
Royal Oaks	S12	S11	L	0.75	1.72	0.00	0.00	8	HD	28	56	0.21	3.47	0.00	0.00	0.7	0.5	1	1	0.4	**1.60**	105.200	200	0.60	**1.9**	**25.4**	0.45	0.81	706.867	706.235	710.25	3.38
Royal Oaks	S18	S11	M	1.08	1.08	0.00	0.00	13	HD	46	46	0.17	3.54	0.00	0.00	0.6	0.3	0	0	0.0	**0.90**	142.800	200	1.20	**1.0**	**35.8**	0.48	1.14	707.949	706.235	711.13	3.18
Royal Oaks	S11	S10	J	0.65	3.45	0.00	0.00	8	HD	28	130	0.48	3.19	0.00	0.00	1.5	1.0	0	1	0.4	**2.90**	87.600	200	0.50	**3.4**	**23.2**	0.50	0.74	706.175	705.737	710.27	4.09
Royal Oaks	S10	S09	I	0.69	4.14	0.00	0.00	8	HD	28	158	0.59	3.13	0.00	0.00	1.8	1.2	0	1	0.4	**3.40**	87.700	200	0.50	**4.0**	**23.2**	0.53	0.74	705.707	705.269	709.73	4.02
Royal Oaks	S09	S08	H	0.94	8.66	0.00	0.00	5	MD	18	307	1.14	2.93	0.00	0.00	3.3	2.4	0	0	0.0	**5.70**	86.400	200	0.40	**6.6**	**20.7**	0.56	0.66	705.209	704.863	709.20	3.99
Royal Oaks	S08	S07	G	1.17	9.83	0.00	0.00	8	MD	28	335	1.24	2.90	0.00	0.00	3.6	2.8	0	0	0.0	**6.40**	86.400	200	0.40	**7.4**	**20.7**	0.58	0.66	704.833	704.488	708.57	3.74
Royal Oaks	S07	S05	F	0.93	10.76	0.00	0.00	6	MD	21	356	1.32	2.88	0.00	0.00	3.8	3.0	0	0	0.0	**6.80**	86.400	200	0.40	**7.9**	**20.7**	0.59	0.66	704.458	704.112	707.88	3.42
Royal Oaks	S06	S05	E	1.26	1.26	0.00	0.00	10	MD	35	35	0.13	3.64	0.00	0.00	0.5	0.4	0	0	0.0	**0.90**	97.900	200	2.00	**1.0**	**46.5**	0.58	1.48	705.600	703.642	708.96	3.36
Royal Oaks	S05	S04	D	0.86	12.88	0.00	0.00	3	LD	11	402	1.49	2.85	0.00	0.00	4.2	3.6	1	1	0.4	**8.20**	63.000	200	0.40	**9.5**	**20.7**	0.62	0.66	703.612	703.360	707.19	3.58
Royal Oaks	S04	S03	C	1.02	13.90	0.00	0.00	9	MD	32	434	1.61	2.83	0.00	0.00	4.6	3.9	0	1	0.4	**8.90**	120.000	200	0.40	**10.3**	**20.7**	0.64	0.66	703.330	702.850	707.54	4.21
Royal Oaks	S03	S02	B	1.37	15.27	0.00	0.00	12	MD	42	476	1.76	2.80	0.00	0.00	4.9	4.3	1	2	0.8	**10.00**	120.000	200	0.40	**11.6**	**20.7**	0.65	0.66	702.820	702.340	706.83	4.01
Royal Oaks	S02	S01	A	1.09	16.36	0.00	0.00	10	MD	35	511	1.89	2.78	0.00	0.00	5.3	4.6	0	2	0.8	**10.70**	114.000	200	0.40	**12.4**	**20.7**	0.66	0.66	702.280	701.824	707.59	5.31
Basin #1A																																
Future Development	S22	S21	DD	0.91	0.91	0.00	0.00	17	HD	60	60	0.22	3.44	0.00	0.00	0.8	0.3	0	0	0.0	**1.10**	105.000	200	1.50	**1.3**	**40.2**	0.56	1.28	705.749	704.174	708.92	3.17
Future Development	S21	S20	CC	0.80	1.71	0.00	0.00	11	HD	39	99	0.37	3.28	0.00	0.00	1.2	0.5	1	1	0.4	**2.10**	85.300	200	0.40	**2.4**	**20.7**	0.42	0.66	704.114	703.773	708.14	4.03
Future Development	S20	S19	BB	0.73	2.44	0.00	0.00	13	HD	46	145	0.54	3.15	0.00	0.00	1.7	0.7	0	1	0.4	**2.80**	85.300	200	0.40	**3.3**	**20.7**	0.46	0.66	703.743	703.402	708.48	4.74
Future Development	S19	S01	AA	0.38	2.82	0.00	0.00	5	HD	18	163	0.60	3.12	0.00	0.00	1.9	0.8	1	2	0.8	**3.50**	82.000	200	0.40	**4.1**	**20.7**	0.49	0.66	703.342	703.014	708.48	5.14
Future Development	S01 Fut Trunk		-	0.00	19.18	0.00	0.00	0	-	0	674	2.50	2.70	0.00	0.00	6.8	5.4	0	4	1.6	**13.80**	66.000	250	0.40	**16.0**	**37.8**	0.71	0.77	701.764	**701.500**	708.67	6.91
Basin #2																																
Future Development	S46	S45	L1	0.82	0.82	0.00	0.00	14	HD	49	49	0.18	3.52	0.00	0.00	0.6	0.2	0	0	0.0	**0.80**	92.000	200	0.80	**0.9**	**29.2**	0.41	0.93	708.437	707.701	711.66	3.22
Future Development	S45	S44	M1	0.88	1.70	0.00	0.00	17	HD	60	109	0.40	3.25	0.00	0.00	1.3	0.5	0	0	0.0	**1.80**	96.300	200	0.40	**2.1**	**20.7**	0.41	0.66	707.641	707.255	711.11	3.47
Future Development	S44	S43	N1	0.52	2.22	0.00	0.00	9	HD	32	141	0.52	3.16	0.00	0.00	1.6	0.6	0	0	0.0	**2.20**	84.600	200	0.40	**2.6**	**20.7**	0.43	0.66	707.195	706.857	711.11	3.91
Future Development	S43	S37	O1	1.51	3.73	0.00	0.00	3	Multi/HD	212	353	1.31	2.89	0.00	0.00	3.8	1.0	1	1	0.4	**5.20**	92.000	200	0.40	**6.0**	**20.7**	0.55	0.66	706.797	706.429	710.60	3.80
Future Development	S35	S42	G1	1.42	1.42	0.00	0.00	30	HD	105	105	0.39	3.26	0.00	0.00	1.3	0.4	0	0	0.0	**1.70**	148.200	200	0.80	**2.0**	**29.2**	0.51	0.93	710.523	709.337	713.65	3.13
Future Development	S42	S41	H1	0.63	2.05	0.00	0.00	6	MD	21	126	0.47	3.20	0.00	0.00	1.5	0.6	0	0	0.0	**2.10**	92.000	200	0.40	**2.4**	**20.7**	0.42	0.66	709.277	708.909	712.76	3.48
Future Development	S41	S40	J1	0.65	2.70	0.00	0.00	2	HD/MR	7	133	0.49	3.18	0.00	0.00	1.6	0.8	0	0	0.0	**2.40**	92.000	200	0.40	**2.8**	**20.7**	0.44	0.66	708.849	708.481	712.76	3.91
																														1.0m drop		
Future Development	S46	S40	K1	0.77	0.77	0.00	0.00	15	HD	53	53	0.20	3.49	0.00	0.00	0.7	0.2	0	0	0.0	**0.90**	92.000	200	1.00	**1.0**	**32.7**	0.46	1.04	708.431	707.511	711.66	3.23
Future Development	S40	S39	R1	0.65	4.12	0.00	0.00	6	HD/MR	21	207	0.77	3.04	0.00	0.00	2.3	1.2	0	0	0.0	**3.50**	76.300	200	0.40	**4.1**	**20.7**	0.49	0.66	707.481	707.176	712.21	4.73
Future Development	S39	S38	-	0.00	4.12	0.00	0.00	0	-	0	207	0.77	3.04	0.00	0.00	2.3	1.2	0	0	0.0	**3.50**	78.400	200	0.40	**4.1**	**20.7**	0.49	0.66	707.116	706.802	711.46	4.34
Future Development	S38	S37	Q1	1.57	5.69	0.00	0.00	24	HD	84	291	1.08	2.94	0.00	0.00	3.2	1.6	1	1	0.4	**5.20**	78.300	200	0.40	**6.0**	**20.7**	0.55	0.66	706.772	706.459	710.90	4.13
Future Development	S36	S37	P1	1.26	1.26	0.00	0.00	24	HD	84	84	0.31	3.33	0.00	0.00	1.0	0.4	0	0	0.0	**1.40**	105.000	200	1.60	**1.6**	**41.5**	0.61	1.32	708.139	706.459	711.76	3.62
Future Development	S37	S24	-	0.00	10.68	0.00	0.00	0	-	0	728	2.70	2.68	0.00	0.00	7.2	3.0	0	2	0.8	**11.00**	113.000	200	1.30	**12.8**	**37.4**	1.04	1.19	706.399	704.930	711.15	4.75
																														0.5m drop		
Future Development	S41	S33	I1	1.02	1.02	0.00	0.00	6	HD/MR	21	21	0.08	3.83	0.00	0.00	0.3	0.3	0	0	0.0	**0.60**	78.700	200	0.80	**0.7**	**29.2**	0.37	0.93	709.626	708.996	712.76	3.13
Future Development	S35	S34	F1	0.67	0.67	0.00	0.00	12	HD	42	42	0.16	3.57	0.00	0.00	0.6	0.2	0	0	0.0	**0.80**	92.000	200	1.00	**0.9**	**32.7**	0.44	1.04	710.586	709.666	713.65	3.06
Future Development	S34	S33	E1	0.61	1.28	0.00	0.00	11	HD	39	81	0.30	3.34	0.00	0.00	1.0	0.4	0	0	0.0	**1.40**	61.000	200	1.00	**1.6**	**32.7**	0.52	1.04	709.606	708.996	713.65	4.04
Future Development	S33	S31	D1	0.96	3.26	0.00	0.00	12	HD	42	144	0.53	3.16	0.00	0.00	1.7	0.9	0	0	0.0	**2.60**	145.300	200	0.50	**3.0**	**23.2**	0.49	0.74	708.936	708.210	713.29	4.35
Future Development	S32	S31	B1 & C1	0.81	0.81	7.61	7.61	15	HD/Comm.	53	53	0.20	3.49	6.01	4.46	27.5	2.4	0	0	0.0	**29.90**	56.700	200	1.40	**34.8**	**39.0**	1.36	1.24	709.014	708.220	713.58	4.57
Future Development	S31	S29	A1	0.32	4.39	0.00	7.61	4	HD	14	211	0.78	3.04	6.01	4.46	29.2	3.4	0	0	0.0	**32.60**	65.700	250	0.80	**37.9**	**53.0**	1.14	1.08	708.160	707.634	713.14	4.98
Future Development	S30	S29	Z	3.05	3.05	0.00	0.00	0	Multi	406	406	1.50	2.85	0.00	0.00	4.3	0.9	0	0	0.0	**5.20**	55.000	200	1.20	**6.0**	**35.8**	0.81	1.14	708.284	707.624	712.35	4.07
Future Development	S29	S28	Y	0.90	8.34	0.00	7.61	1	HD/MR	4	621	2.30	2.73	6.01	4.46	33.1	4.5	0	0	0.0	**37.60**	135.700	250	0.60	**43.7**	**46.1**	1.05	0.94	707.574	706.760	712.05	4.48
Future Development	S27	S28	X	1.08	1.08	0.00	0.00	19	HD	67	67	0.25	3.41	0.00	0.00	0.9	0.3	0	0	0.0	**1.20**	132.500	200	0.80	**1.4**	**29.2**	0.46	0.93	707.320	706.260	710.67	3.35
Future Development	S27	S26	W	0.58	0.58	0.00	0.00	9	HD	32	32	0.12	3.67	0.00	0.00	0.4	0.2	0	0	0.0	**0.60**	86.000	200	0.80	**0.7**	**29.2**	0.37	0.93	707.077	706.389	710.67	3.59
Future Development	S26	S25	V	0.97	1.55	0.00	0.00	10	HD	35	67	0.25	3.41	0.00	0.00	0.9	0.4	1	1	0.4	**1.70**	131.100	200	0.60	**2.0**	**25.4**	0.46	0.81	706.329	705.542	709.78	3.45
Future Development	S28	S25	U	0.59	10.01	0.00	7.61	9	HD	32	720	2.67	2.69	6.01	4.46	34.0	4.9	0	0	0.0	**38.90**	86.000	250	0.80	**45.2**	**53.0**	1.18	1.08	706.210	705.522	710.67	4.46
Future Development	S25	S24	T	0.58	12.14	0.00	7.61	9	HD	32	819	3.03	2.65	6.01	4.46	34.8	5.5	0	1	0.4	**40.70**	86.000	250	1.20	**47.3**	**65.3**	1.40	1.33	705.492	704.460	709.78	4.29
Future Development	S24	S23	S	2.53	25.35	0.00	7.61	15	Multi/HD	389	1936	7.17	2.43	6.01	4.46	44.2	9.2	0	3	1.2	**54.60**	100.000	250	1.20	**63.5**	**65.3**	1.49	1.33	704.430	703.230	708.92	4.49
Future Development	S23 Fut Trunk		-	0.00	25.35	0.00	7.61	0	-	0	1936	7.17	2.43	6.01	4.46	44.2	9.2	1	4	1.6	**55.00**	100.000	250	1.20	**64.0**	**65.3**	1.49	1.33	703.200	**702.000**	708.92	5.72

ROYAL OAKS STAGE 1 INTERIM SANITARY SEWER TIE-IN DESIGN CALCULATIONS

PROJECT: Royal Oaks Estates
JOB # : 754-01
DATE: 1-Apr-11
DESIGN BY: A.L.
CHECKED BY: D.P.

Per Capita Flow = 320 L/c/d
Low Density Residential (LD) = 5 DU/ha 3.5 P/DU 18 P/ha
Medium Density Residential (MD) = 10 DU/ha 3.5 P/DU 35 P/ha
Higher Density Residential (HD) = 20 DU/ha 3.5 P/DU 70 P/ha
Multi Dwelling Residential = 38 DU/ha 3.5 P/DU 133 P/ha

Peaking Factor = 2.6[(P/1000)^(-0.1)] (minimum 1.5)
Inflow/Infiltration Allowance = 0.28 L/s/ha
Sag Manhole Allowance = 0.40 L/s/MH
Manning's "n" = 0.013

Non-Residential Flows: (Commercial/Industrial&Institutional)
Sewage Generation= 0.79 L/s/ha (68 m³/ha/day)
Peaking Factor = 10*(Q)^(-0.45) (Min=2.5, Max=25)
NOTES:
1. Infil/Inflow allowance based on CoE 10L/mm of pipe dia./km of NEW sewer.

Location	From MH	To MH	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 Added	Population Total	Residential Average Flow (L/s)	Residential Peaking Factor	Non-Residential Average Flow (L/s)	Non-Residential Peaking Factor	Total Peak Flow (L/s)	Inflow/ Infilt. (L/s)	Added Sag MH	Total Sag MH	Sag MH Inflow (L/s)	**Design Flow (L/s)**	Pipe Length (m)	Pipe Size (mm)	Pipe Slope (%)	**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)
Part of Basin #1 (see Outline Plan)																																
Royal Oaks	S09	S08	H	0.94	0.94	0.00	0.00	5	MD	18	18	0.07	3.89	0.00	0.00	0.30	0.00	0	0	0.0	**0.30**	96.400	200	0.40	**0.4**	**20.7**	0.24	0.66	705.249	704.863	709.20	3.95
Royal Oaks	S08	S07	G	1.17	2.11	0.00	0.00	8	MD	28	46	0.17	3.54	0.00	0.00	0.60	0.00	0	0	0.0	**0.60**	86.400	200	0.40	**0.7**	**20.7**	0.29	0.66	704.833	704.488	708.57	3.74
Royal Oaks	S07	S05	F	0.93	3.04	0.00	0.00	6	MD	21	67	0.25	3.41	0.00	0.00	0.90	0.01	0	0	0.0	**0.91**	86.400	200	0.40	**1.1**	**20.7**	0.33	0.66	704.458	704.112	707.88	3.42
Royal Oaks	S06	S05	E	1.26	1.26	0.00	0.00	10	MD	35	35	0.13	3.64	0.00	0.00	0.50	0.00	0	0	0.0	**0.50**	97.900	200	2.00	**0.6**	**46.5**	0.49	1.48	705.600	703.642	708.96	3.36
Royal Oaks	S05	S04	part of D	0.45	4.75	0.00	0.00	0	LD	2	104	0.39	3.26	0.00	0.00	1.30	0.01	1	1	0.4	**1.71**	63.000	200	0.40	**2.0**	**20.7**	0.40	0.66	703.612	703.360	707.19	3.58
Royal Oaks	S04	S03	-	0.10	4.85	0.00	0.00	0	LD	1	105	0.39	3.26	0.00	0.00	1.30	0.01	0	1	0.4	**1.71**	120.000	200	0.40	**2.0**	**20.7**	0.40	0.66	703.330	702.850	707.54	4.21
Royal Oaks	S03	S02	-	0.10	4.95	0.00	0.00	0	LD	1	106	0.39	3.25	0.00	0.00	1.30	0.02	0	1	0.4	**1.72**	120.000	200	0.40	**2.0**	**20.7**	0.40	0.66	702.820	702.340	706.83	4.01
Royal Oaks	S02	S01	-	0.10	5.05	0.00	0.00	0	LD	1	107	0.40	3.25	0.00	0.00	1.30	0.02	0	1	0.4	**1.72**	114.000	200	0.40	**2.0**	**20.7**	0.40	0.66	702.280	701.824	707.59	5.31
Tie-In to ex. 525mm trunl	S01	Ex. Trunk	-	0.00	5.05	0.00	0.00	0	-	0	107	0.40	3.25	0.00	0.00	1.30	0.02	0	1	0.4	**1.72**	66.000	250	0.40	**2.0**	**37.8**	0.39	0.77	701.764	**701.500**	708.67	6.91

Appendix D

Proposed Range Road 245 Ditch Improvements
For Stormwater Outfall

Scheffer Andrew Ltd.
Planners & Engineers

February 3, 2011 FILE NO: 754-01-1.5

Leduc County Centre
1101-5th Street
Nisku, AB T9E 2X3

Attn: Laurie Johnson, Planner II
Khushnud Yousafzai, Development Engineering Coordinator

RE: ROYAL OAKS ESTATES SUBDIVISION – PROPOSED RR 245 DITCH IMPROVEMENTS FOR STORMWATER OUTFALL

The purpose of this letter is to present the preliminary plan of RR 245 ditch improvements for the Royal Oaks Estates stormwater outfall.

Existing Topography and Drainage:

The stormwater run-off from the Royal Oaks area currently flows offsite to the existing outlet point at the NE corner of the RR 245 and Twp Rd 505 intersection. The drainage route and the water basin outlet point are shown on Figure 1. Stormwater flows via a seasonal drainage route indicated by the large arrows on Figure 1.

From the basin outlet point, storm water flows downstream in the east roadside ditch of Range Road 245, thought the existing 500mm culvert at Twp Road 505, to Highway 625 and east to Blackmud Creek.

The proposed stormwater management plan **does not** change the amount of water flowing downstream to the basin outlet point.

Proposed Stormwater Management Plan:

Stormwater will be collected and stored in a stormwater management facility (SWMF) located within Royal Oaks (Basin #1, SWMF #1). The stormwater will be discharged via a piped outfall to Range Road 245 east ditch east at the pre-development release rate of 5 L/s/ha. For the detailed run-off calculations refer to the Stormwater Management Report that was submitted to the County and to Alberta Environment on March 2010.

The piped stormwater outfall will release water upstream of the existing basin outlet point as shown on Figure 1. Improvements are proposed to the east RR 245 ditch from the storm outlet point to the basin outlet point at Twp Rd 505. Upgrades will include re-grading of the ditch and installation of

larger culverts as noted on Figure 1. The proposed ditch improvements will require dedication of a drainage right-of-way or roadway widening.

Ditch improvements are **NOT** proposed south of Twp Rd 505.

Since the post-development release rate from the Royal Oaks subdivision will be limited to the pre-development release rate of 5L/s/ha, the amount of water flowing to the existing basin outlet point after development of the Outline Plan Area will be equivalent to the pre-development (existing) flows. Therefore, the proposed development will not add more water to the drainage ditches downstream of the basin outlet point at Twp Rd 505. Based on this rational, ditch improvements are not considered necessary downstream of Twp Rd 505.

The proposed stormwater management plan, including the post-development drainage pattern is consistent with the approved Municipal Servicing Study for the East Vistas ASP, dated Jan 2010.

RECOVERIES

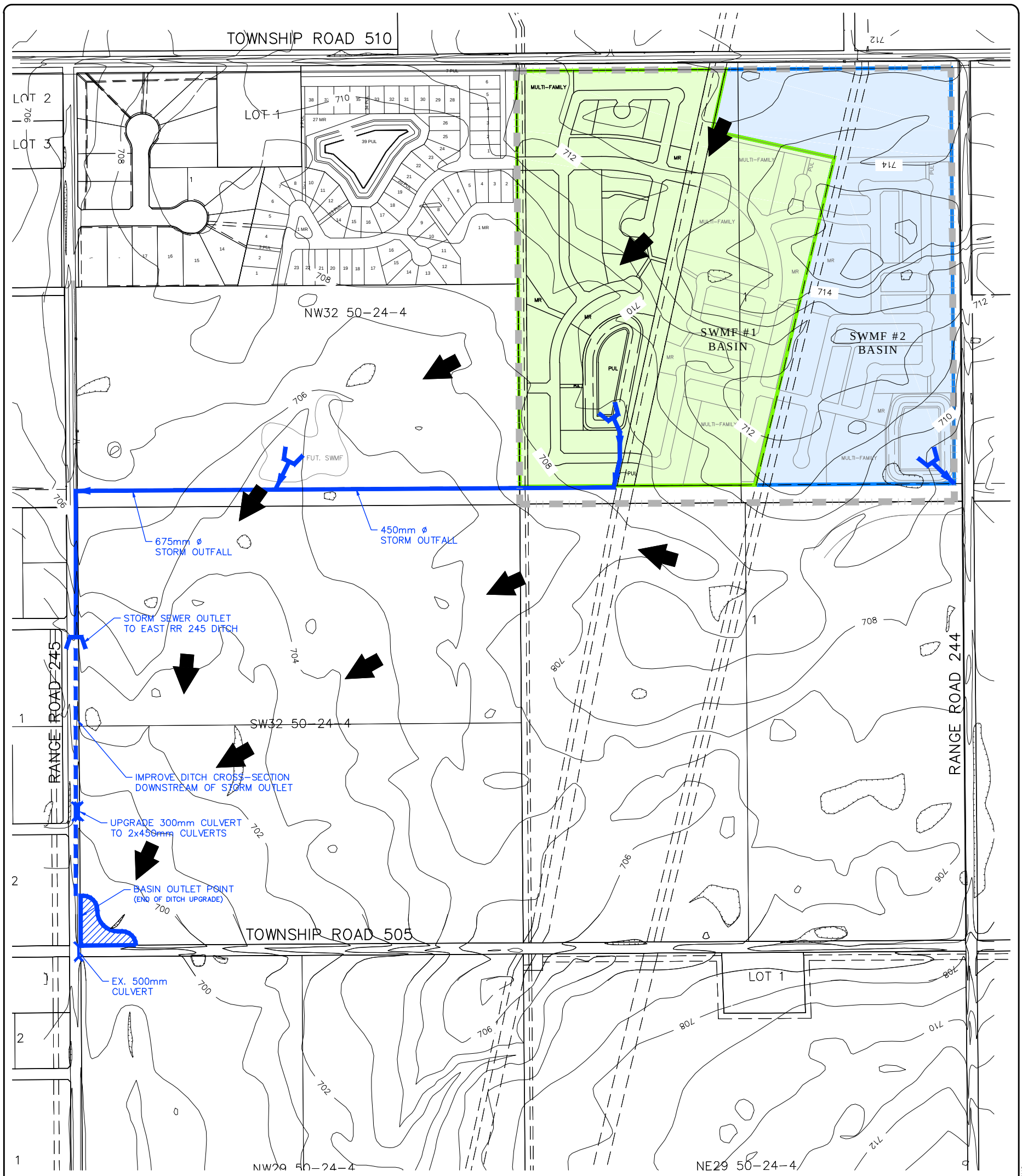
The proposed improvements will be oversized to accommodate future stormwater flows at 3.4 L/s/ha from NW4-32-50-24-4 (planned Nickel Lands subdivision by Qualico). The developer of Royal Oaks will collect recoveries once the neighbouring subdivision connects its stormwater management facility to the oversized storm outfall.

Sincerely,

Scheffer Andrew Ltd., Edmonton

Andrew Lytovchenko, Design Engineer
Direct: 780.732.7791, Cell: 780.999.3942
Email: a.lytovchenko@schefferandrew.com

Enclosed: Figure 1.



LEGEND

STORMWATER BASIN OUTLET POINT

OUTLINE PLAN BOUNDARY

EXISTING DRAINAGE FLOW

PREDEVELOPMENT CONTOUR (AERIAL) — 706

PROPOSED OFFSITE STORM SEWER

ROYAL OAKS SWMF #1 BASIN

FUTURE SWMF #2 BASIN

FIGURE 1

BASIN DRAINAGE PLAN

ROYAL OAKS ESTATE OUTLINE PLAN

Lot 1, Block 1, Plan 0526699
Leduc County

Scale = 1:7500
April 2011
75401-FIG 2.dwg

Scheffer Andrew Ltd.
Planners & Engineers

J:\DGN\75401 ROYAL OAKS\01 PRELIMINARY\FIGURES\OUTLINE PLAN\75401-FIG 2.DWG PLOTTED: 4/1/2011 BY: DESMOND CHONG

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

PROJECT: **Royal Oaks**
JOB # : 754-01
DATE: 01-Apr-11
DESIGN BY: A.L.
CHECKED BY: D.P./J.M.

LAND USE	"C"
Medium Density	0.50
High Density	0.65
Multi-Family	0.65
Commercial	0.90

(County min. = 0.50)

Initial Time of Concentration = 8.0 min
Mannings' 'n' = 0.013

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)	Design Flow,Q (L/s)	Trunk Safety Factor	Required Capacity (L/s)	Slope (%)	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)
SWMF #1 BASIN																							
	D14	D15	J	1.520	1.520	0.500	0.760	0.760															
					1.520			0.760	8.0	77.0	163	1.00	163	0.300	450	0.99	105.3	1.8	163	707.41	707.10	709.88	2.02
Foundation Drain	D13	D15		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	135.8	3.4	22	707.89	707.35	711.13	3.04
			E	1.550	1.550	0.650	1.008	1.008															
	D15	D16		0.000	1.520	0.500	0.000	0.760															
					3.070			1.768	8.0	77.0	378	1.00	378	0.720	525	1.70	78.6	0.8	380	707.02	706.46	710.27	2.72
				0.000	1.550	0.650	0.000	1.008															
	D16	D09	G	0.650	2.170	0.500	0.325	1.085															
					3.720			2.093	8.8	73.0	425	1.00	425	0.440	600	1.46	91.4	1.0	426	706.38	705.98	709.73	2.75
Foundation Drain	D13	D12		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	95.0	2.4	22	707.65	707.27	711.13	3.28
	D12	D11	D	1.030	1.030	0.650	0.670	0.670															
					1.030			0.670	8.0	77.0	143	1.00	143	0.400	450	1.15	78.7	1.1	188	707.02	706.70	710.47	3.01
	D11	D10	B	0.530	1.560	0.650	0.345	1.014															
					1.560			1.014	9.1	71.0	200	1.00	200	0.500	450	1.28	58.1	0.8	210	706.64	706.35	709.96	2.87
	D10	D09	A & C	1.460	3.020	0.650	0.949	1.963															
					3.020			1.963	9.9	68.0	371	1.00	371	0.350	600	1.30	62.4	0.8	380	706.20	705.98	709.57	2.77
	D09	D08		0.000	4.570	0.650	0.000	2.971															
			F	1.330	3.500	0.500	0.665	1.750															
					8.070			4.721	10.7	65.0	853	1.00	853	0.570	750	1.92	85.8	0.7	877	705.83	705.34	709.20	2.62
	D08	D07		0.000	4.570	0.650	0.000	2.971															
			H	0.550	4.050	0.500	0.275	2.025															
					8.620			4.996	11.4	63.0	875	1.00	875	0.600	750	1.97	85.8	0.7	900	705.34	704.83	708.57	2.48
	D07	D06		0.000	4.570	0.650	0.000	2.971															
			K	0.860	4.910	0.500	0.430	2.455															
					9.480			5.426	12.1	61.0	920	1.00	920	0.660	750	2.07	85.9	0.7	944	704.80	704.23	707.88	2.33
Foundation Drain	D05A	D05		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.800	300	1.24	46.4	0.6	90	705.47	705.10	708.96	3.19
	D05	D06	L	1.400	1.400	0.500	0.700	0.700															
					1.400			0.700	8.0	77.0	150	1.00	150	0.800	375	1.44	47.5	0.6	164	704.96	704.58	708.14	2.81
BOL Drainage	D04A	D04	I	1.240	1.240	0.150	0.186	0.186															
					1.240			0.186	8.0	77.0	40	1.00	40	0.200	300	0.62	70.0	1.9	45	704.95	704.81	706.02	0.77
	D04	D06		0.000	1.240	0.150	0.000	0.186															
					1.240			0.186	9.9	68.0	35	1.00	35	0.200	300	0.62	52.0	1.4	45	704.75	704.65	707.51	2.46
	D06	SWMF#1		0.000	4.570	0.650	0.000	2.971															
			T1	1.100	7.410	0.500	0.550	3.705															
					11.980			6.676	12.8	59.0	1095	1.00	1095	2.01	750	3.61	84.5	0.4	1648	704.20	702.50	707.19	2.24
Foundation Drain	D01	D51		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	110.0	2.7	22	705.14	704.70	707.59	2.25
	D02	D03	O	0.570	0.570	0.500	0.285	0.285															
					0.570			0.285	8.0	77.0	61	1.00	61	0.150	375	0.62	138.5	3.7	71	704.41	704.20	707.59	2.81
Foundation Drain	D04	D03		0.000	0.000	0.150	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	129.0	3.2	22	704.89	704.38	707.51	2.42
	D03	SWMF#1	M & N	1.560	2.130	0.500	0.780	1.065															
				0.000	0.000	0.150	0.000	0.000															
					2.130			1.065	11.7	62.0	184	1.00	184	1.89	375	2.21	84.7	0.6	251	704.20	702.60	706.83	2.26
Foundation Drain	D25A	D25		0.000	0.000	0.500	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	55.0	1.4	22	706.17	705.95	708.37	2.00
	D25	D26	Y	0.730	0.730	0.650	0.475	0.475															
					0.730			0.475	8.0	77.0	102	1.00	102	0.310	375	0.89	85.3	1.6	102	705.77	705.51	708.11	1.96
	D26	D24		0.000	0.730	0.650	0.000	0.475															
					0.730			0.475	9.6	69.0	91	1.00	91	0.250	375	0.80	85.2	1.8	91	705.51	705.30	708.65	2.77
Foundation Drain	D31A	D31		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.800	200	0.94	40.0	0.7	31	710.62	710.30	713.89	3.07
Foundation Drain	D30	D31		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	1.500	200	1.29	55.9	0.7	42	710.30	709.46	713.58	3.08
	D31	D18	Q	1.050	1.050	0.650	0.683	0.683															
					1.050			0.683	8.0	77.0	146	1.00	146	1.500	375	1.97	63.5	0.5	224	709.29	708.34	713.14	3.48
	D17	D18	P	3.200	3.200	0.650	2.080	2.080															
					3.200			2.080	8.0	77.0	445	1.00	445	1.000	525	2.01	62.9	0.5	448	708.81	708.19	712.35	3.01
	D18	D19	R	0.250	4.500	0.650	0.163	2.925															
					4.500			2.925	8.5	74.0	602	1.00	602	1.150	600	2.36	137.9	1.0	688	708.11	706.53	712.05	3.34
	D19	D21	T (HD)	0.665	5.165	0.650	0.432	3.357															
			T (MR)	0.665	0.665	0.100	0.067	0.067															
					5.830			3.424	9.5	70.0	666	1.00	666	0.650	675	1.91	80.0	0.7	707	706.45	705.93	710.67	3.54
Foundation Drain	D20	D19		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	132.6	3.3	22	707.46	706.93	710.67	3.01
	D21	D23	V	0.880	6.045	0.650	0.572	3.929															
				0.000	0.665	0.100	0.000	0.067															
					6.710			3.996	10.2	67.0	744	1.00	744	0.450	750	1.71	92.0	0.9	779	705.85	705.44	709.78	3.18
Foundation Drain	D28	D29		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	70.6	1.8	22	706.68	706.40	709.30	2.42
	D29	D23	Z	1.840	1.840	0.650	1.196	1.196															
					1.840			1.196	8.0	77.0	256	1.00	256	0.400	525	1.27	100.0	1.3	283	706.07	705.67	708.92	2.32
	D23	D24	X	0.840	8.725	0.650	0.546	5.671															
				0.000	0.665	0.100	0.000	0.067															
					9.390			5.738	9.3	71.0	1133	1.00	1133	0.400	900	1.82	129.4	1.2	1193	705.29	704.77	708.92	2.73
	D20	D22	S	0.640	0.640	0.650	0.416	0.416															
					0.640			0.416	8.0	77.0	89	1.00	89	1.000	300	1.38	80.0	1.0	101	706.47	705.67	710.67	3.90
Foundation Drain	D21	D22		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.500	200	0.75	131.2	2.9	24	706.43	705.77	709.78	3.15
	D22	D27	U	0.940	1.580	0.650	0.611	1.027															
					1.580			1.027	8.0	77.0	220	1.00	220	0.700	450	1.52	50.8	0.6	249	705.52	705.16	709.78	3.81
	D24	D27	W & U1	1.640	11.095	0.650	1.066	7.212															
				0.000	0.665	0.100	0.000	0.067															
					11.760			7.278	11.4	63.0	1275	1.00	1275	0.200	1050	1.43	46.7	0.5	1275	704.62	704.53	707.79	2.12
	D27	SWMF#1		0.000	12.675	0.650	0.000	8.239															
				0.000	0.665	0.100	0.000	0.067															
					13.340			8.305	11.9	61.0	1408	1.00	1408	2.15	1050	4.67	93.0	0.3	4179	704.50	702.50	708.96	3.41

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

PROJECT: **Royal Oaks**
JOB # : 754-01
DATE: 01-Apr-11
DESIGN BY: A.L.
CHECKED BY: D.P./J.M.

LAND USE	"C"
Medium Density	0.50
High Density	0.65
Multi-Family	0.65
Commercial	0.90

(County min. = 0.50)

Initial Time of Concentration = 8.0 min
Mannings' 'n' = 0.013

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)	Design Flow,Q (L/s)	Trunk Safety Factor	Required Capacity (L/s)	Slope (%)	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)
SWMF #2 BASIN																							
Comm. on-site	C-D2	C-D1		0.000	0.000	0.650	0.000	0.000															
				3.400	3.400	0.900	3.060	3.060															
					3.400			3.060	8.0	77.0	655	1.00	655	0.600	675	1.84	280.0	2.5	680	711.70	710.02	714.00	1.63
Comm. on-site	C-D1	D32		0.000	0.000	0.650	0.000	0.000															
				2.900	6.300	0.900	2.610	5.670															
					6.300			5.670	10.5	66.0	1040	1.00	1040	0.320	900	1.63	145.0	1.5	1067	709.79	709.33	714.00	3.31
Foundation Drain	D33	D33A		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	49.0	1.2	22	710.63	710.44	713.65	2.82
	D33A	D32	A1	1.200	1.200	0.650	0.780	0.780															
					1.200			0.780	8.0	77.0	167	1.00	167	0.830	375	1.46	49.0	0.6	167	710.26	709.86	713.37	2.73
	D32	D32A		0.000	1.200	0.650	0.000	0.780															
				0.000	6.300	0.900	0.000	5.670															
					7.500			6.450	12.0	61.0	1094	1.00	1094	0.350	900	1.70	77.0	0.8	1116	709.33	709.06	713.65	3.42
	D32A	D35	1/3 D1	0.560	1.760	0.650	0.364	1.144															
				0.000	6.300	0.900	0.000	5.670															
					8.060			6.814	12.8	59.0	1118	1.00	1118	0.400	900	1.82	77.0	0.7	1193	709.03	708.72	713.21	3.27
Foundation Drain	D34A	D34		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	70.0	1.7	22	710.41	710.13	713.75	3.14
Foundation Drain	D33	D34		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	66.1	1.7	22	710.39	710.13	713.65	3.06
	D34	D36	1/3 B1	0.667	0.667	0.650	0.433	0.433															
					0.667			0.433	8.0	77.0	93	1.00	93	0.400	375	1.02	87.7	1.4	116	709.95	709.60	713.29	2.96
	D36	D35A	2/3 B1	1.333	2.000	0.650	0.867	1.300															
					2.000			1.300	9.4	70.0	253	1.00	253	0.350	525	1.19	49.0	0.7	265	709.45	709.28	712.76	2.78
	D35A	D35	C1	0.650	2.650	0.650	0.423	1.723															
					2.650			1.723	10.1	67.0	321	1.00	321	0.250	625	1.13	49.0	0.7	357	709.15	709.03	712.48	2.71
	D35	D37	2/3 D1	1.120	5.530	0.650	0.728	3.595															
				0.000	6.300	0.900	0.000	5.670															
					11.830			9.265	13.5	57.0	1468	1.00	1468	0.700	900	2.41	86.0	0.6	1578	708.72	708.12	712.76	3.14
	D38	D37		0.000	0.000	0.650	0.000	0.000															
			E1	0.580	0.580	0.500	0.290	0.290															
					0.580			0.290	8.0	77.0	62	1.00	62	0.400	375	1.02	98.0	1.6	116	709.00	708.61	712.21	2.84
	D37	D45A		0.000	5.530	0.650	0.000	3.595															
				0.000	0.580	0.500	0.000	0.290															
			G1	0.520	0.520	0.650	0.338	0.338															
				0.000	6.300	0.900	0.000	5.670															
					12.930			9.893	14.1	56.0	1540	1.00	1540	0.700	900	2.41	98.0	0.7	1578	708.09	707.40	711.66	2.67
Foundation Drain	D44	D45		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	48.5	1.2	22	708.40	708.21	711.11	2.51
	D45	D45A	K1	0.300	0.300	0.650	0.195	0.195															
					0.300			0.195	8.0	77.0	42	1.00	42	0.220	300	0.65	48.5	1.2	47	708.11	708.00	710.82	2.41
			J1	0.960	6.790	0.650	0.624	0.624															
	D45A	SWMF#2		0.000	0.580	0.500	0.000	1.144															
			L1	0.250	0.770	0.650	0.163	0.453															
				0.000	6.300	0.900	0.000	0.000															
					14.440			2.559	14.8	54.0	384	1.00	384	2.19	900	4.25	64.0	0.3	2790	707.40	706.00	711.11	2.81
Foundation Drain	D38	D39		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	75.7	1.9	22	708.91	708.61	712.21	3.10
	D39	D42		0.000	0.000	0.650	0.000	0.000															
			F1	0.930	0.930	0.500	0.465	0.465															
					0.930			0.465	8.0	77.0	100	1.00	100	0.300	375	0.88	81.0	1.5	100	708.43	708.19	711.46	2.66
	D42	D40	H1	1.270	1.270	0.650	0.826	0.826															
				0.000	0.930	0.500	0.000	0.465															
					2.200			1.291	9.5	70.0	251	1.00	251	0.350	525	1.19	81.0	1.1	265	708.04	707.76	710.80	2.24
Foundation Drain	D41	D40		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	98.5	2.5	22	708.48	708.09	711.76	3.08
	D40	D43	O1	1.040	2.310	0.650	0.676	1.502															
				0.000	0.930	0.500	0.000	0.465															
			Q1	0.460	0.460	0.100	0.046	0.046															
					3.700			2.013	10.6	66.0	369	1.00	369	0.180	675	1.01	98.0	1.6	372	707.61	707.43	711.15	2.87
Foundation Drain	D44	D43		0.000	0.000	0.650	0.000	0.000															
					0.000			0.000	0.0	0.0	0	1.00	0	0.400	200	0.67	85.0	2.1	22	708.22	707.88	711.11	2.69
	D43	SWMF#2	M1&N1	0.810	3.120	0.650	0.527	2.028															
				0.000	0.930	0.500	0.000	0.465															
			P1	1.210	1.210	0.650	0.787	0.787															
				0.000	0.460	0.100	0.000	0.046															
					5.720			3.326	12.2	60.0	555	1.00	555	2.08	675	3.42	67.4	0.3	1265	707.40	706.00	710.60	2.53

SWMF #2 BASIN																							
"AA" Offsite Drainage																							
		D101	AA	0.620	0.620	0.150	0.093	0.093															
					0.620			0.093	8.0	77.0	20	1.00	**20**	PICKED UP BY OFFSITE OUTFALL. RELEASE RATE TO BE RESTRICTED TO 20L/s (MAX).									
"YY" Drainage																							
		D100A	YY	0.370	0.370	0.150	0.056	0.056															
					0.370			0.056	8.0	77.0	12	1.00	**12**	PICKED UP BY OFFSITE OUTFALL. RELEASE RATE TO BE RESTRICTED TO 12L/s (MAX).									

LEDUC COUNTY

Royal Oaks Estates Outline Plan – Amendments		
RESOLUTION NO.	**DATE**	
396-17	September 5 2017	to reduce the total area of the commercial area and replace with Higher Density Residential

Scheffer Andrew Ltd.
Planners & Engineers

Adopted by Resolution 396-17
September 5 2017

Amendment

Royal Oaks Estates Outline Plan

Within the W ½ of NE-32-50-24-W4

East Vistas Local Area Structure Plan
Leduc County

May 10, 2017

Contents

List of Figures

Appendix

1 Introduction

The purpose of the *Royal Oaks Estates Outline Plan* amendment is to revise the type of commercial from neighborhood to convenience commercial uses in order to create a plan that creates a viable commercial development and increase the size of the multifamily site by removal of the proposed east-west linear municipal reserve between the two uses.

The amendment area is located entirely on Lot 2 Block 3 Plan 122-4810 and contains a total area of 0.4 ha. The ***Current Development Concept*** is illustrated in ***Figure 5A***, and the ***Amended Development Concept*** is illustrated in ***Figure 5D.***

This amendment reflects changes in regional planning which has occurred since the adoption of the *East Vistas Local Area Structure Plan* in September 2010 and to reflect the *Royal Woods Outline Plan* (RW OP) approved April 12, 2016.

A redistricting application is being submitted concurrent with this amendment to support the proposed changes in land use and to reflect the current lot configuration. As well, an amendment to the RW OP is also submitted for the County's consideration so that the adjacent commercial uses are identical.

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 and 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 are consistent with the EV LASP.

2.2 Royal Oaks Estates Outline Plan

The *Royal Oaks Estates Outline Plan* (RO OP) is located in the northeast corner of the East Vistas plan area within the W ½ NE 32-50-24-4. This Plan was adopted in April 1, 2011 to provide a more specific planning framework for an area within the local area structure plan. An amendment to the plan was approved November 27, 2014 to modify the configuration of the Higher Density Residential east of the north-south pipeline corner within the eastern portion of the plan.

In order to proceed with the future development in the northeast corner of the plan, an amendment to the *Royal Oaks Estates Outline Plan* is proposed to change the type of commercial proposed for the fragmented site and to remove the Municipal Reserve strip between the multifamily and

commercial site so as to be coincidental with RW OP to the east. The multifamily site will increase in area accordingly.

2.3 Regional Planning Changes

Since the adoption of the EV LASP in 2010, there have been changes within the long-range planning of 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 as proposed 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 Outline Plan amendment increases the overall area of the site and revises the type of commercial development from neighborhood to convenience commercial uses. The ***Current Development Concept*** is illustrated in ***Figure 5A***, and the ***Amended Development Concept*** for the RO OP is illustrated in ***Figure 5D.*** The OP figures in the amendment have been numbered as per the currently approved OP amendment.

The redistricting application submitted proposes to amend the currently approved UC2 site area to UC1 Commercial, and to adjust the approved redistricting boundary for the multifamily site to reflect the removal of the municipal reserve strip.

3.1 Open Space

The municipal reserve strip between the multifamily site and the commercial site is proposed to be removed and the area added to the multifamily site. As there is Higher Density Residential east of

this site, this strip for a walkway is no longer required as there are sidewalks within the road network to provide connectivity for residents within the neighborhood.

Figure 6A is the current approved ***Parks Concept*** and ***Figure 6B*** is the ***Amended Parks Concept*** plan indicating the open space and trail connectivity in the quarter section with the removal of the linear Municipal Reserve strip. This plan has also been updated from the previous Parks Concept plan to reflect the approved *Royal Woods Outline Plan* configuration to the east.

3.2 Commercial Site

The commercial site will be amended to convenience commercial for the provision of daily and basic needs for local residents versus neighborhood commercial designed for the drive by public. It is anticipated that this site will be developed in conjunction with Royal Woods site, but may be stand-alone. 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.

4 Land Use Statistics

The addition of the 0.05ha municipal reserve strip to the multifamily area does not change the overall statistics. As such, the approved land use statistics from the November 27, 2014 amendment is still current.

5 Transportation Network and Servicing

Overall, this amendment will have no effects on transportation within the plan area. Access to Township Road 510 is limited to one, so coordination between the Royal Woods and Royal Oaks Estates commercial site will be required to utilize the access and align internal drive lanes.

The proposed amendment to the RW OP will have no effect on municipal and franchise servicing. The overall change in area of the multi-family site is minimal and the change in commercial uses will not affect demand.

6 Staging

The staging plan has been revised to reflect the development of the commercial independent of the residential development to the south. Access to the site is from the Township Road 510 so connection to the internal road system is not required. Development of the adjacent multifamily site may also be developed prior to the development to the south. Both developments will be triggered by market needs and servicing availability. The multifamily site development will require extension of the collector road

from the west. The ***Current Staging Plan*** is illustrated in ***Figure 7A*** and the ***Amended Staging Plan*** as ***Figure 7B***.

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 Oaks Estates Outline Plan amendment is consistent with the overall vision of the East Vistas Local Area Structure Plan. The change in type of commercial will allow for a viable convenience commercial development planned in conjunction with the Royal Woods site to the east and the slight increase in the area of the multifamily site also reflects the Royal Woods approved plan This amendment will have no constraints with provision of municipal utilities or community services.

FIGURE 5A
AMENDED DEVELOPMENT CONCEPT

ROYAL OAKS ESTATES
OUTLINE PLAN

Lot 1 Block 1 Plan 052-6699
Leduc County

1:4000
October 17, 2014
7540100op10.dgn

Scheffer Andrew Ltd.
Planners & Engineers

FIGURE 5D
AMENDED DEVELOPMENT CONCEPT

ROYAL OAKS ESTATES
OUTLINE PLAN

NE 1/4 32 - 50 - 24 - W4
Leduc County

1:4000
May 10, 2017
7540100op11.dgn

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FIGURE 6A
AMENDED PARKS CONCEPT

ROYAL OAKS ESTATES
OUTLINE PLAN

Lot 1 Block 1 Plan 052-6699
Leduc County

1:5000
October 17, 2014
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- Amendment Boundary
- Municipal Reserve
- Open Space
- Trail Network
- Sidewalks

FIGURE 6B
AMENDED PARKS CONCEPT

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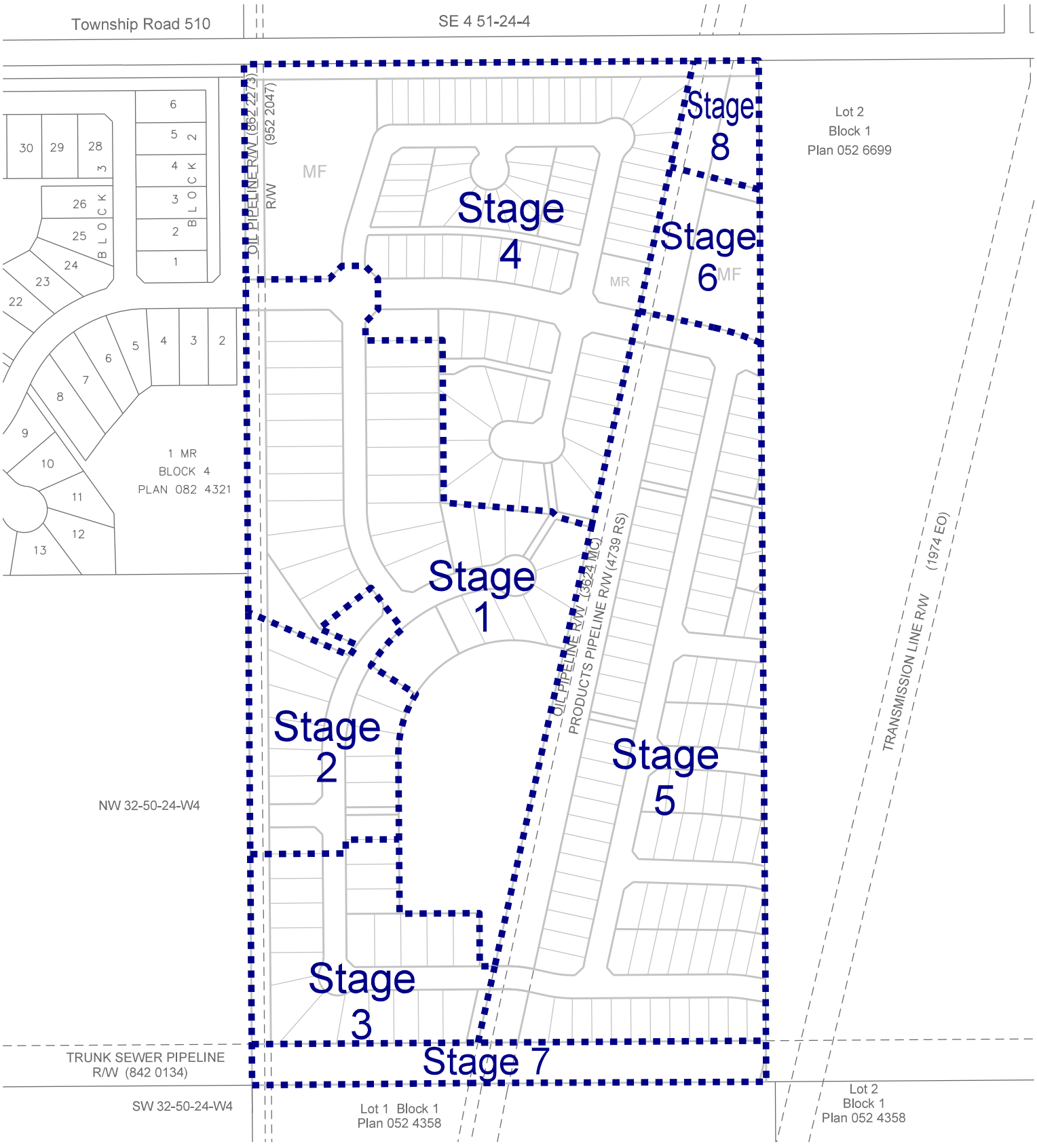

FIGURE 7A
AMENDED DEVELOPMENT SEQUENCE

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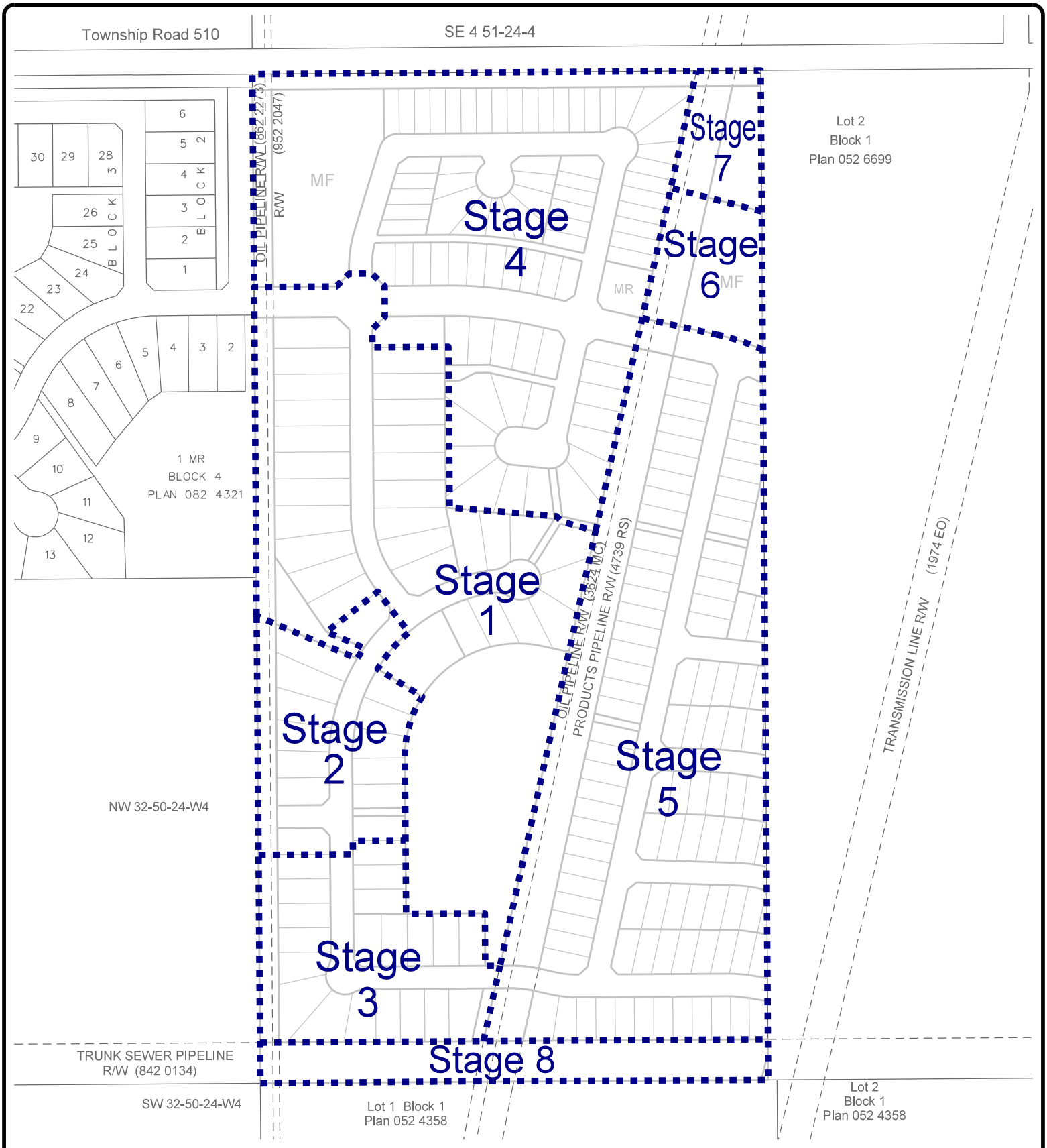

FIGURE 7B
AMENDED DEVELOPMENT SEQUENCE

Note: Timing of development of the commercial site (7) is independant of the residential development to the south and will be subject to market demand. Proposed staging is representive only and staging may occur out of sequence if servicing and market needs warrant.

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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:

- *"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."*
- *"It is important that all developments be in accord with the applicable Local Area Structure Plan."*
- *"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 not what East Vistas residents want."*
- *Large commercial is for Town Center. We want convenience commercial. Now please*
- *Large commercial is better suited to Towne Centre*
- *Better to have less commercial so less traffic in plan area*

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:

- *"I feel whatever can benefit the County to grow and develop works for me."*
- *"This amendment increases density more than necessary."*
- *"This questionnaire is both vague, leading and in my view is not doing service to the residents."*
- *"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."*
- *If there are no people, there will be no commercial. Agree with revisions.*
- *Glad we are being updated. Sounds reasonable.*
- *I am business owner. Advise when I can lease a building space.*

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."