RANGE ROADS 245 and 250
FUNCTIONAL PLANNING STUDY
Leduc County / City of Leduc

Final Report

2131 – 00079-0

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Leduc County / City of Leduc

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1 EXECUTIVE SUMMARY

1.1 Project

Once completed, the Nisku Spine Road will travel east of and parallel to Highway 2, providing a contiguous north-south arterial serving the growing Nisku area industrial corridor between the Cities of Edmonton and Leduc.

Range Roads 245 and 250, and the connecting section of Township Road 500, are presently gravel roads that form the east boundary between Leduc County and the City of Leduc. The County/City propose extending the Nisku Spine Road (9th Street) southerly along the east City boundary, connecting Airport Road in the north, with Township Road 500 (City's 65th Avenue) in the centre, with Highway 623 (Rolly View Road) in the south. This proposed 7.5 km long extension of the Spine Road is consistent with the City's plans for a boundary road, or ring road, along the City's east side.

These road plans are being advanced because plans for industrial development are beginning to expand south out of the Nisku Industrial Park and east out of Leduc, as well as residential plans around Saunders Lake. The approved functional roadway plans will now define the right-of-way requirements affecting future land development bordering the proposed Spine Road alignment.

On the east side of the proposed Spine Road corridor, in the County, the study area falls within the *Saunders Lake Area Structure Plan*. Existing rural residents near Saunders Lake expressed interest in seeing the Spine Road serve as the demarcation between the proposed industrial land uses to the east and residential land uses to the west by having the alignment approximately follow the path of the Edmonton International Airport's Noise Exposure Forecast (NEF) 30 contour. A second concern involved ensuring the proposed alignment does not aggravate existing drainage patterns or concerns in the study area east of the roadway.

The recommended plans include a preliminary local road network that defines tentative arterial and collector roads, and the associated intersection points along the Spine Road. The specific intersection locations are conceptual and subject to the actual land development process.

Highway 2 is the Province's North-South Trade Corridor. Access to the corridor under study from Highway 2 is accommodated by (and limited to) Airport Road, 65th Avenue, and ultimately the new Highway 2/2A interchange via the south leg of the City's proposed ring road. The Spine Road will be the only contiguous north-south route between Highway 814 on the east and Highway 2 on the west, connecting south Leduc and possibly Highway 2A, with Nisku, the future Capital Region Ring Road and Anthony Henday Drive. It will offer a viable alternative to some of the commuters that presently must converge on to Highway 2 entering the Capital Region.

The Spine Road corridor will ultimately function as a major arterial roadway connecting or serving the major economic centres in the region including the International Airport, the Nisku Business Park, and the Cities of Edmonton and Leduc.

1.2 Study Purpose

Land development activity has begun to migrate south across Airport Road from the Nisku Industrial Park and east out of Leduc. This joint County/City study of Range Roads 245 and 250, along the boundary between Leduc County and the City of Leduc, was initiated for primarily two reasons. One, to identify the preferred alignment for extending a future Spine Road arterial south from Airport Road to Highway 623, and second to identify and protect the associated right-of-way requirements. See Figure 1-1.

1.3 Conclusions

Project Justification

The decision to prepare plans for the future extension of the Spine Road south from Airport Road to Highway 623 is supported by several factors. These include growth related to the general provincial economy that has already lead to the preparation of development plans south of Airport Road, as well as new area catalysts on the horizon such as the Port Alberta Gateway project and the proposed CPR Intermodal Yard. The continued strength and attractiveness of the Nisku-Leduc industrial area as an economic driver for the region will rely, in part, on maintaining a high level of mobility and access to the developable and well-positioned lands in the study area.

Land Use Pattern

One of the more significant factors affecting study outcomes was the location of the Edmonton International Airport's Noise Exposure Forecast (NEF) 30 contour. The County/City use the NEF 30 contour as a demarcation between future residential land uses on the east and industrial land uses on the west. The proposed Spine Road alignment swings between Range Roads 245 and 250 loosely following the NEF 30 contour, and the alignment is paralleled by a strip of Transitional Mixed (Land) Use providing a buffer between the industrial and residential land uses.

Road Network

The recommended plans show a preliminary and tentative local road network for the study area. This network defines the arterial and collector roads, and associated intersection points along the Spine Road, necessary to connect the City and County and establish mobility across the study corridor[1]. With one exception, the intersections

[1] The road network in the County was largely based on the *Saunders Lake ASP*.

are spaced a minimum 800m apart; however, each individual location should be considered conceptual and subject to the actual land development process.

The Spine Road (9th Street) will be extended south along Range Roads 245 and 250, crossing Township Road 500 (City's 65th Avenue) to Highway 623. The Spine Road also serves as a future boundary or ring road along the City's east side. If a future extension of the Spine Road south of Highway 623 intersected Highway 2A opposite Kavanagh / Glen Park Road, it would also permit accessing Highway 2 via an interchange. This has the potential to divert some traffic from both Highways 2A and 2, particularly for traffic destined for the Nisku Industrial Park, and to improve redundancy for the highway network approaching the Capital Region.

Staging

The proposed roadway cross-section will ultimately provide for six basic traffic lanes, three in each direction, within a 60m to 70m wide right-of-way. A raised median between the traffic lanes will accommodate left turn bays at the intersections. Staging would comprise 2, 4 and ultimately 6 paved lanes, retaining a 6m wide median for the turn bays. Actual timing would be based on future levels of land development activity and growth in traffic volumes.

Bridge Planning Assessments

The potential bridge sites affecting the recommended alignment were examined. It was determined that none of these sites currently have bridge sized structures, and that none of the sites require a bridge sized structure. All crossings are drainage related.

Stormwater

A review of the drainage and stormwater implications posed by the new roadway did not identify any significant issues. All existing drainage patterns are maintained. The existing George Brown drainage channel, flowing east along the north ditch of Township Road 500, is not affected by the new roadway plan.

The Spine Road cross-section uses a raised median, which directs all runoff to the outside ditch lines. Underground storm drainage is not required except through areas of super-elevation where catch basin leads are required to drain the high side of the median.

Environmental Resources

Development of the proposed road alignment has the potential to impact soils, vegetation, wetlands, wildlife and fish habitats within the study area. Implementing the strategies identified in this report will reduce negative impacts to the environment. Mitigation strategies and recommended actions are included.

Leduc & District Landfill

Present access to the Leduc & District Landfill site is provided off of Range Road 244 while Range Road 245 is only gravel surfaced. Future access to the expanded landfill site could be provided off of Range Road 245 following upgrading to the proposed roadway standards. The additional access would improve landfill operations and reduce costs for the operator and users; as well as provide access to developable lands to the west, opposite the landfill.

Public Input

The primary concerns identified through the public consultation process were all associated with the location of the transition from Range Road 245 to Range Road 250.

a. Proximity of roadway alignment to rural residential lands near Saunders Lake.

   Final alignment reduces proximity to these residential lands as much as possible.

b. Impact on the George Brown Drainage Channel and area drainage patterns.

   Final plan minimizes impacts to the drainage channel and associated drainage patterns.

c. Preference for proximity of the new road alignment to the Edmonton International Airport's Noise Exposure Forecast (NEF) 30; and

d. Loss of continuity in 65th Avenue crossing Range Road 250.

   Final alignment balances both concerns. The NEF 30 contour is followed as closely as possible after the plan avoids disrupting existing 65th Avenue.

1.4 Recommendations

Spine Road Alignment

For the area under study, the Spine Road alignment will follow Range Road 250 south from Airport Road to 65th Avenue (Township Road 500). South of 65th Avenue, the alignment turns in a south easterly direction, travelling parallel to, and approximately 600m from, the north shore of Telford Lake. East of Telford Lake, the alignment turns in a southerly direction to follow Range Road 245 south to Highway 623. See Figure 1-2.

The Spine Road corridor had already been established by previous studies between the City of Edmonton boundary (41st Avenue South) and Airport Road. The current study establishes the corridor from Airport Road to Highway 623. The final leg of the corridor plan should also be established, extending the corridor south from Highway 623 to Highway 2A. There is merit in considering a connection to Highway 2A opposite Kavanagh/Glen Park Road. This would improve the corridor's appeal by providing access to/from both Highways 2A and 2.

Access Management

To preserve the Spine Road's role as a key north-south arterial east of Leduc, it will be important to maintain two design standards:

1. The minimum 800m intersection spacing is recommended to protect long-term mobility along the Spine Road corridor.
2. Intersections should only be permitted with other arterial roads or with collector roads. There should be no intersections with local roads or direct access to adjoining lands.

Implementation

The corridor and required right-of-way should be protected by incorporating the road plan in all existing and future affected area structure plans.

The County and City should work out a shared plan to construct the roadway in stages, e.g. 2 lanes from Airport Road to 65th Avenue, based on development cost charges and accretion of the required right-of-way.

The County/City should explore opportunities for provincial funding, e.g. resource road, based on the Spine Road corridor's connection with Highways 2 and 2A and the resulting potential to divert some traffic from, and provide a degree of redundancy for, both provincial corridors.

Stormwater Management

The Spine Road corridor is likely to be implemented gradually over many years. As each section is warranted by adjacent development pressures, the stormwater management requirements, if any, should be incorporated by the development plans.

Acquiring and constructing an independent system, would occupy more lands, is likely to be less efficient and is likely to present staging and acquisition challenges for the County/City.

Design Criteria

To achieve high mobility standards along the Spine Road a 90 km/h design speed is recommended, with an 80 km/h posted speed. An ultimate 6-lane, semi-urban, expressway cross-section is recommended to permit staging and preserve options for high long-term capacity. A 60m to 70m right-of-way width is recommended to support the preceding criteria.

1.5 Right-of-Way Issues

AltaLink Power Substation

An AltaLink power substation is located in the southeast corner of Airport Road and Township Road 250. To avoid impacting the substation all right-of-way widening must occur on the west side of the existing range road right-of-way.

Saurabh Park Outline Plan

Saurabh Park is located in the southwest quadrant of Range Road 250 and Airport Road. The Saurabh Park Outline Plan, dated March 2006, proposed extending 82nd Avenue east to Range Road 250, 400m south of Airport Road. The plan shows two road widening parcels or easements along the west side of RR 250 totalling approximately 30m wide. The existing RR 250 right-of-way appears to be 20m wide. Road widening requires an additional 20m on both sides or 40m on one side. Opposite the Alta-Link substation, the 40m right-of-way widening will be required entirely on the west side.

Leduc Business Park – Stage 6

Stage 6 of the Leduc Business Park is located on the west side of the Spine Road from south of 82nd Avenue on the north to 75th Avenue (Allard Avenue) on the south. The developer sought to have their “Overall Grading Plan” adopted by the proposed road plan.

Figure 1-1: Location Plan

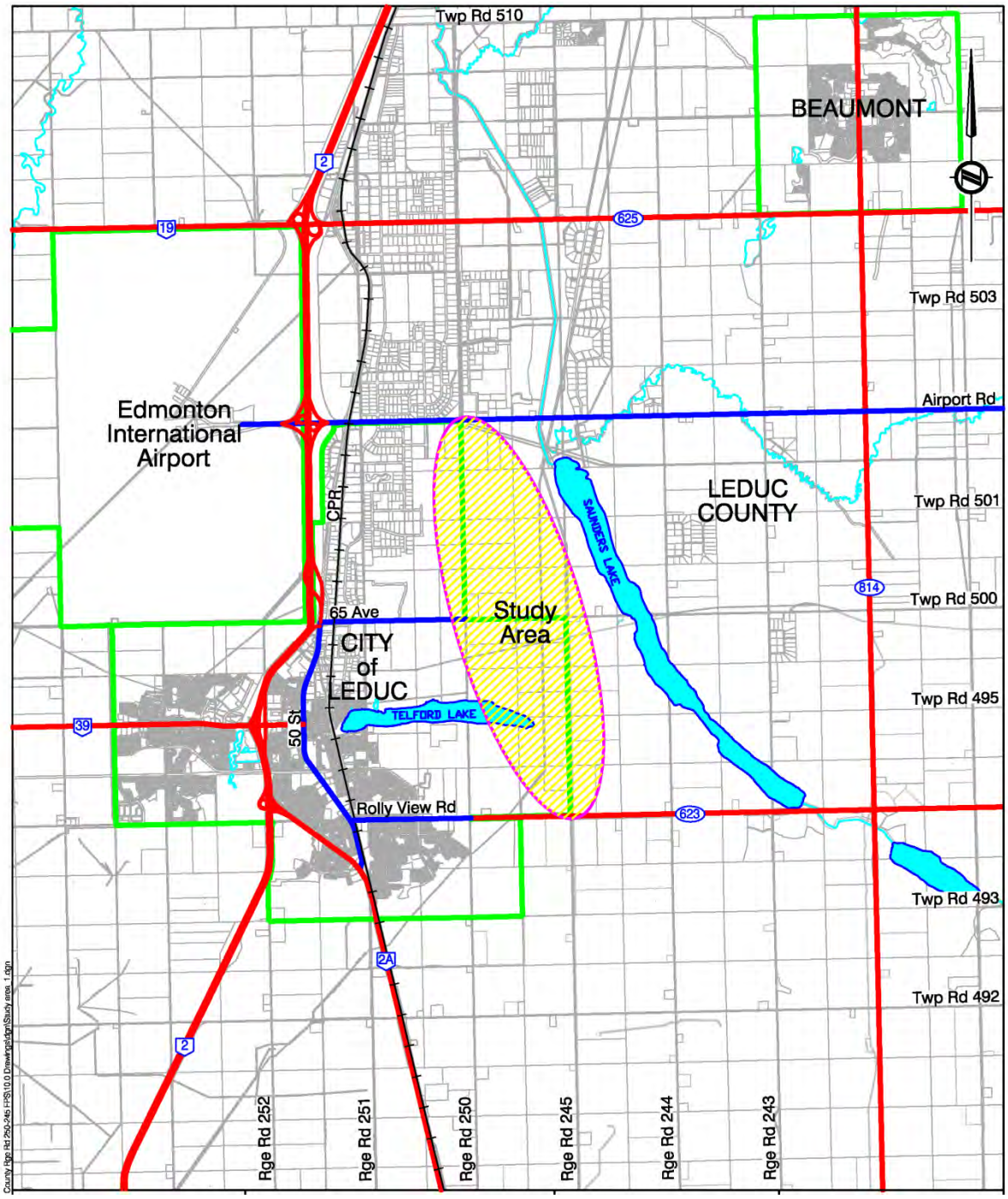
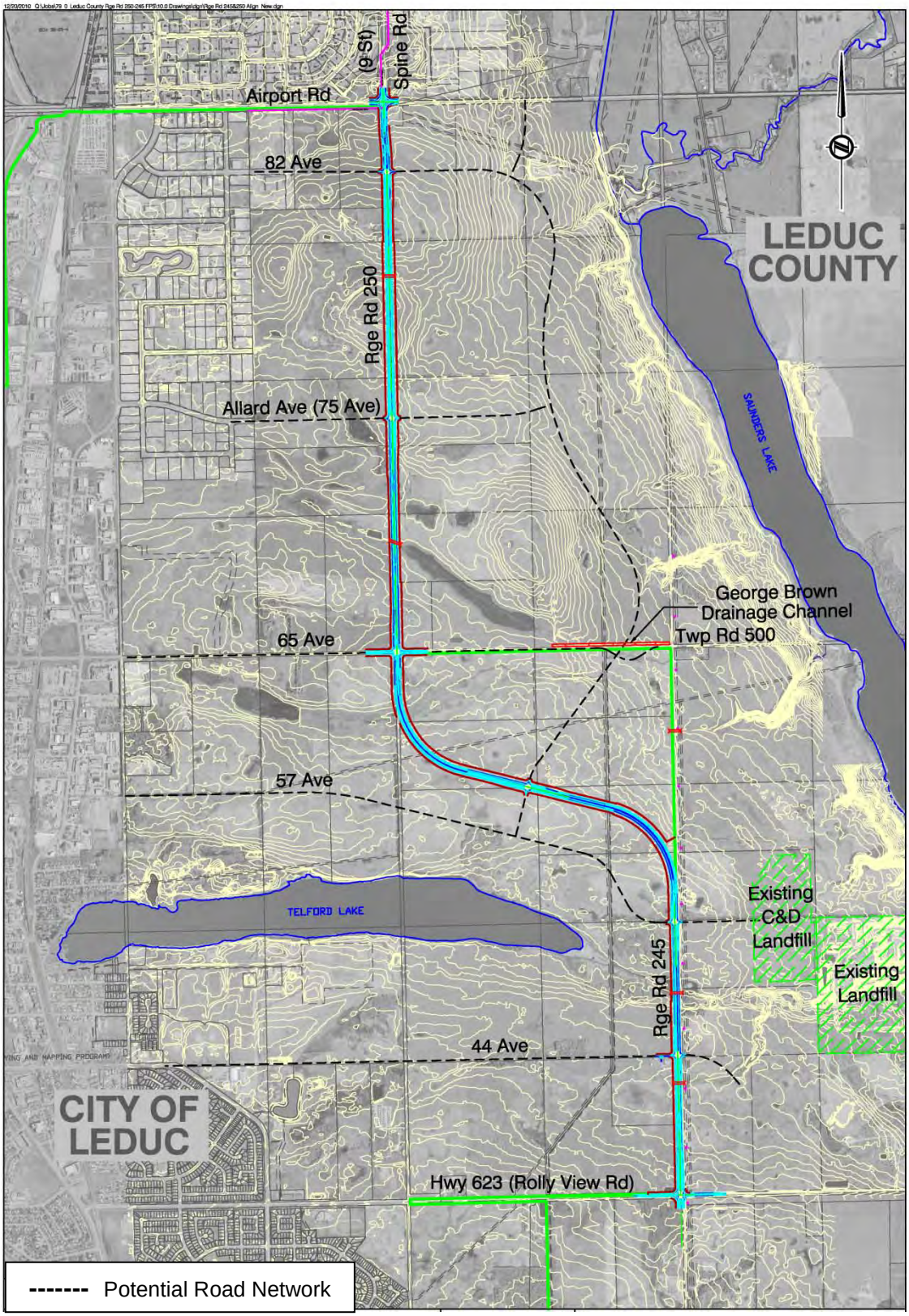


Figure 1-2: Recommended Roadway Alignment



2 INTRODUCTION

2.1 Background

The Range Roads 245 and 250 Functional Planning Study extends the Nisku Spine Road (9th Street) southerly along the City of Leduc's east boundary. The study outlines long-term requirements for the ultimate design of the roadway connecting Airport Road in the north, with Township Road 500 (City's 65th Avenue) in the centre, with Highway 623 (Rolly View Road) in the south.

The sections of Range Road 250, Township Road 500 and Range Road 245 under study form the boundary between Leduc County and the City of Leduc. The City of Leduc and Telford Lake are on the west. Leduc County and Saunders Lake are on the east. Township Road 500 connects the two range roads and accommodates an east-west jog necessitated by the presence of the two lakes.

On the east side, in the County, the study area falls within the *Saunders Lake Area Structure Plan*. The study corridor is bounded by a proposed Business land use strip along Range Road 250, with proposed Estate Residential north of Township Road 500. Largely Agricultural land use south of Township Road 500. There was a recent expansion of the Leduc & District Landfill facility located east of Range Road 245 north of Highway 623.

On the west side and north of Telford Lake, the adjacent land use in the City is urban reserve, which is bounded by existing industrial land uses further east, and recreational land use south of Telford Lake.

Saunders and Telford Lakes form a boundary for future land development and constrain the development of the future road network. See Figure 1-1: Location Plan.

The *Leduc 2060* was a joint County and City planning study, which combined a Growth Study with an update of the Intermunicipal Development Plan (IDP). The results of *Leduc 2060* gave definition to the land use planning assumptions for the current functional planning study. See Figure 2-1: Leduc 2060 Growth Strategy.

Existing *Leduc 2060* information, under Infrastructure Considerations, shows a tentative Range Road 245/250 alignment potentially extending south of Highway 623 and south of the City towards Highway 2A. The existing IDP shows that the study corridor is already located in an inter-municipal referral area.

Access to the Nisku Industrial Park, and to the corridor under study, from the Highway 2 corridor, is accommodated by (and limited to) Highway 625, Airport Road, and (in the near term) 65th Avenue, and ultimately the new Highway 2/2A interchange via the City's proposed ring road. East of the CPR there is no viable compelling north-south arterial that improves the level of access and expands the marketability of this large development area that spans across both County and City lands.

The 7.5 km long corridor under study will ultimately connect the County's proposed Nisku Spine Road to Leduc's proposed southerly east-west ring road and possibly extend south to Highway 2A. Together with the established Spine Road this will be the only contiguous north-south route between Highway 814 on the east and Highway 2 on the west, connecting south Leduc and possibly Highways 2 and 2A, with Nisku, the Capital Region Ring Road and Anthony Henday Drive. It will offer a viable alternative to some commuters that can presently only use Highway 2. Highway 814 is increasingly becoming low-standard and congested north of Highway 625 and is not an attractive alternative to Highways 2A or 2. See Figure 2-2, Spine Road Corridor.

2.2 Study Limits

The study limits from a network perspective, extend south along the study corridor from Airport Road to Highway 2A. The study limits for development of a functional plan extend south from Airport Road along Range Road 250, cross Township Road 500 and follow Range Road 245 to Highway 623.

2.3 Study Area

Spine Road

The only existing section of the Spine Road follows 9th Street, extending north from Airport Road (10th Avenue) to Township Road 510. An approved Spine Road plan extends north to the City of Edmonton Boundary at the intersection of 41st Avenue South and Range Road 244.

Range Roads 245 and 250

Range Roads 245 and 250, and the section of Township Road 500 in between, is a two-lane, low-volume, 8 km long gravel road. They provide the only opportunity for north-south travel between Highway 2A and 50th Street in Leduc on the west and Highway 814 on the east, passing between Telford and Saunders Lakes. They form the east boundary between the County and City.

Airport Road

Airport Road (Township Road 502) extends from an interchange on Highway 2 easterly to 9th Street, to Highway 814 and to Highway 21. It is four lanes from Highway 2 to 9th Street. It forms the north study limit and is the north boundary between the County and City. The Edmonton International Airport is located immediately west of Highway 2, opposite the Airport Road interchange.

Township Road 500 / 65th Avenue

Township Road 500 (City's 65th Avenue) extends from 50th Street in Leduc, immediately south of the 50th Street directional interchange with Highway 2, east to Range Roads

250 and 245. It is a gravel road in the county and ends at Saunders Lake. Between the two range roads, Township Road 500 is the boundary between the County and City.

Highway 623 (Rolly View Road)

Highway 623 (Township Road 494) extends from 50th Street in Leduc, east to Highways 814, 21 and 617. It is a low-volume paved road and, immediately west of Range Road 245, it is the boundary between the City and County.

Highway 2A

Highway 2A extends from Highway 2 south of Ponoka north through Wetaskiwin and Millet and reconnects with Highway 2 at Leduc. It is a regional commuter route into the Capital Region, feeding traffic onto Highway 2.

Nisku Industrial Park

The Nisku Industrial Park is located in Leduc County, and is the largest business and industrial park in Western Canada. Since its inception in 1972, the Park has grown to accommodate 400 companies, employing more than 6,000 skilled trades and professional workers. The large growth in the employment base compared with a modest increase in population means that the County is a net trip attractor. Residents of Leduc, Edmonton and other neighbouring municipalities commute to Nisku to work.

Edmonton International Airport

The airport is one of several key drivers, or catalysts, affecting economic growth and the marketability of business lands in the Nisku Industrial Park. There are plans underway to expand the role of the airport lands and vicinity as Port Alberta, a multi-modal transportation hub in north-central Alberta.

Leduc & District Landfill

The Leduc & District Landfill occupies a quarter section on the west side of Range Road 244, 800m north of Highway 623. The landfill operators have completed plans for an expansion north-westerly into an adjacent quarter section (comprising parts of two quarters) that borders on the east side of Range Road 245. There is a 350m to 450m wide land use buffer around both parts of the landfill that precludes adjacent residential development.

2.4 Study Objectives

In consultation with the Steering Committee, McElhanney undertook a functional planning study to:

- Prepare and evaluate alternative alignments connecting Airport Road and Hwy 623.
- Confirm the Spine Road cross-section.
- Recommend intersection spacing and preliminary study area road network.
- Rationalize land use zones with road network patterns.
- Recommend and justify the preferred alternative.
- Identify right-of-way requirements.
- Assess environmental resources and drainage patterns.

The study objectives were confirmed through a series of Steering Committee meetings with Leduc County and the City of Leduc.

2.5 Methodology

A Steering Committee oversaw development of the study process. The Steering Committee members included Des Mryglod and Khushnud Yousafzai, Leduc County; Ron Hanson, City of Leduc; and Henry Devos, McElhanney Consulting Services Ltd.

The Steering Committee met six times to work through the Project Appraisal, Development of Alternatives, Selection of the Preferred Alternative, and Final Documentation phases. The following steps outline the study methodology used to assess the Spine Road alignment, intersection spacing and development of the functional plan.

1. Project Appraisal

Project Initiation Meeting held October 14, 2008.

Performed site assessments.

Documented existing conditions and problem definition.

Defined study issues and objectives.

Performed traffic forecasting and analysis.

Steering Committee Meeting #1 held November 25, 2008.

Mailed study notice to landowners in the study area on December 2, 2008.

2. Development of Alternatives

Identified road network issues.

Developed alignment alternatives.

Steering Committee Meeting #2 held January 14, 2009.

Identified / quantified impacts and issues.

Steering Committee Meeting #3 held February 5, 2009.

Mailed Open House #1 notice to landowners in the study area on February 5, 2009.

Open House #1 held March 5, 2009 to present preliminary alternatives.

3. Selection of Preferred Alternative

Finalized additional alignment option, evaluations and ranking.

Steering Committee Meeting #4 held March 27, 2009.

Developed additional alignment options and confirmed a preferred alternative.

Steering Committee Meeting #5 held May 8, 2009.

Mailed Open House #2 notice to landowners in the study area on May 30, 2009.

Open House #2 held June 22, 2009 to present additional and the preferred alternatives.

4. Final Documentation

Steering Committee Meeting #6 held August 11, 2009.

Finalized recommended functional plan and profile.

Draft report and drawings submitted in November 2009.

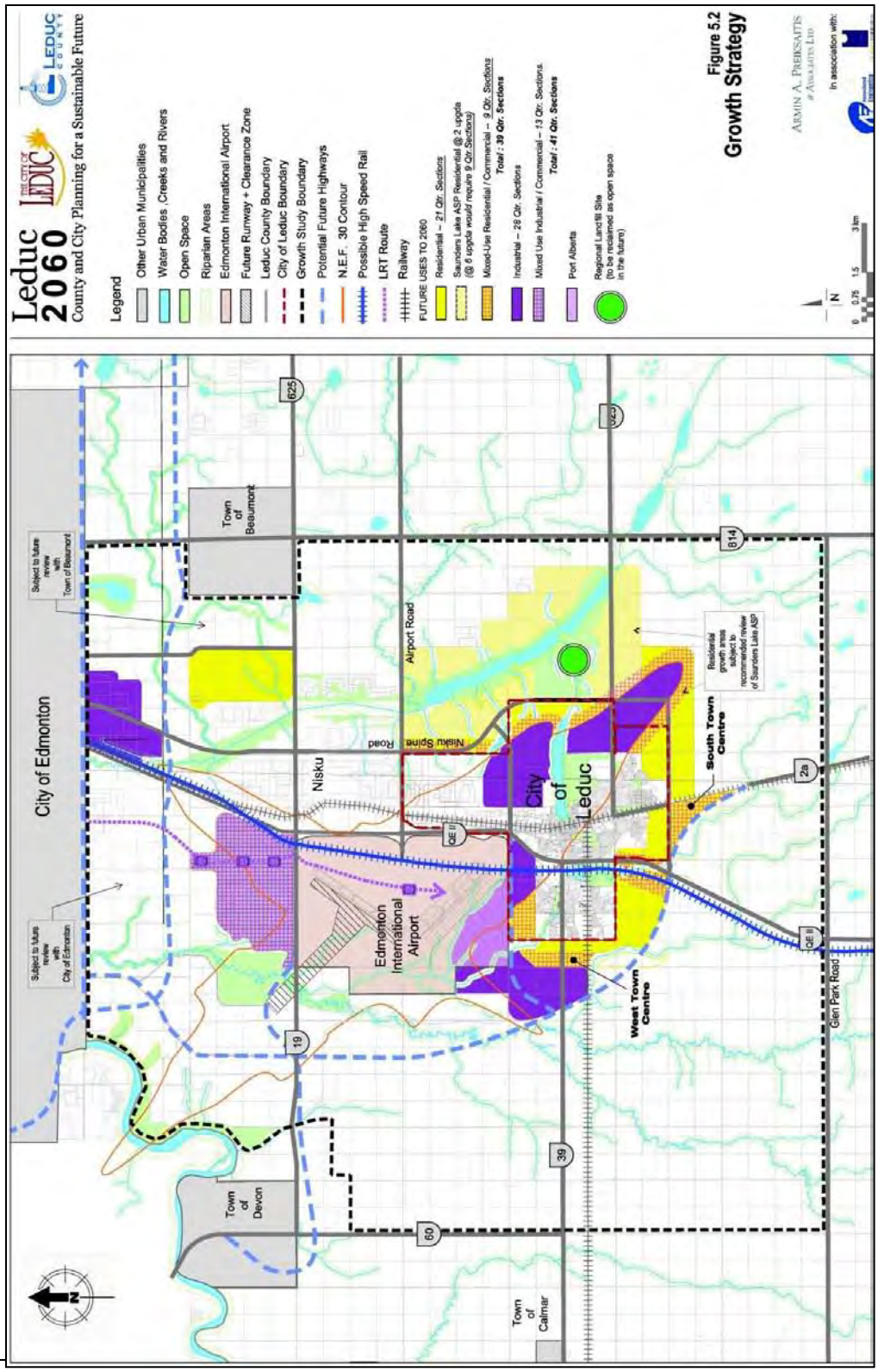
Review meeting held January 26, 2010.

Presentation to Joint Meeting of County and City Councils on June 8, 2010.

Final County and City approvals in September 2010.

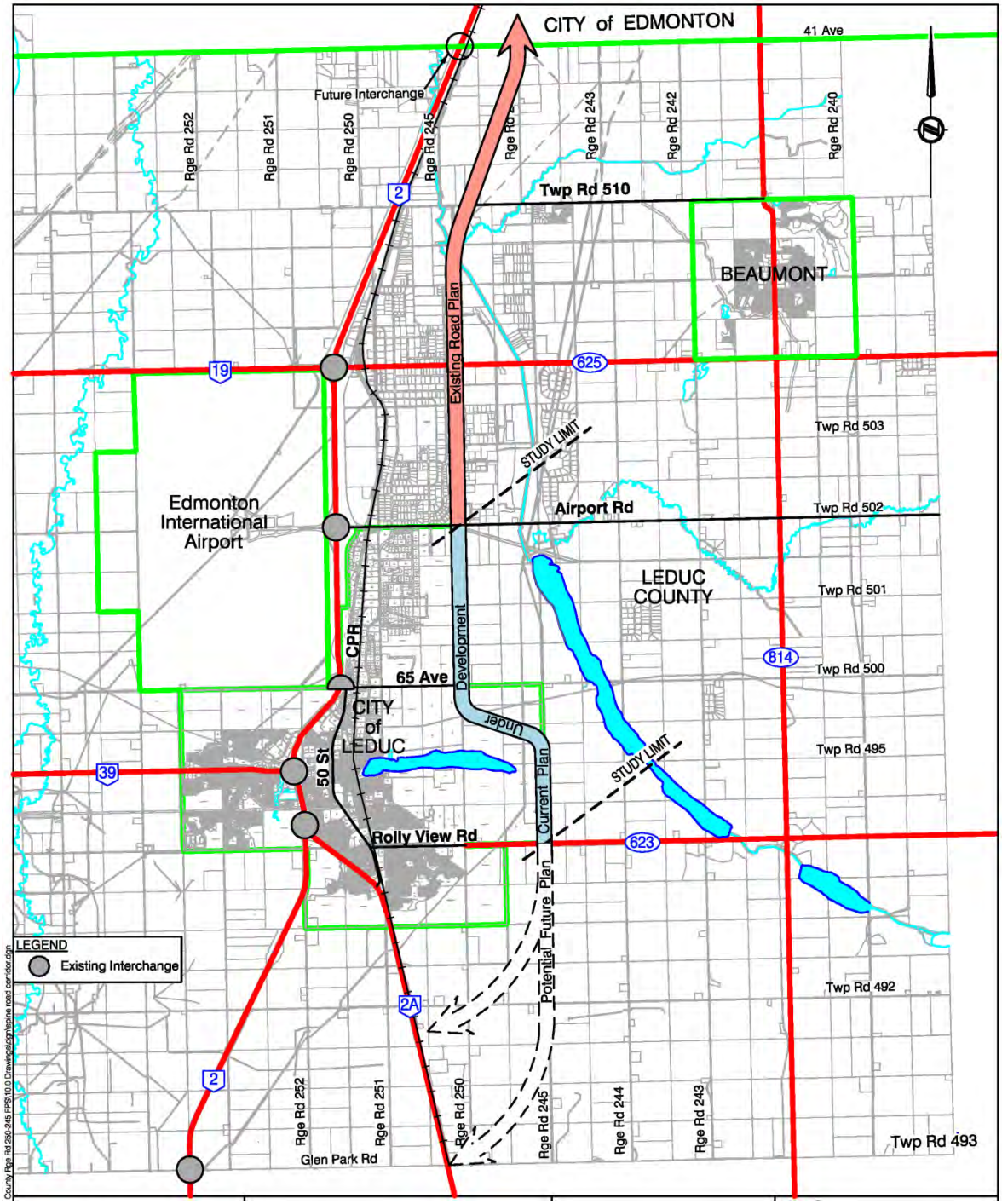
Final report and drawings in December 2010.

Figure 2-1: Leduc 2060 Growth Strategy[2]



[2] From *Leduc 2060* Report.

Figure 2-2: Spine Road Corridor



3 PROJECT APPRAISAL

The Project Appraisal phase examines the existing conditions, identifies project issues and defines the study parameters for development of alternatives and mitigation of impacts.

3.1 Key Issues

Several key issues that influenced overall development of the Spine Road plan include:

Traffic Forecasting.

The traffic model considered growth potential along the study corridor, the commuters that could be diverted from Leduc and the long-distance through flows that may ultimately originate from the south, i.e. from Highways 2 and 2A. If connected with Highway 2A, the corridor under study may also ultimately off-load growth along Highway 2. Increased access to, and mobility along, the proposed Spine Road will influence the desirability for development and growth along the corridor.

Roadway Classification.

Access management requirements should be consistent with what is anticipated to be a Major Arterial in a development area likely to attract/generate traffic and experience significant growth. Traffic volumes can be significantly affected by the functional classification and design standards assumed for this route. For this road to become a north-south arterial, ultimately playing an important role in the regional road network, there should be an emphasis on mobility.

Land Use.

The *Leduc 2060* is a joint County/City planning study, which combined a Growth Study with an update of the Intermunicipal Development Plan. The results of *Leduc 2060* together with the Edmonton International Airport's Noise Exposure Forecast (NEF) 30 contour gave definition to the land use planning assumptions for this functional planning study. See Figure 2-1: Leduc 2060 Growth Strategy.

Regional Road Network.

Alberta Transportation may express an interest in what has the potential to become the first contiguous multi-lane north-south route between Highways 2 and 814 with the potential to divert some traffic from both Highways 2A and 2, particularly if the roadway under study ultimately connects with both highways south of Leduc. The Highway 2 corridor is not well supported by parallel routes into the Capital Region from the south, compared to the other three approaches into the region.

3.2 Road Network

3.2.1 Airport Road

Airport Road (Township Road 502) extends east from an interchange with Highway 2 to 9th Street, to Highway 814 and to Highway 21. Connectivity with the airport is an important part of the business park's international marketability. Airport Road and Highway 625 are the two primary access points to the Nisku Industrial Park. Airport Road is four lanes from Highway 2 to 9th Street. It forms the north study limit and is the boundary between the County and City.

Conclusion:

Airport Road will continue to be an important east-west arterial serving the study area and the Nisku Industrial Park.

3.2.2 Township Road 500 / 65th Avenue

Township Road 500 (City's 65th Avenue) extends from 50th Street in Leduc, immediately south of the 50th Street directional interchange with Highway 2, east to Range Roads 250 and 245. It is expected that in the short-to-medium term, 65th Avenue will have an all-movement interchange with Highway 2. Township Road 500 is a gravel road in the county and ends at Saunders Lake. Between the two range roads, Township Road 500 is the boundary between the City and County.

Conclusion:

An all-movement interchange with Highway 2 will improve 65th Avenue's importance as a east-west corridor into the study area.

3.2.3 Highway 623 (Rolly View Road)

Highway 623 (Township Road 494) extends east from 50th Street in Leduc, to Highways 814, 21 and 617. It is a paved road and immediately west of Range Road 245 it is the boundary between the City and County. Highway 623 ends at Leduc and, from a provincial perspective; it is a Level 3 Collector Service Class and a Major Two-Lane Roadside Management Class.

Conclusion:

It is unclear what the provincial interest in Highway 623 will be in the long-term. The province may wish to consider rerouting Hwy 623 south around Leduc, e.g. along Leduc's ring road or the Spine Road, with the potential to connect with Highways 2A and/or 2.

3.2.4 Highway 2A

Highway 2A (former Highway 2) extends from Highway 2 south of Ponoka (north of Red Deer) north through Wetaskiwin and Millet and reconnects with Highway 2 at Leduc. It is an inter-regional commuter route into the Capital Region, feeding traffic onto Highway 2. Highway 2A is a Level 3 Collector Service Class, two classes below Highway 2, with a

Multi-Lane Roadside Management classification.

Highway 2A through the City of Leduc is a four-lane divided roadway, with a posted speed of 70 km/h, and under city jurisdiction east of Highway 2 to Leduc's south boundary. South of Leduc, Highway 2A is a two-lane provincial route. Its importance is as a parallel route to Highway 2 that accommodates commuter flows into and out of the Capital Region. However, since Highway 2A converges on Highway 2 south of Leduc, north-south mobility remains almost completely reliant on Highway 2.

Conclusion:

Highway 2A serves as a major connector to Leduc's south side and as a secondary route to the communities south of the city. The importance of the Highway 2A connection will continue to grow as residential development increases in south Leduc and other communities in the Highway 2A corridor, unless other routes are established to carry traffic north-south into the Capital Region. A key network observation is that it is largely only Highway 2 that effectively connects Edmonton with southern Alberta. Highway 60 funnels traffic back to Highway 2 via Highway 39 and Highway 21 heads in a south-easterly direction.

3.2.5 Future Landfill Access

The plans expanded landfill site may require access off of Range Road 245 in the future. To meet the minimum 800m intersection spacing, the access would need to be located 1.6 km north of Highway 623.

Conclusion:

To protect a future option to provide access to the landfill off Range Road 245, the horizontal curve in the Spine Road (to connect Range Roads 245 & 250) could not begin until 170m north of the proposed access point.

3.2.6 65th Avenue

To leave the existing 65th Avenue alignment in its present location, the horizontal curve in the Spine Road (to connect Range Roads 245 & 250) would occur south of 65th Avenue and north of a potential future landfill access. The decision sight distance requirements are met by the 500m radius curves in the Spine Road; however the minimum 170m stopping sight distance to the intersections is preferably provided on tangent, between the intersection and the beginning of curve.

Conclusion:

The beginning of curve south of 65th Avenue (and north of the potential landfill access) is located 170 m away from both intersections, increasing the deflection angle along the section of new Spine Road connecting Range Roads 245 and 250.

3.3 Nisku Industrial Park

The Nisku Industrial Park is located north of Airport Road, extending north to Township Road 510. Since its inception in 1972, the Park has grown to accommodate 400 companies, employing more than 6000 skilled trades and professional workers. It is expected that the Park will expand south across Airport Road and along Range Road 250. CP proposes to construct an intermodal yard near the City of Edmonton boundary, immediately north of Nisku, and, combined with plans for Port Alberta, is likely to fuel additional growth for the Nisku Industrial Park.

Conclusion:

It is prudent to plan for development and growth ultimately expanding south along the proposed Spine Road extension

3.4 CP Rail

The CPR mainline, connecting Edmonton and Calgary, follows Highway 2A south of Leduc, 50th Street through Leduc and Highway 2 passing Nisku. The CPR rail service is an important part of the Nisku Industrial Park. CP is planning an intermodal yard in Edmonton near 41st Avenue South, adjacent to Nisku.

Conclusion:

The CPR and the proposed inter-modal yard is also one of several key drivers, or catalysts, affecting economic growth and the marketability of business lands in the Nisku Industrial Park.

3.5 Major Utilities

There are four major utilities in the study area. Two utilities have an effect on roadway planning:

- An Alta Link power transmission line traveling north-south along the east side of Range Road 245; and
- An Alta Link power substation in the southeast corner of Airport Road and Township Road 250.

Conclusion: In both cases, all roadway widening will be made to the west side of the existing right-of-way.

Two other utilities can easily be accommodated by the roadway plan:

- A joint corridor containing three underground oil pipelines travelling north-south 400m west of Range Road 245; and
- A gas pipeline travelling east-west 600m south of Township Road 500.

Conclusion: In both cases, design can easily be accommodated during future stages.

3.6 Leduc 2060

The *Leduc 2060* is a joint County and City planning study, which combined a Growth Study with an update of the Intermunicipal Development Plan. The results of Leduc 2060, together with the Saunders Lake ASP, gave broad definition to the land use planning assumptions for this functional planning study. See Figure 2-1: Leduc 2060 Growth Strategy.

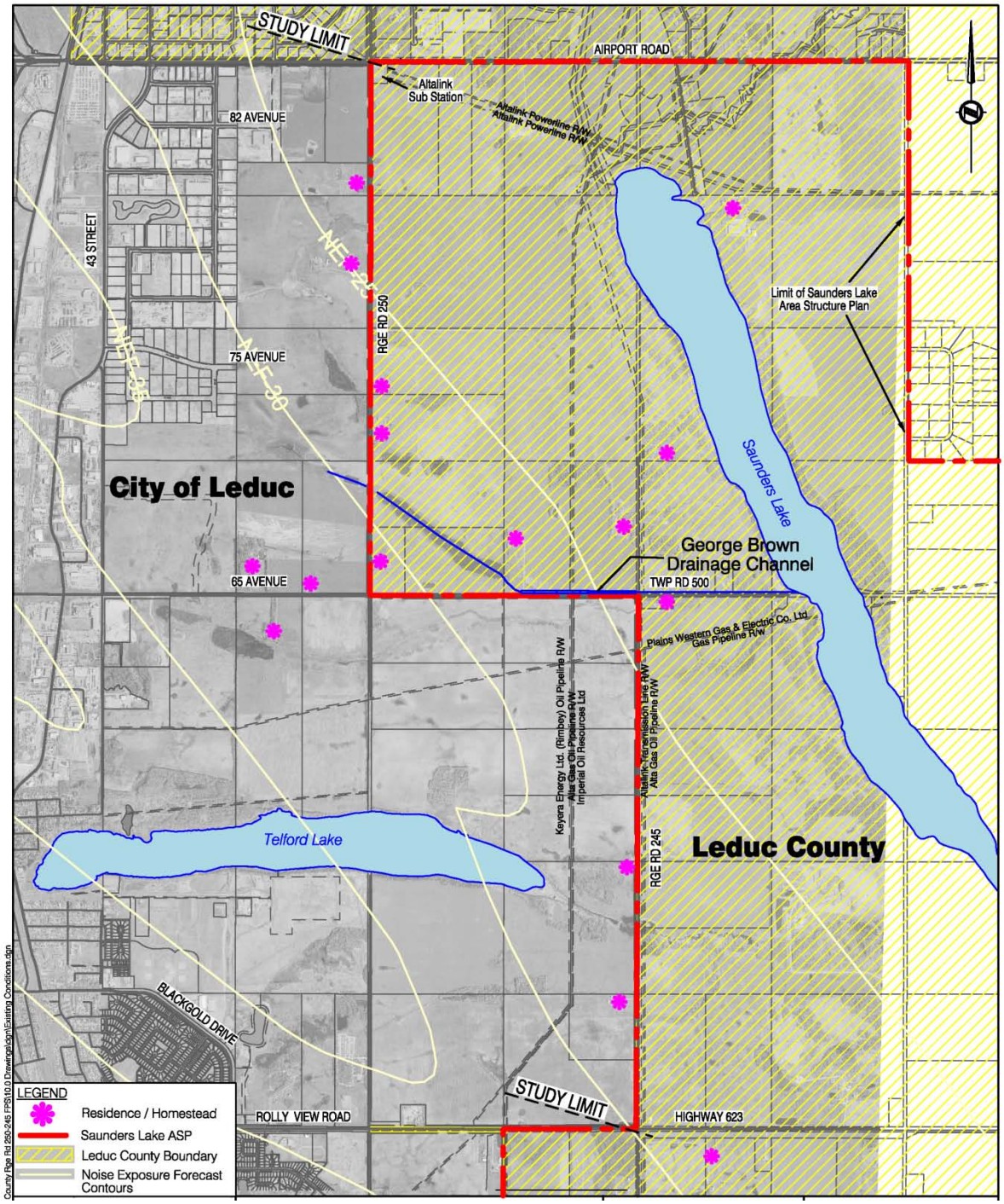
Related land use requirements include:

- A 450m wide buffer is used around the existing, easterly, landfill site.
- A 350m wide buffer is used around the westerly landfill expansion.
- A 30m wide development buffer is shown around Telford Lake. The buffer around Telford Lake is conceptual. Actual buffer will be determined by the Telford Lake Master Plan process.

Conclusion:

For the purposes of the functional planning study, the land use assumptions provided by the Leduc 2060 plan are sufficient for roadway planning purposes.

Figure 3-1: Existing Conditions

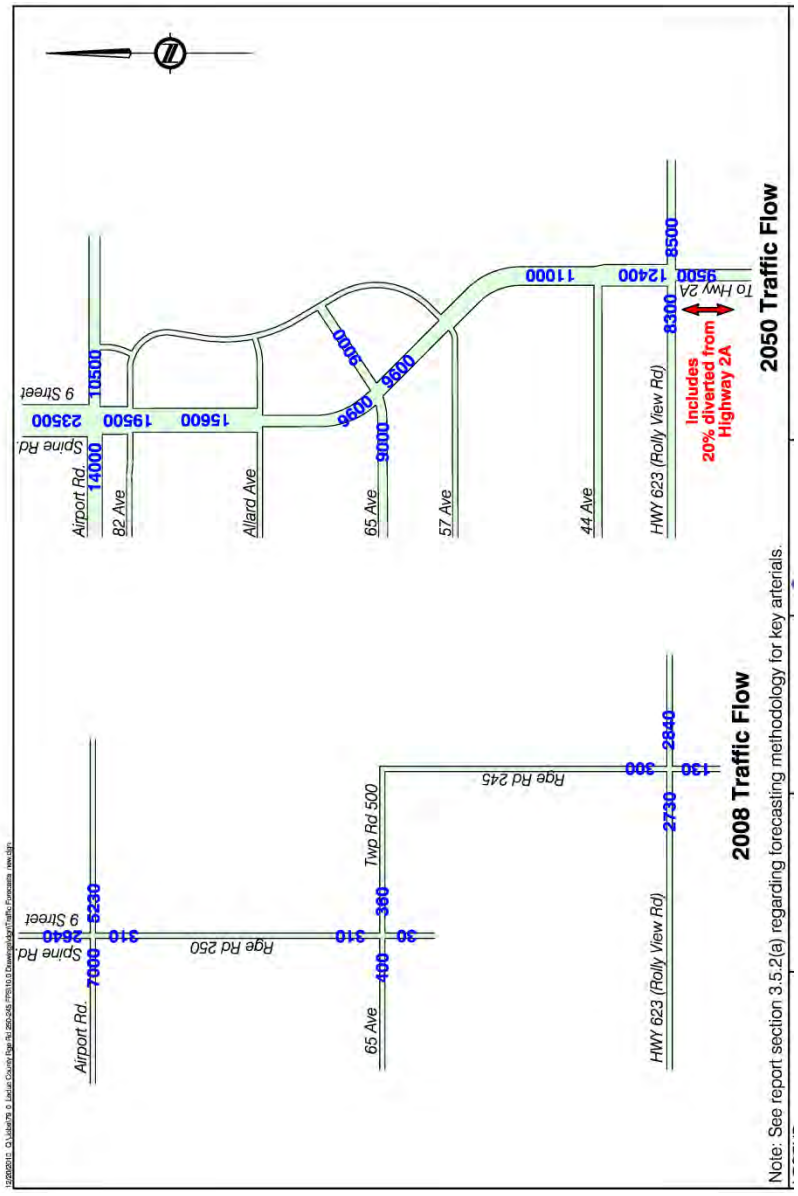


3.7 Traffic Forecasts

3.7.1 Existing Traffic Volumes

Figure 3-2: Traffic Flow Diagram (AADT) shows existing 2008 and forecast 2050 Average Annual Daily Traffic (AADT) flows.

Figure 3-2: Traffic Flow Diagram (AADT)



3.7.2 Forecast Traffic Volumes

The following outlines the methodology used to prepare long-term traffic forecasts. The Edmonton Capital Region Model (ECRM) forecasts were not available for this study. See Figure 3-2: Traffic Flow Diagram (AADT).

a) Methodology for Key Arterials[3]

Airport Road

The historical growth rate at Alberta Transportation's Automatic Traffic Recording (ATR) station located on Highway 625 west of Highway 814 is 2.5% per year for the 10 years ending 2007. This highway and growth rate is considered comparable to conditions along the Airport Road corridor in the study area and was applied to the 2008 AADT to assist in forecasting AADT values for future years.

9th Street (Nisku Spine Road)

The "*9th Street (Nisku Spine Road) Functional Planning Study – June 2006*" estimated that Spine Road would have 11,000 vehicles per day by 2016. The report suggested that the Nisku Industrial Park would be fully built out by 2016 and that traffic would continue to grow at a rate of 6% per year. Comparing this recent forecast with current historical growth rates in the study area, the growth rate was reduced to 3% per year for this study. The 2016 forecasts were then projected to 2018, 2028 and 2050.

65th Avenue

65th Avenue will ultimately connect with Highway 2 near the current partial interchange to/from the north near 50th Street, immediately south of the International Airport lands. "*Leduc's Transportation Study Update – March 2008*" was used as a starting point to estimate future external flows along 65th Avenue entering the study area. Trip generation was estimated in the study area to determine internal traffic flows (See "Trip Generation" below) and added to the external traffic flows along 65th Avenue.

Highway 623

The historical growth rate at Alberta Transportation's ATR located on Highway 623 west of Highway 814 is 2.2% per year for the 10 years ending 2007. This growth rate is considered comparable to conditions along the Highway 623 corridor in the study area and was applied to the 2008 AADT to assist in forecasting values for future years. "*Leduc's Transportation Study Update – March 2008*" was used to estimate the future external flows along Highway 623 entering the study area.

[3] References include:

1. Saunders Lake Area Structure Plan (August 2005) by Scheffer Andrew Ltd.
2. Saunders Lakeview Outline Plan (July 2006) by Scheffer Andrew Ltd.
3. Leduc 2060: Intermunicipal Development Plan, by Armin A. Preiksaitis & Associates. Refer to Figure 5.2 "Growth strategy", "Growth strategy 2006-2036" and "Growth strategy 2026-2036"
4. City of Leduc Transportation Study Update (March 2008) by ISL Engineering and Land Services.

Nisku Spine Road South

The southerly extension of the Nisku Spine Road (Leduc Ring Road) may ultimately join Highway 2A south of Leduc. For study purposes, it was assumed that 20% of the traffic from Highway 2A would divert northeast around Leduc towards the Nisku industrial area (including the current study area) using the Spine Road. The historical growth rate at Alberta Transportation's ATR located on Highway 2A south of the City of Leduc is 2.4% per year for the 10 years ending 2007. "*Leduc's Transportation Study Update – March 2008*" was used to estimate the future external flows along Leduc ring road entering the study area from the east. 20% of the projected growth along Highway 2A was added to estimate AADT values for future years.

b) Leduc's Transportation Study Update – March 2008

Traffic volumes taken from "Leduc's Transportation Study Update – March 2008" were based on the model for 40,000 people. Using a 3% growth rate, Leduc would approach the target population in approximately 2050. A factor was then applied to predict traffic for the ultimate year horizon.

c) Trip Generation

Trips generated in the study area were predicted by applying trip generation rates to the proposed future land uses. The "*Saunders Lake Area Structure Plan*" suggested that estate residential would produce an average 4 dwelling units per hectare. The "*Saunders Lakeview Outline Plan*" suggested that estate residential would generate an average 10 trips per dwelling unit daily and industrial/commercial would generate 60 trips per hectare daily. It was assumed that a 'Transitional Mixed Use' development would generate an average of 35 trips per hectare daily. A growth rate of 2% per year was obtained from the "*Saunders Lake ASP*", Section 9.4, suggesting that development would be complete by 2055.

d) Trip Flow Table

Table 3-1: Trip Flow Table (2050 Peak Hour) shows how the estimated traffic volumes might flow once the Spine Road corridor is built out. The table reflects both background volumes and future land use trip generation. The first step was estimating how much traffic would continue south from the Spine Road and north from Highway 2A. The traffic generated from the surrounding development areas was then added, along with background growth forecast by *Leduc's Transportation Study Update*. Turning movements were assigned, with a view to keeping each intersection balanced. The combined flows provided a ballpark estimate of traffic volumes that may use the north/south study corridor.

Starting with southbound traffic from the Spine Road and adding southbound traffic from Airport Road provides an estimate of vehicles approaching the 82nd Avenue intersection. It was assumed that each turning movement had an equal and opposite movement. For example, if 100 vehicles turned north from the west approach to an

intersection, then 100 vehicles would be expected to turn west from the north approach to the intersection during the opposite peak hour flow. This pattern was used to estimate flows southbound starting at Airport Road and northbound starting at Highway 623. A percentage residual flow would need to be assigned to the off-peak direction for traffic engineering purposes.

3.7.3 Forecasting Reliability

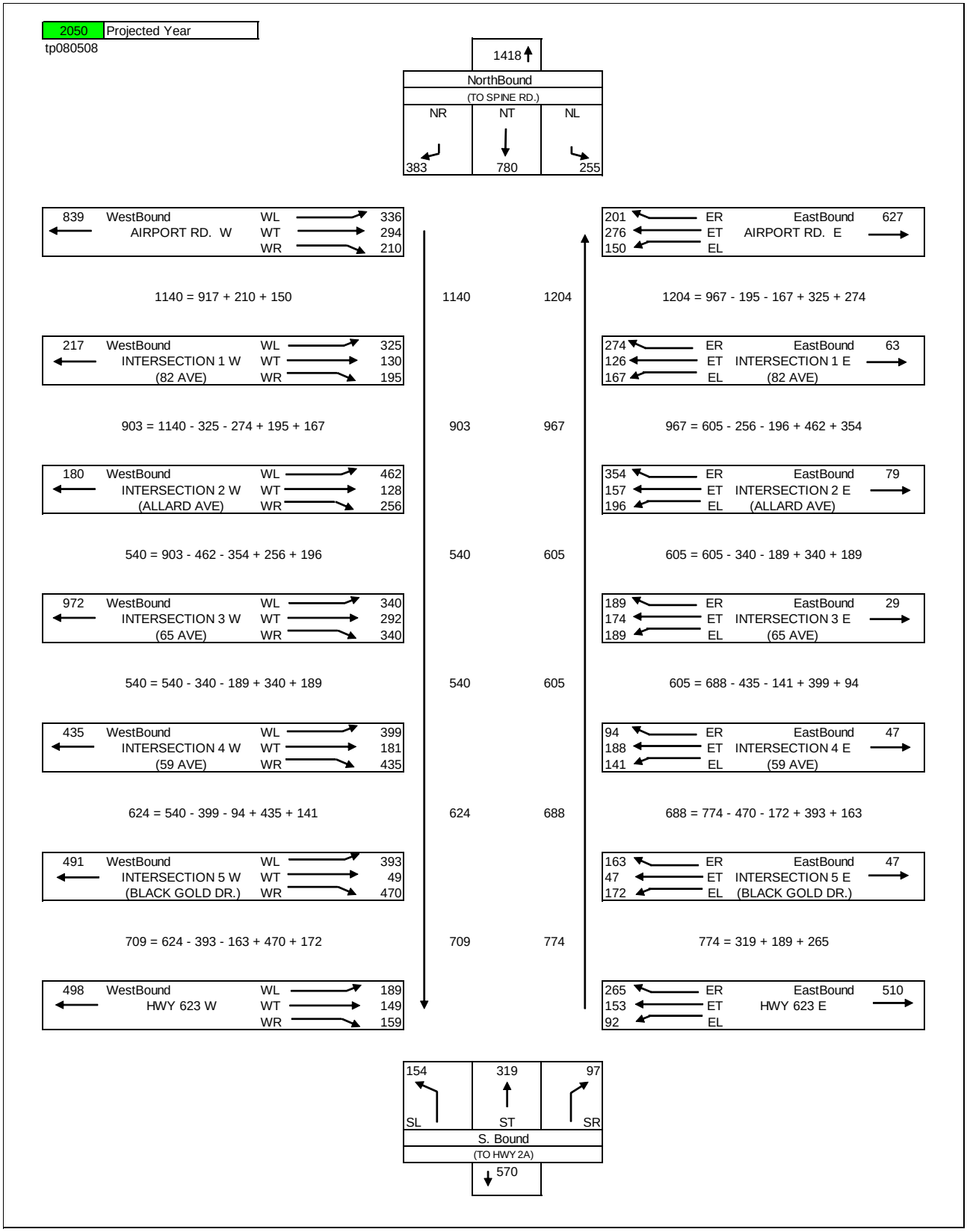
The methodology used assigns traffic growth based on diversion from other highways, background growth from Leduc, and development driven trip generation. Much will hinge on how attractive the corridor is from a mobility perspective. There are other catalysts affecting growth including the general provincial economy, progress with CP's proposed multi-modal yard, the Port Alberta Gateway proposal, etc.

The existing base traffic volumes cannot be used to forecast future travel patterns because the area is undergoing a transition from rural to urban as the City of Leduc and Nisku expand. Future growth from these new areas will establish new traffic patterns.

Conclusion:

Due to the evolving development pattern in the study area and the importance of the region, the standard horizons for a functional planning study, e.g. 20 to 25 years, was replaced with a long-term or ultimate build out of the study area, e.g. 2050, to ensure that the new Spine Road will accommodate long-term development traffic, regardless of the sequence or pace in which development actually occurs.

Table 3-1: Trip Flow Table (2050 Peak Hour)



3.7.4 Design Criteria

The ultimate plan for the Spine Road is provisional, dependent on growth, since it can be constructed in stages to an ultimate six-lane plan. The Spine Road will be designed as an expressway, access-controlled, facility based on standards outlined in Table 3-2: Design Criteria.

Table 3-2: Design Criteria

Criteria	Design Standard
Alignment Elements	
Design Speed	90 km/h
Posted Speed	80 km/h
Number of Lanes (stages)	2 / 4 / 6
Design Classification	Expressway
Access Control	Signalized Intersections
Intersection Spacing	800m min.
Intersecting Roadways	Arterial or Collector Roads
Horizontal Curve	340m min.
DSD	280 to 360m
Super Elevation (e_{max})	0.06 m/m max.
Cross Section Elements	
Lane Width	3.7m
Curb Line - median	Rolled Curb Face
Shoulder Width - outside	3.0m
Shoulder Width - inside	0.5m gutter width
Median Width – Raised	6m
Ditch Foreslope	4:1
Ditch Backslope	3:1

The design criteria and typical cross-section are primarily taken the "9th Street (Nisku Spine Road) Functional Planning Study, Figure 5-15" and Alberta Transportation's HGDG Urban Supplement, Figure U.C.6.2c.

See Figure 3-3: Typical Cross Sections & Staging.

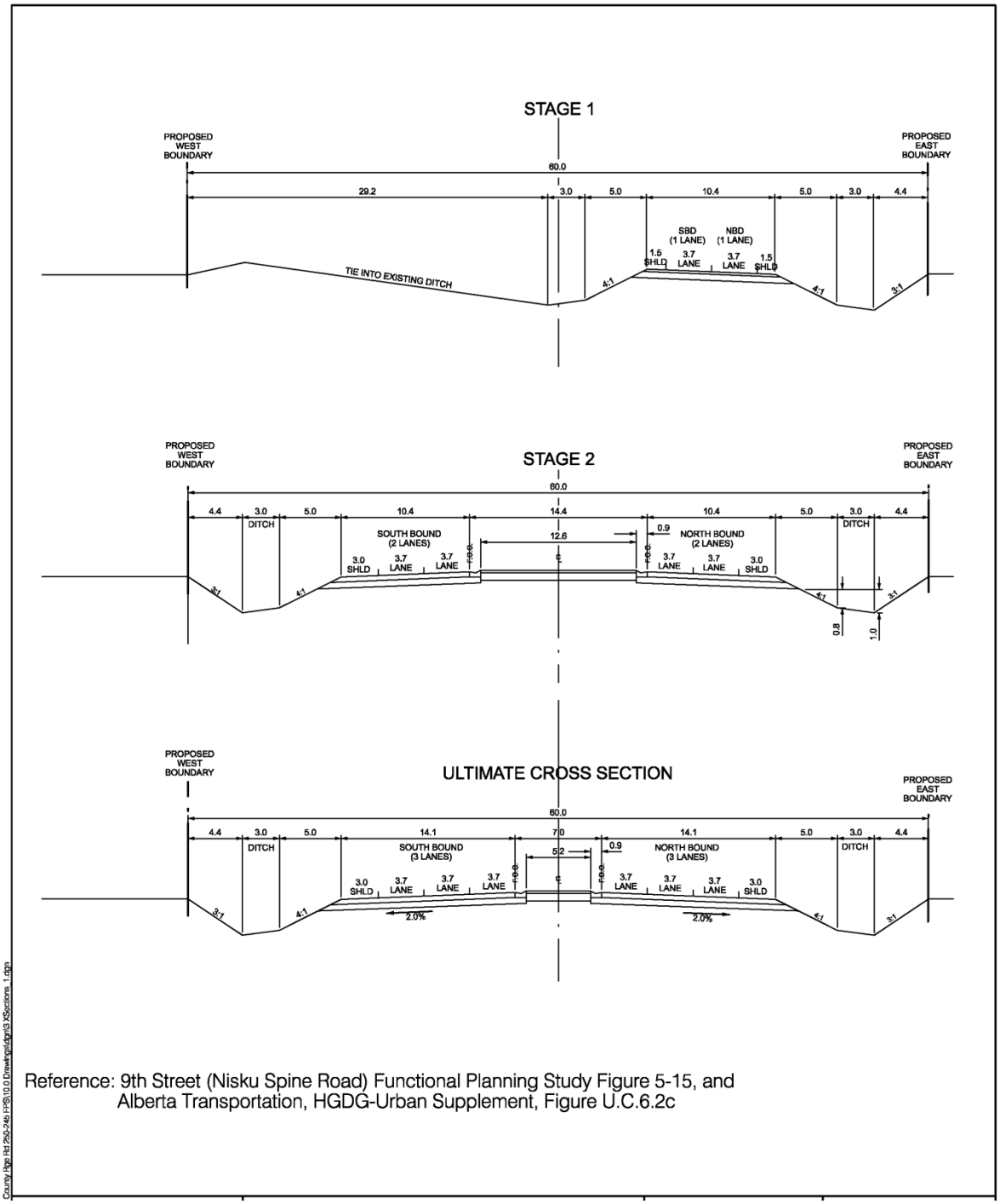
There are two design criteria questions to be considered during future design phases that would affect would affect total right-of-way width.

1. The ultimate six-lane cross-section and 90 km/h design speed may require a 1m inside shoulder width. Design speeds of 80 km/h or less do not require an inside shoulder.
2. The 90 km/h design speed may require a 5:1 foreslope. A 4:1 foreslope is commonly used up to an 80 km/h design speed.

To minimize impacts, a short section of urban design is used passing AltaLink's substation

in the south-west quadrant of Airport Road and RR250. The north end of the Spine Road alignment approaching Airport Road will be curved slightly to the west to ensure the AltaLink site is not affected. The Sturgeon Homes site (354TR, Lot A) is affected by this change.

Figure 3-3: Typical Cross Sections & Staging



Reference: 9th Street (Nisku Spine Road) Functional Planning Study Figure 5-15, and Alberta Transportation, HGDG-Urban Supplement, Figure U.C.6.2c

3.8 Signalized Expressway

3.8.1 Intersection Spacing[4]

Efficient progression of vehicular traffic along arterial roads is dependent on the provision of optimal and uniform traffic signal spacing. Signal progression is directly dependent on traffic speeds and intersection spacing.

When the spacing between signalized intersections exceeds about 800m, as is common in a rural environment where cycle lengths are in the range of 90 to 120 seconds, the benefits of platoon dispersion diminishes the compactness of the traffic stream.

For an intersection spacing of 800m and an average running speed of 80 km/h (posted speed), a 70 second cycle length would establish efficient progression (maintaining mobility). For an intersection spacing of 500m, a cycle length of 60 seconds would still require a reduced running speed of 70 km/h.

Conclusion: To maintain a high, 80 km/h, posted speed, an intersection spacing of 800m or greater is recommended.

3.8.2 Signalization

The Spine Road will initially be a two-lane facility, probably not signalized in its earliest stage, and ultimately a six-lane facility. The design speed is 90 km/h, but the horizontal curves will exceed 90 km/h. All intersections will be located on tangent sections.

In Alberta, provincial highways (non freeway) are typically slowed from a 100 km/h posted speed to 70 km/h passing through a signalized intersection. (Note, that there are few signalized intersections along Alberta's primary highway system.) Although a 90 km/h design speed is proposed for the Spine Road, it will have a posted speed of 80 km/h, and ultimately signalized intersections at an 800m spacing.

Design guidelines for BC provincial highways provide for the use of advance warning flashers (AWF's) for posted speeds over 70 km/h. In areas where pedestrian volumes are low or nil, there are no driveway conflicts, and the sight distance to approaching side street traffic is good, it is reasonable to assume that a roadway already posted at 80 km/h does not have to be slowed a further 10 km/h at traffic signals spaced every 800m.

Conclusion:

The Spine Road meets the required criteria and can ultimately be upgraded to a signalized expressway standard, with a 90 km/h design speed, 80 km/h posted speed and 800m intersection spacing.

[4] TAC Geometric Design Guide for Canadian Roads, Section 2.3.1.8

3.9 Constraints

The purpose of the Range Roads 245 and 250 Functional Planning Study is to provide the County/City with a long-range plan to assist in construction programming and right-of-way protection, and to assist developers with land-use planning. To summarize Project Appraisal and set direction for the next study phase, Development of Alternatives, several constraints or problems affecting the Spine Road alignment are summarized in Table 3-3: Roadway Planning Constraints.

Table 3-3: Roadway Planning Constraints

Constraint	Location	Affecting
82nd Avenue	Previously approved intersection located only 400m south of Airport Road	Minimum 800m intersection spacing
65th Avenue/Township Road 500	East-west roadway midpoint between Airport Road and Highway 623	Construction staging
George Brown Channel and associated drainage patterns	Flowing east in the north ditch of Township Road 500	Roadway alignment & drainage impacts
Edmonton International Airport – NEF 30 Noise Contour	Running northwest - southeast south of 65th Avenue	Roadway alignment and land use
Tentative access to expanded Leduc & District Landfill	East side of RR 245, 1600m north of Hwy 623	Roadway alignment and intersection spacing
AltaLink Substation	Southeast quadrant at Airport Road	Roadway alignment

4 DEVELOPMENT OF ALTERNATIVES

4.1 Introduction

The roadway alignment is largely established by existing Range Roads 245 and 250. The existing intersections with Highway 623 and Airport Road will remain in their current locations. No compelling reasons could be found to realign the existing approaches to these two major east-west roadways.

The primary alignment design issue is removing the two right-angle turns where the present roadway jogs east-west along Township Road 500 between the two range roads. The Spine Road alternatives presented below largely concern the location of the deflection points where the new alignment diverges from either of the two range roads, north or south of Township Road 500.

4.2 Spine Road Alignment Options

The following five options were developed during the course of the study. Option 1 was presented at Open House 1. Options 1A, 2, 3 and 4 were presented at Open House 2.

Option 1A was a slightly modified version of Option 1 with changes in land use, but no changes in roadway alignment. Options 1 and 1A are presented together and only Option 1A is evaluated and shown following.

4.2.1 Options 1 and 1A

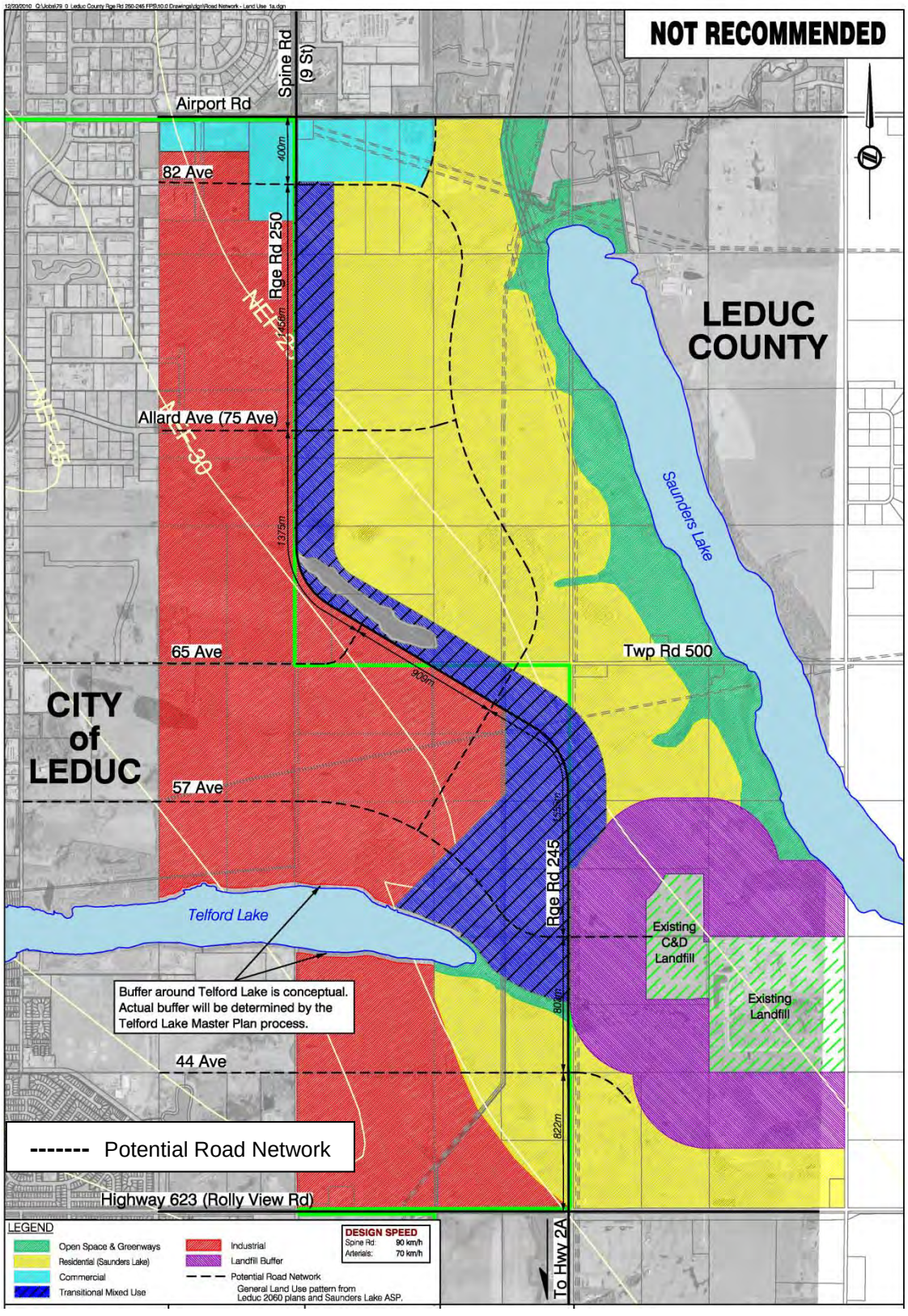
Rationale: Roadway alignment diverges from existing Range Road 250 north of 65th Avenue and merges with Range Road 245 south of Township Road 500, positioning responsibility for the section of new Spine Road equally between the County and City resulting in a symmetrical design. The general road plan, both the Spine Road and local network, is largely consistent with the concepts shown in *Leduc 2060* and the *Saunders Lake Area Structure Plan*.

Discussion:

- Potential impact on the George Brown Drainage Channel and associated drainage pattern.
- Poor network planning since 65th Avenue would terminate at the Spine Road.
- Poor staging for 65th Avenue since it would leave its present alignment before intersecting the Spine Road.
- Potential access to the expanded landfill is achieved.
- Options 1 and 1A are Not Recommended.

See Figure 4-1: Road Network / Land Use Option 1A.

Figure 4-1: Road Network / Land Use Option 1A



4.2.2 Option 2

Rationale: The east curve in the main roadway alignment is shifted south to pull the alignment away from Township Road 500 and the George Brown Drainage Channel.

Discussion:

- Potential access to the expanded landfill site off of Range Road 245 is maintained.
- Results in realignment and poor staging for 65th Avenue crossing the new Spine Road alignment.
- There is still proximity to the George Brown Drainage Channel.
- Option 2 is Not Recommended.

See Figure 4-2: Road Network / Land Use Option 2.

4.2.3 Option 3

Rationale: The west curve in the main roadway alignment is also shifted south to improve staging and simplify the connection with 65th Avenue.

Discussion:

- Potential access to the expanded landfill site off of Range Road 245 is maintained.
- 65th Avenue is unaffected by construction of the main Spine Road alignment, offering good staging.
- Option 3 is Recommended.

See Figure 4-3: Road Network / Land Use Option 3.

4.2.4 Option 4

Rationale: The east curve in the main Spine Road alignment is shifted further south to improve proximity to the NEF 30 noise contour. The west curve remains as shown in Options 1 and 1A.

Discussion: Option 4:

- Poor potential access to the expanded landfill site off of Range Road 245.
- Again results in realignment and poor staging for 65th Avenue crossing the new Spine Road alignment.
- Option 4 is Not Recommended.

See Figure 4-4: Road Network / Land Use Option 4.

Figure 4-2: Road Network / Land Use Option 2

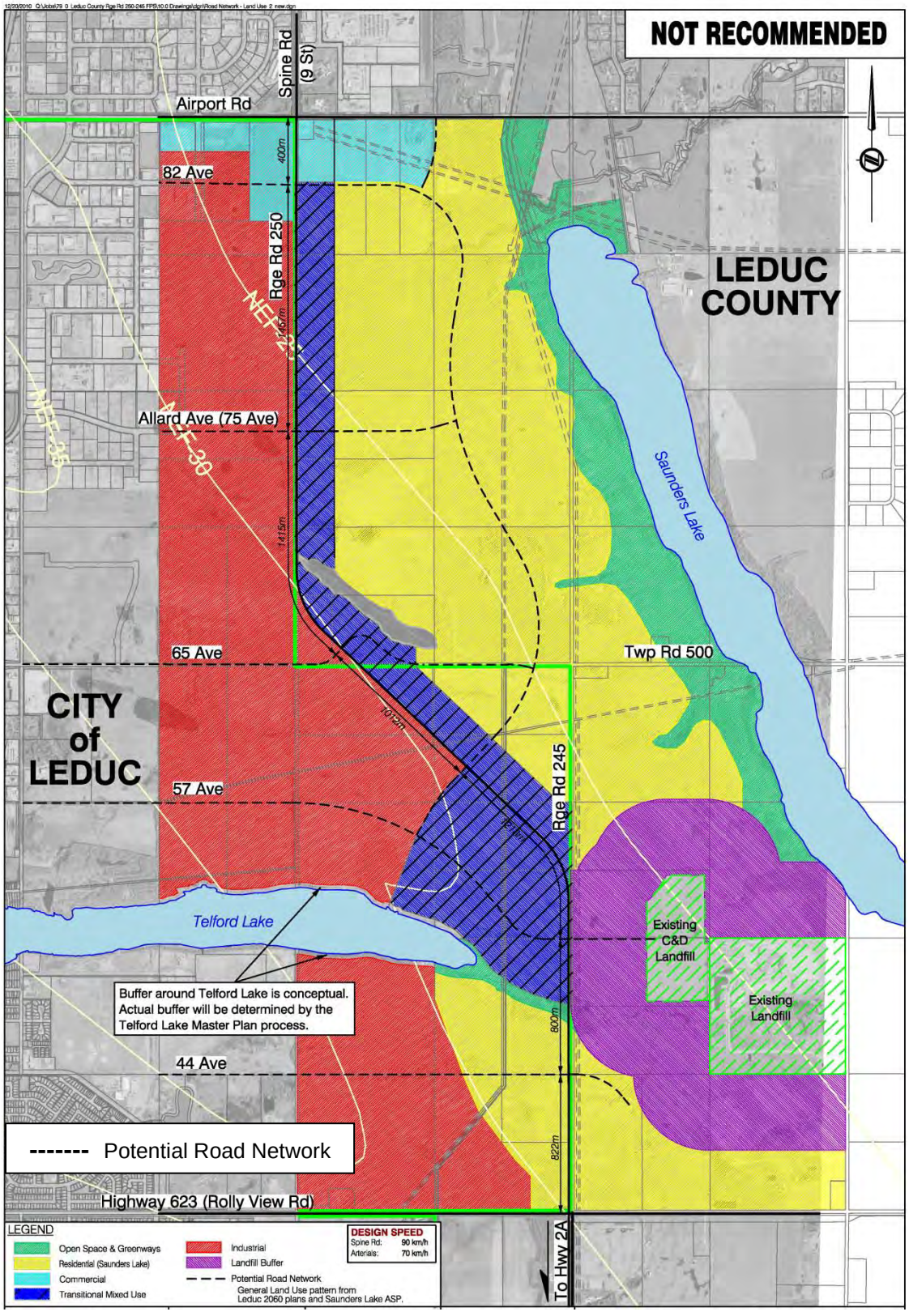


Figure 4-3: Road Network / Land Use Option 3

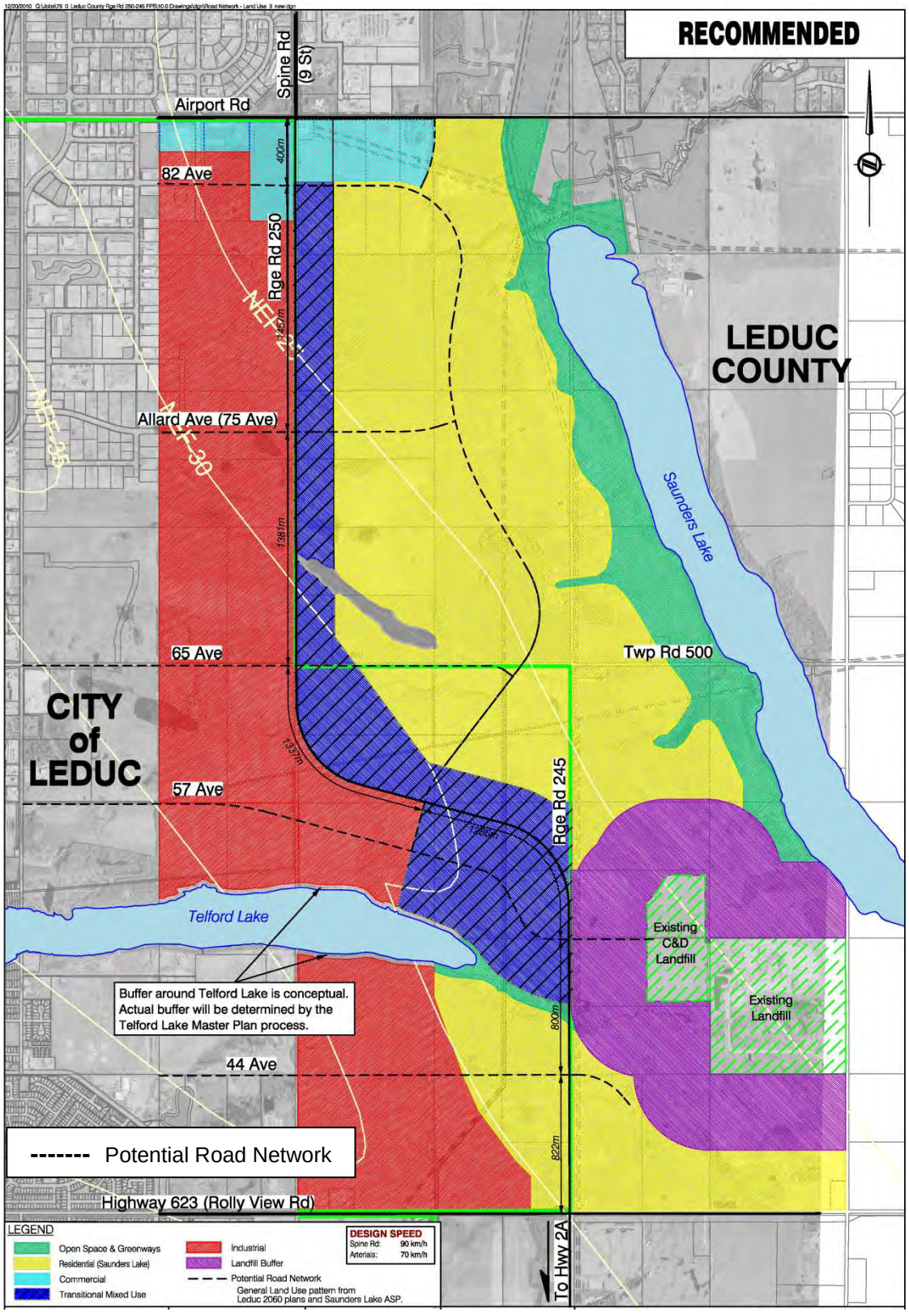
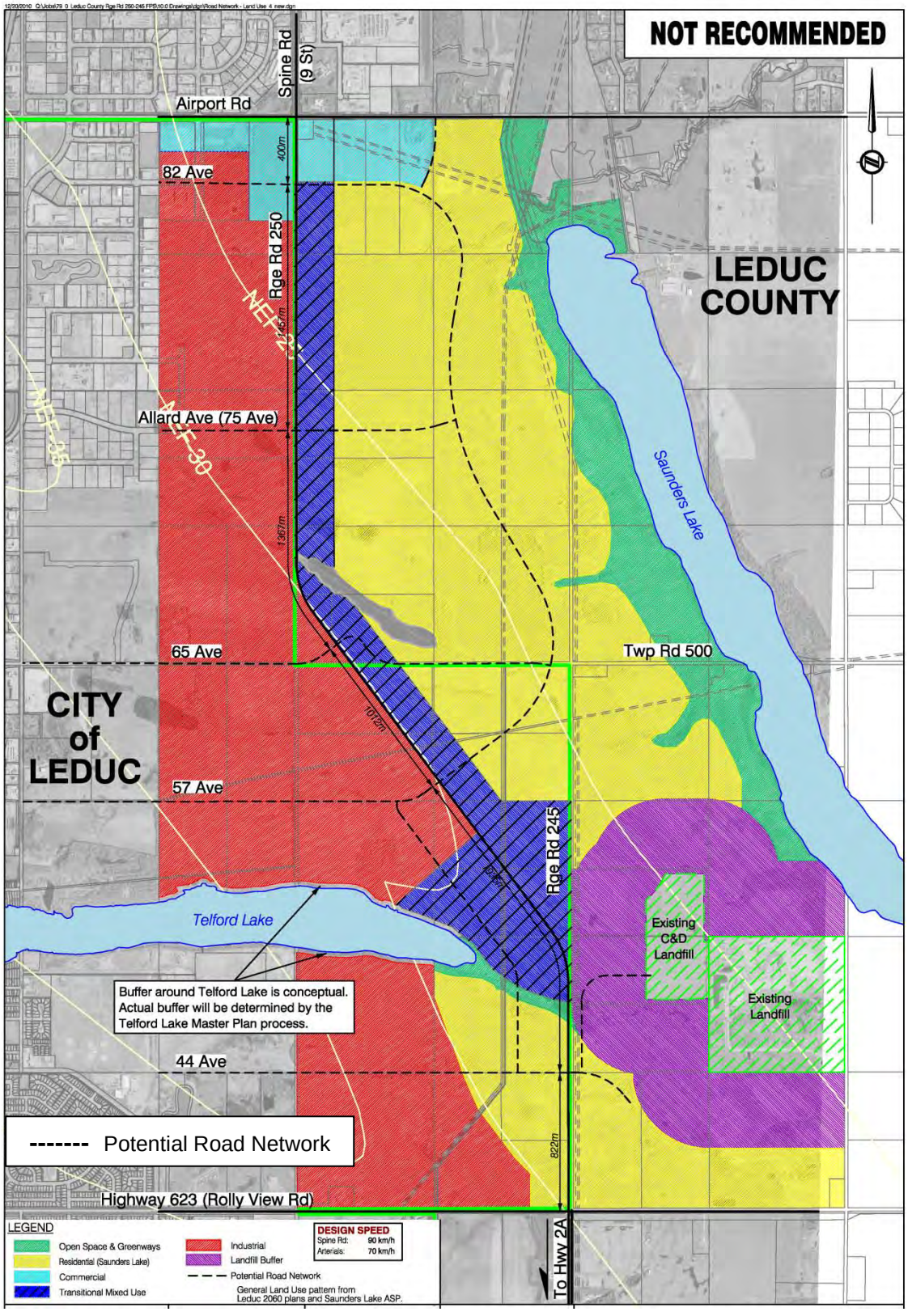


Figure 4-4: Road Network / Land Use Option 4



4.3 Evaluation of Options

4.3.1 Objectives and Criteria

The primary objectives and evaluation criteria are:

- Maintain minimum 800m intersection spacing.
- Construction staging should minimize disruption of existing 65th Avenue.
- Proximity of the road alignment to the Edmonton International Airport's Noise Exposure Forecast (NEF) 30 contour as a buffer between industrial and residential land uses.
- Minimize impact on the George Brown Drainage Channel and associated drainage patterns.
- Provide for potential future access to the expanded landfill site from Range Road 245, as well as to developable lands to the west, opposite the landfill.
- Placement of Transitional Land Uses.

4.3.2 Evaluation Results

Table 4-1: Selection of Recommended Plan summarizes the results of the evaluation.

Table 4-1: Selection of Recommended Plan

Objective / Option	1A	2	3	4
800m Intersection Spacing	**Good**	**Good**	**Good**	**Good**
Provision of Potential Future Access to Landfill	**Good**	**Good**	**Good**	Poor
Staging/Disruption of 65th Avenue	Terminates at Spine Rd	Realigned	**Uninterrupted**	Realigned
Proximity to Airport's NEF 30 Noise Contour	Poor proximity	**Good proximity**	Poor proximity	**Best proximity**
Minimize Impact on George Brown Drainage Channel	Greatest potential impact	Some potential impact	**Least potential impact**	Some potential impact
Placement of Transitional Land Uses	Good	Good	Good	Good
Ranking	**Third**	**Second**	**First**	**Fourth**

Option 3 is recommended because:

- It causes the least disruption to 65th Avenue.
- It provides potential future access to the expanded landfill site, as well as to developable lands to the west, opposite the landfill.
- It poses the least impact on the George Brown Drainage Channel and associated drainage patterns.
- Maintains minimum 800m intersection spacing (except at previously approved 82nd Avenue) and a functional local road network, similar to the Saunders Lake ASP.
- Poor proximity to the airport's NEF 30 noise contour is compensated by placement of the Transitional Mixed (Land) Use.

4.4 Summary

Option 3, the recommended Spine Road alignment and plan, achieves the following:

1. 65th Avenue: The present alignment of 65th Avenue (Township Road 500) is maintained. This simplifies future staging and best accommodates east-west travel for existing County residents.
2. George Brown Drainage Channel: The final Spine Road alignment connects Range Roads 245 and 250 south of Township Road 500, minimizing impacts to the George Brown Drainage Channel, and associated drainage pattern.
3. Road Network: The plan identifies a tentative road network for the study area that provides good traffic circulation and mobility across the Spine Road corridor and is consistent with the *Saunders Lake ASP*.
4. Land Use: The plan establishes tentative land use zoning based on using the Edmonton International Airport's Noise Exposure Forecast (NEF) 30 contour as the primary demarcation between industrial land uses on the west side and residential land uses on the east side. Where the Spine Road alignment is not consistent with the NEF 30 contour line, Transitional Mixed (Land) Use zoning was used to bridge the gap, and prevent locating residential zones on the west side of the contour.
5. Leduc & District Land Fill: The final plan can accommodate future access to the expanded land fill site off of the Spine Road's southern leg, Range Road 245 and provides access to developable lands to the west, opposite the landfill.
6. Jurisdiction: The Spine Road's section of new alignment is located entirely south of 65th Avenue in the City of Leduc.

5 RECOMMENDED PLAN

The following sections assess some of the impacts and requirements associated with delivering the recommended plan.

5.1 Bridge Planning

5.1.1 Introduction

Terrace Engineering Ltd. was retained by McElhanney Consulting Services to provide bridge planning assessments for the proposed Spine Road alignment.

The bridge planning assessments reflect a conceptual review of potential bridge sites. Bridge sites can be identified by crossings of streams, watercourses or drainage paths that require a structure with an equivalent culvert diameter of 1.5m or greater. Smaller drainage courses are not considered to be bridge sites. This study was carried out based on mapping, aerial images and a visual site inspection that occurred on November 7, 2008. Additional engineering efforts will be required during future design phases when additional information will be obtained regarding staging and development patterns and may change the details and recommendations contained in this report.

5.1.2 Potential Bridge Sized Sites

The potential bridge sites that were examined are shown on Figure 5-1: Bridge Assessments – Site Map and identified as Site "A" to Site "F". Photographs at each of the sites are shown in Appendix D. It was determined that none of these sites currently have bridge sized structures, and that none of the sites require a bridge sized structure. All crossings are drainage related and had no water during our site inspection in November 2008. Accordingly, all structures should be handled as part of the future drainage design that will be carried out by others. Descriptions of each site follow below.

Site "A" - Range Road 245 approximately 0.6 km north of Highway 623

The existing structure is a short non-bevelled CSP culvert with a diameter of approximately 0.75m with flow travelling from west to east. There is no defined channel to the west and a gentle swale type depression to the east, with a ponded depression immediately downstream from the culvert. According to the County maintenance staff they have had some difficulties with this crossing, and the scour at the outlet may indicate that the culvert is undersized. Even with a larger culvert diameter, this would not be a bridge sized crossing.

Site "B" - Range Road 245 approximately 1.2 km north of Highway 623

The existing structures consist of short non-bevelled CSP culverts with approximate diameters of 0.9m, 0.6m, and an older 0.6m x 0.75m CSP arch with flow travelling from west to east. There is no defined channel within a depression leading to a small pond on

the west side and a shallow channel to the east. According to the County maintenance staff, the upstream ends of the culverts were cleaned out this fall due to blockage issues, and the older CSP arch was newly 'discovered'.

No other flow related problems were noted. When the roadway is reconstructed, it may be appropriate to use a single larger culvert (perhaps 1.2m diameter) that is less prone to blockage compared to several smaller culverts. If desired, a smaller overflow culvert at a higher elevation can be installed in case the main culvert is blocked. This is not a bridge sized crossing.

Site "C" - Range Road 245 approximately 2.8 km north of Highway 623

The existing structure is a short non-bevelled CSP culvert with a diameter of approximately 0.6m with flow travelling from west to east. There is no defined channel to the west and a minor swale type depression to the east. No flow related problems were noted. This is not a bridge sized crossing.

Site "D" - Township Road 500 to the west of Range Road 245

A larger drainage ditch, known as the George Brown Drainage, runs alongside Township Road 500 on the north side of the roadway between Range Road 245 on the east and approximately 0.6 km to the west. The flow travels from west to east, and appears to turn south at Range Road 245. Several concrete weir structures in poor condition are installed along the east-west ditch. This ditch is not impacted by the proposed roadway improvements and does not require any bridge sized structures.

Site "E" - Range Road 250 approximately 0.7 km north of Township Road 500

The existing structure is a short non-bevelled CSP culvert with a diameter of approximately 0.9m with flow travelling from west to east. There is a short channel section leading to a pond on the west and a swale type depression to the east. No flow related problems were noted. This is not a bridge sized crossing.

Site "F" - Range Road 250 approximately 2.2 km north of Township Road 500

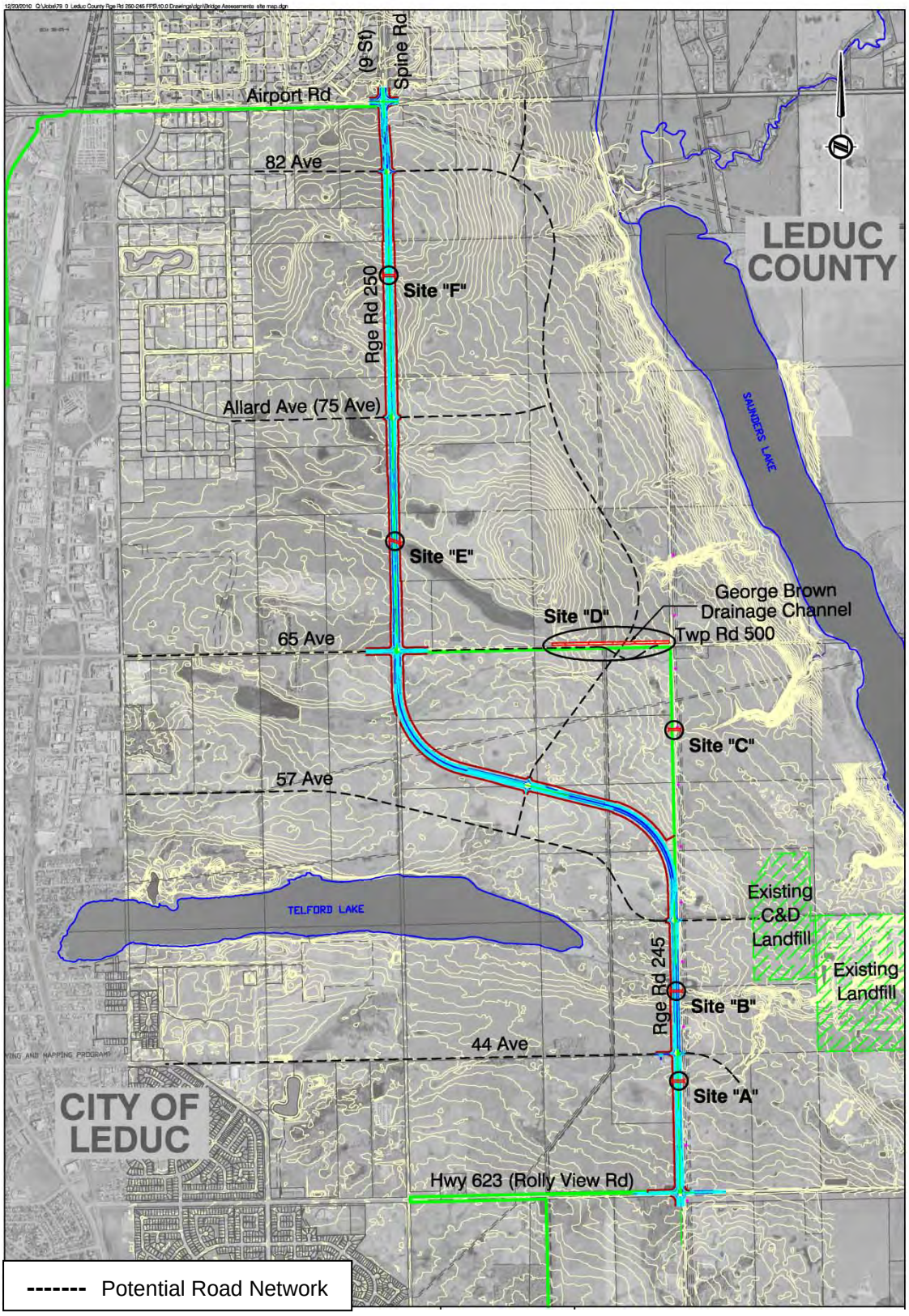
The existing structure is a short non-bevelled CSP culvert with a diameter of approximately 0.8m with flow travelling from west to east. There is no well defined channel to the west or to the east. No flow related problems were noted. This is not a bridge sized crossing.

Table 5-1: Summary of Inspected Potential Bridge Sites

Site No.	Approximate Location	Approximate Diameter	Status	Suggested Action*
A	RR 245, 0.6m north of Hwy 623	0.8 m	Dry with no defined channel, possibly undersized	Increase to 1.2 m dia.
B	RR 245, 1.2 km north of Hwy 623	0.9m. 0.9m and 0.6m x 0.75m arch	Shallow channel, no flow issues. The 0.6m culvert was only recently exposed	Consider replacing with a single 1.2m dia, plus smaller overflow culvert
C	RR 245, 2.8 km north of Hwy 623	0.6 m	Minor swale channel	Not affected by road plan
D	TR 500, to west from RR 245	George Brown weir structures	Under review by others	Not affected by road plan
E	RR 250, 0.7 km north of TR 500	0.9 m	No flow related problems evident	None
F	RR 250, 2.2 km north of TR 500	0.9 m	No flow related problems evident	None

***To be confirmed by future detailed road design.**

Figure 5-1: Bridge Assessments – Site Map



5.2 Stormwater / Drainage Overview

5.2.1 Introduction

EBA Engineering Consultants Ltd. was retained by McElhanney Consulting Services Ltd. to conduct a stormwater management plan for the study area affected by the proposed roadway alignment.

The objectives of this review are to describe current stormwater drainage patterns through a background review and site visit, and to determine how the proposed alterations to the alignment of Range Roads 245 and 250 may affect the stormwater drainage patterns, if any.

5.2.2 Background

The study area is located within the City of Leduc and Leduc County between Telford Lake and Saunders Lake which drain into the North Saskatchewan River. The study area is a part of the upper Blackmud Creek basin which joins the North Saskatchewan River in Edmonton. The North Saskatchewan River eventually drains into Hudson's Bay through the Saskatchewan River. A topographic map (NTS 83H/6) encompassing the study area was reviewed. The study area is located within the prairie section of central Alberta. The regional topography consists of gently sloping terrain with nearby elevations ranging from 640 to 940 metres above sea level (masl).

The drainage ditches have relatively gentle slopes along the roadways and generally drain into tributaries that flow in an easterly direction towards Saunders Lake. Several small intermittent creeks flow under Range Road 250 and Range Road 245. These watercourses pass through numerous culvert crossings along each range road. On either side of the existing roadways, there are low areas and evidence of occasional ponding of water on the upstream side was noted.

Some of these ponded lowland areas appear to be natural or associated with roadside ditches. It also appears that roadside ditches may connect flows between cross culverts when flows are high in the spring. Beaver dam interference with drainage does not appear to be an issue. The area receives approximately 480 mm of precipitation per year (Environment Canada, 2009). A runoff depth map provided by Alberta Transportation (2006) indicated that this area receives runoff depths of approximately 40 mm per year.

In total, several significant creeks cross Range Road 250 and drain east towards Saunders Lake. One of these small tributaries also crosses Township Road 500 and Range Road 245 before joining Saunders Lake. In total, four small creeks cross Range Road 245 before meeting Saunders Lake. It is unknown if all the creeks identified flow permanently but catchment areas are relatively small.

5.2.3 Site Visit

A site visit of the study area was conducted November 12, 2008. The weather prior to the site visit had temperatures below 0ºC with fog and light snow. There was no snow cover at the time of the site visit. Three small drainage zones were identified during the site visit, as noted on Figure 5-2: Drainage Features and Culvert Locations. Drainage Area A located just south of the intersection of Airport Road and Range Road 250 consists of the headwaters of Clearwater Creek (NTS 83H/6). Drainage Area B consists of three small creeks that cross Range Road 250 and Township Road 500 before discharging into Saunders Lake to the east. Drainage Area C consists of two creeks that cross the south portion of Range Road 245. This area consists of one creek connecting Telford Lake and Saunders Lake and one additional small creek located just north of the intersection of Range Road 245 and Highway 623. During the site visit, crossings were evaluated from a drainage perspective and drainage aspects along the road corridors were noted.

5.2.4 Culvert Inventory

An inventory of known culverts under Range Road 250, Township Road 500 and Range Road 245 was not available from the Leduc County Engineering Office. In addition, there are no design or as-built drawings for those sections of roadway. Culvert locations identified during the site visit are shown on Figure 5-2: Drainage Features and Culvert Locations and summarized in Table 5-2: Inventory of Primary Culverts. All culverts are circular steel.

Table 5-2: Inventory of Primary Culverts

Culvert No.	Bridge Planning Site #	Condition	Approximate Diameter (mm)	Drainage Area
1		Fair, partially blocked, located on crest of hill	450	A
2	F	Good, unblocked, dry	900	A
2A		Good, unblocked, dry	600	A
3	E	Good, relatively clear	900	B
4		Good, unblocked	450	B
5		Good, unblocked	1,000	B
6	C	Fair, partially blocked with vegetation, dry	600	B
7		Fair, partially crushed on both U/S and D/S pipe ends, partially clogged and overgrown	600	C
8	B	Fair, partially crushed, recently unclogged, evidence of disturbed soil in west ditch area	900	C
9	B	Good, recently unblocked, evidence of disturbed soil in west ditch area	900	C
10	B	Fair, partially crushed, recently unclogged, evidence of disturbed soil in west ditch area	600	C
11	A	Good, partially blocked	800	C
12		Good, unblocked, damp, south of Hwy 623	600	C

Condition of culvert relates to capacity and visible corrosion. An evaluation of culvert integrity has not been conducted.

In total, there were 12 centre line culverts noted to be passing under the range and township roads within the study area. Two centre line culverts (1 and 2) pass below Range Road 250 within drainage Area A. These culverts range in sizes of 450 to 800 mm. There were four culverts located within drainage Area B; within this area, two culverts (3 and 4) pass under Range Road 250, one culvert (5) passes below Township Road 500 and one culvert (6) passes under Range Road 245. These culverts range in size of 450 to 1,000 mm. Six culverts (7 to 12) pass under Range Road 245 and have sizes ranging from 300 to 1,000 mm. Most culverts were in good condition (Photo 1); however, some of these culverts had visible wear and tear along with minor corrosion damage. In addition to visible surface damage, there were several locations that had partial blockage due to debris and or vegetation growth within the adjacent ditch area (Photo 2).

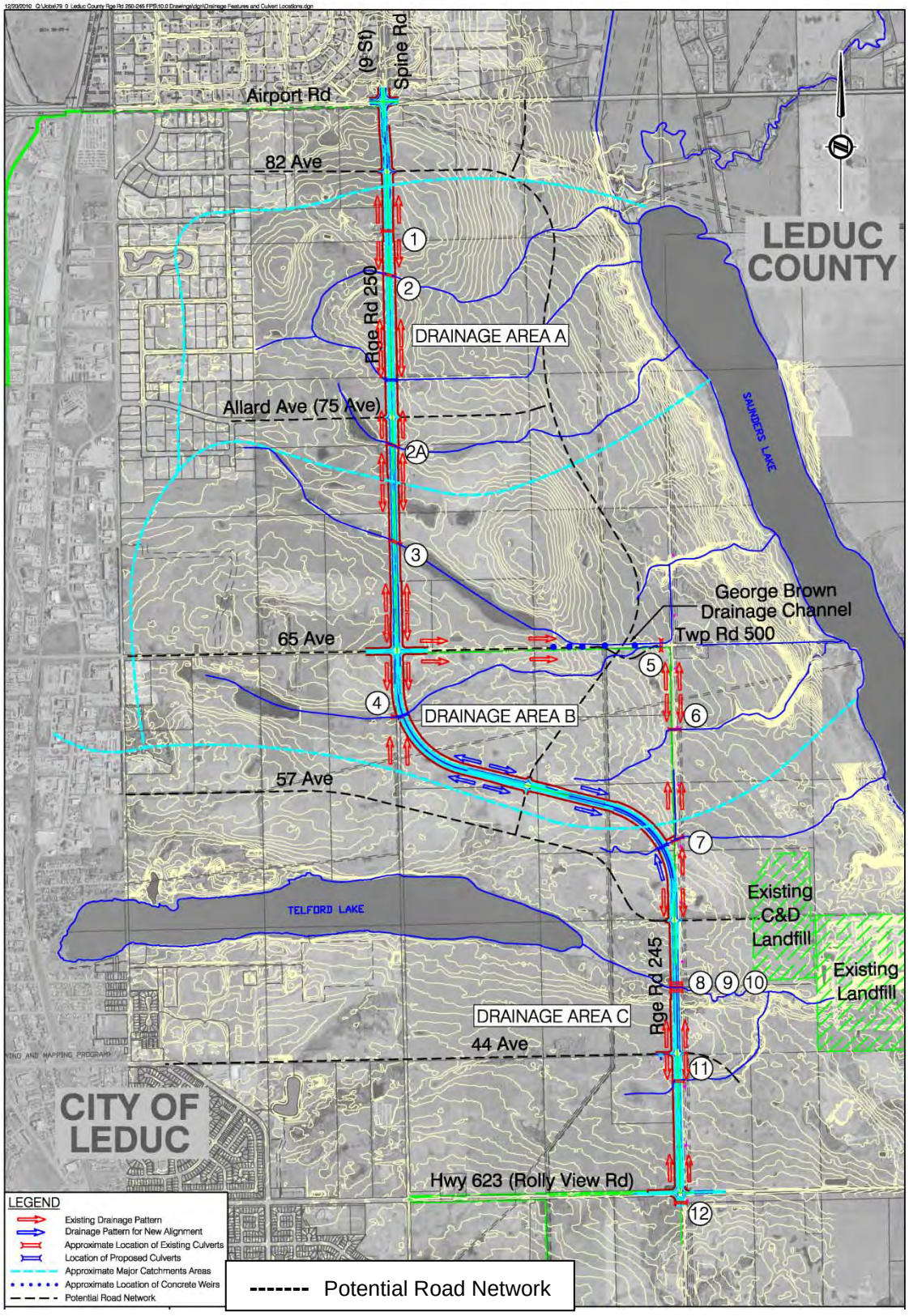
All centre line culverts appear to allow for natural drainage patterns of the small creeks that flow within Drainage Areas A, B and C. Some of these small creeks appear to be seasonally flowing and do not appear to have permanent flow. It was noted during the site visit that the intersection of Range Road 250 and Township Road 500 and the intersection of Range Road 245 and Township Road 500 could benefit from additional culvert placement to ensure there is minimal roadway flooding and erosion. This was based on observations during the site visit of erosion within the ditch areas at these intersections.

Disturbance of soils and vegetation on the upstream side of Telford Creek which crosses Range Road 245 indicated maintenance to three culverts (8, 9, and 10) located at the crossing in Drainage Area C that is responsible for connecting Telford Lake to Saunders Lake. The reason for three culverts was undetermined; however, it appears that this drainage pathway may have seasonally high water flow between these lakes and the additional culverts provide extra capacity.

Fourteen entrance and approach culverts were identified along the study area; two culverts within Drainage Area A, four culverts within Drainage Area B, and six culverts within Drainage Area C. All approach culverts were located under access roads to houses or access roads to adjacent farmland. The condition of these approach culverts was briefly inspected to ensure that unimpeded drainage was occurring alongside the roadways. Approach culverts were typically oriented parallel to the roadways and provide flow pathways for water flowing in roadside ditches prior to entering a cross-culvert. Most approach culverts alongside the roadways were in good condition; however, some were partially overgrown by vegetation in the ditch. Proper maintenance of these culverts should be routinely conducted to ensure proper drainage along the road. There were approximately two approach roadways that did not have culverts crossing below them; these access roadways have potential to disrupt roadside flow within the ditch areas although ditch flow will overtop these access ways and not flood the road itself.

The Leduc County Engineering Office did not identify any known flooding problems within the study area when contacted. Alberta Environment (AENV) does not have floodplain mapping of the area and no historical flooding events for this area have been recorded.

Figure 5-2: Drainage Features and Culvert Locations



5.2.5 Additional Drainage Features

In addition to culvert placement for local drainage purposes, there were five concrete weir structures (example on Photo 3, Appendix E) located along the north side of Township Road 500, east of Range Road 250 (see Figure 5-2: Drainage Features and Culvert Locations). These weirs were placed in ditch depths up to 4 m below road surface and 2 to 3 m away from the road. These weirs allow for the temporary detention of storm water during periods of high water flow. In addition, due to the placement of these weirs, there would be minimal roadside erosion due to control of high water flows. Drainage along this ditch is also in an easterly direction towards Saunders Lake.

A report outlining the condition of these weirs was reviewed and primarily focused on the integrity of the concrete structures (Sameng Inc., 2009). The weirs were constructed in 1966 and 1967 and no operational issues were noted over the years. They were built to address channel erosion and localized flooding on adjacent lands and downstream.

The conclusions of the study were that most of the weirs require extensive rehabilitation or replacement and that they should remain in place.

A request for water quality data for the City of Leduc and Leduc County confirmed that no specific data was available for this study area.

5.2.6 Topography

A review of the topography of the study area located along the east boundry of the City of Leduc (NTS 83H/5 and 83H/6) identifies flat areas mixed with low elevation undulating hills of the prairies. The local topography slopes towards Saunders Lake and was confirmed during the site visit on November 12, 2008. The regional landscape gently slopes to the north towards the North Saskatchewan River through the Blackmud Creek system.

Low lying ponded areas do exist north of Telford Lake and west of Saunders Lake. There are two creeks that appear to originate west of Range Road 250 and flow into Clearwater Creek (Drainage Area A). In addition, there are several creeks that appear to form east of Range Road 250 and flow into Saunders Lake (Drainage Area B). Drainage Area C that consists of Telford Lake outflows and creeks that flow into the southern portion of Saunders Lake. These creeks originate west of Range Road 245.

Roadside ditches in many locations along the roadways are greater than 1.5 m depth from the road surface.

Figure 5-2 shows existing (predevelopment) versus proposed flow paths.

5.2.7 Wetland Drainage

An aerial photograph and topographic map review of the project area identified several low lying wetland and wooded areas along the west side of Range Roads 250 and 245 (Photo 2, Appendix E). The small creeks identified were typically treed and accompanied by low lying vegetation. Several culverts identified during the site visit appear to act as equalizing culverts to allow for the natural drainage patterns of the landscape. Beaver activity is often

associated with wetlands and can lead to blockages of culverts. The County office did not identify any beaver activity in this section of roadway and as a result, there are no maintenance issues with regards to this potential concern. Proper maintenance of culvert inlets and outlets will ensure that excessive ponding does not occur due to accumulated ice and/or debris. In addition, proper ditch depths at the downstream end of the culvert will allow for increased flow. The current culverts along the roadway appear to be effectively assisting the natural drainage of the area.

5.2.8 Proposed Modifications

The roadway right-of-way will also be widened to allow for a 6-lane road under ultimate conditions. Addressing drainage concerns will require matching culverts for the extension of drainage courses currently flowing through culverts 4, 6, and 7. This plan will avoid the location of five flow control weirs along the north side ditch of Township Road 500. A recent report has indicated that repair or replacement of these weirs is required but they are expected to remain in their current locations. The recent weir assessment report (Sameng, Inc., January 2009) has a detailed plan showing the station locations of these weirs along Township Road 500.

5.2.9 Leduc Business Park – Stage 6

Stage 6 of the Leduc Business Park is located along the west side of Range Road 250, extending from station 15+400 (south of Allard Avenue) to approximately station 16+900. The Overall Grading Plan for Stage 6 of the Leduc Business Park, prepared for the developer by Stantec, recommended a specific profile for design of the future Spine Road along the affected section of Range Road 250. The County/City approved incorporating Stantec's recommended profile into the Spine Road design.

The grading plan for Stage 6 of the Leduc Business Park also recommended a single specific discharge point under Range Road 250 at approximately station 16+450. The developer is responsible for assessing the requirements downstream to ensure that the conveyance system, and water quality, are sufficient and suitable for the consolidation of flows, including any regulatory and permitting requirements.

5.2.10 Conclusions and Recommendations

Current culvert sizes below the roadways appear to be effectively draining the road surfaces; however, these culverts must be maintained regularly to prevent blockages. Several culverts were noted to have minor damage or overgrowth by vegetation which will require maintenance to ensure equalization of flow. In addition, the current culvert sizes under the access roads and ditch depths alongside the roadways appear to be effectively draining the roadside areas. These culverts are also critical to maintaining proper roadside drainage and direct water to the appropriate receiving waterbody. Careful consideration of existing wetland and creek areas should be conducted to allow for water equalization under the road surface to mitigate potential roadway flooding.

Proposed re-alignment of Range Roads 245 and 250 will not affect the drainage system as long as matching culverts are installed to connect flows from culverts 4, 6, and 7 noted on Figure 2. The locations of existing weirs along the north side of Township Road 500 will be avoided with the recommended re-alignment and provide continuity of flows along the associated channel.

The recommended re-alignment has also been sized to convert the road from the present 2-lane gravelled roadway to 6-lane paved road ultimately. While the road paving will generate additional runoff locally, it is not expected to impact the size of culvert crossings or impact downstream flooding/erosion due to the relatively large size of each respective drainage basin compared to road area. Therefore, detention storage of runoff from the road is not required. It will be important to establish and maintain vegetative cover on the embankment slopes to prevent erosion from sheet flow off the roadway. From a water quality perspective, sediment levels in runoff and dust will be reduced once paving occurs. As the road is widened and paved, it will also generate more traffic. This may result in additional attention to de-icing which could increase salt levels in runoff. This will need to be managed effectively by the County/City. In summary, no measurable impacts on water quantity or quality are anticipated due to the proposed roadway improvements. The following mitigation measures should be incorporated into the detailed design and construction environmental protection plan (EPP) to mitigate potential impacts:

- Silt control fencing along the construction limits
- Siltation ponds adjacent to the Culvert 8 watercourse to settle out sediment in runoff.

These facilities could be left in place following construction:

- Establishment and maintenance of healthy vegetative cover along road embankments
- Plan to manage use of de-icing products, particularly salt, as the road is upgraded and traffic increases

The County and City are urged to ensure that the developer of the Leduc Business Park, Stage 6 (and other future developers along the corridor) assesses the downstream requirements to ensure that the conveyance systems, and associated water quality, is sufficient and suitable for the consolidation of flows, including any regulatory and permitting requirements.

5.3 Environmental Resources Overview

5.3.1 Introduction

EBA Engineering Consultants Ltd. was retained by McElhanney Consulting Services Ltd. to complete an Environmental Overview for the study area affected by the proposed roadway alignment. This Environmental Overview is used at the beginning stages of conceptual design to ensure negative environmental impacts are avoided or minimized by describing existing conditions within the study area using air photos and field surveys. Future development roads are not included in this assessment.

The objectives of this Environmental Overview are to:

- Identify and describe existing environmental resources using aerial photographs, field surveys and historical database searches;
- Recognize and evaluate potential impacts to the environment, if any;
- Recommend avoidance and/or mitigation strategies and/or measures to minimize environmental resource impacts; and
- Assess current drainage conditions and potential drainage concerns.

5.3.2 Methods

Identification of vegetation, wetlands and wildlife habitat resources was completed in two stages: desktop review and field survey. For the desktop review, our search included the following maps and databases:

- Alberta Natural Heritage Information Centre (ANHIC 2008): Rare plant and wildlife records from the study area and surrounding townships;
- National Topographic Survey (NTS) maps;
- Alberta Land Management Wildlife Referral Map, Areas 3 and 4 of the Southwest Region (Alberta Sustainable Resource Development(ASRD), 2005);
- Alberta Code of Practice for Watercourse Crossing Map, Red Deer Management Area (Alberta Environment 2000a);
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC) – Species assessed by COSEWIC for protection under SARA (Species at Risk Public Registry 2008);
- Map of Schedule 1 Species at Risk – Presence of Schedule 1 SARA species (Environment Canada 2007);
- The 2005 General Status of Alberta Wild Species – Species assessed by Fish and Wildlife for protection under the Wildlife Act (ASRD 2006);
- Species Currently Listed under the Wildlife Act and New Species Assessed by the

ESCC - Species protected under Wildlife Act (ASRD 2007); and

- Alberta AGRASID Soil Viewer Database. (Alberta Soil Information Centre 2001).

Stereo air photo interpretation was used to identify drainage patterns, vegetation communities, potential wildlife habitat, wildlife corridors, and wetlands. The air photos reviewed were taken May, 2003 at a scale of 1:20,000. Accessible landscape units were surveyed on October 1, 2008 to confirm desktop findings. Information collected during the field surveys included vegetation and wildlife occurrence, drainage patterns and habitat identification.

Valued Ecosystem Component (VEC) mapping was completed to identify natural landscape patches, which were evaluated and described as containing habitat of high, moderate, or low environmental significance (See Figure 5-3: VEC Polygons and Table 5-3: VEC Polygon Characteristics for Study Area). These evaluations are specific to the study area and are based on rarity within the landscape, connectivity, and relative size. For example, Telford Creek is assigned a high level of value due to its role in providing connectivity between Telford and Saunders lakes, refuge for fish and wildlife, and the wide variety of native plant species identified growing in/near the watercourse. Areas assigned a low value are generally small, isolated, and fragmented. VECs with high environmental value are areas where avoidance is recommended. Evidence of wildlife observed during the field survey is included in the VEC assessment.

Identification of key drainage areas, crossing locations, recharge areas and wetlands during the desktop phase was verified through observations during the field survey. In particular, the locations of major drainages and associated culvert sizes with flow conditions were noted. See Section 5.2 Stormwater / Drainage for details.

5.3.3 Existing Conditions

Climate - The study area lies within the Central Parkland Natural Subregion (herein referred to Central Parkland subregion), a transitional region between warm, dry grasslands to the south and cool, wet boreal forests to the north and west. This region has a mean monthly precipitation of 441 mm, most of which falls during the month of July, and a mean monthly temperature of 2.3^{o}C. A long, warm growing season and adequate amounts of precipitation create favorable conditions for the development of agriculture within this region (Natural Regions Committee 2006).

Land Uses - The study area is located in the City of Leduc and Leduc County, an area dominated by agriculture. Secondary land uses include residential, commercial, natural (William F. Lede Regional Park - Telford Lake) and industrial. The majority of these secondary land uses are located within the Nisku area and the City of Leduc. Properties within the study area are largely agricultural and residential. Generally, most land use within the study area, such as agriculture, create little environmental concern due to minimal impacts upon the environment. However, some landuses could pose a higher environmental risk based on the potential for soil, surface water, and groundwater

contamination. Other than a pipe line riser located south of Township Road 500, oil and gas related facilities are generally absent from the study area.

Soils and Landforms - Soils within the Central Parkland subregion were conducive to cultivation and hence, the predominant agricultural landscape. Orthic Black Chernozems are typically found under grasslands and open woodlands, while forested areas are common on Orthic Dark Gray Chernozems and Dark Gray Luvisols. Humic and Orthic Gleysols are the most common soil types associated with wetlands. Soils within the immediate study area are primarily black solodized solonetzic soils, of the Kavanagh series. Chernozemic soils are also common (Alberta Soil Information Centre 2001).

Dominant Plants and Plant Communities - Agricultural plant communities dominate the study area. These agronomic communities vary each year and are of low environmental value. As such, this report will focus on native plant communities within the study area.

Aspen forests are common in moist northern areas of the subregion, while drier, southern aspects are dominated by grassland communities. The typical forest community within the Central Parkland is composed of aspen and balsam poplar (*Populus tremoides, Populus balsamifera,* respectively*)* with a variable understory consisting commonly of rose (*Rosa acicularis)*, wild sasparilla (*Aralia nudicalis)* and beaked hazelnut (*Corylus cornuta).* Wetlands within the Central Parkland subregion are primarily cattail (*Typha latifolia*), sedge (*Carex spp*.) or bulrush (*Scirpus spp*.) marshes, with willow (*Salix spp*.) shrublands commonly occurring (Natural Regions Committee 2006).

Field surveys conducted on October 1, 2008 confirmed regional vegetation types within the area. Vegetation plots within residual aspen and poplar provided evidence of a typical aspen, rose, tall forb community. The Telford Creek riparian area was also sampled. Due to the increase of moisture near the creek, vegetation was dominated by willow (*Salix spp*.), sedge (*Carex spp*.) and cattail (*Typha latifolia*). For a complete listing of vegetation observed during the field survey see Table 5-4: List of Vegetation Observed in the Study Area.

Wildlife - Characteristic and endemic species of the Central Parkland subregion vary in distribution based upon proximity to northern forested areas, southern grassland areas and wetlands. Species such as the upland sandpiper (*Bartramia longicauda)* and Baird's sparrow (*Ammodramus bairdii)* are common in southern grassland areas while the boreal forest species such as broad-winged hawk (*Buteo platypterus*) and rose-breasted grosbeak (*Pheucticus ludovicianus)* are more common in the north. Forested areas provide suitable habitat for red-eyed vireo (*Vireo olivaceus*), red-tailed hawk (*Buteo jamaicensis)*, least flycatcher (*Empidonax minimus)*, Baltimore oriole (*Icterus galbula*), yellow warbler (*Dendroica petechia*), woodchuck (*Marmota monax*), white-tailed deer (*Odocoileus virginianus*), American porcupine (*Erethizon dorsatum*), northern pocket-gopher *(Thomomys talpoides*) and snowshoe hare (*Lepus americanus*). Wetlands within the Central Parkland contain significant populations of birds and amphibians (Alberta Heritage Community 2008).

Field surveys conducted in October found moderate evidence of wildlife utilization; evidence of whitetail deer (*Odocoileus virginianus*), and coyote (*Canis latrans*) was observed near woodlots, along with Canada goose (*Branta Canadensis)* and other waterfowl species utilizing Telford Lake and the surrounding agricultural landscape. Highly fragmented habitat types in the study area create conditions favourable for species like whitetail deer, which are adapted for survival in such areas. This fragmentation, however, limits the habitat suitability for many typical aspen parkland species.

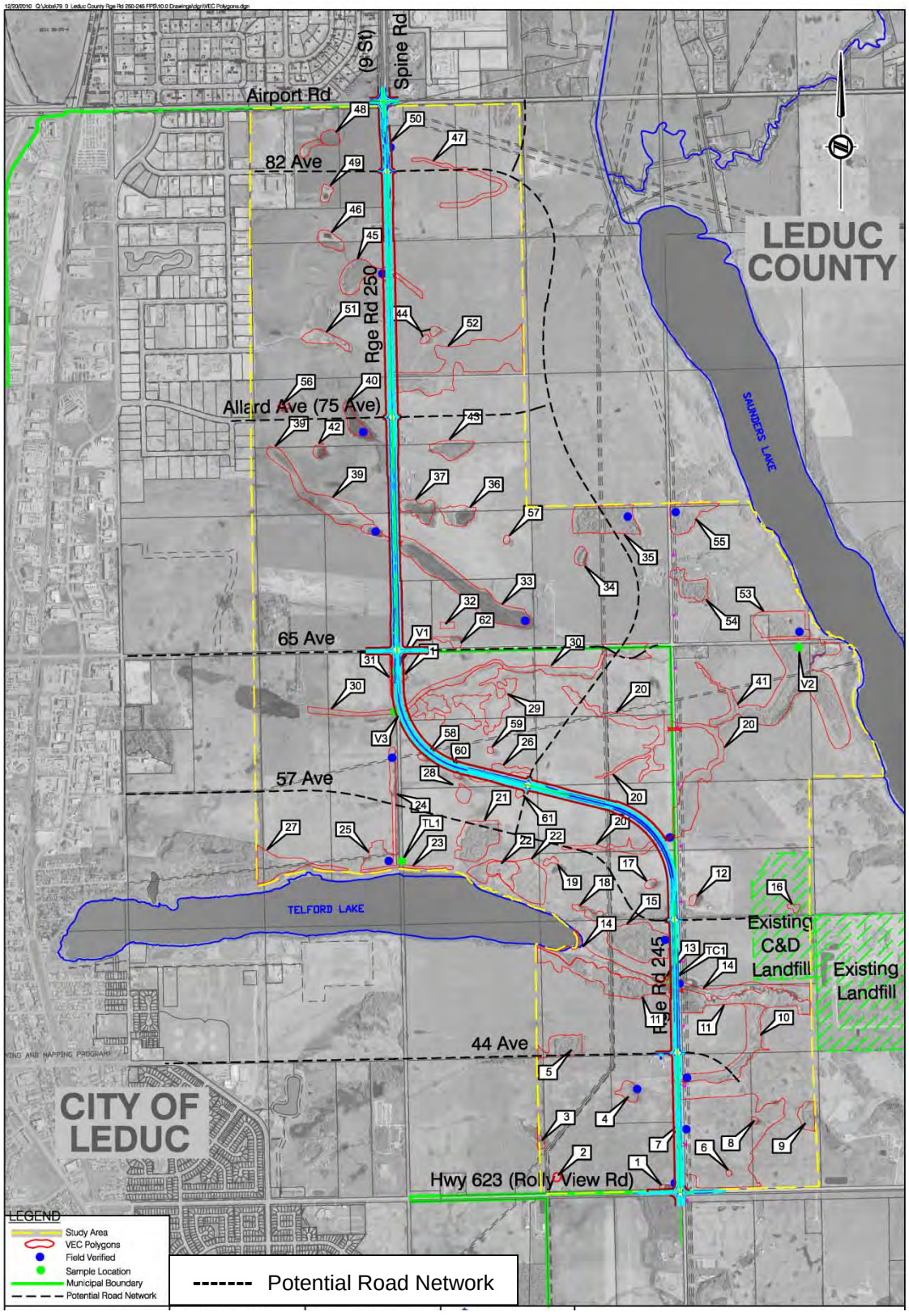
Fish and Aquatic Resources - Both Telford and Saunders Lakes, and Telford Creek connecting them, are potential fish bearing waterbodies. Although Telford Creek was dry at the time of field review, it is expected to potentially hold up to 50 cm (depth) of water during spring-runoff and wet periods during the year. All fish bearing or potentially fish bearing waterbodies are sensitive to human disturbance and are considered to have high environmental value. Literature concerning species composition for the above mentioned waterbodies is lacking, however, due to the proximity and connectivity to the North Saskatchewan River, any fish species commonly found within this drainage basin could potentially exist within the study area. Based on information on Telford and Saunders Lakes, fish are likely to be present and a possible species list is provided in Table 5-5: Fish Species that Occur or Potentially Occur in the Study Area.

Additional waterbodies within the study area include various wetlands and dugouts. These aquatic systems are not known to support fish populations, but are considered ecologically important and enhance local biodiversity. Natural wetland destruction or alteration will require approval and potential compensation from Alberta Environment as per the Water Act (Government of Alberta, 2009) and the Provincial Wetland Restoration/Compensation Guide (Alberta Environment, 2007)

Stormwater Drainage - Within the study area, drainage ditches have relatively gentle slopes and generally drain into tributaries that flow in an easterly direction towards Saunders Lake. Watercourses within the area pass through numerous culvert crossings along each road.

A culvert inventory conducted on November 12, 2008 identified 12 centerline culverts. Most culverts were in good condition; however some of these culverts had visible wear and minor corrosion damage. Partial blockage due to debris and vegetation growth was also identified. A complete report and list of culvert assessments can be found within Stormwater / Drainage .

Figure 5-3: VEC Polygons



5.3.4 Potential Impacts and Mitigation

Potential environmental impacts were identified by evaluating the existing environmental conditions in relation to project components, such as project footprint and expected project activities during construction and operation. Areas that may require further study are identified as well as general mitigation strategies.

Soils and Landforms - Based on available literature and a preliminary site assessment, the proposed alignment creates some risk to local soils without adherence to mitigative measures discussed below.

Direct impacts to soils will occur as a result of the proposed development. Soil resources may be moderately impacted by the proposed development during construction and possibly infrequently during operation and the life of the development. Impacts during construction include potential loss of soils at the construction zone and borrow pits (if required), soil admixing, soil compaction, and soil contamination from equipment operation, maintenance, and re-fuelling. During the operation phase, contaminants (including road salts) have the potential to negatively impact soils in ditches. The majority of soil impacts from the construction and operation of the proposed development can be minimized by using best management practices and minimizing the footprint, wherever possible. Prior to construction, a topsoil assessment should be conducted to identify existing soil conditions and determine appropriate soil handling procedures. All topsoil must be salvaged, stockpiled during construction, and redistributed within the right-of-way.

In addition, all topsoil and subsoil from borrow pits must also be salvaged, and practices to conserve soil and restore borrow pits must be followed. To minimize soil compaction, construction activities during wet soil conditions should be avoided.

Surface Drainage - Surface drainage may also be impacted by the direct loss of wetlands. To mitigate impacts, avoid direct loss of wetlands and maintain natural drainage patterns. Compensation/mitigation in the form of reconstructed wetlands and/or wetland restoration will be required if wetlands are destroyed or altered as per the Provincial Wetland Restoration Compensation Guide.

Plants and Plant Communities - Impacts to high valued VECs will likely require regulatory approval and avoidance is recommended. VECs with moderate environmental value may require regulatory approval and mitigation. Low ranked VEC areas can generally be developed using best management practices.

Agricultural land dominates the study area. These plant communities vary each year and are considered to be low value. Direct loss of agricultural land is considered long-term with low impact. To mitigate direct loss, the project footprint should be minimized.

Impacts to large forested stands should be avoided, if possible. Forested polygons impacted by road development (polygons 7, 10, 31, and 50) should have a rare plant survey completed before clearing. If avoidance is not possible, compensation (i.e., native plant revegetation program) may be required depending on the health of the forest stand,

existing local fragmentation, and uniqueness of the community within the local area. Clearing of forested areas, if required, should be conducted during appropriate seasons, to avoid disruption to any nesting bird species and contravention of the Migratory Bird Convention Act. In contrast, the direct loss of small forest stands and some windrows is considered moderate to low impact. Best management practices to minimize the loss of plants and plant communities within small forest stands should be implemented. The direct loss of plant and plant communities is considered long-term.

The proposed project may also introduce weedy and invasive plant species during the construction and operation phases. The introduction of weedy species is considered a negative impact. To mitigate, best management practices pertaining to weed control should be implemented during construction and operation, as well as the reclamation of borrow pits and other work zones to reduce the likelihood of weedy species establishment.

Wetlands - A number of wetlands exist within the study area. The proposed development may directly and indirectly impact wetland plant communities. All moderate to high valued wetlands should be avoided if possible. If avoidance is not possible, compensation for loss will be required. Lowlands impacted by road development (polygons 1, 10, 13, 14, 20, 26, 30, 33, 45, 58, 60, and 61) should be assessed in the spring before construction to verify their classification and compensation requirements, if required. Low, undisturbed areas also have potential to support rare plants (polygons 1, 10, 13, 14, 20, 26, 30, 33, 45, 58, 60, and 61) and will also require a rare plant survey. The proposed development may also indirectly impact wetlands by altering drainage patterns. Impacts to wetlands are considered moderate to high in magnitude and long-term. If impacts to wetlands cannot be avoided, it is possible that approvals, compensation, and consultation with AENV will be required (Alberta Environment 2007) and (Alberta Environment 2000b).

Wildlife - The proposed development has the potential to directly and indirectly impact wildlife within the study area throughout the construction and operation of the roadway alignment.

Direct habitat loss and mortality due to human-wildlife interaction/collision can occur to those species residing within all habitat types, including agricultural land. Agricultural land will be most impacted by the proposed development. Both large and small forest stands, grasslands (non-native pastures/haylands), and wetlands may also be directly lost due to construction. The loss of wildlife habitat can be mitigated by reducing the project footprint in moderate to high valued areas, as wildlife are directly dependant on specific plant communities for shelter and forage. These losses are considered low to moderate and long-term in duration. If required, based on transportation-collision data, wildlife warning signs can be posted near potential crossings such as the Telford Creek area.

The proposed development may also indirectly impact wildlife by eliciting avoidance behaviour, creating a barrier to wildlife movement, and altering habitat quality from the addition of road salts and sand. Wildlife may be disturbed by human activities during construction and operation and subsequently may avoid the area for the life of the proposed

development. Based on the existing level of habitat disturbance and human activities currently in the area, the magnitude of this impact is considered low. Mitigation is recommended around Telford Creek, which may serve as a wildlife corridor, because of the water course and the vegetated buffer surrounding it.

The proposed development may also create a barrier to wildlife movements, particularly for amphibians and small mammals. Since the proposed development is located primarily on agricultural land and in an area which already includes a roadway system, the additional impact to wildlife movement is considered minimal.

Decreases in amphibian habitat quality due to road salt and sand entering ditches and other subsequent aquatic environments may occur and lead to mortality at all life stages, including egg masses. Roadway maintenance programs, including road salt and sanding practices should be monitored and kept to a minimum near dugouts, wetlands, and riparian areas. Indirect impacts created by changes in habitat quality are considered long-term.

Fish and Aquatics - Fish and aquatic systems have the potential to be directly and indirectly impacted by the proposed alignment, depending upon water crossing design. Direct and indirect impacts could include habitat loss, alteration, and/or disruption, fish mortality, as well as barriers to fish migration.

Direct and indirect habitat loss of fish bearing waterbodies (Telford Creek, Telford Lake and Saunders Lake) can occur during both construction and operation phases of the roadway, and are considered short, long-term and highly significant. Telford Creek serves as a crucial link between Telford and Saunders lakes and provides a potential pathway for fish migration. Any loss in connectivity between the two waterbodies is considered to be long-term and highly significant. A Harmful Alteration, Disruption or Destruction (HADD) authorization from the Department of Fisheries and Oceans (DFO) for new watercourse crossings may be required along with further studies and consultation with DFO. A fish and fish habitat assessment in polygons 13 and 14 will be required before construction. The Department of Fisheries and Oceans have not been contacted for input on federal regulatory requirements at this time. Consultation with DFO is recommended prior to construction during the early planning stages.

Biofiltration swales should be constructed to protect all aquatic systems that receive runoff from the realigned roadway. This would reduce the risk of highway contaminants (such as sand, de-icing salt, sediments and other transported contaminants) from entering into the aquatic systems. Implementation of best management practices during the construction phase can eliminate the risk of fish mortality, barriers to fish migration and avoid deleterious substances (including silt) from entering or impacting the tributaries.

Drainage - The proposed roadway holds the potential to impact current water courses by altering or blocking flow patterns. To prevent impacts, culverts of appropriate size and alignment must be installed to eliminate future flow disruption. See Appendix A for a more detailed overview on roadway drainage.

5.3.5 Conclusions and Recommendations

Development of the proposed road alignment has the potential to impact soils, vegetation, wetlands, wildlife and fish habitats within the study area. Implementing the strategies identified in this report will reduce negative impacts to the environment.

Mitigation strategies and recommended actions include:

1. Conduct topsoil assessments to identify existing soil conditions and determine appropriate soil handling procedures.
2. Salvage and stockpile all topsoil from work areas to be re-distributed upon project completion.
3. Avoid construction activities during wet soil conditions to minimize soil compaction.
4. Avoid direct loss or fragmentation of intact, mature forested stands.
5. Implement invasive/weed vegetation control methods during construction and operation.
6. In general, all high and moderate valued wetlands should be avoided. If impacts to wetlands cannot be avoided, consultation and possible approvals under the Public Lands and or Alberta Water Act may be required.
7. Impacts to wildlife are directly related to habitat loss, and therefore procedures to preserve plant communities and wetlands will also protect wildlife habitat. Wildlife warning signs should be erected in areas with high animal collision risk.
8. Roadway maintenance programs near dugouts, wetlands and riparian areas, including road salt and sanding practices should be reduced if possible as they may have negative effects on area amphibian populations.
9. Impacts to fish and aquatic resources from habitat loss, alteration, and disruption must be avoided. Further study may be required, along with a HADD authorization and consultation with DFO.
10. The implementation of biofiltration swales to reduce the risk of roadway contaminants (such as sand, de-icing salt, sediments and other transported contaminants) from entering (both directly and indirectly) into the aquatic systems is recommended.
11. Current culvert sizes below the roadways appear to be effectively draining the road surfaces; however these culverts, and any culverts installed during the construction of this project, must be maintained regularly to prevent blockages. Careful consideration of existing wetland and creek areas should be conducted to allow for water equalization under the road surface to mitigate potential roadway flooding. The proposed re-alignment will not affect the drainage system as long as culverts are installed to match existing conditions.
12. Environmental monitoring plans are recommended during construction and to ensure best management practices are followed during the duration of the project.

Environmental Resource Tables

Table 5-3: VEC Polygon Characteristics for Study Area

Polygon #	Topo-graphy	Field Verified ?	Value	Dominant Cover	Vegetation Type	Comments
1	Lowland	Yes	Low	Water	N/A	Dugout
2	Lowland	-	Moderate	Aquatic	Graminoid	Small Pond / Wetland
3	Lowland	-	Moderate	Forest	Deciduous	Wetland
4	Lowland	Yes	Moderate	Shrub	Deciduous	Low Spot in Ephemeral Draw
5	Upland	-	Moderate	Forest	Deciduous	Residual Forested Patch. Intact.
6	Lowland	-	Moderate	Aquatic	Graminoid	Small Pond / Wetland
7	Upland	Yes	Low	Shrub/ Graminoid	Deciduous	Pasture / Scrubland/ Small shrubs / trees
8	Lowland	-	Moderate	Aquatic	Graminoid	Small Pond / Wetland
9	Lowland	-	Moderate	Shrub	Deciduous	Wetland
10	Lowland	Yes	High	Forest	Deciduous	Draw into low creek
11	Lowland	-	High	Forest	Deciduous	Forested area surrounding Telford Creek
12	Lowland	-	Low	Water	N/A	Vegetated Dugout
13	Lowland	-	Moderate	Aquatic	Graminoid	Dugout near Telford Creek
14	Lowland	Yes	High	Shrub	Deciduous/ Aquatic	Telford Creek banks and channel. Assessment Point TC1
15	Upland	Yes	Moderate	Forest	Deciduous	Sparse, Aspen scrub
16	Lowland	-	Moderate	Shrub	Deciduous	Small Pond / Wetland
17	Lowland	-	Moderate	Shrub	Deciduous/ Aquatic	Small Pond / Wetland
18	Lowland	-	Moderate	Shrub	Deciduous/ Aquatic	Small Pond / Wetland
19	Lowland	-	Moderate	Shrub	Deciduous/ Aquatic	Small Pond / Wetland
20	Lowland	Yes	Low	Shrub/Graminoid	Deciduous	Ephemeral Draw
21	Upland	-	Moderate	Forest	Deciduous	Residual Forested Unit
22	Lowland	-	Low	Shrub	Deciduous	Small Pond / Wetland
23	Lowland	Yes	High	Shrub	Deciduous	Bank of Telford Lake. Assessment point TL1
24	Upland	-	Moderate	Forest	Deciduous	Windrow adjacent to road
25	Upland	-	Moderate	Forest	Deciduous	Young Aspen scrub
26	Lowland	-	Low	Graminoid	-	Seasonably wet draw
27	Upland	-	High	Forest	Deciduous	Forested area bordering Telford Lake
28	Lowland	-	Low	Graminoid	-	Seasonably wet area
29	Lowland	-	Low	Graminoid	-	Seasonably wet area
30	Lowland	Yes	Moderate	Shrub/ Graminoid	Deciduous	Ephemeral Draw. Assessment point V3
31	Upland	Yes	High	Forest	Deciduous	Mature Forested area. Assessment point V1
32	Lowland	-	Low	Water	N/A	Dugout
33	Lowland	Yes	Moderate	Graminoid	-	Seasonably wet low area
34	Lowland	-	Moderate	Shrub	Deciduous	Small pond / low lying area
35	Upland	Yes	High	Forest	Deciduous	Mature Forested area
36	Lowland	-	Moderate	Shrub	Deciduous	Pond / low lying area
37	Lowland	-	Moderate	Shrub	Deciduous	Pond / low lying area
38	Lowland	-	Low	Water	N/A	Dugout in ephemeral low area
39	Lowland	Yes	Low	Graminoid	-	Seasonably wet low area associated with # 33
40	Lowland	Yes	Moderate	Aquatic	Graminoid	Wetland-Typha latifolia

Polygon #	Topo-graphy	Field Verified ?	Value	Dominant Cover	Vegetation Type	Comments
41	Lowland	Yes	High	Forest	Deciduous	Forested Draw. Structural Diversity. Forested Hill Slope. Assessment point V2
42	Lowland	-	Moderate	Graminoid	-	Wetland. Isolated
43	Lowland	-	Low	Shrub	Deciduous	Shrubby area Near Farm Yard
44	Lowland	-	Low	Graminoid	-	Two low spots in field
45	Lowland	Yes	Moderate	Aquatic	Graminoid	Pond / wetand
46	Lowland	-	Moderate	Shrub/ Graminoid	Deciduous	Seasonal wet area. Shrubs on the south side
47	Lowland	-	Low	Graminoid	-	Small wetland
48	Lowland	-	Moderate	Graminoid	-	Draw in field
49	Lowland	-	Moderate	Graminoid	Aquatic	Low Spot in Field, likely Typha spp.
50	Upland	Yes	Low	Shrub	Deciduous	Shrubs/Willows next to road.
51	Lowland	-	Moderate	Aquatic	Graminoid	Low area in Field
52	Upland/ Low land	-	Moderate	Forest/ Shrub	Deciduous	Low area surrounded by deciduous vegetation
53	Upland/ Low land	Yes	Moderate	Forest	Deciduous	Pocket of Deciduous forest with a low, wet area
54	Upland	-	Low	Forest	Deciduous	Pocket of Deciduous forest
55	Upland	Yes	Moderate	Forest	Deciduous	Pocket of Deciduous forest
56	Lowland	-	Moderate	Graminoid	-	Small wetland in field
57	Lowland	-	Low	Graminoid	-	Small low spot in field
58	Lowland	-	Low	Graminoid	-	Small low spot in field
59	Lowland	-	Low	Graminoid	-	Small low spot in field
60	Lowland	-	Low	Graminoid	-	Small low spot in field
61	Lowland	-	Low	Graminoid	-	Small low spot in field
62	Lowland	-	Moderate	Aquatic	Graminoid	Wetland near road

Table 5-4: List of Vegetation Observed in the Study Area

Vegetation Type	Scientific Name	Common Name	V1	V2	V3	TC1	TL1
Trees	*Populus balsamifera*	Balsam poplar	X	X	X	-	-
	Polpulus tremoloides	Trembling aspen	X	X	-	-	X
	Betula papyrifera	Paper Birch	-	X	-	-	-
Shrubs	*Amelanchier alnifolia*	Saskatoon	-	X	-	-	-
	Corylus cornuta	Beaked hazelnut	X	-	-	-	-
	Cornus stolonifera	Red-Osier dogwood	X	X	-	-	-
	Lonicera involucrate	Bracted honeysuckle	X	X	-	-	-
	Prunus virginiana	Choke Cherry	-	-	-	-	X
	Ribes hudsonianum	Northern Black Currant	X	-	-	-	-
	Rosa acicularis	Prickly rose	X	X	-	-	-
	Rubus idaeus	Wild red raspberry	X	X	-	-	-
	Salix spp.	Willow	-	X	X	X	X
	Symphoricarpos albus	Common snowberry	X	X	-	-	-
	Viburnum edule	Low-bush Cranberry	X	-	-	-	-
Forbs	*Aster ciliolatus*	Fringed Aster	X	-	-	-	-
	Cicuta bulbifera	Bulb-Bearing Water Hemlock	-	-	-	X	X
	Cirsium arvense	Canada thistle	X	-	X	X	X
	Cornus Canadensis	Bunchberry	X	-	-	-	-
	Epilobium angustifolium	Fireweed	X	-	-	-	-
	Equisetum pratense	Meadow Horsetail	X	-	-	-	-
	Fragaria virginiana	Wild strawberry	-	X	-	-	-
	Galium boreale	Northern bedstraw	X	-	-	-	-
	Lathyrus ochroleucus	Creamy peavine	X	-	-	-	-
	Mentha arvensis	Wild mint	-	-	-	X	-
	Mertensia paniculata	Tall Blue Lungwort	X	-	-	-	-
	Pyrola spp.	Wintergreen	X	-	-	-	-
	Rubus pubescens	Running raspberry	X	X	-	-	-
	Solidago Canadensis	Canada Goldenrod	X	-	-	-	-
	Tanasetum vulgare	Tansy	X	X	-	-	X
	Thalictrum dasycarpum	Purple meadow rue	X	-	-	-	-
	Vicia Americana	American Vetch	X	-	-	-	-
Graminoid	*Beckmannia syzigachne*	Slough grass-	-	-	X	X	-
	Bromus inermis	Smooth brome	X	X	-	-	-
	Calamagrostis Canadensis	Marsh reed grass	X	X	-	X	X
	Carex aquatilis	Water sedge	-	-	X	X	-
	Eloecharis palustris	Common Spike Rush	-	-	-	X	-
	Phalaris arudinacea	Reed canary grass	-	-	X	-	-
	Phleum pratense	Timothy	-	X	-	-	-
	Sporangium eurycarpum	Giant Burreed	-	-	-	X	X
	Typha latifolia	Common cattail	-	-	-	X	-
Mosses	*Eurhynchium pulchellum*	Common Beaked Moss	X	X	-	-	-
Aquatics	*Lemna spp.*	Duckweed	-	-	-	-	X
	Potamogeton sp.	Pondweed	-	-	-	X	-

Notes: V1 - Aspen Woodlot; V2 - Aspen Woodlot;
V3 - RR 250 Vegetation Assessment Low Area
TC1 - Telford Creek Riparian Area; TL1 - Telford Lake North Shore

Table 5-5: Fish Species that Occur or Potentially Occur in the Study Area

Fish Species	Scientific Name
Lake Chub	*Couesius plumbeus*
Pearl Dace	*Margariscus margarita*
Northern Redbelly Dace	*Phoxinus eos*
Finescale Dace	*Phoxinus neogaeus*
Fathead Minnow	*Pimephales promelas*
Flathead Chub	*Platygobio gracilis*
Longnose Dace	*Rhinichthys cataractae*
Northern Pike	*Esox lucious*
Trout-Perch	*Percopsis omiscomaycus*
Burbot	*Lota lota*
Brook Stickleback	*Culaea inconstans*
Spoonhead Sculpin	*Cottus ricei*

(Royal Alberta Museum 2005)

5.4 Traffic Noise Modelling

5.4.1 Procedure

A preliminary noise model was prepared to assess the impacts of establishing the proposed Spine Road alignment along Range Road 245 on the adjoining residential land-use between Telford Lake and Highway 623. There are no residential areas planned adjacent to the study corridor north of Telford Lake. The City of Edmonton Urban Traffic Noise Policy (C506), 2004 was used as a guideline for this study and a copy of this policy is included in Appendix F for reference. The policy suggests that noise attenuation measures should be undertaken when traffic noise levels in the rear amenity area of residential properties exceeds 60 dBA Leq_{24}. Also, noise levels are to be modeled based on forecasted 20-year traffic volumes.

For this model the traffic volumes from Figure 3-2 of this report where used as a baseline and then factored up by approximately 30%. Therefore a two-way AADT of 16,000 was used to model noise values along the affected section of Range Road 245 from Highway 623 north to 57th Avenue. The projected 2050 Traffic Flow numbers were factored up to account for the potentially high traffic volumes that can be accommodated by the ultimate six lane cross-section of Range Road 245. The traffic was modeled based on the outside lanes of the 6-lane cross-seciton.

The Federal Highway Administration's Traffic Noise Model (Version 1.0) software was used for this study. The ultimate stage cross-section and traffic volumes were input with noise levels measured at 10 points along the roadway offset 40m from the edge of pavement. This 40m offset is estimated to be within the rear amenity area of future residential properties backing onto the roadway.

5.4.2 Model Output

The initial model output calculated noise levels along the corridor ranging from 65.7 to 67.7 dBA Leq. Since these values were above the suggested maximum a second model run assumed a 2m high noise attenuation berm place along both sides of the corridor and centered 18m from the edge of pavement. A 2m berm resulted in noise levels ranging from 61.3 to 63.3 dBA Leq. Since these values were still above the suggested maximum a third model run assumed a 3m high noise attenuation berm. A 3m berm resulted in acceptable noise levels at nine of the ten receivers calculated, ranging from 59.3 to 60.0 dBA Leq and a single receiver calculated a value of 61.7 dBA Leq. The predicted noise level results are summarized in Table 5-6 and the noise model software outputs can be found in Appendix F.

Table 5-6: Predicted Noise Levels

Reciever	Calculated dBA		
	No Barrier	2m Berm	3m Berm
Sta 200W	65.7	61.3	59.3
Sta 450W	65.7	61.3	59.4
Sta 700W	66.5	61.8	60.0
Sta 950W	66.3	61.7	59.9
Sta 1200W	65.7	61.3	59.4
Sta 100E	65.8	61.4	59.5
Sta 350E	67.7	63.3	61.7
Sta 600E	65.9	61.5	59.5
Sta 850E	65.7	61.3	59.3
Sta 1100E	65.8	61.5	59.7

5.4.3 Summary

As a result of this preliminary noise model it is recommended that noise attenuation measures, e.g. a 3m high berm, be included in future residential development plans along this section of the Spine road corridor.

5.5 Right-of-Way Requirements

5.5.1 Saurabh Park Outline Plan

The Saurabh Park Outline Plan, dated March 2006, proposes extending 82 Avenue east to RR 250. The plan showed two road widening parcels or easements along the west side of RR 250. The first is approximately 10m wide, is identified as Road Widening, and appears on both sides of the original range road r/w. The second easement on the west side is approximately 20m wide and is identified as Future Service Road. The existing RR 250 r/w appears to be 20m wide. Not including the service road allowance, the total road allowance width would increase to only 40m. For symmetrical widening, a minimum 20m would be required from both sides of the existing r/w to achieve a 60m wide r/w. However, there is an Alta Link transformer station in the southeast quadrant of the Spine Road/Airport Road intersection that requires that all widening occurs to the west side of the Spine Road affecting the proposed development.

Conclusion:

The existing, or original, range road r/w width is 20m. The ultimate Spine Road cross-section requires a minimum 60m width. This would require either a 20m widening on both sides or a 40m widening on one side.

If there is already a 10m widening on both sides of the original range road allowance, for a 40m total existing width, then an additional 10m widening is required on both sides to achieve an ultimate 60m wide r/w width south of Airport Road.

For the section passing the Alta-Link substation the entire 40m widening will be required on the west side.

5.5.2 Typical Cross-Sections

There are six Typical Cross-Sections, Exhibits 2.1 through 2.6, illustrating the right-of-way requirements and property impacts and the associated Right-of-Way Requirements are shown on Exhibits 3.1 through 3.4.

Typical Cross-Sections show staging, location of existing roadway and the overall implications of the r/w requirements compared to existing proposed development plans along the west side of RR 250 approaching Airport Road.

The plans also show acquisition of a sliver of land where the Spine Road alignment curves north-westerly away from RR245.

The following is noted concerning the Right-of-Way drawings:

(a) R/W requirements are subject to change following completion of future detail design and drainage plans and establishing final profile grades.

(b) Where design cut/fill widths would have exceeded 35m from centreline, a 35m maximum was used. This assumes that the developer will adjust adjoining grades

to match the highway design and mitigate further r/w requirements.

(c) R/W requirements for the northbound right-turn slots along RR 245 encroach into the Altalink easement. This avoids moving the cross-section an additional 4m west, since all widening is to the west already.

(d) The drawings show the estimated location of the AltaLink towers. Where practical, deceleration lanes were shortened to avoid impacting AltaLink towers.

A note on the r/w drawings indicates that: “There will be no acquisition of AltaLink lands.” The design should only require some grading of the back slope into AltaLink lands.

5.6 Cost Estimate

A conceptual order-of-magnitude cost estimate to construct the recommended plan is provided in Table 5-7. The cost estimate extends from Airport Road to Highway 623. An estimate is provided for constructing the entire cross-section and for constructing in three stages, 2 lane, 4 lanes and ultimately achieving 6 lanes. All costs are 2010 dollars. A preliminary right-of-way cost is provided, including a 30% contingency. The right-of-way costs need to be verified.

Table 5-7: Cost Estimate for the Recommended Alternative

No.	Item		Total
Construction - Three Stages			
1	Stage 1 - Initial 2 Lane		$ 15,535,000
2	Stage 2 Twin to Add 2 Lanes - 4 Lanes Total		$ 15,035,000
3	Stage 3 Add 2 Median Lanes - 6 Lanes Total		$ 18,865,000
	Subtotal for Three Stages:		**$ 49,435,000**
	Confidence Factor	1.2	$ 59,322,000
	Contingency	15%	$ 8,898,300
	Engineering and Administration	10%	$ 5,932,200
	Subtotal for Right-of-Way:		**$ 74,152,500**
Right-of-Way (to be confirmed)			
1	Agricultural Land in the City		$ 2,976,000
2	Large Parcel Agricultural Land in the County		$ 225,000
3	Small Parcel Agricultural Land in the County		$ 65,000
4	Additional to acquire Home/Farmstead on Parcel		$ 1,600,000
	Subtotal		$ 4,866,000
	Contingency	30%	$ 1,459,800
	Subtotal for Right-of-Way:		**$ 6,325,800**
Total Construction (3 Stages) plus Right-of-Way			**$ 80,479,000**

See Appendix G for breakdown of the cost estimate.

6 PUBLIC CONSULTATION

Two public open houses were held to convey study findings to the public and affected stakeholders. The first open house was held following initial development of alternatives and included presentation of a preliminary preferred concept. In response to public input at Open House 1, three additional options were developed and a revised preferred concept was presented at Open House 2.

6.1 Open House #1

Date: Thursday, March 5, 2009

Location: Nisku Inn, 1101 – 4th Street, Nisku Alberta

Purpose: To make the public aware of the preferred new roadway alignment for Range Road 245/250 and the associated ultimate arterial roadway standards.

Advertised: The open house was advertised in the Leduc Representative and the Pipestone Flyer in the week preceding the open house. Open house notices were mailed to all potentially affected property owners along the study corridor as registered at Alberta Land Titles.

Venue: An informal open house to provide area residents and businesses the opportunity to view the project information and discuss their interests and concerns with project staff.

4pm to 6pm: Informal venue for potentially affected property owners, invited to this special session by mail.

6pm to 8pm: Informal venue for the general public.

Presented: Details about the roadway function and design requirements; the development of a preliminary preferred plan; and next steps.

Information Package: All attendees were provided with a Project Questionnaire, a small-scale drawing showing the preliminary plan, and the text of the storyboard line.

Attendance: Approximately 32 people attended and signed in at the Open House.

Questionnaires: Respondents were asked to return the questionnaires by March 26, 2009.

A total of 21 questionnaires or responses were left at the open house or returned afterwards, representing a 66% response rate. Three letters were received following the open house.

Question 1: Residence and Workplace - Where do live and/or work?

Location		Live		Work
1	City of Leduc	5	29%	4
2	Leduc County	8	47%	7
3	Nisku	0	0%	2
4	Edmonton	4	24%	4
5	Wetaskiwin	0	0%	0
6	Millet	0	0%	0
7	Beaumont	0	0%	0
8	Other	0	0%	1
	TOTAL:	**17**		**18**

Question 2: Travel Purpose - Why do you travel through the study area? Primarily for:

Purpose		Response
a.	Residence & Personal Travel	11
b.	Employment	3
c.	Farming	9
d.	Business	3
e.	Trucking	1
f.	Other	3
	TOTAL	**30**

Question 3: Open House Session - How did you hear about this session?

Heard it from:		Response
a.	Radio	0
b.	Newspaper Advertisement	4
c.	Television	0
d.	Flyer	0
e.	Community/Newsletter	5
f.	Other	9
g.	Were information displays helpful - YES	15
h.	Were information displays helpful - NO	1
I.	Better understand process due to OH - YES	14
j.	Better understand process due to OH - NO	1
	TOTAL:	**49**

Question 4: Specific Open House Questionnaire Comments and Concerns

Table 6-1: Open House 1 – Key Stakeholder Issues

	Topic	Documented Concern or Interest	Response
1	Alignment	Move the transition from RR 245 to RR 250 south of 65th Avenue.	7
2	None	No concerns documented on questionnaire.	7
3	Timing	Proceed soon, start with 2 lanes paved.	2
4	Landfill	Do not provide access to landfill from RR 245.	2
5	Road Network	How subdivisions will be served by network; retain continuity of 65th Avenue.	2
6	Truck Traffic	Ban truck traffic on gravel road sections.	2
7	R/W Acquisition	Process for r/w acquisition and compensation.	1
8	Future Extension	Noise abatement for future Spine Road extension south of Highway 623.	1
9	Land Use	Leduc 2060 land use plan.	1
10	Road Design	Developer seeking to make road design consistent with subdivision plan.	1
11	Drainage	Affect of land development on area drainage patterns.	1

Summary Open House 1

The largest representation at Open House 1 was from potentially affected property owners in the corridor that had received a study notice. A total of 31 people attended and 21 attendees completed a questionnaire, suggesting that there was substantive concern with the preferred plan. The primary issue was the various implications associated with the location of the transition connecting Range Roads 245 and 250.

6.2 Open House #2

Date: Monday, June 22, 2009

Location: Nisku Inn, 1101 – 4th Street, Nisku Alberta

Purpose: To make the public aware of the recommended new roadway alignment for Range Road 245/250 and the associated ultimate arterial roadway standards.

Advertised: The open house was advertised in the Leduc Representative and the Pipestone Flyer in the week preceding the open house. Open house notices were mailed to all potentially affected property owners along the study corridor as registered at Alberta Land Titles.

Venue: An informal open house to provide area residents and businesses the opportunity to view the project information and discuss their interests and concerns with project staff.

4pm to 6pm: Informal venue for potentially affected property owners, invited to this special session by mail.

6pm to 8pm: Informal venue for the general public.

Presented: Details about the roadway function and design requirements; summary of public input at Open House 1; the development of 4 additional alternatives; evaluation and selection of the recommended plan; and next steps.

Information Package: All attendees were provided with a Project Questionnaire, a small-scale drawing showing the recommended plan, and the text of the storyboard line.

Attendance: Approximately 37 people attended and 33 people signed in at the Open House.

Questionnaires: Respondents were asked to return the questionnaires by July 15, 2008.

A total of 4 questionnaires or responses were left at the open house or returned afterwards, representing only an 11% response rate. Two letters were received following the open house.

Question 1: Residence & Work Place – Where do live and/or work?

Location		Live		Work
1	City of Leduc	0	0%	1
2	Leduc County	5	100%	2
3	Nisku	0	0%	0
4	Edmonton	0	0%	1
5	Wetaskiwin	0	0%	0
6	Millet	0	0%	0
7	Beaumont	0	0%	0
8	Other	0	0%	1
	TOTAL:	5		5

Question 2: Travel Purpose – Why do you travel through the study area?

Purpose		Response
a.	Residence & Personal Travel	3
b.	Employment	2
c.	Farming	3
d.	Business	1
e.	Trucking	0
f.	Other	0
TOTAL:		9

Question 3: Open House Session – How did you hear about this session?

Heard it from:		Response
a.	Newspaper	3
b.	Study Notice	2
c.	Community/Newsletter	1
d.	Other	0
e	Were information displays helpful - YES	4
f	Were information displays helpful - NO	0
g	Better understand process due to OH - YES	0
h	Better understand process due to OH - NO	0
TOTAL:		10

Question 4: Specific Open House Questionnaire Comments and Concerns

Table 6-2: Open House 2 – Key Stakeholder Issues

	Topic	Documented Concern or Interest	Response
1	Good Plan	Approve of Option 3, improvement over Option 1.	4
2	Timeline	Build the road soon.	2
3	Changes to Plan	Suggest additional changes to alignment.	2
4	Access to Landfill	No access to landfill from RR 245.	2

Summary Open House 2

The largest representation at Open House 2 was again from potentially affected property owners in the corridor that had received a study notice. A total of 37 people attended; however, only four people completed a questionnaire, suggesting that attendees were largely supportive of the recommended plan.

The group attending Open House 1 that opposed Option 1 were largely county residents living near Saunders Lake. This resident group was concerned about the proximity of the Spine Road to their properties; but were not actually impacted by right-of-way requirements. The concern from this group appears to have reduced significantly, both in terms of numbers of people and scope of concern.

6.3 Summary

Table 6-3 summarizes open house attendance and the number of concerned attendees. Although total open house attendance increased from 31 to 37, the number of respondents fell from 21 to 4, from 66% to 11% of attendees with concerns.

The primary concern at Open House 1 was the location of the new connection between Range Roads 245 and 250. The recommended plan (Option 3) shown at Open House 2 moved the connection south of 65th Avenue and the plan was viewed much more favourably by the public in the study area.

Table 6-3: Summary of Open House Attendance and Concerns

Open House	Attendance	Respondents	Concerned Attendees
1	31	21	66%
2	37	4	11%

6.4 Conclusions

The recommended Spine Road alignment, Option 3, best responds to the concerns expressed by the study area's stakeholders.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

Project Justification

The decision to prepare plans for the future extension of the Spine Road south from Airport Road to Highway 623 is supported by several factors. These include growth related to the general provincial economy that has already lead to the preparation of development plans south of Airport Road, as well as new area catalysts on the horizon such as the Port Alberta Gateway project and the proposed CPR Intermodal Yard. The continued strength and attractiveness of the Nisku-Leduc industrial area as an economic driver for the region will rely, in part, on maintaining a high level of mobility and access to the developable and well-positioned lands in the study area.

Land Use Pattern

One of the more significant factors affecting study outcomes was the location of the Edmonton International Airport's Noise Exposure Forecast (NEF) 30 contour. The County/City use the NEF 30 contour as a demarcation between future residential land uses on the east and industrial land uses on the west. The proposed Spine Road alignment swings between Range Roads 245 and 250 loosely following the NEF 30 contour, and the alignment is paralleled by a strip of Transitional Mixed (Land) Use providing a buffer between the industrial and residential land uses.

Road Network

The recommended plans show a preliminary and tentative local road network for the study area. This network defines the arterial and collector roads, and associated intersection points along the Spine Road, necessary to connect the City and County and establish mobility across the study corridor[5]. With one exception, the intersections are spaced a minimum 800m apart; however, each individual location should be considered conceptual and subject to the actual land development process.

The Spine Road (9th Street) will be extended south along Range Roads 245 and 250, crossing Township Road 500 (City's 65th Avenue) to Highway 623. The Spine Road also serves as a future boundary or ring road along the City's east side. If a future extension of the Spine Road south of Highway 623 intersected Highway 2A opposite Kavanagh / Glen Park Road, it would also permit accessing Highway 2 via an interchange. This has the potential to divert some traffic from both Highways 2A and 2, particularly for traffic destined for the Nisku Industrial Park, and to improve redundancy for the highway network approaching the Capital Region.

[5] The road network in the County was largely based on the *Saunders Lake ASP*.

Staging

The proposed roadway cross-section will ultimately provide for six basic traffic lanes, three in each direction, within a 60m to 70m wide right-of-way. A raised median between the traffic lanes will accommodate left turn bays at the intersections. Staging would comprise 2, 4 and ultimately 6 paved lanes, retaining a 6m wide median for the turn bays. Actual timing would be based on future levels of land development activity and growth in traffic volumes.

Bridge Planning Assessments

The potential bridge sites affecting the recommended alignment were examined. It was determined that none of these sites currently have bridge sized structures, and that none of the sites require a bridge sized structure. All crossings are drainage related.

Stormwater

A review of the drainage and stormwater implications posed by the new roadway did not identify any significant issues. All existing drainage patterns are maintained. The existing George Brown drainage channel, flowing east along the north ditch of Township Road 500, is not affected by the new roadway plan.

The Spine Road cross-section uses a raised median, which directs all runoff to the outside ditch lines. Underground storm drainage is not required except through areas of super-elevation where catch basin leads are required to drain the high side of the median.

Environmental Resources

Development of the proposed road alignment has the potential to impact soils, vegetation, wetlands, wildlife and fish habitats within the study area. Implementing the strategies identified in this report will reduce negative impacts to the environment. Mitigation strategies and recommended actions are included.

Leduc & District Landfill

Present access to the Leduc & District Landfill site is provided off of Range Road 244 while Range Road 245 is only gravel surfaced. Future access to the expanded landfill site could be provided off of Range Road 245 following upgrading to the proposed roadway standards. The additional access would improve landfill operations and reduce costs for the operator and users; as well as provide access to developable lands to the west, opposite the landfill.

Public Input

The primary concerns identified through the public consultation process were all associated with the location of the transition from Range Road 245 to 250:

a. Proximity of roadway alignment to rural residential lands near Saunders Lake.

Final alignment reduces proximity to these residential lands as much as possible.

b. Impact on the George Brown Drainage Channel and area drainage patterns.

   Final plan minimizes impacts to the drainage channel and associated drainage patterns.

c. Preference for proximity of the new road alignment to the Edmonton International Airport's Noise Exposure Forecast (NEF) 30; and

d. Loss of continuity in 65th Avenue crossing Range Road 250.

   Final alignment balances both concerns. The NEF 30 contour is followed as closely as possible after the plan avoids disrupting existing 65th Avenue.

7.2 Recommendations

Spine Road Alignment

For the area under study, the Spine Road alignment will follow Range Road 250 south from Airport Road to 65th Avenue (Township Road 500). South of 65th Avenue, the alignment turns in a south-easterly direction, travelling parallel to, and approximately 600m from, the north shore of Telford Lake. East of Telford Lake, the alignment turns in a southerly direction to follow Range Road 245 south to Highway 623.

The Spine Road corridor had already been established by previous studies between the City of Edmonton boundary (41st Avenue South) and Airport Road. The current study establishes the corridor from Airport Road to Highway 623. The final leg of the corridor plan should also be established, extending the corridor south from Highway 623 to Highway 2A. There is merit in considering a connection to Highway 2A opposite Kavanagh/Glen Park Road. This would improve the corridor's appeal by providing access to/from both Highways 2A and 2.

Access Management

To preserve the Spine Road's role as a key north-south arterial east of Leduc, it will be important to maintain two design standards:

1. The minimum 800m intersection spacing is recommended to protect long-term mobility along the Spine Road corridor.
2. Intersections should only be permitted with other arterial roads or with collector roads. There should be no intersections with local roads or direct access to adjoining lands.

Implementation

The corridor and required right-of-way should be protected by incorporating the road plan in all existing and future affected area structure plans.

The County and City should work out a shared plan to construct the roadway in stages, e.g. 2 lanes from Airport Road to 65th Avenue, based on development cost charges and accretion of the required right-of-way.

The County/City should explore opportunities for provincial funding, e.g. resource road, based on the Spine Road corridor's connection with Highways 2 and 2A and the resulting potential to divert some traffic from, and provide a degree of redundancy for, both provincial corridors.

Stormwater Management

The Spine Road corridor is likely to be implemented gradually over many years. As each section is warranted by adjacent development pressures, stormwater management requirements should be incorporated by the development plans. Acquiring and constructing an independent system, would occupy more lands, is likely to be less efficient and is likely to present staging and acquisition challenges for the County/City.

Design Criteria

To achieve high mobility standards along the Spine Road a 90 km/h design speed is recommended, with an 80 km/h posted speed. An ultimate 6-lane, semi-urban, expressway cross-section is recommended to permit staging and preserve options for high long-term capacity. A 60m to 70m right-of-way width is recommended to support the preceding criteria.

7.3 Planning and Design Issues

Design Criteria

There are two design criteria questions to be considered during future design phases that would affect total right-of-way width.

1. The ultimate six-lane cross-section and 90 km/h design speed may require a 1m inside shoulder width. Design speeds of 80 km/h or less do not require an inside shoulder.
2. The 90 km/h design speed may require a 5:1 foreslope. A 4:1 foreslope is commonly used up to an 80 km/h design speed.

Avoiding AltaLink Substation

To minimize impacts, a short section of urban design is used for the northbound lanes passing AltaLink's substation in the south-west quadrant of Airport Road and RR250. The north end of the Spine Road alignment approaching Airport Road will be curved slightly to the west to ensure the AltaLink site is not affected. The Sturgeon Homes site (354TR, Lot A) is affected by this change.

RANGE ROADS 245 and 250
FUNCTIONAL PLANNING STUDY
Leduc County / City of Leduc

PART 2

FINAL APPENDICES

2131 – 00079-0

Prepared for:
Leduc County / City of Leduc

By:
McElhanney Consulting Services Ltd.
138 - 14315 118th Avenue
Edmonton, Alberta
T5L 4S6

December 2010

List of Appendices

A) Meeting Summaries & Correspondence
   - Meeting Summaries
   - Correspondence

B) Presentation to Leduc County and City of Leduc,

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   - Open House 1
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D) Site Photographs
   - Bridge Planning
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A) MEETING SUMMARIES & CORRESPONDENCE

A.1 Meeting Summaries

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Project Initiation Meeting

Date: October 14, 2008, 8:00 am

Location: Leduc County Office, PW&E Services Building

Purpose: To identify the study's information requirements, preliminary issues and other conditions necessary to begin the study.

Attendees:

Leduc County	
Des Myrglod	Manager, Engineering
Khushnud Yousafzai	Development Engineering Coordinator
City of Leduc	
Qumars Fani	Senior Engineering Technician
Tyler Tymchyshyn	Municipal Engineer
McElhanney Consulting Services Ltd.	
Henry Devos	Project Manager

SUMMARY

1. Study Purpose

The study purpose is to prepare plans to extend the Spine Road concept south along Range Road 250/245 and to recommend the staged improvements required to meet immediate and long-term traffic flows.

2. Information Requirements

Current Studies and Plans

- 9th Street (Nisku Spine Road) FPS Report – County.

  ACTION: **County** to supply current copy of report.

- Saunders Lake ASP (2005) – County
- Saunders Lakeview Outline Plan (2006), Scheffer Andrew
- Saunders Lake Outline Plan (2006), UMA/AECOM

  (Above 3 okay as per website.)

- Other ASPs and Land Use Plans.

  ACTION: **City** to supply current plans and reports.

- Leduc 2060 (Growth and IDP) Current Status/Update (2008).

  ACTION: **County** to supply copy of current work in progress.

- Transportation Study Update (2008)

  (City indicated that March 2008 draft is still the current copy.)

- Other Transportation Plans. (City & County have no applicable TIAs.)

> **ACTION**: **County and City** to supply relevant off-site levy studies.

Mapping

- Digital orthophoto mosaic.
- Digital cadastral base for the study corridor.
- Digital elevation model.
- Most recent air photos.

> **ACTION (URGENT)**: **City and County** to forward all four above components. The DEM will include both the model file and the contour file.

Other?

- Known area property owners (City), stakeholders and related study issues (developers, industries and other stakeholders active in the study area).

  City supplied list of property owners.

> **ACTION**: County and City to supply list of developers active in study area. County to supply electronic list of property owners.

- Known constraints or issues affecting roadway planning, technical or political.

  Discussion: County operates the *George Brown Water Licence* affecting stormwater flows along north ditch of Township Road 500, between Range Roads 250 and 245. County is evaluating the existing weir structures, with report expected in approximately 5 weeks. Copy will be forwarded to McElhanney when it becomes available.

  The County anticipates that there may be a geotechnical issue in the northeast quadrant of TR500 and RR250.

  The County anticipates that issues may arise regarding any affects the study may have on LSDs 2 & 7 in SE6, north of TR500.

- Existing traffic data.

  Discussion: The City's Transportation Study Update (Draft) dated March 2008 is still the current version. A final report is expected in the near future, but not yet available.

> **ACTION**: **County** will request output from the Edmonton Regional Traffic Model (Allan Brownlee, City of Edmonton) for intermediate and long-term (3.5M people) horizons. The request will extend from the Outer Regional Ring Road in the north to Kavanagh/Glen Park Road in the South, and from Highway 2 on the west to Highway 814 on the east. Request will include information regarding land use assumptions. Outputs have been expected by end October 2008.

- Municipal and utility contacts for the study area. City has no existing utilities in the study corridor.

> **ACTION: County** will supply contact information for utility agencies operating in the study corridor.

3. Design Criteria

- Roadway Classification?

  As a southerly extension of the Spine Road concept, Range Roads 250/245 will be designated *Arterial*, the highest roadway classification in both the City and County.

- Design Speed?

  The design speed is expected to be 90 km/h, posted at 80 km/h. This will be confirmed by the previous Spine Road report.

- Ultimate 6-lane cross-section?

  The roadway will be planned for four lanes, and protected for ultimately six-laning into the median. As a signal controlled facility, there would be more queuing and congestion at full development, compared with a free-flow high-speed provincial highway of similar cross-section carrying similar volumes. Cross-section design should be consistent with the previous Spine Road report.

- Access Management?

  If this road becomes a major north-south arterial, ultimately playing an important role in the regional road network, there may be an emphasis on mobility, affecting traffic volumes and selection of design standards. The balance between mobility and access will be confirmed by the study process.

4. Traffic

Transportation Study Update 2008 - City

- Exhibit 4.7 – Traffic Volumes for 40,000 Population Horizon
- Exhibit 5.1 – Long Term Road Network, showing intersection locations with Range Road 250/245.
- Exhibit 2.7 – 40,000 Population Distribution, showing from 0-99 in Urban Reserve areas along study corridor.

> **ACTION**: **City** to clarify how the population distribution figures, e.g. 0-99, are defined, e.g. by Traffic Analysis Zone, by quarter section, etc.

- Exhibit 2.12 – 40,000 Employment Distribution, showing 0-99 at south end of study area to 500-599 at north end.

- Exhibit 6.2 – Ten Year Capital Plan, showing upgraded Range Road 250/245 extending south from Airport Road, to Leduc South Ring Road, and west to 50 Street.

Traffic Forecasting:

Traffic forecasting will include the following:

- Growth potential along the immediate study corridor.
- Commuters that will be diverted from City of Leduc, via a south City boundary road, Highway 623 and 65th Avenue (ultimately connected with Highway 2).
- Longer distance through flows that may ultimately originate from the south, i.e. from Highway 2A.
- Traffic counts are proposed at the following locations.
  - Airport Road and Range Road 250
  - Range Road 250 and 65th Avenue/Township Road 500
  - Highway 623 and Range Road 245

5. Public Consultation

- Local awareness? Potential opposition to an extension of the Spine Road?

  There is moderate local awareness that the Spine Road concept will ultimately be extended south along Range Roads 250/245.

- Affected by the southerly extent of the conceptual 'Spine Road' corridor ultimately contemplated by the County/City.

  Large block arrows will be used on the concept plans to indicate that the Spine Road may ultimately extend south of Highway 623 towards Hwy 2A.

- Stakeholders will include affected landowners, businesses, utility owners and Alberta Transportation.

- First stage occurs during the Project Appraisal Phase. The key stakeholders will be identified, alerted to the study process and invited to submit input. Landowners adjacent to the study area will be interviewed to determine local issues and comments.

  Potentially affected property owners will receive an initial contact letter by mail. The letter will be followed up by phone. Property owners to be contacted directly (and added to the stakeholder mailing list) are those that abut the route and those that may be affected by potential route options.

  ACTION: McElhanney will prepare a draft contact letter for County/City review.

- Second stage follows the Development of Preferred Plan phase. An Open House will be held to provide an opportunity for residents and stakeholders in the study area to identify concerns with the proposed upgrades.

- Public will be informed of the open house through a notice placed in the Leduc Representative one and two weeks prior to the open house date. Notices will also be mailed directly to the stakeholders and adjacent land owners along the study corridor.

  The County will also place the notice in the Pipestone Flyer.

- Dialogue with Alberta Transportation, e.g. Highway 623, connection with Highway 2A.
- A stakeholder mailing list will be prepared.

6. Environmental Assessment

- Field assessments begun while season permits
- Environmental sensitivities with proximity to Saunders and Telford Lakes.

  The proposed landfill expansion to the northwest, towards Range Road 245, is still in process and has not received final approvals.

7. Bridge/Culvert Planning

- Field assessment after plans prepared, assuming no great accumulations of snow.

8. Schedule

An updated Gantt chart was distributed with the agenda. All dates were moved forward approximately 2 months to reflect an October 14/08 Project Initiation Meeting date. This is almost a two month long delay.

The following meeting schedule is proposed.

Steering Committee Meeting #1	Tuesday November 25, 2008
Steering Committee Meeting #2	Thursday December 11, 2008
Steering Committee Meeting #3	Wednesday January 14, 2009
Open House	Thursday February 5, 2009
Steering Committee Meeting #4	Tuesday February 17, 2009

ACTION: Steering Committee members are asked to reserve the dates in their calendar.

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Steering Committee Meeting #1

Date:	November 25, 2008, 1:30 pm	
Location:	Leduc County Office, PW&E Services Building	
Purpose:	To identify the study's information requirements, preliminary issues and other conditions necessary to begin the study.	
Attendees:	Leduc County	
	Des Myrglod	Manager, Engineering
	City of Leduc	
	Tyler Tymchyshyn	Municipal Engineer
	McElhanney Consulting Services Ltd.	
	Henry Devos	Project Manager
Copies to:	Leduc County	
	Khushnud Yousafzai	Development Engineering Coordinator
	City of Leduc	
	Qumars Fani	Senior Engineering Technician
	Ron Hanson	Manager, Engineering & Environmental Services

MEETING SUMMARY

1. Action Items from Last Meeting

Current Studies and Plans

- Other ASPs and Land Use Plans.

  ACTION: City to supply current plans and reports. None available – Done.

- Leduc 2060 (Growth and IDP) Current Status/Update (2008).

  ACTION: County to supply copy of current work in progress. Forwarded - Done

- Other Transportation Plans. (City & County have no applicable TIAs.)

  ACTION: **County** and **City** to supply relevant off-site levy studies. Required.

- Known area property owners (City), stakeholders and related study issues (developers, industries and other stakeholders active in the study area).

  ACTION: **County** and **City** to supply list of developers active in study area. Required.

- Known constraints or issues affecting roadway planning, technical or political.

  County operates the *George Brown Water Licence* affecting stormwater flows along north ditch of Township Road 500, between Range Roads 250 and 245. County is evaluating the existing weir structures, with report expected in approximately 5 weeks (December). ACTION: **County** will forward copy to McElhanney as soon as it

becomes available. Required.

- Existing traffic data.

  ACTION: **County** will request output from the Edmonton Regional Traffic Model (Allan Brownlee, City of Edmonton) for intermediate and long-term (3.5M people) horizons. The request will extend from the Outer Regional Ring Road in the north to Kavanagh/Glen Park Road in the South, and from Highway 2 on the west to Highway 814 on the east. Request will include information regarding land use assumptions. Outputs have been expected by end October 2008. Required.

- Municipal and utility contacts for the study area.

  ACTION: **County** will supply contact information for utility agencies operating in the study corridor. Required.

2. Design Criteria

The following design criteria were confirmed:

- Roadway Classification: *Arterial*, the highest roadway classification in City & County.
- Design Speed: 90 km/h, posted at 80 km/h, confirmed by previous Spine Rd report.
- Ultimate 6-lane cross-section: See attached Cross-Section drawing. Cross-section design is consistent with the previous Spine Road report.
- Access Management: This road will become a major north-south arterial, ultimately playing an important role in the regional road network. There may be an emphasis on mobility, affecting traffic volumes and intersection spacing. The balance between mobility and access will be confirmed by the study process. See attached Road Network/Land Use drawing.

  Discussion: The land use designations shown on the Road Network/Land Use drawing will be revised to conform to the Leduc 2060 findings.

ACTION: **County** to confirm width of the mixed-use residential/commercial strip along the east side of Range Roads 250/245. Required.

ACTION: **City** to confirm extension of this mixed-use south to Highway 623. Required.

ACTION: **City** to provide McElhanney copy of TIA for Saurabh Park by Bunt Associates. Required.

ACTION: **County** and **City** to confirm zoning shown on Road Network/Land Use drawing. Required.

3. Traffic

Transportation Study Update 2008 - City

- Exhibit 4.7 – Traffic Volumes for 40,000 Population Horizon
- Exhibit 5.1 – Long Term Road Network, showing intersection locations with Range Road 250/245.

Traffic Forecasting:

Traffic forecasting includes the following:

- Growth potential along the immediate study corridor. See attached Road Network/ Land Use drawing.
- Commuters that will be diverted from City of Leduc, via a south City boundary road, Highway 623 and 65th Avenue (ultimately connected with Highway 2).
- Longer distance through flows that may ultimately originate from the south, i.e. from Highway 2A.
- Traffic counts were performed at the following locations.
  - Airport Road and Range Road 250
  - Range Road 250 and 65th Avenue/Township Road 500
  - Highway 623 and Range Road 245

  ACTION: **McElhanney** to forward copies of traffic count results to County and City. Done.

- See Traffic Forecasts drawing and Trip Generation table. It was noted that these two drawings are still Draft and in the development stage.

  ACTION: **McElhanney** to determine traffic growth rate recorded along Highway 625 and assess comparability for use along Airport Road. Required.

  ACTION: **McElhanney** to assess maximum growth potential and limiting roadway capacities that would probably cap long growth in the network. Required.

  ACTION: **McElhanney** to confirm determination of flows used in the DHV Trip Generation table. Required.

4. Public Consultation

- Local awareness. There is moderate local awareness that the Spine Road concept will ultimately be extended south along Range Roads 250/245. Large block arrows will be used on the concept plans to indicate that the Spine Road may ultimately extend south of Highway 623 towards Hwy 2A.
- Stakeholders will include affected landowners, businesses, utility owners and Alberta

Transportation.

- First Stage occurs during the Project Appraisal Phase. The potentially affected property owners were identified and the Land Ownership drawing prepared (see attached). Property owners added to the stakeholder mailing list are those that abut the route and those that may be affected by potential route options.
- Potentially affected property owners will receive an initial contact letter (see attached) and sketch by mail. The letter and sketch would alert potentially affected property owners. They will be dealt with on a case by case basis if they called, and meet with them if necessary. The sketch will similar to exhibit included in the TOR.
- A second notice will be mailed out with better information, again offering to meet with potentially affected residents who express an interest. If the interest isn't there, we meet them at the open house.
- Third stage follows the Development of Preferred Plan phase. An Open House will be held to provide an opportunity for residents and stakeholders in the study area to identify concerns with the proposed upgrades.
- Public will be informed of the open house through a notice placed in the Leduc Representative one and two weeks prior to the open house date. Notices will also be mailed directly to the stakeholders and adjacent land owners along the study corridor. The County will also place the notice in the Pipestone Flyer.
- Dialogue with Alberta Transportation, e.g. Highway 623, connection with Highway 2A.

  ACTION: **McElhanney** will notify County and City of meeting with Alberta Transportation. Required.

5. Environmental Assessment

See attached status report.

6. Bridge/Culvert Planning

The existing road and potential road realignment areas have been examined both from air photos and from a site visit. Work is still underway; however, the following observations are provided:

- There are no existing bridge file numbers or existing structures that are bridge-sized within the study area. Based on Alberta Transportation criteria, a bridge-sized culvert needs to be 1.5m in diameter or equivalent combined culvert areas.
- There are a number of drainage channels that cross the road alignment, but all are minor in nature. Except for one location being considered more closely, these

channels do not require bridge-sized structures.

- The largest channel within the project limits is located approximately 1km north of Hwy 623/Rollyview Road on RR 245. Currently there are three small culverts (approx 0.9, 0.6, 0.7) carrying flows under the roadway with an equivalent flow area of approximately a 1.3m diameter culvert. We have not yet assessed whether this is adequate flow area or not. The site appears to have been worked on recently, possibly due to debris clogged culvert entrances, and the water may have gone over the road. We are still investigating this location to see if a bridge-sized structure is warranted and will be talking to the County maintenance personnel to determine what information is available about the recent work at the site.
- There is a drainage control system in place to the north side of Twp Rd 500, consisting of concrete weir structures, located to the east of the proposed road realignment. The proposed roadway realignment does not appear to impact the drainage structures, but the new alignment is located adjacent to the upstream drainage path leading to the control structures. This drainage path does not appear to carry sufficient flows to require any bridge sized structures within the project limits (there is a 0.9m diameter culvert where it crosses RR 250), and should be handled as a drainage issue.

The work is still on-going; however we do not anticipate that the remaining work will affect the roadway alignment options. As noted above, there is a possibility of a small bridge sized structure being required along RR 245, but this has not yet been determined. Whether this channel requires a bridge sized crossing or just a drainage crossing should not have an impact on your roadway alignment decisions.

ACTION: **City** will provide design and operation information regarding the stormwater weir outlet on Telford Lake. Required.

ACTION: **City** will provide information regarding the creek flowing immediately north of the existing landfill site. Required.

7. Schedule

Phase 2 Tasks:

- Stakeholder Contacts (from Stage 1)
- Document Project Objectives / Design Criteria
- Preliminary Realignment Alternatives – Single Line
- Quantify Impacts, Costs, Traffic Engineering
- Traffic forecasts refined.

The following meeting schedule is proposed:

- Steering Committee Meeting #2 Wednesday January 14, 2009
- Steering Committee Meeting #3 ~~Wednesday January 21, 2009~~ (TBD)
- Open House ~~Thursday February 12, 2009~~ (TBD)
- Steering Committee Meeting #4 ~~Tuesday February 24, 2009~~ (TBD)

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Steering Committee Meeting #2

Date:	January 14, 2009, 2:00 pm	
Location:	Leduc County Office, PW&E Services Building	
Purpose:	To review draft plan and discuss public consultation process.	
Attendees:	Leduc County	
	Khushnud Yousafzai	Development Engineering Coordinator
	City of Leduc	
	Tyler Tymchyshyn	Municipal Engineer
	Ron Hanson	Manager, Engineering & Environmental Services
	McElhanney Consulting Services Ltd.	
	Henry Devos	Project Manager
Copies to:	Leduc County	
	Des Myrglod	Manager, Engineering
	City of Leduc	
	Qumars Fani	Senior Engineering Technician

MEETING SUMMARY

1. Drawing List

1. Road Network / Land Use
2. Traffic Forecasts
3. Typical Cross-sections
4. Road Alignment
5. Functional Plan & Profile
6. Land Ownership

2. Action Items

See separate sheet.

3. Public Consultation

- First Stage occurred during the Project Appraisal Phase.

  Potentially affected property owners received an initial contact letter (see attached) and sketch by mail. The letter and sketch alerted potentially affected property owners. There have been no calls or emails requesting a meeting or more information.

- Second Stage during Development of Alternative(s).

  A second notice will be mailed out with better information, again offering to meet with potentially affected residents who express an interest. If the interest isn't there, we meet them at the open house.

- Third Stage follows Selection of Preferred Plan.

  An Open House will be held to provide an opportunity for residents and stakeholders in the study area to identify concerns with the proposed upgrades.

  Public will be informed of the open house through a notice placed in the Leduc Representative one and two weeks prior to the open house date. Notices will also be mailed directly to the stakeholders and adjacent land owners along the study corridor. The County will also place the notice in the Pipestone Flyer.

Discussion: The County/City reviewed the list of missing landowner addresses. The County provided a current list of addresses for affected property owners. The City followed up by email with two corrections.

ACTION: McElhanney will again review list of missing addresses.

Open House Advertising

- The Leduc Representative requires the open house advertisements to be in to their office one week in advance of the publication date.
- The City and County will also place the open house ads on their web sites.
- The open house will be held at the Nisku Inn. One venue is acceptable to the City and County.

4. Alberta Transportation

Discussion with Alberta Transportation will involve Highway 623 and potential connection with Highway 2A.

Meeting should take place after tentative plans are prepared.

McElhanney will notify County and City of meeting with Alberta Transportation.

5. Project Objectives / Design Criteria

The following design criteria were confirmed:

- Roadway Classification: *Arterial*, the highest roadway classification in City & County.
- Design Speed: 90 km/h, posted at 80 km/h, confirmed by previous Spine Rd report.
- Ultimate 6-lane cross-section: See Typical Cross-Section drawing. Cross-section design is consistent with the previous Spine Road report.
- The land use designations shown on the Road Network/Land Use drawing were revised to conform to the Leduc 2060 findings.
- Access Management: This road will become a major north-south arterial, ultimately playing an important role in the regional road network. There may be an emphasis on mobility, affecting traffic volumes and intersection spacing. The balance between mobility and access will be confirmed by the study process. See Road Network/Land Use drawing.

6. Traffic Forecasts

See separate report.

- The traffic growth rate recorded along Highway 625 was used for forecasts along Airport Road.
- May still be need to assess maximum growth potential and limiting roadway capacities that would cap long growth in the network.

ACTION: McElhanney emailed copies of the traffic report and table to Khushnud and Tyler.

7. Road Network / Land Use Drawing

Discussion:

- The existing access to the landfill is off of Highway 623. The landfill approval did not permit access off of the gravel surface Range Road 250. RR 250 will ultimately be paved and access into the landfill site off of RR 250 could be reconsidered. It should be possible to maintain the desired minimum 800m intersection spacing along RR250.

  ACTION: The study report will indicate that there is potential for access to the landfill site off of RR250, meeting 800m minimum intersection spacing.

- The land use drawing shows an approximate buffer around the two land fill quarters.

ACTION: The County to check on the specified widths of the land use buffers around the land fill site.

ACTION: The County and City will both confirm the land uses shown on the drawing.

8. Preliminary Alternative

- See Draft Road Alignment and Draft Functional Plan-Profile drawings.
- Alignment matches 9th Street (Spine Road) across Airport Road and is centered along Range Road 250.
- There is potential for a curvi-linear alignment to largely avoid existing homesteads, by widening to east side of existing r/w immediately south of Airport Road and widening to the west of existing r/w north of Twp Rd 500.
- Alignment connects Range Roads 250 to 245, crossing Twp Rd 500 immediately south of the wet area/drainage channel in the northeast quadrant at 65th Avenue and Range Rd 250.
- Alignment widens to west side of Range Road 245 to avoid power transmission line along east side of existing right-of-way.

ACTION: McElhanney emailed the Draft Functional & Profile drawings to Khushnud and Tyler.

9. Saurabh Park Outline Plan

The Saurabh Park Outline Plan is dated March 2006 and proposes extending 82 Avenue east to RR 250. The plan shows two road widening parcels or easements along the west side of RR 250. The first is approximately 10m wide, is identified as Road Widening, and appears on both sides of the original range road r/w. The second easement on the west side is approximately 20m wide and is identified as Future Service Road. The existing RR 250 r/w appears to be 20m wide. Not including the service road allowance, the total road allowance width would increase to only 40m. For symmetrical widening, a minimum 20m would be required from both sides of the existing r/w to achieve a 60m wide r/w.

Conclusion:

The existing, or original, range road r/w width is 20m. The ultimate Spine Road cross-section requires a 60m width. This will require a 20m widening on both sides or a 40m widening on one side.

If there is already a 10m widening on both sides of the original range road allowance, for a 40m total existing width, then an additional 10m widening is required on both sides to

achieve an ultimate 60m wide r/w width south of Airport Road.

10. Schedule

Phase 2 Tasks:

- Second stakeholder contact

  2nd contact would assume that the Road Alignment plan is an acceptable starting point.

Phase 3 Tasks:

- Finalize evaluations and ranking
- Draft road plans – Preferred Alternative
- Prepare open house package
- Steering Committee Meeting #3
- Mail open house notice – Place advertising
- Open House to present preliminary road plans
- Centreline survey
- Quantify impacts, costs:
  - Traffic engineering
  - Environmental
  - Culvert planning
  - Stormwater

The following meetings are proposed:

- Steering Committee Meeting #3 Wednesday February 4, 2009
- Open House Wednesday February 25, 2009

  Minimum 2 weeks (3 weeks)
- Steering Committee Meeting #4 Wednesday March 18, 2009

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Steering Committee Meeting #3

Date:	February 5, 2009, 2:00 pm	
Location:	Leduc County Office, PW&E Services Building	
Purpose:	Final review of draft plan and review of draft open house materials.	
Attendees:	Leduc County	
	Khushnud Yousafzai	Development Engineering Coordinator
	Tom Schwerdtfeger	Planning
	City of Leduc	
	Tyler Tymchyshyn	Municipal Engineer
	McElhanney Consulting Services Ltd.	
	Henry Devos	Project Manager
Copies to:	Leduc County	
	Des Myrglod	Manager, Engineering
	City of Leduc	
	Ron Hanson	Manager, Engineering & Environmental Services
	Qumars Fani	Senior Engineering Technician

MEETING SUMMARY

1. Drawing List

1. Road Network / Land Use (No Change)
2. Traffic Forecasts (No Change)
3. Typical Cross-sections
4. Road Alignment (No Change)
5. Functional Plan & Profile (No Change)
6. Land Ownership (No Change)

2. Landowners

The attached table shows the property owners contacted to date. The colour coding indicates the following:

No Fill	Notices sent out and not returned.
Green	Notices returned, information updated and resent.
Blue	Notices returned, and no updated information found.

Yellow Not enough information found to send a notice.

ACTION: The County and City will have one more look for addresses for landowners marked in Blue or Yellow.

3. Preliminary Alternative

- See Draft Road Alignment and Draft Functional Plan-Profile drawings.
- Alignment matches 9th Street (Spine Road) across Airport Road and is centered along Range Road 250.
- There is potential for a curvi-linear alignment to largely avoid existing homesteads, by widening to east side of existing r/w immediately south of Airport Road and widening to the west of existing r/w north of Twp Rd 500. (Rejected)
- Alignment connects Range Roads 250 to 245, crossing Twp Rd 500 immediately south of the wet area/drainage channel in the northeast quadrant at 65th Avenue and Range Rd 250.
- Alignment widens to west side of Range Road 245 to avoid power transmission line along east side of existing right-of-way.

4. Open House

Public will be informed of the open house through a notice placed in the Leduc Representative one and two weeks prior to the open house date. The open house will be held at the Nisku Inn – Ballroom 3. One venue is acceptable to the City and County. Representatives from the County and City will likely also attend the meeting.

The Leduc Representative requires the open house advertisements to be in to their office one week in advance of the publication date.

ACTION: The County will place the ad in the Leduc Representative and in the Pipestone Flyer. The County will also place the ad on their web site.

ACTION: The City will place the ad on their web site.

ACTION: McElhanney will mail the stakeholder letter directly to the adjacent land owners along the study corridor, inviting them to attend early, from 4 to 6 pm. General Public from 6 to 8 pm.

The Open House storyboard also offers to meet with potentially affected residents who express an interest, at or following the open house.

Open House Venue

Informal venue, no formal presentations.

Provide questionnaire. Draft questionnaire was reviewed and acceptable.

Provide handout of open house material.

Sign-in table at the entrance.

The preliminary Storyboard Line was reviewed and amended. A final version will circulated to the County and City for comment.

5. Action Items

See separate sheet.

ACTION: Tom is going to confirm the setback zones around the landfill to ensure accuracy on the exhibits used at the open house.

6. Schedule

Phase 3 Tasks:

- Place advertising
- Mail open house notice
- Open House to present preliminary road plans
    - Part 1 – Stakeholders - 4 to 6pm
    - Part 2 – General Public – 6 to 8 pm
- Meeting with Alberta Transportation
- Centreline survey
- Quantify impacts, costs:
    - Environmental
    - Culvert planning
    - Stormwater

The following meetings are proposed:

- Open House Thursday March 5, 2009
- Steering Committee Meeting #4 Wednesday March 25, 2009

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Steering Committee Meeting #4

Date: March 27, 2009, 2:00 pm

Location: Leduc County Office, PW&E Services Building

Purpose: To discuss road network Option 2 and to review the Open House results.

Attendees:

Leduc County		
	Khushnud Yousafzai	Development Engineering Coordinator
	Des Mryglod	Manager, Engineering
	Tom Schwerdtfeger	Planner
City of Leduc		
	Ron Hanson	Director of Engineering
	Jennifer Cardiff	Manager, Long Range Planning
McElhanney Consulting Services Ltd.		
	Henry Devos	Project Manager

Copies to:

City of Leduc		
	Qumars Fani	Senior Engineering Technician

MEETING SUMMARY

1. Road Network / Land Use Option 2

Comparison with Option 1

No.	Criteria or Characteristics	Option 1	Option 2
1	Land Use		Preferred municipal plan
2	Horizontal Curves (D.S. 90 km/h – 340m radius)	400m radius	500m radius
3	Intersection Sight Distances		Increased offset from horizontal curves for 57 and 65 Avenues
4	Vertical Alignment		Expected to be less rolling
5	Route Length		300m shorter
6	Proximity to George Brown Drainage Channel		Further away from TR 500 section
6	Proximity to Telford Lake	Further away from the Lake.	
7	Future Landfill Access	Option would better permit future access	
8	County / City Jurisdiction	50 / 50 split	38/62 split
9	Public Input		Preferred

2. Open House Response

1. Residence and Workplace

Where do live and/or work?

Location			Live		Work
1	City of Leduc	a	5	29%	4
2	Leduc County	b	8	47%	7
3	Nisku	c	0	0%	2
4	Edmonton	d	4	24%	4
5	Wetaskiwin	e	0	0%	0
6	Millet	f	0	0%	0
7	Beaumont	g	0	0%	0
8	Other	h	0	0%	1
	TOTAL:		**17**		**18**

2. Travel Purpose

Why do you travel through the study area? Primarily for:

Purpose		Response
a.	Residence & Personal Travel	11
b.	Employment	3
c.	Farming	9
d.	Business	3
e.	Trucking	1
f.	Other	3
	TOTAL	**30**

3. Open House Session

How did you hear about this session?

Heard it from:		Response
a.	Radio	0
b.	Newspaper Advertisement	4
c.	Television	0
d.	Flyer	0
e.	Community/Newsletter	5
f.	Other	9
g.	Were information displays helpful - YES	15
h.	Were information displays helpful - NO	1
I.	Better understand process due to OH - YES	14
j.	Better understand process due to OH - NO	1
	TOTAL:	**49**

4. Specific Open House Questionnaire Comments

See sheets attached to the agenda distributed at the meeting.

5. Letters from Stakeholders

Letters have been received from Thomas Taylor, Norma Messner and Janette McDonald. Ms. McDonald indicates she represents the Saunders Lake Improvement Coalition. (Not believed to be a registered organization.)

Action: In consultation with the City, the County is preparing responses to each letter writer.

6. Historical Drainage Issue

One of the concerns expressed by two of the above stakeholders is past changes to the drainage patterns in the study area.

Conclusion: This concern will not be addressed by McElhanney or the current study process.

3. NEF Noise Contours

It would be helpful to show the airport's NEF Noise Contours on the Road Network Option plans.

Action: The City will forward a digital copy of the noise contours.

4. Access to the Proposed Landfill Expansion

Option 2 will not permit access to the proposed landfill expansion site. It was agreed that two additional Road Network / Land Use Options will be developed.

Option 3 will start with Option 1 and move the connection between the two range roads southerly to place the north curve south of 65 Avenue. This option might better respond to some stakeholder concerns and still permit access to the landfill.

Option 4 will start with Option 2 and move the south curve northerly to place a tangent passing the landfill. This option might better follow the noise contours and still permit access to the landfill.

5. Schedule

- Develop Road Network Options 3 and 4
- Conduct centreline survey for preferred option and quantify impacts, costs for environmental, bridge planning and stormwater, for preferred option.
- McElhanney to submit addendum for additional open house and development of additional options.
- Meeting with Alberta Transportation to follow confirmation of preferred option.

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Steering Committee Meeting #5

Date:	May 8, 2009, 2:00 pm	
Location:	Leduc County Office, PW&E Services Building	
Purpose:	To discuss road network Option 3 and 4 and proposed Open House #2.	
Attendees:	Leduc County	
	Khushnud Yousafzai	Development Engineering Coordinator
	Des Mryglod	Manager, Engineering
	Jay del Cid	Engineering Technologist, Public Works
	Sylvain Losier	Planner II, Planning & Development
	City of Leduc	
	Ron Hanson	Director of Engineering
	Jennifer Cardiff	Manager, Long Range Planning
	McElhanney Consulting Services Ltd.	
	Henry Devos	Project Manager
Copies to:	Leduc County	
	Tom Schwerdtfeger	Planner

MEETING SUMMARY

The four road network options were discussed in detail. The following modifications were made.

1. New Options 3 and 4

Option 3 started with Option 1 and moved the connection between the two range roads southerly to place the north curve south of 65 Avenue. This option might better respond to some stakeholder concerns and still permit access to the landfill.

Option 4 started with Option 2 and moved the south curve northerly to place a tangent passing the landfill. This option might better follow the noise contours and still permit access to the landfill.

Option 1 was renamed Option 1A to permit making changes discussed at the meeting.

2. Access off of RR 245 to the Proposed Landfill Expansion

In an attempt to minimize traffic on the gravel-surfaced RR 245, access to the *Leduc & District Regional Landfill* has been restricted to Highway 623. After the Spine Road is paved and landfill operation moves into the proposed westerly quarter, the landfill operator will seek access directly from the Spine Road. This will reduce travel costs for both the operator and users.

Option 1A – Access will be shown to the centre of the landfill quarter section.

Option 2 – Access will be shown coming from the south along the east side of RR 245, from the east leg of the intersection with 44th Avenue.

Option 3 – Access will be shown into the middle of the south half of the landfill quarter section. This option results in poor intersection spacing along the Spine Road from 44th Avenue.

Option 4 – Access will be shown to the centre of the landfill quarter section.

3. Conformance with the NEF 30 Noise Contour

The International Airport Authority restricts residential development inside the NEF 30 noise contour.

Option 1A – 3rd rank conformance, Spine Road alignment stays north of the contour line.

Option 2 – Best Spine Road alignment following the contour line.

Option 3 – Poorest conformance, Spine Road crosses back and forth across the contour.

Option 4 – 2nd best Spine Road alignment following the contour line.

4. Land Use

Option 1A – Transitional Mixed Use extended south along north side of Spine Road and south along west side of RR 245 to outlet from Telford Lake.

Option 2 – No change.

Option 3 – Transitional Mixed Use extended west along south side of Spine Road towards 57th Avenue intersection. This option is preferred by the City's Engineering Dept.

Option 4 – No change. This option is preferred by the City's Planning Dept.

5. Road Network

Option 1A – 57th Avenue is extended southeast to connect to RR 245 opposite the landfill access. The loop road collector west of RR 250 is extended southwest across the Spine Road to 'T' into 57th Avenue.

65th Avenue 'Tees' into the Spine Road at a new intersection location north of the existing intersection.

Option 2 – Access to the landfill is provided from the east leg of the 44th Avenue intersection with the RR 245. A collector road is extended south from 57th Avenue to 44th Avenue, approximately 300m west of the Spine Road, to provide access to the Transitional Mixed Use at the east end of Telford Lake. The indirect access to the Transitional Mixed Use east of RR 245 results in a less desirable road network compared with the other three options.

65th Avenue intersects the Spine Road at a new intersection location north of the existing. 65th Avenue is goose-necked on the east side of the Spine Road to establish

a full intersection.

Option 3 – 57th Avenue is extended southeast to connect to RR 245 opposite the landfill access. This road network results in poor intersection spacing along RR 245.

The existing 65th Avenue intersection is retained, potentially offering better construction staging and fewer property requirements.

Option 4 – 57th Avenue is extended SE to connect to RR 245 opposite the landfill access.

65th Avenue intersects the Spine Road at a new intersection location north of the existing. 65th Avenue is goose-necked on the east side of the Spine Road to establish a full intersection.

6. Buffer Around Landfill Site

A 450m wide buffer is used around the existing, easterly, landfill site.

A 350m buffer will be used around the proposed westerly landfill expansion.

7. Buffer Around Telford Lake

A 30m wide development buffer will be shown around Telford Lake. The photomosaic will show through in the buffer area; no shading will be used.

8. Historical Drainage Issue

One of the concerns expressed by stakeholders at and following Open House 1 is the perception that the new Spine Road alignment will exacerbate past changes to the drainage patterns, and George Brown Water License, in the study area.

Option 1A – Greatest proximity to the affected drainage area.

Option 2 – 2nd least proximity to the affected drainage area.

Option 3 – Least proximity to the affected drainage area.

Option 4 – 3rd least proximity to the affected drainage area.

9. Public Input

Stakeholders that expressed concern at and following Open House 1 regarding the proximity of the Spine Road to Saunders Lake would probably rank the options as follows - Option 3, Option 2, Option 4 and Option 1A.

Discussed regional road network concept already reviewed with AT.

Open House 2 should show a proposed future access to the expanded landfill site.

10. Schedule

- Revised road network options and evaluation table complete by Friday May 22, 2009.
- Conduct Open House 2 on Tuesday June 23, 2009.
- Conduct centreline survey for preferred option and quantify impacts, costs for environmental, bridge planning and stormwater, for preferred option.

11. Action Items

- Ron Hanson to forward an electronic copy of the current cadastral for the City.
- Ron Hanson to confirm a 350m wide buffer around the westerly landfill quarter section.
- Jennifer Cardiff to confirm a 30m wide buffer around Telford Lake.
- McElhanney to send Geoffrey Gaetz a copy of the material shown at Open House 1.
- McElhanney to prepare an evaluation table comparing the four road network options.

Leduc County / City of Leduc
Range Road 250/245 (Airport Road to Highway 623)
Functional Planning Study

Steering Committee Meeting #6

Date: August 11, 2009, 2:00 pm

Location: Leduc County Office, PW&E Services Building

Purpose: To discuss public response to Open House #2 and to confirm final plan.

Attendees:

Leduc County	
Khushnud Yousafzai	Development Engineering Coordinator
Des Mryglod	Manager, Engineering
City of Leduc	
Ron Hanson	Director of Engineering
McElhanney Consulting Services Ltd.	
Henry Devos	Project Manager

MEETING SUMMARY

1. Summary - Open House #2

Attached to the agenda were an Open House Summary and a Comment Summary with two letters.

The following are some arguments that may be helpful in responding to the two letters.

(a) The City and County are undertaking this study jointly to prepare plans for future growth. The first option for road widening is symmetrical where the roadway, i.e. Range Road 250, is the boundary between the City and County. This distributes the right-of-way requirements equally between both municipalities and between both development areas. Some areas may develop sooner; however, the contribution to infrastructure requirements should be made by both parties.

(b) As Ron mentioned, road bans are not part of this study.

(c) The curved roadway alignment, connecting Range Roads 245 and 250, has been located to achieve a number of outcomes. Moving the south curve further south would impact the following:

i. The suggested alignment would move the roadway closer to Telford Lake, meaning the roadway would largely serve development on only one side, to the north.

ii. The suggested alignment would be more parallel to the NEF contours, but not closer to the NEF 30 contour, affecting the placement of land use.

iii. The suggested alignment would make it more difficult to achieve an effective local road network parallel to the arterial standard Spine Road. This could force

more local trips onto the Spine Road, accelerating the need for future twinning or six-laning.

(d) The plans shown at the open house did not include an added emphasis to the existing developed urban areas. We suspect that the increased density of the cadastral lines (property lines) may have created an unintended emphasis.

(e) We have understood that access to the landfill from a paved Range Road 245 was not precluded by the landfill approval process; however, that formal approval for a potential future access is needed.

Action: The County will prepare responses to the two letters. Copy to the City.

2. Right-of-Way Drawings

Attached to the agenda were four Right-of-Way Requirements drawings and five Typical Cross-Sections for different sections along Range Roads 245 and 250.

The following is noted on the R/W drawings:

(a) R/W requirements are subject to change following completion of the drainage plan and establishing final profile grades.

(b) Where design cut/fill widths would have exceeded 35m from centreline, a 35m maximum was used. This assumes the developer will adjust adjoining grades to match the highway design and mitigate further r/w requirements.

(c) R/W requirements for the northbound right-turn slots along RR 245 encroach into the Altalink easement. This avoids moving the cross-section an additional 4m west, since all widening is to the west already.

Action: A note to be added to the drawings: "There will be no acquisition of AltaLink lands. The design should only require some grading of the back slope into AltaLink lands." The drawings will show the estimated location of the AltaLink towers. Where practical, deceleration lanes will be shortened to avoid impacting AltaLink towers. (McElhanney)

It should be stressed to the landowners/developers that the right-of-way requirements are still DRAFT and subject to change.

Typical Cross-Sections show staging, location of existing roadway and the overall implications of the r/w requirements compared to existing proposed development plans along the west side of RR 250 approaching Airport Road.

Action: The plans will show acquisition of a sliver of land where the Spine Road alignment curves north-westerly away from RR245. (McElhanney)

Action: Reference to the Land Fill Access will be removed from the title of Typical Cross Section #1. (McElhanney)

3. Stormwater Management

Final stormwater management plan is being developed together with the environmental plan by EBA.

Action: The final plans will show existing (predevelopment) versus proposed flow paths.

Action: Ron Hanson forwarded a PDF showing the drainage area outlines covering an area almost 4 quarters north of Telford Lake, from 43rd Street west to Saunders Lake.

Action: Ron Hanson requested digital copy of Stantec's drainage/grading plan for the industrial subdivision on the west side of RR250, between 75th and 82nd Avenues. This will be used to confirm if Stantec's ditch drainage change along RR250 can be accommodated.

Action: Des Mryglod to forward copy of Focus drainage map in County.

4. Land Use and Road Network

It was confirmed that Option 3 remains the recommended plan for Land Use and Road Network considerations.

5. Road Design

Action: The driveway entering 052 6444, Blk 1, Lot 1 (Bakker) will shown relocated west along the future 44th Avenue. (McElhanney)

Action: To minimize impacts, an urban design will be used passing AltaLink's site in the southwest quadrant of Airport Road and RR250. The north end of the Spine Road alignment approaching Airport Road will be curved slightly to the west to ensure the AltaLink site is not affected. The Sturgeon Homes site (354TR, Lot A) will be affected by this change. (McElhanney)

6. Potential Future Plan to South

The final report will use broad arrows to show two possible options to connect the Spine Road to Hwy 2A at Glen Park Road and to the north.

7. Next Steps

Action: Forward copy of plan to Alberta Transportation showing two things:

- Proposed Spine Road intersection with Hwy 623 (Rolly View Road).
- Possible future extension of Spine Road south to Highway 2A near Glen Park Road.

Plan to be sent to Murray Armitage, Development & Planning Technologist, Alberta Transportation, Stony Plain.

Action: Draft report tentatively by end September.

Action: Study presentation to a joint council meeting.

A.2 Correspondence

September 21, 2010

Mayor Marvin Molzan
Leduc County
Suite 101, 1101 – 5th Street
Nisku, AB T9E 2X3

Dear Mayor Molzan: Marvin

RE: Range Road 245/250, Airport Road to Highway 623
Functional Planning Study
Your File No. 0965-245

As noted in your letter dated July 30, 2010, please accept this letter as confirmation of the City of Leduc's support of the findings of the study.

At their September 13th, 2010 regular Council meeting, City of Leduc Council formally adopted the Range Road 245/250, Airport Road to Highway 623 Functional Planning Study.

Sincerely,

Greg Krischke
Mayor

c Mr. Ron Hanson, Director, Engineering Services, City of Leduc
c Mr. C.D. Wright, County Manager
c Mr. Michael MacLean, Director, Public Works & Engineering, Leduc County
c Mr. Khushnud Yousafzai, Development Engineering Coordinator, Leduc County

LEDUC COUNTY

Office of the Mayor

County Centre
Suite 101, 1101 - 5 Street, Nisku, Alberta T9E 2X3
Telephone: (780) 955-3555 • Fax: (780) 955-3444

July 30, 2010

Our File: 0965-245

City of Leduc
Civic Centre
#1 Alexandra Park
Leduc, AB
T9E4C4

Attention: Ron Hanson

Dear Mr. Hanson:

Range Road 245/250, Airport Road to Highway 623, Functional Planning Study

Thank you for attending the joint presentation to City of Leduc Council and Leduc County Council regarding Range Road 245/250, Airport Road to Highway 623, Functional Planning Study. We appreciate the opportunity to work with the City of Leduc to develop the functional plan.

Based on the presentation and as mutually agreed to at the presentation, Leduc County supports the Range Road 245/250, Airport Road to Highway 623, Functional Planning Study. We anticipate that we will be receiving a reciprocal letter supporting the findings of this study.

If you have any question, please do not hesitate to contact Khushnud Yousafzai, Development Engineering Coordinator at (780) 955-4590 or via email at Khushnud@leduc-county.com.

Yours truly,

Marvin Molzan
Mayor

MM/drm

cc: C.D. Wright, County Manager
Michael MacLean, Director, Public Works & Engineering
Khushnud Yousafzai, Development Engineering Coordinator

LEDUC COUNTY

County Centre
Suite 101, 1101 - 5 Street, Nisku, Alberta T9E 2X3
Telephone: (780) 955-3555 • Fax: (780) 955-3444

March 30, 2009

Our File: 0965-245

Norma Messner
5107 43 Avenue
Leduc, Alberta
T9E 5A4

Dear Mrs. Messner:

Letter of March 10th, 2009 RE; Drainage Concerns, Around SE¼ 6-50-24-W4M

Thank you for your letter of March 10th, 2009. I would also like to thank you for your attendance at the March 5th, 2009 Open House regarding the Functional Planning Study of Range Road 245 and 250, from Airport Road to Highway 623. As part of the functional planning study process, it is important to get feedback from stakeholders like yourself in order to refine our designs.

However, I want to note that the concerns stated in your letter reference a pre-existing drainage issues, and is not being affected by the functional planning study. The study will try to ensure that the existing drainage will continue unimpeded as possible, but it is outside the scope of the study to modify the existing drainage.

Regardless, I wish to address the questions in your March 10th letter.

The proposed storm water management facility within the NW¼ 36-49-25-W4M was advertised in the September 21, 2007 edition of the Leduc Representative. The City of Leduc should be able to supply you with a copy of the advertisement. The storm water management facility will be designed in such a manner that the flow from the developed area will not exceed the flow from the undeveloped area. The developer will not be making any changes to the natural flow path; any diversion that is envisioned is already in place, and likely has been in place for some time. No change to the existing drainage path has been approved by Leduc County.

As part of the storm water management facility approval process, an inspection of the Range Road 245 ditch, north of Township Road 500 was completed. An undersized approach culvert, some erosion repairs and major centerline road culvert repairs were identified as requiring attention. These works will be identified as a project submission in the 2010 Leduc County capital plan, where it will be prioritised. Once these works are completed, the maintenance of the ditch will become a joint Leduc County and City of Leduc responsibility.

Unfortunately, we have been unable to find any records regarding the original diversion mentioned in item two of your letter. However, the information regarding the concrete check structures (also known as the George Brown drainage project) is available.

The constrcution of the concrete check structures were approved by Alberta Environment. We concur that the existing drainage may not be the original, natural drainage course, however, any change to the drainage, even to what may be determined as the natural drainage route, will require approval by Alberta Environment.

If you wish to discuss further, please do not hesitate to contact me at (780) 955-6418, or via email at des@leduc-county.com.

Yours truly,

Michael MacLean
Director, Planning and Development

MM/drm

cc: Honourable Rob Renner, Minister of Environment
Mr. George Rogers, MLA, Leduc - Beaumont - Devon
Mayor Marvin Molzan, Leduc County
Mayor Greg Krischke, City of Leduc
Ron Hanson, City of Leduc
Henry Devos, McElhanney Consulting Services Ltd.

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March 30, 2009

Our File: 0965-245

Thomas O. Taylor
Box 3433
Leduc, Alberta
T9E 6M2

Dear Mr. Taylor:

Letter of March 15th, 2009 RE: Range Road 245/250 Functional Planning Study

Thank you for your letter of March 10th, 2009. I would also like to thank you for your attendance at the March 5th, 2009 Open House regarding the Functional Planning Study of Range Road 245 and 250, from Airport Road to Highway 623. As part of the functional planning study process, it is important to get feedback from stakeholders like yourself in order to refine our designs.

In regards to your questions:

1. We presently are in the functional planning study phase of the project. When the alignment of the roadway is finalised, discussion between the City of Leduc and Leduc County will occur in order to determine the potential staging, construction timing and funding for construction of the roadway;
2. The consulting is preparing a change order for the project, which will outline the cost for pursuing additional alternative alignments and holding an additional open house. The change order presented along with additional funding requirements to both the City of Leduc and Leduc County to pursue this change order;
3. Please see Item 2; this will be reviewed through the proposed alterative alignments;
4. The proposed land use adjacent to the roadway is planned to be business commercial. This land use, along with other features if required, will act as a buffer between the roadway and proposed residential land uses further away from the roadway;
5. Again, please see Item 2; this will be reveiwed through the proposed alterative alignments;
6. The open house forums are meant to be a venue to gain feedback from local landowners on the proposed alignments and plans. It provides an opportunity for the municipalities and the consultants to get feedback from the landowners, as well as other interested parties;
7. This project is a joint project by the City of Leduc and Leduc County. The cost share for this functional planning portion of the project has been split 50/50 between the City of Leduc and Leduc County.

As a side note, I understand the consultant was asked this question at the open house. However, he was not aware of the funding arrangement for this project;

8. Unfortunately, we have been unable to find any records regarding the original diversion mentioned in item two of your letter. However, the information regarding the concrete check structures (also known as the George Brown drainage project) is available.

   The concrete check structures were approved by Alberta Environment. We concur that the existing drainage may not be the original, natural drainage course, however, any change to the drainage, even to what may be determined as the natural drainage route, will require approval by Alberta Environment;

9. This open house was scheduled weeks in advance; unfortunately the weather did not cooperate on this day. If additional funding is approved, and additional open houses held, the weather should be more conducive to public attendance.

If you wish to discuss further, please do not hesitate to contact me at (780) 955-6418, or via email at des@leduc-county.com.

Yours truly,

Michael MacLean
Director, Public Works & Engineering

MM/drm

cc: Honourable Ray Danyluk, Minister of Municipal Affairs
Honourable Rob Renner, Minister of Environment
Honourable Luke Ouellette, Minister of Transportation
Mr. George Rogers, MLA, Leduc - Beaumont - Devon
Mayor Marvin Molzan, Leduc County
Mayor Greg Krischke, City of Leduc
Ron Hanson, City of Leduc
Henry Devos, McElhanney Consulting Services Ltd.

LEDUC COUNTY

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Suite 101, 1101 - 5 Street, Nisku, Alberta T9E 2X3
Telephone: (780) 955-3555 • Fax: (780) 955-3444

March 31, 2009 Our File: 0965-245

Saunders Lake Improvement Coalition
Leduc, Alberta no mailing address.: sent by e-mail to: Janette McDonald at j.mcdonald@xplornet.com

Dear's:

Letter of March 26th, 2009 RE; Realignment of proposed Roadway, Around SE¼ 6-50-24-W4M, SW¼ 5-50-24-W4M and NW¼ 32-50-24-W4M

Thank you for your letter of March 26th, 2009. I would also like to thank you for your attendance at the March 5th, 2009 Open House regarding the Functional Planning Study of Range Road 245 and 250, from Airport Road to Highway 623. As part of the functional planning study process, it is important to get feedback from stakeholders like yourself in order to refine our designs.

Your input was discussed in the steering committee meeting of this project. As it is outside the current scope of the study, the consulting firm is preparing a change order for the project, which will outline the cost for pursuing additional alternative alignments and holding an additional open house. The change order will be presented along with additional funding requirements to both the City of Leduc and Leduc County to pursue this change order.

Once the approval process is completed and if approved, we will develop alternate alignments and will arrange another open house to discuss the options with the land owners and residents.

If you wish to discuss further, please do not hesitate to contact me at (780) 955-6418, or via email at des@leduc-county.com.

Yours truly,

Michael MacLean
Director, Planning and Development

MM/drm

cc:

Mayor Marvin Molzan, Leduc County
Mayor Greg Krischke, City of Leduc
Ron Hanson, City of Leduc
Henry Devos, McElhanney Consulting Services Ltd.

THE CITY OF LEDUC

INFRASTRUCTURE AND PLANNING

1 Alexandra Park
Leduc, Alberta T9E 4C4

Information
780.980.7177

Facsimile
780.980.7127

2009 April 02

Our File: _____

Ms. Norma Messner
5107 – 43 Avenue
LEDUC, AB
T9E 5A4

Dear Ms. Messner:

RE: LETTER OF CONCERN – DRAINAGE AROUND SE 6-50-24-W4

Thank you for your letter of March 10, 2009. We believe that we had addressed all the concerns associated with development within the City of Leduc at the time of making formal application to Alberta Environment. In your letter you had raised a number of issues that I will respond to accordingly.

The proposed storm water management facility on NW 36-49-25-W4 was advertised in the Leduc Representative on September 21, 2007. A copy of the cut sheet from that newspaper is attached showing the advertisement. Your previous inquiries (after the advertisement was placed in the paper) were discussed with the design engineers at Focus Corporation and personnel of Leduc County. Discussions on the development design continued into the summer of 2008. At that time, Mr. Tom Taylor, who I understand was acting on your behalf, was informed of the drainage patterns noted below and the approvals that would be required if any changes to the existing drainage pattern were made.

Subsequent to the advertisement and the required waiting period, Alberta Environment personnel indicated that Leduc County was to repair some erosion in the channel running north on the east side of your property. Leduc County has agreed to perform this work and the City of Leduc has agreed to be jointly responsible for any future maintenance once the initial work was completed. Alberta Environment has, after being satisfied with the maintenance commitments made by Leduc County and the City of Leduc, approved the development of the storm water management facility on NW 36-49-25-W4. The Alberta Environment approval #00240623-00-00 was issued on December 5, 2008 to the City of Leduc.

The flow of storm water from NW 36-49-25-W4 does travel through both natural and manmade drainage paths on its route to Saunders Lake. The natural drainage path noted in the approval from NW 36-49-25-W4 is directly east from the site through NW 31-49-24-W4 and NE 31-49-24-W4 as is shown on the plan attached to your letter. The natural drainage path has never been to the south directly to Telford Lake due to an east-west ridge that starts on the southern boundary of NW 36-49-25-W4. This ridge continues east-north-east until the

.../2

INFRASTRUCTURE AND PLANNING

2009 April 02
Ms. Norma Messner

Page -2-

north east corner of NE 31-49-24-W4. From this point, as you noted, the drainage has been changed historically to drain north past your property and then east through SW 5-50-24-W4 to Saunders Lake. This change in flow direction was approved through Alberta Environment and is fully within Leduc County which is outside of our jurisdiction. Any changes in this current drainage pattern of the area must be made by Leduc County and approved by Alberta Environment even if the change is back to the historical drainage flow path.

As noted above, the City of Leduc and Leduc County have agreed to jointly maintain the channel running to the north on the east side of your property. This is the limit of the City's involvement with respect to the conditions imposed by Alberta Environment for the north/south ditch adjacent to your property. If in the future there are still unforeseen drainage issues resulting from water flows in this ditch we will work with the Leduc County to correct the situation.

Waters draining from the S½ 6-50-24-W4 are not directly within our jurisdiction; however we do recognize that some of these waters are from within the City boundary and do drain onto these lands at pre-development rates. At this time these lands are not being developed but prior to any future development on these lands the storm water management issues need to be re-evaluated. Please direct any comments about the current drainage from this area to Leduc County as they are currently responsible for managing these flows.

We feel we have addressed the portions of your letter of concern to the extent that we are able to. If you have further questions regarding the storm water from NW 36-49-25-W4 and the approval of the plan please contact the undersigned.

Yours truly,

Ron Hanson
DIRECTOR, ENGINEERING SERVICES
rhanson@leduc.ca
(780) 980-7142

RH/mjs

Enclosure

p.c. Mr. Michael MacLean, Leduc County
p.c. Honourable Rob Renner, Minister of Environment
p.c. Mr. George Rogers, MLA, Leduc – Beaumont – Devon
p.c. Mayor Marvin Molzan, Leduc County
p.c. Mayor Greg Krischke, City of Leduc
p.c. Mr. Henry Devos, McElhanney Consulting Services Ltd. FAX 780-452-7033

THE CITY OF LEDUC

RECEIVED
APR - 7 2009

1 Alexandra Park
Leduc, Alberta T9E 4C4

Information
780.980.7177

Facsimile
780.980.7127

INFRASTRUCTURE & DEVELOPMENT

April 2, 2009

Thomas O. Taylor
Box 3433
Leduc, Alberta
T9E 4C4

Dear Mr. Taylor:

Subject: Range Road 245/250 Functional Planning Study

Thank you for your letter of 15 March, 2009. Your attendance at the March 5, 2009 Open House was appreciated as it is important to get feedback from stakeholders such as yourself. Your comments will be taken into consideration as we move forward with refining the options with Leduc County. With regard to your specific questions, the City would respond similarly to the responses provided by Leduc County in their March 30, 2009 letter to you.

Another open house is being planned in the near future to review alignment options. It is hoped that all interested stakeholders will take this opportunity to provide further feedback.

If you wish to discuss this matter further, you may contact me at the number below or via E-Mail at mpieters@leduc.ca.

Yours sincerely,

Mike Pieters
General Manager – Infrastructure and Planning
Phone: (780) 980-7151
mpieters@leduc.ca

/mpp

c: Honourable Ray Danyluk, Minister of Municipal Affairs
Honourable Rob Renner, Minister of Environment
Honourable Luke Ouellette, Minister of Transportation
Mr. George Rogers, MLA, Leduc – Beaumont – Devon
Mayor Marvin Molzan, Leduc County
Mayor Greg Krischke, City of Leduc
Paul Benedetto, City Manager, City of Leduc
Michael MacLean, Leduc County
Kevin Cole, City of Leduc
Ron Hanson, City of Leduc
Henry Devos, McElhanney Consulting Services. Ltd.

LEDUC COUNTY

Public Works and Engineering Department

County Centre
Suite 101, 1101 - 5 Street, Nisku, Alberta T9E 2X3
Telephone: (780) 955-3555 • Fax: (780) 955-3444

September 9, 2009 Our File: 0965-245

Saunders Lake Improvement Coalition
Leduc, Alberta

To Whom it May Concern:

Proposed Roadway Alignment, Range Roads 245/250

Thank you for your letter dated July 15th, 2009. I would also like to thank you for your attendance at the June 22nd, 2009 Open House regarding the Functional Planning Study of Range Road 245 and 250, from Airport Road to Highway 623. As part of the functional planning study process, it is important to get feedback from stakeholders like yourselves in order to refine our designs.

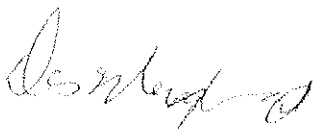
In regards to your questions:

1. The City and County are undertaking this study jointly to prepare plans for future growth. The first option for road widening is symmetrical where the roadway, i.e., Range Road 250, is the boundary between the City and County. This distributes the right-of-way requirements equally between both municipalities and both development areas. Some areas may develop sooner; however, the contribution to infrastructure requirements should be made by both parties. Though, in some areas, it is impossible to obtain additional right-of-way equally on both sides due to transmission power lines. In this case, all the additional right-of-way will be obtained from the unencumbered side of the roadway.
2. Road bans are outside the scope of this study. This will be an operation aspect that will be examined when the roadway is constructed.
3. The curved roadway alignment, connecting Range Roads 245 and 250, has been located to achieve a number of outcomes. Moving the south curve further south would:
    a. Make it more difficult to achieve an effective local road network parallel to the arterial standard Spine Road. This could force more local trips onto the Spine Road, accelerating the need for future twinning or six-laning;
    b. Move the roadway closer to Telford Lake, meaning the roadway would largely serve development on only one side; and
    c. Be more parallel to the NEF contours, but not closer to the NEF 30 contours, which would affect the placement of land use.

4. The plans shown at the open house did not include an added emphasis to the existing developed areas. Existing development are always considered during the functional planning process. In addition, residents along the roadway were notified by mail regarding the open house in order to obtain their input regarding the proposed roadway alignment.
5. Provision of an access to the Leduc Regional Landfill is not an outcome of this study. However, the study process would examine the feasibility of the provision of access to all properties adjacent to the study area, even though one may never be constructed.

If you wish to discuss further, please contact me at (780) 955-6418, or via email at des@leduc-county.com.

Yours truly,



Des Mryglod
Manager, Engineering

cc: Ron Hanson, City of Leduc
Henry Devos, McElhanney Consulting Services Ltd.

LEDUC COUNTY

Public Works and Engineering Department

County Centre
Suite 101, 1101 - 5 Street, Nisku, Alberta T9E 2X3
Telephone: (780) 955-3555 • Fax: (780) 955-3444

September 9, 2009 Our File: 0965-245

Thomas O. Taylor
Box 3433
Leduc, Alberta
T9E 6M2

Dear Mr. Taylor:

Concerning Open House # 2 June 22nd, 2009: Range Road 245/250 Study

Thank you for your letter dated July 13th, 2009. I would also like to thank you for your attendance at the June 22nd, 2009 Open House regarding the Functional Planning Study of Range Road 245 and 250, from Airport Road to Highway 623. As part of the functional planning study process, it is important to get feedback from stakeholders like yourself in order to refine our designs.

In regards to your questions:

1. The curved roadway alignment, connecting Range Roads 245 and 250, has been located to achieve a number of outcomes. Moving the south curve further south would:
    a. Make it more difficult to achieve an effective local road network parallel to the arterial standard Spine Road. This could force more local trips onto the Spine Road, accelerating the need for future twinning or six-laning;
    b. Move the roadway closer to Telford Lake, meaning the roadway would largely serve development on only one side; and
    c. Be more parallel to the NEF contours, but not closer to the NEF 30 contours, which would affect the placement of land use.
2. Provision of an access to the Leduc Regional Landfill is not an outcome of this study.
3. Road bans are outside the scope of this study. This will be an operation aspect that will be examined when the roadway is constructed. However, good engineering judgement does not preclude the potential construction of an access, even though one may never be constructed.

If you wish to discuss further, please contact me at (780) 955-6418, or via email at des@leduc-county.com.

Yours truly,

Des Mryglod
Manager, Engineering

cc: Ron Hanson, City of Leduc
Henry Devos, McElhanney Consulting Services Ltd.

B) PRESENTATION TO LEDUC COUNTY AND CITY OF LEDUC

RANGE ROADS 245/250

Future Spine Road

Airport Road to Highway 623

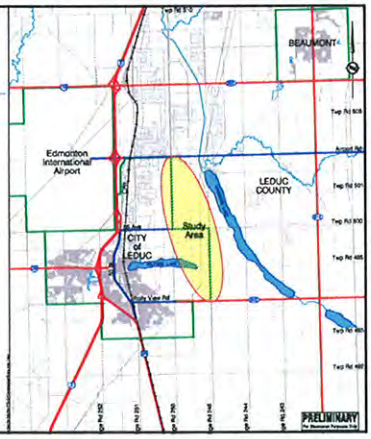
Functional Planning Study

JOINT COUNCIL PRESENTATION

June 8, 2010

McElhanney 1

STUDY AREA



McElhanney

STUDY PURPOSE

1. To plan for property protection in support of future roadway upgrades;
2. To ultimately extend the County's proposed Spine Road (9th Street) south along the City's east side; and
3. To identify preliminary intersection locations and interim staging requirements.

McElhanney 3

STUDY PROCESS

1. Open House 1 held March 5, 2009 to present a Preliminary Plan.
2. Open House 2 held June 22, 2009 to present Recommended Plan.

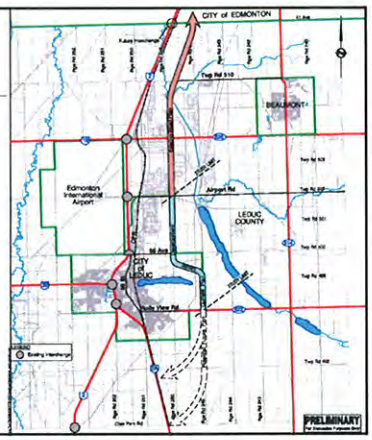
McElhanney 4

ROADWAY FUNCTION

- Planned to operate as a major arterial roadway, serving various future land uses.
- Extend the County's Spine Road concept south from Airport Road to Highway 623.
- Form the east leg of the City's proposed Boundary Road.
- In the future the Spine Road could be extended south to connect with Highway 2A south of Leduc.
- As a major arterial, access will be through intersections with arterial or collector roads only, with no direct access to adjoining lands.
- To maintain the operating speed (80 km/h), intersections will be spaced 800m apart.

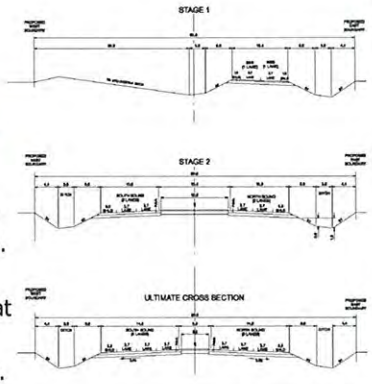
McElhanney 5

SPINE ROAD CORRIDOR



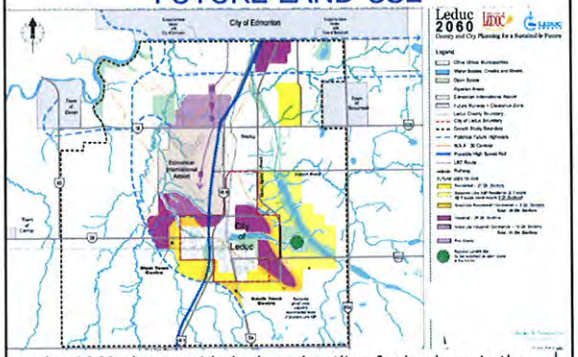
McElhanney

TYPICAL CROSS-SECTIONS & STAGING



- 6 traffic lanes (3 in each direction).
- Raised median allows left turns at intersections.
- Surface drainage.

FUTURE LAND USE



Leduc 2060 plan provided a broad outline for land use in the study area. Also considered was the Saunders Lake ASP.

LEDUC COUNTY Range Roads 245 / 250 Functional Plan THE CITY OF LEDUC

ACCESS TO LANDFILL SITE

Background:

- Present access has been provided off of Range Road 244 as Range Road 245 is only gravel surfaced.

Future Access:

- After Range Road 245/250 is upgraded, additional access could also be provided from RR 245.
- Additional access would improve landfill operations and reduce costs for the operator and users.

LEDUC COUNTY Range Roads 245 / 250 Functional Plan THE CITY OF LEDUC

PUBLIC INPUT – OPEN HOUSE 1

The primary concerns were:

- Proximity of roadway alignment to rural residential lands near Saunders Lake.
- Loss of continuity in 65th Avenue at Rge Rd 250.
- Need for greater proximity of road alignment to airport noise contour Noise Exposure Forecast (NEF) 30.
- Impact on the George Brown Drainage Channel and area drainage patterns.

LEDUC COUNTY Range Roads 245 / 250 Functional Plan THE CITY OF LEDUC

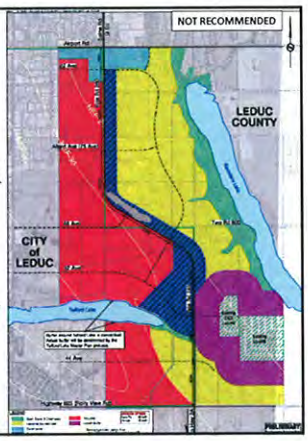
ADDITIONAL ALTERNATIVES

In response to the concerns identified at Open House 1, the Study Team developed three additional Road Network / Land Use options.

ROAD NETWORK / LAND USE - OPTION 1A

Changes:

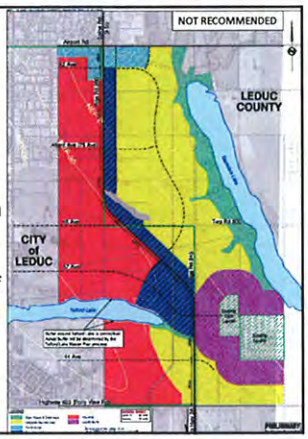
- Main roadway alignment is the same as original Option 1 – shown at Open House 1.
- Supporting Road Network and Land Use modified following Open House 1.
- Poor staging for 65th Avenue, terminating at Spine Road.
- Potential impact on George Brown Drainage Channel.
- OPTION NOT PREFERRED



ROAD NETWORK / LAND USE - OPTION 2

Changes:

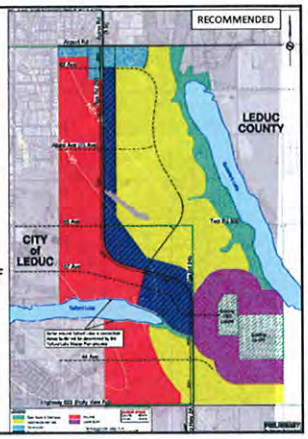
- East curve in main roadway alignment shifted south to pull the alignment away from Twp Rd 500 and the George Brown Drainage Channel.
- Potential access to landfill off of Rge Rd 245 is maintained.
- 65th Avenue now extends east across the Spine Road.
- OPTION NOT PREFERRED



ROAD NETWORK / LAND USE - OPTION 3

Changes:

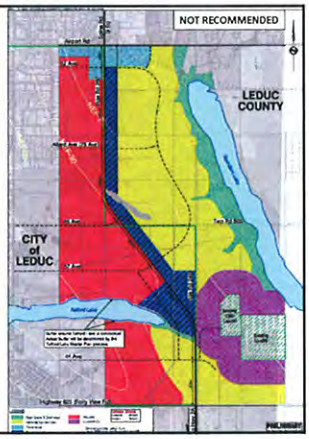
- West curve in main roadway alignment also shifted south to improve staging and simplify connection with 65th Avenue.
- Potential access to landfill off of Rge Rd 245 is maintained.
- 65th Avenue is unaffected by construction of the main roadway alignment.
- RECOMMENDED OPTION



ROAD NETWORK / LAND USE - OPTION 4

Changes:

- West curve in main roadway alignment shifted further south to improve proximity to the NEF 30 noise contour.
- Results in poor access to the landfill.
- Results in poor realignment and staging for 65th Avenue.
- OPTION REJECTED



LEDUC COUNTY Range Roads 245 / 250 Functional Plan THE CITY OF LEDUC

EVALUATION OF OPTIONS

The primary objectives/criteria were:

- Maintain minimum 800m intersection spacing.
- Staging to minimize disruption to 65th Avenue.
- Proximity of road alignment to airport noise contour Noise Exposure Forecast (NEF) 30 as a buffer between land uses.
- Minimize impact on the George Brown Drainage Channel and area drainage patterns.
- Provide for potential future access to landfill from Range Road 245, as well as to developable lands to the west.
- Placement of transitional land uses.

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LEDUC COUNTY Range Roads 245 / 250 Functional Plan THE CITY OF LEDUC

SELECTION OF RECOMMENDED PLAN

Objective / Option	1A	2	3	4
800m Intersection Spacing	**Good**	**Good**	**Good**	**Good**
Provision of Potential Future Access to Landfill	**Good**	**Good**	**Good**	Poor
Staging/Disruption of 65th Avenue	Terminates at Spine Rd	Realigned	**Un-interrupted**	Realigned
Proximity to NEF30 Noise Contour	Poor proximity	**Good proximity**	Poor proximity	Best proximity
Minimize Impact on George Brown Drainage Channel	Greatest potential impact	Some potential impact	**Least potential impact**	Some potential impact
Ranking	**Third**	**Second**	**First**	**Fourth**

LEDUC COUNTY Range Roads 245 / 250 Functional Plan THE CITY OF LEDUC

SELECTION OF RECOMMENDED PLAN

Option 3 was recommended because:

- It causes the least disruption to 65th Avenue.
- It provides potential future access to the landfill, as well as to developable lands to the west.
- It poses the least impact on the George Brown Drainage Channel and area drainage patterns.
- Maintains minimum 800m intersection spacing (except at 82nd Ave.) and a functional local road network, similar to the Saunders lake ASP.
- Poor proximity to airport's NEF 30 contour is compensated by placement of Transitional Mixed (Land) use.

McElhanney 18

RECOMMENDED PLAN

- Intersection locations are conceptual, subject to actual land development process.
- Intersections with arterial & collector roads only, no direct access.
- Intersection spacing is minimum 800m.

Range Roads 245 / 250 Functional Plan

CONSULTATION SUMMARY

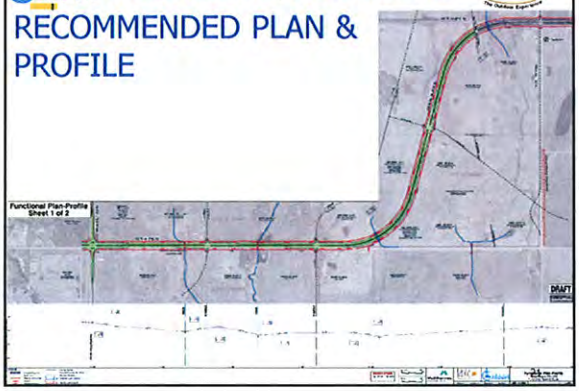
Open House	Attendance	Respondents	Concerned Attendees
1	31	21	66%
2	37	4	11%

- Primary concern at Open House 1 was location of the new connection between the two range roads.
- Recommended plan moved the connection south of 65th Avenue and plan was viewed much more favourably by the affected public.

McElhanney 20

Range Roads 245 / 250 Functional Plan

RECOMMENDED PLAN & PROFILE



Range Roads 245 / 250 Functional Plan

RECOMMENDED PLAN & PROFILE

McElhanney 22

Range Roads 245 / 250 Functional Plan

ENVIRONMENTAL RESOURCES

The study involved review of the following environmental issues which have been documented in the report.

- Soils & Vegetation
- Fish and Wildlife
- Historical Resources
- Stormwater Management

McElhanney 23

Range Roads 245 / 250 Functional Plan

RECOMMENDATIONS

Recommendations were made regarding:

- Spine Road Alignment
  - Future connection south to Highway 2A
- Access Management
  - 800m intersection spacing
  - Arterial & collector intersections only, no direct access
- Implementation
  - Incorporate in future ASPs
  - Develop Joint County/City plan, e.g. DCCs, and r/w dedications

McElhanney 24

RECOMMENDATIONS

- Stormwater Management
  - Incorporate in adjacent ASPs and development plans
- Design Criteria
  - Achieve high mobility standards with 90 km/h design speed
  - Ultimate 6-lane semi-urban expressway
  - 60 to 70m wide right-of-way.

RANGE ROADS 245/250

FUTURE SPINE ROAD

Airport Road to Highway 623

Functional Planning Study

THANK YOU

QUESTIONS?

C) OPEN HOUSE PACKAGES

C.1 Open House 1

December 2, 2008

Re: Range Road 245 / 250 Functional Planning Study
Airport Road to Highway 623 (Rollyview Road)

Dear Sir or Madam:

Leduc County and the City of Leduc contracted McElhanney Consulting Services to begin work on a planning study along Range Roads 245 and 250 passing the east side of the City. The study will assist the County/City in determining and planning for property protection to prepare for future roadway upgrades. This plan would ultimately extend the County's proposed Spine Road (9th Street) south along the City's proposed east leg of the future Boundary Road. The study will also identify intersection locations and interim staging requirements, taking into consideration future growth in both municipalities.

The purpose of this notification is to advise that as one of the owners of property along the corridor, you may potentially be affected by these roadway improvements. The drawing on the back of this letter shows the study area and a conceptual realignment of the two range roads. The study is just beginning and is in the Project Appraisal phase. There will ultimately be a public open house in the City and County after draft roadway plans have been prepared. You will receive a notice inviting you to attend the open house, which will provide an opportunity for input on the preliminary plans prepared.

This study is a planning exercise to identify the property protection requirements. It is anticipated that actual roadway construction is still many years away. If you have any questions or concerns and would like to know more about what is planned, please contact the undersigned at the following:

Henry Devos, Project Manager, McElhanney Consulting Services Ltd.
Phone (780) 451-3420 or email at hdevos@mcelhanney.com.

We look forward to hearing from you or seeing you at the future open house.

Yours truly,

Henry Devos, P.Eng.
McElhanney Consulting Services Ltd.

McElhanney

February 9, 2009

Re: Open House for Range Road 245 / 250 Functional Planning Study
Airport Road to Highway 623 (Rollyview Road)

Dear Sir or Madam:

Leduc County and the City of Leduc contracted McElhanney Consulting Services to undertake a planning study along Range Roads 245 and 250 passing the east side of the City. The study will assist the County/City in determining and planning for property protection to prepare for future roadway upgrades. This plan would ultimately extend the County's proposed Spine Road (9th Street) south along the City's proposed east leg of the future Boundary Road.

As one of the property owners potentially affected by plans for the roadway upgrading, we wish to extend this invitation to you to attend the open house, which will provide an opportunity for input on the preferred plan. The enclosed drawing shows the proposed realignment of the two range roads that the Study Team hopes to recommend to the County and City Councils. We have placed advertisements in the local newspaper to ensure that all other interested stakeholders are also invited to attend.

The open house is scheduled as follows:

Thursday, March 5, 2009
Stakeholders – 4:00 to 6:00 pm
(General Public Hours – 6:00 to 8:00 pm)
Nisku Inn, Ballroom 3
1101 - 4th Street, Nisku

As a potentially affected stakeholder, please attend the open house between 4 and 6 pm; however, feel free to attend either session. For more information on the open house or project, please feel free to contact Henry Devos, Project Manager, McElhanney Consulting Services Ltd. Phone (780) 451-3420 or via email at hdevos@mcelhanney.com.

We look forward to hearing from you or seeing you at the open house.

Yours truly,

Henry Devos, P.Eng.
McElhanney Consulting Services Ltd.

McElhanney

OPEN HOUSE

RANGE ROADS 245/250
Airport Road to Highway 623
Functional Planning Study

WELCOME

4 pm to 8 pm
March 5, 2009

McElhanney 1

OPEN HOUSE FORMAT

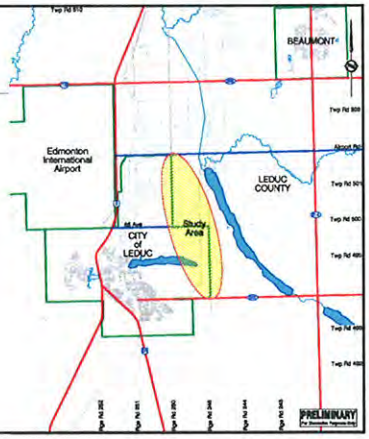
- This Open House is an **Informal Venue**.
- Attendees are provided with the opportunity to view the project information and discuss their interests and concerns with project staff.
- There will be no formal presentation.

OPEN HOUSE PURPOSE

To invite public input regarding:

- Development of a new roadway alignment for Range Road 245/250, and
- To ultimately achieve an arterial standard.

STUDY AREA



STUDY PURPOSE

1. To assist the County/City in determining and planning for property protection to prepare for future roadway upgrades;
2. This plan would ultimately extend the County's proposed Spine Road (9th Street) south along the City's proposed east leg of a future Boundary Road;
3. To identify intersection locations and interim staging requirements, taking into consideration growth in both municipalities.
4. Prepare a conceptual plan.

STUDY PROCESS

1. Data Collection
2. Develop Roadway Alignment
3. **Open House to Present the Preferred Plan**
4. Meet with Property Owners if Requested
5. Modify and Confirm a Preferred Plan
6. Complete Report
7. Presentation to County and City Councils
8. Plan Approval by the County and City

Range Roads 245 / 250 Functional Plan

ROADWAY FUNCTION

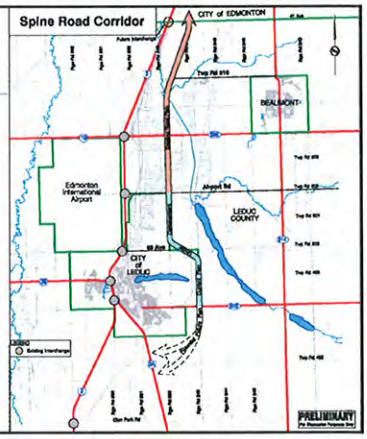
A combined Range Roads 245 and 250 is planned to operate as a major arterial roadway in the future. It will service various future land uses along its length and will serve to extend the County's Spine Road concept south from Airport Road to Highway 623. It will also form the east leg of the City's proposed Boundary Road.

It is possible that in the future the Spine Road could be extended south to connect with Highway 2A south of Leduc.

As a major arterial roadway, access to and from Range Road 245/250 will be through intersections with arterial or collector roads only. In order to maintain high speeds (80 km/h), intersections will be spaced a desirable minimum 800 m apart.

McElhanney 7

SPINE ROAD CORRIDOR

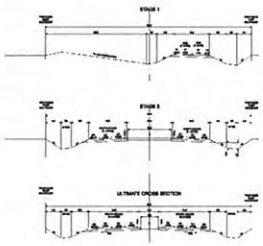


McElhanney

Range Roads 245 / 250 Functional Plan

TYPICAL CROSS-SECTIONS & STAGING

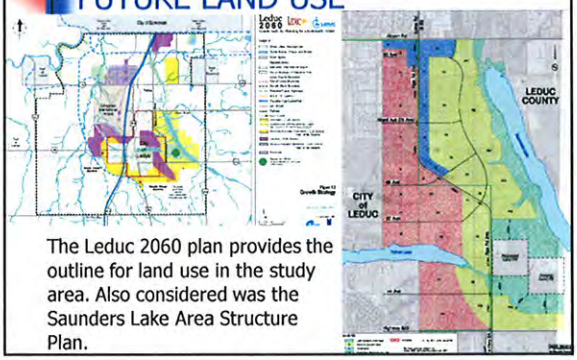
The proposed cross-section for Range Road 245/250 provides for six traffic lanes (3 in each direction). A raised median between the traffic lanes allows left turns at intersections.



McElhanney

Range Roads 245 / 250 Functional Plan

FUTURE LAND USE



The Leduc 2060 plan provides the outline for land use in the study area. Also considered was the Saunders Lake Area Structure Plan.

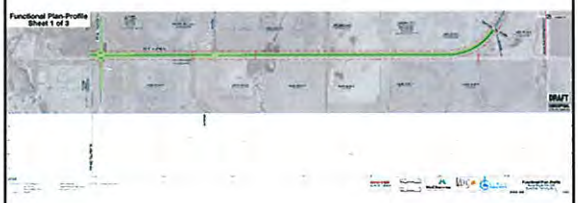
PREFERRED PLAN

Intersection locations are conceptual, subject to actual land development process.

Preferred intersection spacing is 800m.

Range Roads 245 / 250 Functional Plan

PREFERRED PLAN & PROFILE



McElhanney 12

Range Roads 245 / 250 Functional Plan

PREFERRED PLAN & PROFILE

Range Roads 245 / 250 Functional Plan

PREFERRED PLAN & PROFILE

Range Roads 245 / 250 Functional Plan

ENVIRONMENTAL RESOURCES

The study involves reviewing the following environmental issues:

- Soils & Vegetation
- Fish and Wildlife
- Historical Resources
- Stormwater Management

Range Roads 245 / 250 Functional Plan

WHAT HAPPENS NEXT?

- The Preferred Plan may be modified taking into account the comments received here and from other stakeholders.
- The Study Team can meet with interested landowners.
- The final plan will be recommended to the County and City for approval.
- Material will be made available on the City and County web sites.

Range Roads 245 / 250 Functional Plan

WE NEED YOUR HELP.

WHAT HAVE WE MISSED?

- Please help us by taking the time to fill out the questionnaire provided and drop in the box near the entrance.
- The questionnaire can also be returned by mail to the address on the back.

OPEN HOUSE

RANGE ROADS 245/250
Airport Road to Highway 623
Functional Planning Study

THANK YOU
FOR ATTENDING

RANGE ROAD 245 / 250
Airport Road to Highway 623
FUNCTIONAL PLANNING STUDY
Open House – March 5, 2009

- PROJECT QUESTIONNAIRE -

Leduc County and the City of Leduc invite comment from interested local residents and businesses about the preferred plan for future Range Road 245 and 250 passing along the east boundary of the City of Leduc. The County/City attempt to address as many stakeholder issues as possible within existing technical, budgetary, statutory or policy limitations.

If you have comments you would like to share with the County/City, please fill out both sides of this comment sheet and drop in the box near the entrance or return it by mail to the address at the top of the next page. To ensure your comments are considered during the final study phase, please return the questionnaire by March 26, 2009.

1. RESIDENCE and WORKPLACE

Where do you live and/or work?

Live / Work

- ☐ / ☐ City of Leduc
- ☐ / ☐ Leduc County
- ☐ / ☐ Nisku
- ☐ / ☐ Edmonton
- ☐ / ☐ Wetaskiwin
- ☐ / ☐ Millet
- ☐ / ☐ Beaumont
- ☐ / ☐ Other:

2. TRAVEL PURPOSE

Why and how often do you travel through the study area?

- ☐ Residence and Personal Travel
- ☐ Employment
- ☐ Farming
- ☐ Business
- ☐ Trucking
- ☐ Other _____

3. OPEN HOUSE SESSION

How did you hear about this session?

☐ Radio ☐ Newspaper Ad ☐ Television ☐ Flyer ☐ Community/Newsletter ☐ Other_____

Were the information displays helpful?

☐ Yes ☐ No ☐ See Comment _____

Did the Open House help you better understand the study requirements and process?

☐ Yes ☐ No ☐ Comment _____

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LEDUC COUNTY

THE CITY OF LEDUC

4. DEPOSIT QUESTIONNAIRE

Please deposit your questionnaire in the box at the door when you leave.
You may also fax or mail the completed questionnaire to the address below.

Henry Devos, P.Eng.
McElhanney Consulting Services Ltd.
#138, 14315 – 118th Avenue
Edmonton, AB T5L 4S6

Tel: (888) 451-2311 (toll free)
Fax: (780) 452-7033
Email: hdevos@mcelhanney.com

5. COMMENTS

Please use this space to comment on the information presented, or if you have any additional comments from what you've seen today.

6. CONTACT INFORMATION (optional)

Name

Street / Avenue / RR# / Box #

Town / City | Province | Postal Code

Personal information that you provide on this form is protected under the Freedom of Information and Protection of Privacy Act of Alberta. The personal information that is collected on this form relates directly to programs being undertaken by Leduc County and the City of Leduc and may be used to reply to your questions and concerns supplied on this form. No other use will be made of this information and it will not be released without your written consent.

C.2 Open House 2

May 30, 2009

Re: Open House #2 for
Range Road 245 / 250 Functional Planning Study
Airport Road to Highway 623 (Rolly View Road)

Dear Sir or Madam:

Leduc County and the City of Leduc contracted McElhanney Consulting Services to undertake a planning study along Range Roads 245 and 250 passing along the easterly side of the City. The study will assist the County/City in determining and planning for property protection to prepare for future roadway upgrades. This plan would ultimately extend the County's proposed Spine Road (9th Street) south along the City's proposed east leg of the future Boundary Road.

As one of the property owners potentially affected by plans for the roadway upgrading, we wish to extend this invitation to you to attend Open House #2, which will provide an opportunity for input on what is anticipated to be the recommended plan. This plan has been modified since the preliminary information shown at Open House #1 and is the plan that the Study Team hopes to recommend to the County and City Councils. We have placed advertisements in the local newspaper to ensure that all other interested stakeholders are also invited to attend.

The open house is scheduled as follows:

Monday, June 22, 2009
Stakeholders – 4:00 to 6:00 pm
(General Public Hours – 6:00 to 8:00 pm)
Nisku Inn, Ballroom 3
1101 - 4th Street, Nisku

As a potentially affected stakeholder, please attend the open house between 4 and 6 pm; however, feel free to attend either session. For more information on the open house or project, please feel free to contact Henry Devos, Project Manager, McElhanney Consulting Services Ltd. Phone (780) 451-3420 or via email at hdevos@mcelhanney.com.

We look forward to hearing from you or seeing you at the open house.

Yours truly,

Henry Devos, P.Eng.
McElhanney Consulting Services Ltd.

McElhanney

OPEN HOUSE #2

RANGE ROADS 245/250
Airport Road to Highway 623
Functional Planning Study

WELCOME

4 pm to 8 pm
June 22, 2009

McElhanney 1

OPEN HOUSE FORMAT

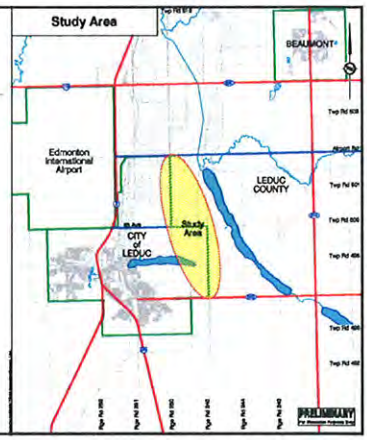
- This Open House is an **Informal Venue**.
- Attendees are provided with the opportunity to view the project information and discuss their interests and concerns with project staff.
- There will be no formal presentation.

OPEN HOUSE PURPOSE

To invite public input regarding:

- The recommended new roadway alignment for Range Road 245/250, and
- The ultimate arterial roadway standards.

STUDY AREA



STUDY PURPOSE

1. To assist the County/City in determining and planning for property protection to prepare for future roadway upgrades;
2. This plan would ultimately extend the County's proposed Spine Road (9th Street) south along the City's proposed east leg of a future Boundary Road;
3. To identify preliminary intersection locations and interim staging requirements, taking into consideration growth in both municipalities.
4. To prepare a conceptual plan.

STUDY PROCESS

1. Data Collection
2. Develop Roadway Alignment
3. Open House 1 - Present Preliminary Plan
4. Meet with Property Owners if Requested
5. Modify and Confirm a Recommended Plan
6. **Open House 2 - Present Recommended Plan**
7. Presentation to County and City Councils
8. Plan Approval by the County and City

Range Roads 245 / 250 Functional Plan

ROADWAY FUNCTION

- A combined Range Roads 245 and 250 is planned to operate as a major arterial roadway in the future. It will service various future land uses along its length and will extend the County's Spine Road concept south from Airport Road to Highway 623. It will also form the east leg of the City's proposed Boundary Road.
- It is possible that in the future the Spine Road could be extended south to connect with Highway 2A south of Leduc.
- As a major arterial roadway, access to and from Range Road 245/250 will be through intersections with arterial or collector roads only. In order to maintain the design speed (80 km/h), intersections will be spaced a minimum 800m apart.

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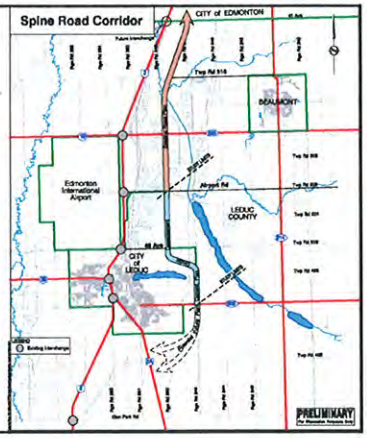
SPINE ROAD CORRIDOR



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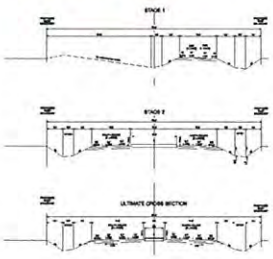
Range Roads 245 / 250 Functional Plan

TYPICAL CROSS-SECTIONS & STAGING

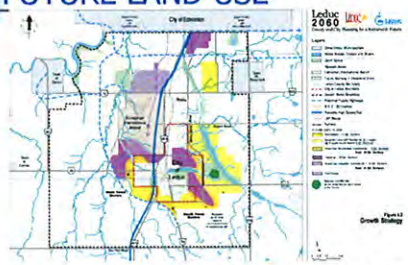
The proposed cross-section for Range Road 245/250 provides for six traffic lanes (3 in each direction). A raised median between the traffic lanes allows left turns at intersections.



McElhanney PRELIMINARY

Range Roads 245 / 250 Functional Plan

FUTURE LAND USE



The Leduc 2060 plan provides a broad outline for land use in the study area. Also considered was the Saunders Lake Area Structure Plan.

Range Roads 245 / 250 Functional Plan

ACCESS TO LANDFILL SITE

Background:

- Present access to the Leduc Regional Landfill has been provided off of Range Road 244 as Range Road 245 is only gravel surfaced.

Future Access:

- After Range Road 245/250 is upgraded to the proposed standards, additional access to the landfill could also potentially be provided from RR 245.
- The additional access would improve landfill operations and reduce costs for the operator and users.

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Range Roads 245 / 250 Functional Plan

PUBLIC INPUT – OPEN HOUSE 1

The primary concerns were:

- Proximity of roadway alignment to rural residential lands near Saunders Lake.
- Loss of continuity in 65th Avenue at Rge Rd 250.
- Need for greater proximity of road alignment to airport noise contour Noise Exposure Forecast (NEF) 30.
- Impact on the George Brown Drainage Channel and area drainage patterns.

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Range Roads 245 / 250 Functional Plan

ADDITIONAL ALTERNATIVES

In response to the concerns identified at Open House 1, the Study Team developed three additional Road Network / Land Use options, shown on the following panels.

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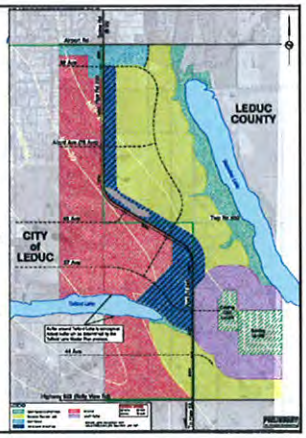
ROAD NETWORK / LAND USE - OPTION 1A

Changes:

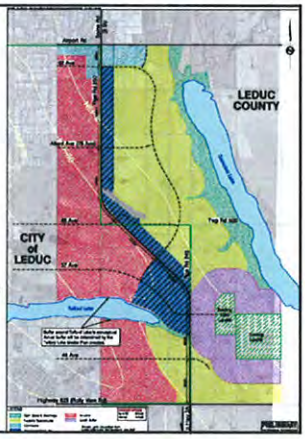
- Supporting Road Network and Land Use modified from the plan shown at Open House 1.
- The main roadway alignment is the same as original Option 1.
- Poor staging for 65th Avenue, terminating at Spine Road.
- Potential impact on George Brown Drainage Channel.
- OPTION NOT PREFERRED



ROAD NETWORK / LAND USE - OPTION 2

Changes:

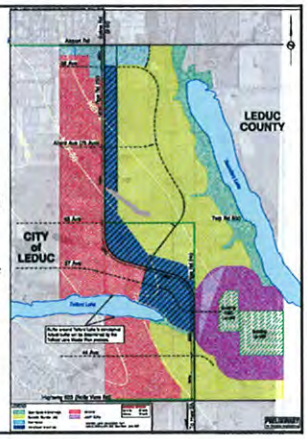
- The east curve in the main roadway alignment shifted south to pull the alignment away from Township Rd 500 and the George Brown Drainage Channel.
- Potential access to landfill off of Rge Rd 245 is maintained.
- 65th Avenue now extends east across the Spine Road.
- OPTION NOT PREFERRED



ROAD NETWORK / LAND USE - OPTION 3

Changes:

- The west curve in the main roadway alignment shifted south to improve staging and simplify connection with 65th Avenue.
- Potential access to landfill off of Rge Rd 245 is maintained.
- 65th Avenue is unaffected by construction of the main roadway alignment.
- RECOMMENDED OPTION



ROAD NETWORK / LAND USE - OPTION 4

Changes:

- The west curve in the main roadway alignment was shifted further south to improve proximity to the NEF 30 noise contour.
- Results in poor access to the landfill.
- Results in poor realignment and staging for 65th Avenue.
- OPTION REJECTED

Range Roads 245 / 250 Functional Plan

EVALUATION OF OPTIONS

The primary objectives/criteria are:

- Maintain minimum 800m intersection spacing.
- Staging to minimize disruption to 65th Avenue.
- Proximity of road alignment to airport noise contour Noise Exposure Forecast (NEF) 30 as a buffer between land uses.
- Minimize impact on the George Brown Drainage Channel and area drainage patterns.
- Provide for potential future access to landfill from Range Road 245, as well as to developable lands to the west.
- Placement of transitional land uses.

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Range Roads 245 / 250 Functional Plan

SELECTION OF RECOMMENDED PLAN

Objective / Option	1A	2	3	4
800m Intersection Spacing	**Good**	**Good**	**Good**	**Good**
Provision of Potential Future Access to Landfill	**Good**	**Good**	**Good**	Poor
Staging/Disruption of 65th Avenue	Terminates at Spine Rd	Realigned	**Un-interrupted**	Realigned
Proximity to NEF30 Noise Contour	Poor proximity	**Good proximity**	Poor proximity	Best proximity
Minimize Impact on George Brown Drainage Channel	Greatest potential impact	Some potential impact	**Least potential impact**	Some potential impact
Ranking	**Third**	**Second**	**First**	**Fourth**

Range Roads 245 / 250 Functional Plan

SELECTION OF RECOMMENDED PLAN

Option 3 is recommended because:

- It causes the least disruption to 65th Avenue.
- It provides potential future access to the landfill, as well as to developable lands to the west.
- It poses the least impact on the George Brown Drainage Channel and area drainage patterns.

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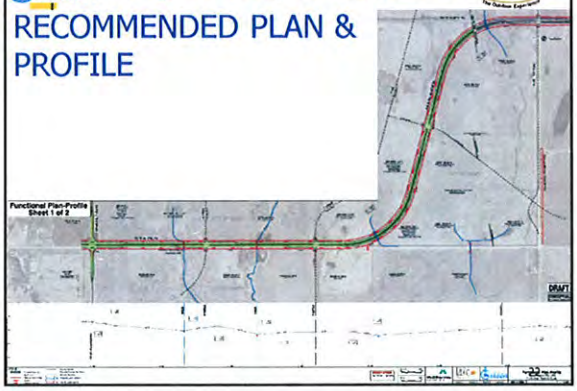
RECOMMENDED PLAN

- Intersection locations are conceptual, subject to actual land development process.
- Intersections with arterial and collector roads only.
- Intersection spacing is minimum 800m.

Range Roads 245 / 250 Functional Plan

RECOMMENDED PLAN & PROFILE



Range Roads 245 / 250 Functional Plan

RECOMMENDED PLAN & PROFILE

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Range Roads 245 / 250 Functional Plan

ENVIRONMENTAL RESOURCES

The study involves reviewing the following environmental issues:

- Soils & Vegetation
- Fish and Wildlife
- Historical Resources
- Stormwater Management

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Range Roads 245 / 250 Functional Plan

WHAT HAPPENS NEXT?

- The Recommended Plan may be modified taking into account the comments received here and from other stakeholders.
- The Study Team can still meet with interested landowners.
- The final plan will be recommended to the County and City for approval.
- Material will be made available on the City and County web sites.

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Range Roads 245 / 250 Functional Plan

WE NEED YOUR HELP.

WHAT HAVE WE MISSED?

- Please help us by taking the time to fill out the questionnaire provided and drop in the box near the entrance.
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OPEN HOUSE #2

RANGE ROADS 245/250
Airport Road to Highway 623
Functional Planning Study

THANK YOU
FOR ATTENDING

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RANGE ROAD 245 / 250
Airport Road to Highway 623
FUNCTIONAL PLANNING STUDY
Open House #2 – June 22, 2009

- PROJECT QUESTIONNAIRE #2-

Leduc County and the City of Leduc invite comment from interested local residents and businesses about the revise plan for future Range Road 245 and 250 passing along the east boundary of the City of Leduc. The County/City attempt to address as many stakeholder issues as possible within existing technical, budgetary, statutory or policy limitations.

If you have comments you would like to share with the County/City, please fill out both sides of this comment sheet and drop in the box near the entrance or return it by mail to the address at the top of the next page. To ensure your comments are considered during the final study phase, please return the questionnaire by July 15, 2009.

1. RESIDENCE and WORKPLACE

Where do you live and/or work?

Live / Work

- ☐ / ☐ City of Leduc
- ☐ / ☐ Leduc County
- ☐ / ☐ Nisku
- ☐ / ☐ Edmonton
- ☐ / ☐ Wetaskiwin
- ☐ / ☐ Millet
- ☐ / ☐ Beaumont
- ☐ / ☐ Other:

2. TRAVEL PURPOSE

Why and how often do you travel through the study area?

- ☐ Residence and Personal Travel
- ☐ Employment
- ☐ Farming
- ☐ Business
- ☐ Trucking
- ☐ Other _____

3. OPEN HOUSE SESSION

How did you hear about this session?

☐ Newspaper ☐ Study Notice ☐ Community/Newsletter ☐ Other_____

Were the information displays helpful?

☐ Yes ☐ No ☐ See Comment _____

Did the Open House help you better understand the study requirements and process?

☐ Yes ☐ No ☐ Comment _____

McElhanney

LEDUC COUNTY

THE CITY OF LEDUC
The Outdoor Experience

4. DEPOSIT QUESTIONNAIRE

Please deposit your questionnaire in the box at the door when you leave.
You may also fax or mail the completed questionnaire to the address below.

Henry Devos, P.Eng.
McElhanney Consulting Services Ltd.
#138, 14315 – 118th Avenue
Edmonton, AB T5L 4S6

Tel: (888) 451-2311 (toll free)
Fax: (780) 452-7033
Email: hdevos@mcelhanney.com

5. COMMENTS

Please use this space to comment on the information presented, or if you have any additional comments from what you've seen today.

6. CONTACT INFORMATION (optional)

Name

Street / Avenue / RR# / Box #

Town / City | Province | Postal Code

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D) SITE PHOTOGRAPHS

D.1 Bridge Planning

Looking upstream towards culvert outlet.

Looking downstream and east.

Looking upstream and west.

Range Road 245 / 250 Planning Study
Bridge Assessments
– Site "A" –
2008-11-07

Figure 2

Looking upstream and west.

Looking downstream towards culvert inlets.

Looking downstream and east.

Range Road 245 / 250 Planning Study
Bridge Assessments
– Site "B" –
2008-11-07
Figure 3

Looking upstream and west.

Looking downstream and east.

Range Road 245 / 250 Planning Study
Bridge Assessments
– Site "C" –
2008-11-07
Figure 4

Looking upstream and west alongside Twp Rd 500.

Looking upstream and west from Twp Rd 500 / Rge Rd 245. intersection.

Range Road 245 / 250 Planning Study
Bridge Assessments
– Site "D" –
2008-11-07

Figure 5

Looking upstream and west.

Looking downstream and southeast.

Range Road 245 / 250 Planning Study
Bridge Assessments
– Site "E" –
2008-11-07
Figure 6

Photo 1
Telford Creek Bed. Channel assessment point, TC 1. 3.2m channel width, 50cm total capacity depth.

Photo 2
Aspen Woodlot Vegetation Plot V2

Photo 3
Aspen Woodlot Vegetation Plot V1

Photo 4
Telford Lake, North Shore Vegetation Plot TL1

Photo 5
Graminoid dominated wetland, VEC #40

Photo 6
Graminoid dominated wetland, VEC #45

Photo 7
Telford Creek Riparian Vegetation with surrounding Aspen Stand, VEC #14

GEO-ENVIRONMENTAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by EBA in its reasonably exercised discretion.

E) EXHIBITS

List of Exhibits

NE19 49-24-4
Madona Abboud

052 6444, Blk 1, Lot 2
Roger Ramsey
Vilma Ramsey
Renuka Verma
Pawan Chugh
Ha Nu Ho
195 Ownership Titles, 1/468 Interest

HWY 623 (ROLLY VIEW RD)

052 6444, Blk 1, Lot 1
Harvey George Bakker
Pamela Sandra Bakker

44 AVENUE
Future Rd (by Others)

CITY OF LEDUC

NE30 49-24-4
Nora Josaphine Gaetz

57 AVENUE
Future Rd (by Others)

902 3255, Lot 2
S & D International Group Inc.
141 Ownership Titles

RGE RD 245 (SPINE RD)

Altalink Transmission Line R/W
Alta Gas Oil Pipeline R/W

10+000
10+500
11+000
11+500

Match Line Sta. 11+800

752 0796, Lot A
Vernon Stanley Bretin
Violet Margaret Bretin

SW29 49-24-4
395209 Alberta Ltd.

NW29 49-24-4
Baramy Investments Ltd.

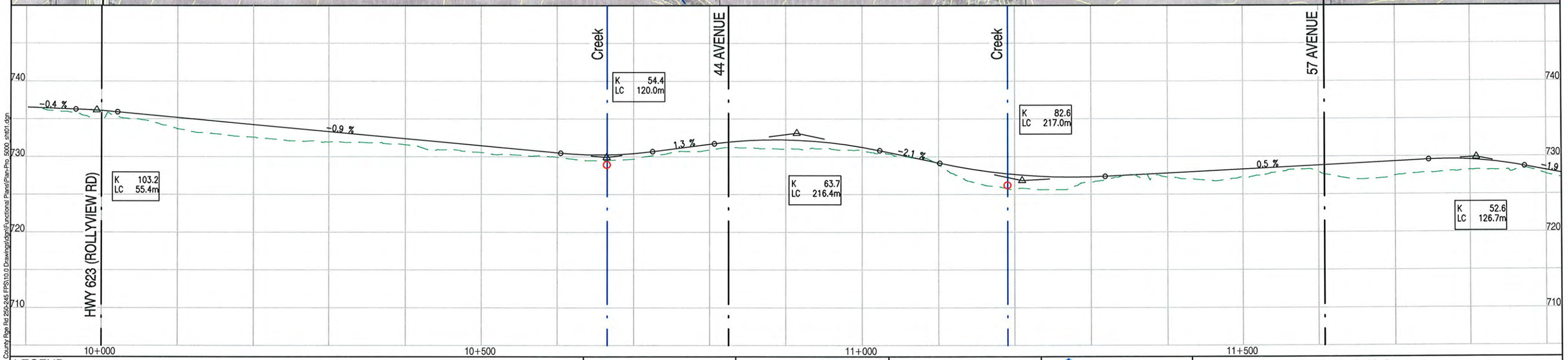
NW29 49-24-4
Leduc County

SW32 49-24-4
Leduc County

Landfill Access

LEDUC COUNTY

725



LEGEND

- Proposed Alignment
- Cut-Fill Limit
- Required Right-of-Way Closure
- Drainage Direction
- Altalink Tower
- Existing Roadway
- Proposed Roadway (By Others)
- Municipal Boundary
- Existing Centerline Profile
- Proposed Culvert Location
- Existing Culvert Location

DESIGN SPEED
Rge Rd 245 90 km/h

Horizontal: 1:5000
50m 0 100m

Vertical: 1:500
5m 0 10m

McElhanney
Consulting Services Ltd.

THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

Drawn by TD | Designed by TD | Checked by DF | Approved by

JUL 28 2010

Exhibit 1.1
Functional Plan-Profile
Range Roads 245 / 250
Functional Planning Study

Match Line Sta. 11+800

902 3255, Lot 2
S & D International Group Inc.
141 Ownership Titles

R= 500m
Ls= 61m

57 AVENUE
Future Rd (by Others)

SW31 49-24-4
Geoffret L Gaetz
Penn West Petroleum Ltd.

SW32 49-24-4
Leduc County

12+000

Keyera Energy Ltd. (Rimbey) Oil Pipeline R/W
Alta Gas Oil Pipeline R/W
Imperial Oil Resources Ltd

902 3255, Lot 1
S & D International Group Inc.
Darlene Gallo Capiral
Arnold Ablaza Capiral
Robert John Yaniw
Carol Edna Yaniw
138 Ownership Titles, 4/319 Interest

Future Rd (by Others)

RGE RD 245 / 250 (SPINE RD)

RGE RD 245 (SPINE RD)

12+500

13+000

13+500

Match Line Sta. 13+600

SW32 49-24-4
Denton Holdings Ltd.

Altalink Transmission Line R/W
Alta Gas Oil Pipeline R/W

NW31 49-24-4
1355181 Alberta Ltd.

NE31 49-24-4
S & D International Group Inc.
138 Ownership Titles

LEDUC COUNTY

CITY OF LEDUC

Future Rd (by Others)

Plains Western Gas & Electric Co. Ltd
Gas Pipeline R/w

R= 500m
Ls= 61m

Creek

R/W
R/W
R/W

Future Road (by Others)

750
740
730
720
710

K 79.4
LC 200.0m

K 52.6
LC 126.7m

K 95.3
LC 120.0m

0.1 %
-1.9 %
0.6 %
-0.6 %

12+000
12+500
13+000
13+500

21/01/2011 Q:\Jobs\79_0 Leduc County\Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Panel\Plan-Pro 5000 sht02.dgn

LEGEND

- Proposed Alignment
- Cut-Fill Limit
- Required Right-of-Way Closure
- Drainage Direction
- Altalink Tower
- Existing Roadway
- Proposed Roadway (By Others)
- Municipal Boundary
- Existing Centerline Profile
- Proposed Culvert Location
- Existing Culvert Location

DESIGN SPEED
Rge Rd 245 90 km/h

Horizontal: 1:5000
50m 0 100m

Vertical: 1:500
5m 0 10m

McElhanney
Consulting Services Ltd.

THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

Exhibit 1.2
Functional Plan-Profile
Range Roads 245 / 250
Functional Planning Study

Drawn by TD	Designed by TD	Checked by DF	Approved by	JAN 20 2011		2 of 5

CITY OF LEDUC

792 1548 (Blk A)
Kevin J Gaetz

Plains Western Gas & Electric Co. Ltd
Gas Pipeline R/W

65 AVE

SE1 50-25-4
Peter Brouer
Robin Grigat

NE1 50-25-4
Harold William Grigat
Margaret Ellen Grigat
Elizabeth Wahl

RGE RD 250 (SPINE RD)

Match Line Sta. 15+100

14+000

14+500

15+000

992 6636, Lot 3
Charles R. Marsden

992 6636, Lot 2
Jacob Vos
Grace Vos

NW6 50-24-4
Jacob Vos
Grace Vos

Match Line Sta. 13+600

13+500

R= 500m
Ls= 61m

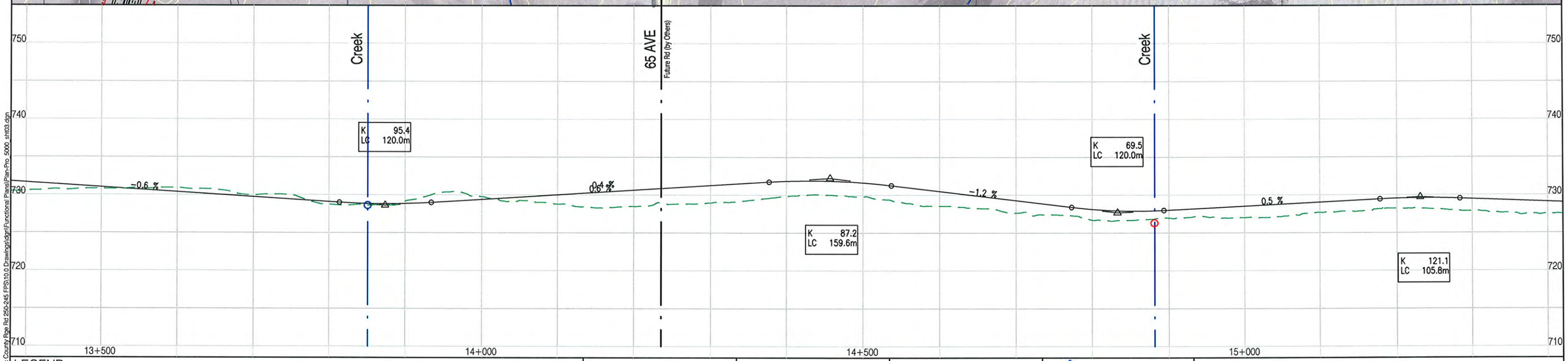
NW31 49-24-4
1355181 Alberta Ltd.

NW31 49-24-4
1355181 Alberta Ltd.

Twp Rd 500

Future Rd (by Others)

LEDUC COUNTY



LEGEND

- Proposed Alignment
- Cut-Fill Limit
- Required Right-of-Way Closure
- Drainage Direction
- Altalink Tower
- Existing Roadway
- Proposed Roadway (By Others)
- Municipal Boundary
- Existing Centerline Profile
- Proposed Culvert Location
- Existing Culvert Location

DESIGN SPEED
Rge Rd 250 90 km/h

Horizontal: 1:5000
50m 0 100m

Vertical: 1:500
5m 0 10m

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC — The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by DF	Approved by

JUL 28 2010

Exhibit 1.3
Functional Plan-Profile
Range Roads 245 / 250
Functional Planning Study

21/01/2011 Q:\Jobs\79_0_Leduc County Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\Plan-Pro_5000_shtt03.dgn

NE1 50-25-4
Harold William Grigat
Margaret Ellen Grigat
Elizabeth Wahl

NE1 50-25-4
William E G Forster
Marion Louise Klak
Cathton Holdings Ltd.

CITY OF LEDUC

SE12 50-25-4
Cathton Holdings Ltd.

NE12 50-25-4
Sturgeon Homes Inc.

ALLARD AVE (75 AVE)
Future Rd (by Others)

RGE RD 250 (SPINE RD)

Match Line Sta. 15+100

Match Line Sta. 16+800

15+000

15+500

16+000

16+500

725

NW6 50-24-4
Jacob Vos
Grace Vos

NW6 50-24-4
Angus McDonald
Leo Pernisch

SW7 50-24-4
Martin Madu
Harold Madu
Reinhold Madu
Esther Collinge
Ottilie Elbers
Lawrence Rufus Burgess
Terraspan Investments Ltd.
Martha Madu
Ethel Salomi Maku

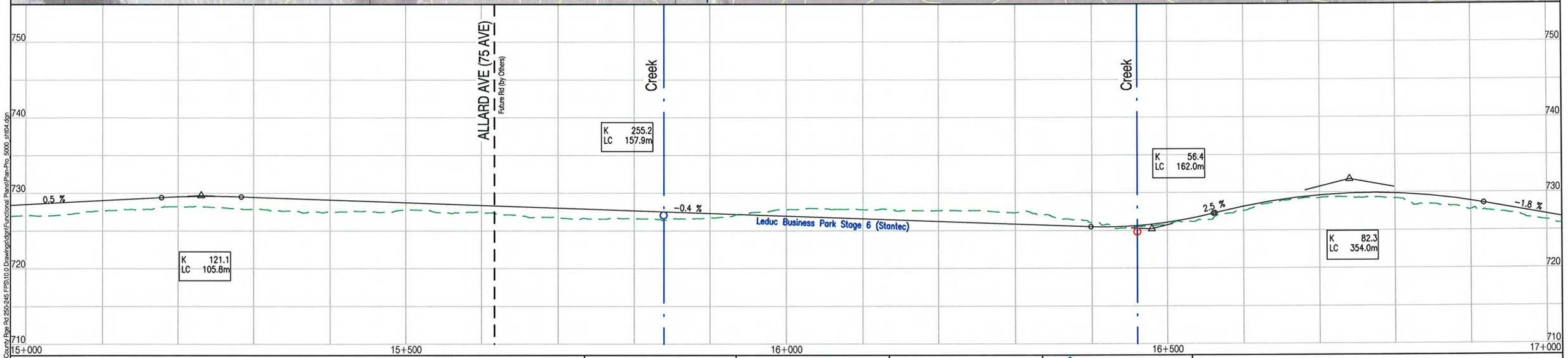
NW7 50-24-4
718721 Alberta Ltd.

992 6636, Lot 2
Jacob Vos
Grace Vos

LEDUC COUNTY

720

725



LEGEND

- Proposed Alignment
- Cut-Fill Limit
- Required Right-of-Way Closure
- Drainage Direction
- Altalink Tower
- Existing Roadway
- Proposed Roadway (By Others)
- Municipal Boundary
- Existing Centerline Profile
- Proposed Culvert Location
- Existing Culvert Location

DESIGN SPEED
Rge Rd 250 90 km/h

Horizontal: 1:5000
50m 0 100m

Vertical: 1:500
5m 0 10m

McElhanney
Consulting Services Ltd.

THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by DF	Approved by

JUL 28 2010

Exhibit 1.4
Functional Plan-Profile
Range Roads 245 / 250
Functional Planning Study

21/01/2011 Q:\Jobs\79_Leduc County Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plan\Plan-Pro_5000_sht04.dgn

CITY OF LEDUC

NE12 50-25-4
Sturgeon Homes Inc.

SE12 50-25-4
Cathton Holdings Ltd.

82 Ave
Future Rd (by Others)

Match Line Sta. 16+800

R= 1000m
Ls= 50.6

354TR, Lot A
Sturgeon Homes Inc.

15.26

1050 Dia. San. Sewer

RGE RD 250 (SPINE RD)

900 Dia. San. Sewer

9 ST (SPINE RD)

16+500

17+000

17+500

15.50

2392 MC, OT
AltaLink Mangament Ltd.

782 0651, Block 1
Club Med Pet Resort Ltd

932 0956, Lot 1
Alberta Swine Genetics Corporation

R= 1000m
Ls= 50.6m

SW7 50-24-4
Martin Madu
Harold Madu
Reinhold Madu
Esther Collinge
Ottilie Elbers
Lawrence Rufus Burgess
Terraspan Investments Ltd.
Martha Madu
Ethel Salomi Maku

NW7 50-24-4
718721 Alberta Ltd.

82 Ave
Future Rd (by Others)

AIRPORT RD

Altalink Powerline R/W

Altalink Powerline R/W

LEDUC COUNTY

9021595, Lot 1
1343576
Alberta Ltd.

720

725

710

Creek

82 Ave
Future Rd (by Others)

AIRPORT RD

740
730
720
710

K 56.4
LC 162.0m

-0.4 %

2.5 %

Leduc Business Park Stage 6
(Stantec)

K 82.3
LC 354.0m

-1.8 %

K 76.6
LC 117.7m

-3.3 %

16+500

17+000

17+500

18+000

LEGEND

- Proposed Alignment
- Cut-Fill Limit
- Required Right-of-Way Closure
- Drainage Direction
- Altalink Tower
- Existing Roadway
- Proposed Roadway (By Others)
- Municipal Boundary
- Existing Centerline Profile
- Proposed Culvert Location
- Existing Culvert Location

DESIGN SPEED
Rge Rd 250 90 km/h

Horizontal: 1:5000
50m 0 100m

Vertical: 1:500
5m 0 10m

McElhanney
Consulting Services Ltd.

THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

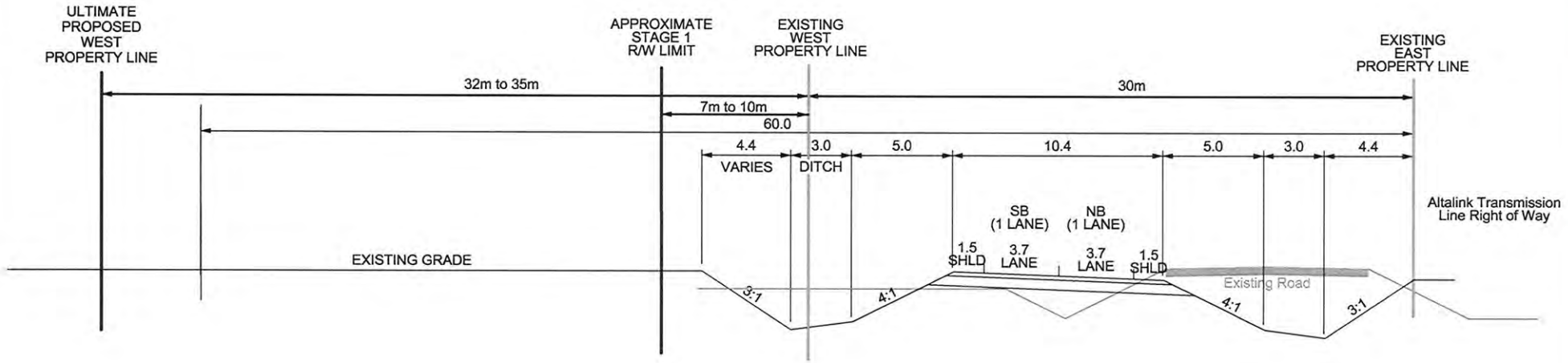
Exhibit 1.5
Functional Plan-Profile
Range Roads 245 / 250
Functional Planning Study

Drawn by TD	Designed by TD	Checked by DF	Approved by	JUL 28 2010		5 of 5

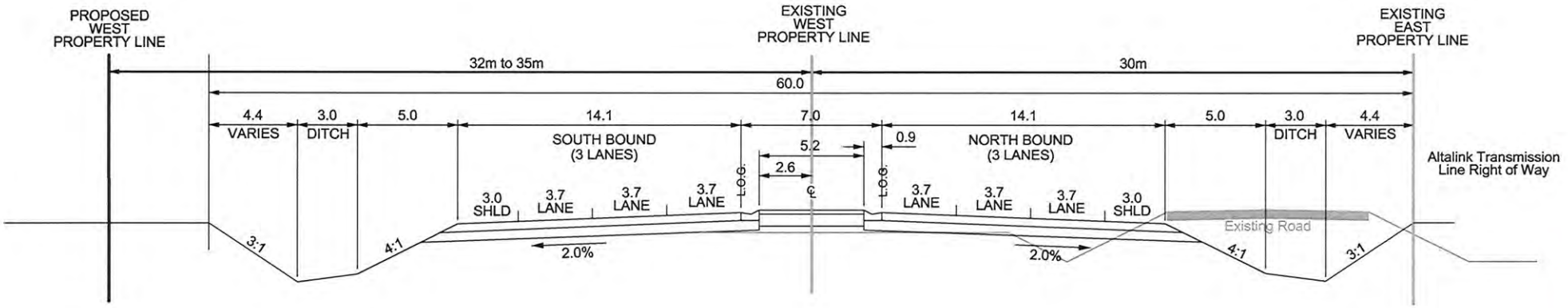
21/01/2011 Q:\Jobs\79.0_Leduc County Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\Plan-Pro_5000_sht05.dgn

Rge Rd 245 - Highway 623 (Rolly View Road) to 57 Avenue

STAGE 1



ULTIMATE



Looking North

LEGEND

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

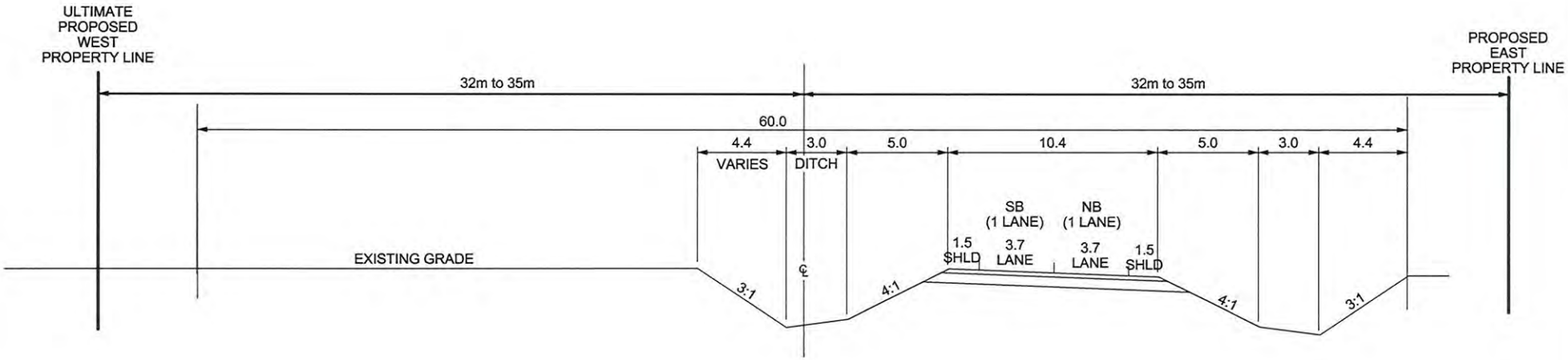
LEDUC COUNTY

Exhibit 2.1
Typical Cross Section - 10+000 to 11+781
Range Roads 245 / 250
Functional Planning Study

Drawn by TD	Designed by	Checked by HD	Approved by	JAN 20 2011	N.T.S.	1 of 6

57 Avenue to 65 Avenue

STAGE 1



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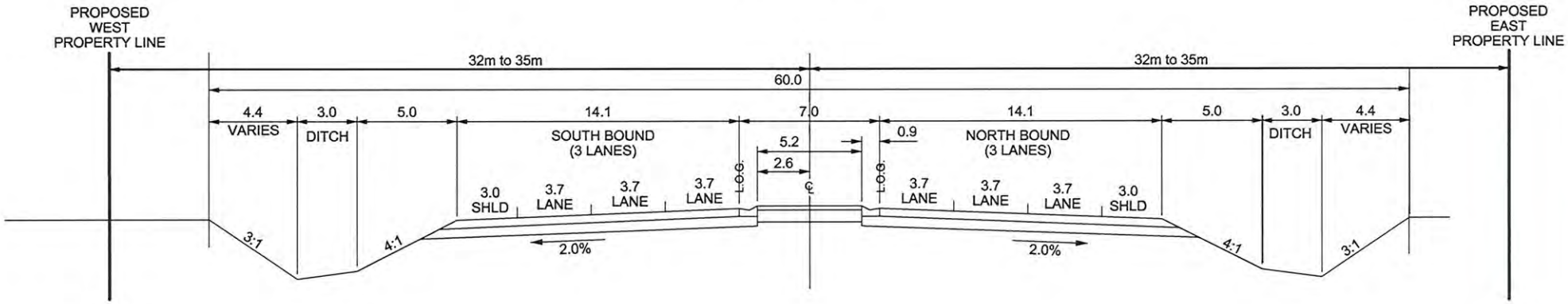


Looking North

LEGEND

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

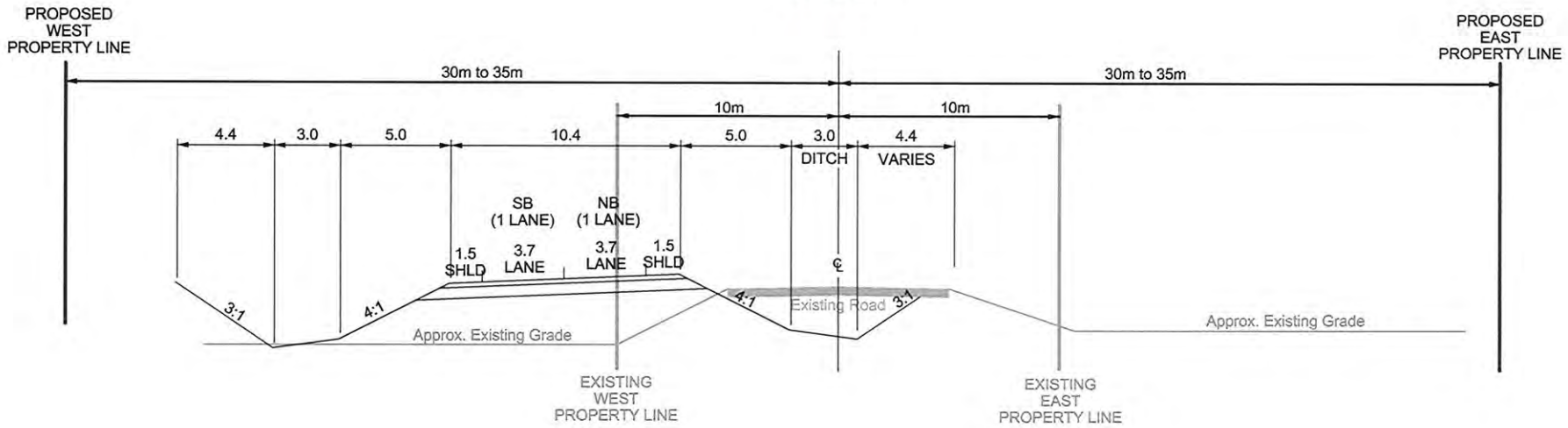
LEDUC COUNTY

Exhibit 2.2
Typical Cross Section - 11+781 to 14+045
Range Roads 245 / 250
Functional Planning Study

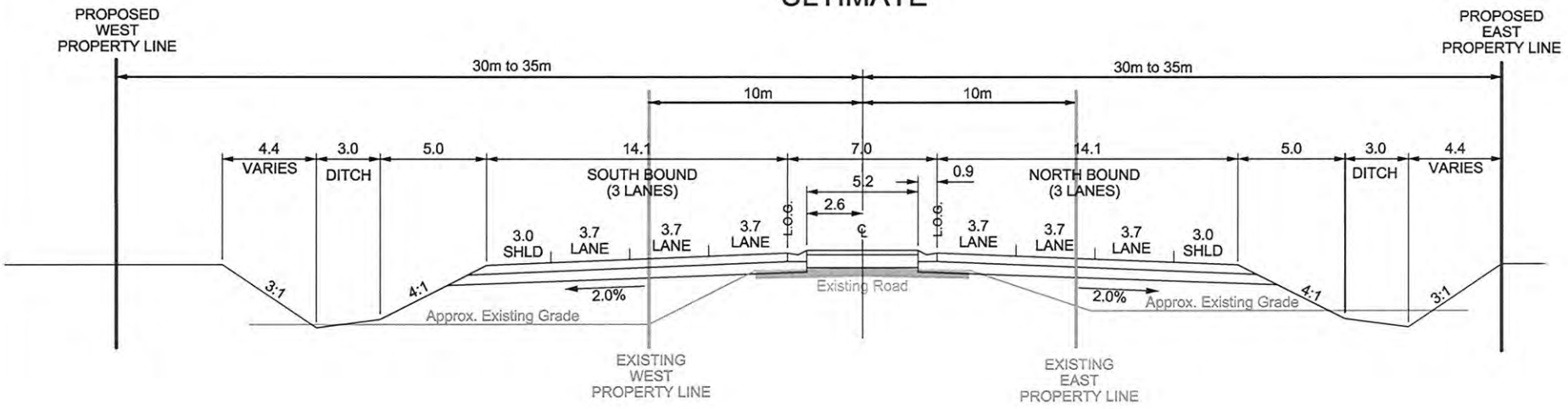
Drawn by TD	Designed by	Checked by HD	Approved by	JAN 20 2011	N.T.S.	2 of 6

Rge Rd 250 - 65 Avenue to Approximately 75 Avenue

STAGE 1



ULTIMATE



Looking North

LEGEND

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

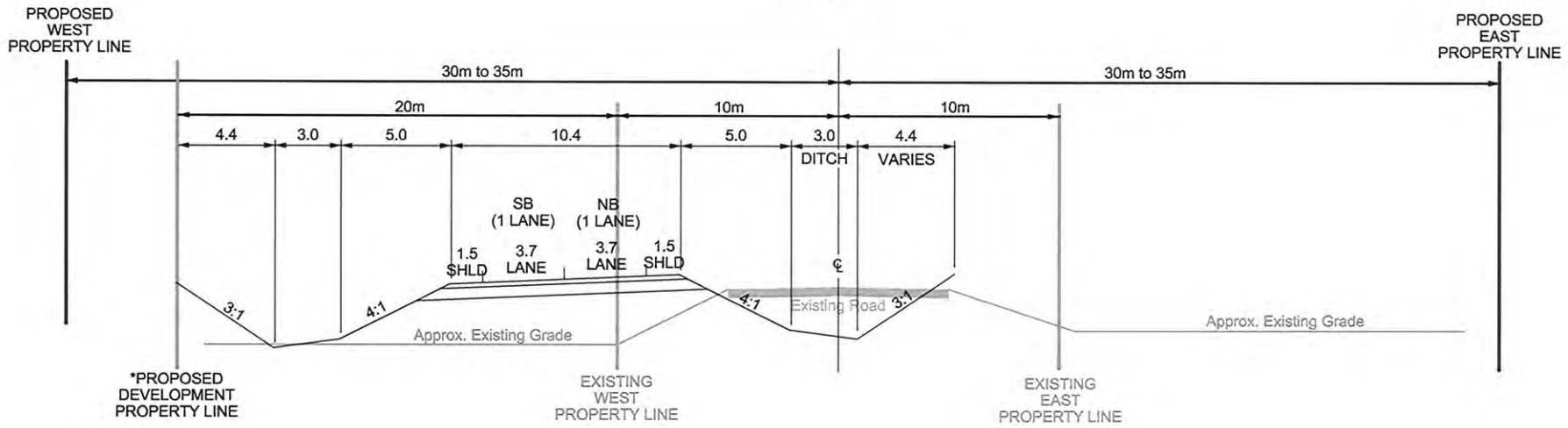
LEDUC COUNTY

Exhibit 2.3
Typical Cross Section - 14+045 to 15+452
Range Roads 245 / 250
Functional Planning Study

Drawn by TD	Designed by	Checked by HD	Approved by	JAN 20 2011	N.T.S.	3 of 6

Rge Rd 250 - 75 Avenue to south of 82 Avenue

STAGE 1



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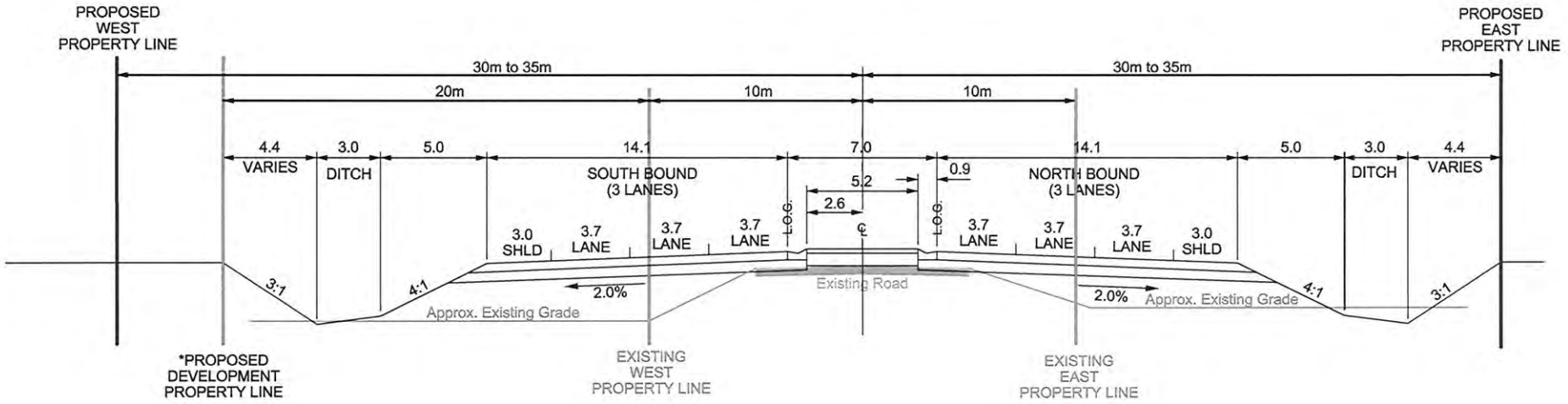


Looking North

* Stantec's overall grading plan. Leduc Business Park Stage 6.

LEGEND

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

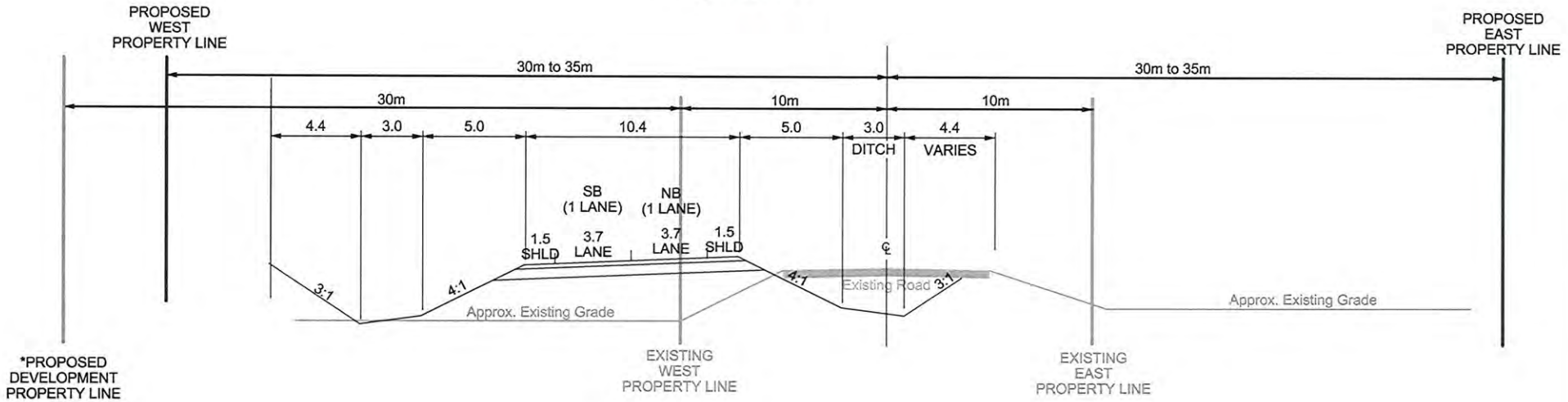
LEDUC COUNTY

Exhibit 2.4
Typical Cross Section - 15+452 to 16+858
Range Roads 245 / 250
Functional Planning Study

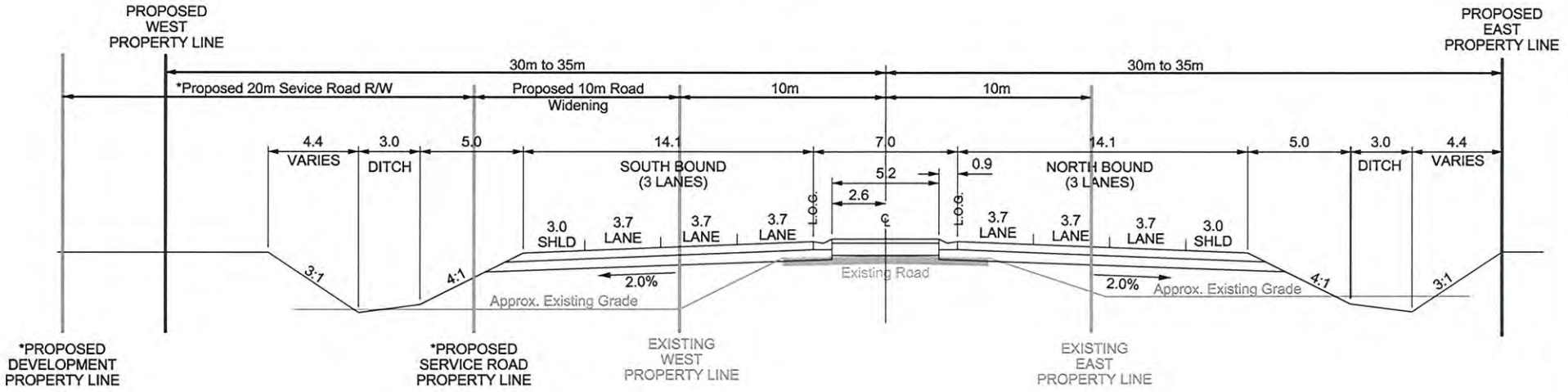
Drawn by TD	Designed by	Checked by HD	Approved by	JAN 20 2011	N.T.S.	4 of 6

Rge Rd 250 - South of 82 Avenue to South of Airport Rd

STAGE 1



ULTIMATE



Looking North

* Sturgeon Homes Inc. Proposed Site Plan by Durrance & Associates, 22/06/05

LEGEND

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

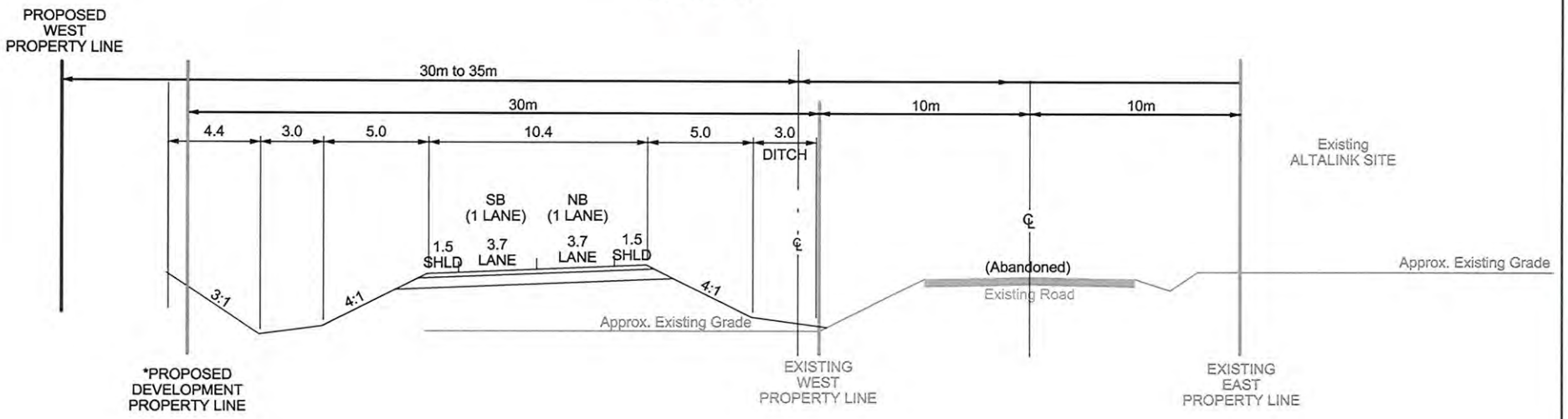
LEDUC COUNTY

Exhibit 2.5
Typical Cross Section - 16+658 to 17+340
Range Roads 245 / 250
Functional Planning Study

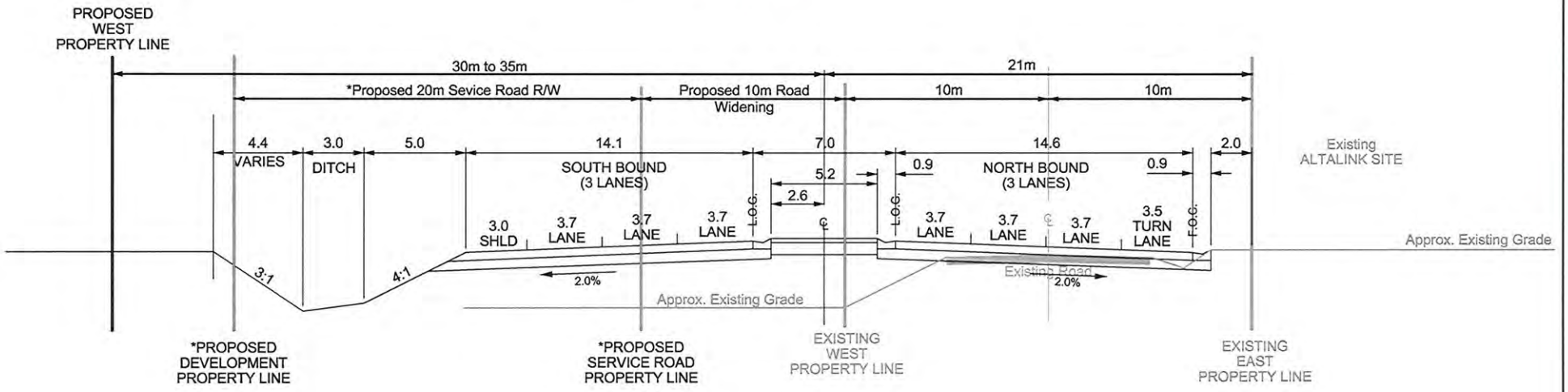
Drawn by TD	Designed by	Checked by HD	Approved by	JAN 20 2011	N.T.S.	5 of 6

Rge Rd 250 - South Airport Rd to Airport Rd

STAGE 1



ULTIMATE



Looking North

* Sturgeon Homes Inc. Proposed Site Plan by Durrance & Associates, 22/06/05

LEGEND

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

LEDUC COUNTY

Exhibit 2.6
Typical Cross Section - 17+340 to 17+443
Range Roads 245 / 250
Functional Planning Study

Drawn by TD	Designed by	Checked by HD	Approved by	JAN 20 2011	N.T.S.	6 of 6

CITY OF LEDUC

LEDUC COUNTY

NE19 49-24-4
Madona Abboud

752 0796, Lot A
Vernon Stanley Bretin
Violet Margaret Bretin

052 6444, Blk 1, Lot 2
Roger Ramsey
Vilma Ramsey
Renuka Verma
Pawan Chugh
Ha Nu Ho
195 Ownership Titles, 1/468 Interest

052 6444, Blk 1, Lot 1
Harvey George Bakker
Pamela Sandra Bakker
Box 3233
Leduc, AB, T9E 6L9

NE30 49-24-4
Nora Josephine Gaetz
4512-52 Ave
Leduc, AB, T9E 5W8

902 3255, Lot 2
S & D International Group Inc.
141 Ownership Titles

SW29 49-24-4
395209 Alberta Ltd.

NW29 49-24-4
Baramy Investments Ltd.

NW29 49-24-4
Leduc County

SW32 49-24-4
Leduc County

HWY 623 (ROLLY VIEW RD)

44 AVENUE

Future Rd (by Others)

57 AVENUE

Future Rd (by Others)

Landfill Access

57 AVENUE

RGE RD 245 (SPINE RD)

Keyera Energy Ltd. (Rimbey) Oil Pipeline R/W
Alta Gas Oil Pipeline R/W
Imperial Oil Resources Ltd

Altalink Transmission Line R/W
Alta Gas Oil Pipeline R/W

1.55 ha.
3.83 ac.

1.37 ha.
3.38 ac.

3.32 ha.
8.21 ac.

0.01 ha.
0.03 ac.

N 5898856.116
E 100592.498

N 5898865.906
E 100592.278

N 5898868.981
E 100729.067

R=25m

N 5898894.511
E 100753.501

N 5898860.517
E 100788.232

N 5899263.890
E 100745.590

N 5899264.648
E 100779.751

N 5899663.321
E 100733.206

N 5899663.406
E 100737.033

N 5899664.168
E 100771.366

N 5899664.299
E 100777.300

N 5899992.542
E 100726.155

N 5899992.649
E 100731.154

N 5900467.046
E 100720.993

N 5900467.934
E 100760.443

N 5898862.364
E 100815.327

R=25m

N 5898887.376
E 100814.792

N 5898862.916
E 100840.335

Notes:

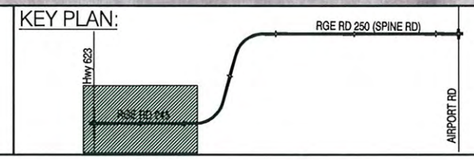
- Right-of-Way requirements are subject to change following completion of future detail design and drainage plans and establishing final profile grades.
- Where design Cut/Fill width would have exceeded 35m from centerline, a 35m maximum was used.
- There will be no acquisition of Altalink Lands.

Cross Section #1 10+000 - 11+781

LEGEND

- Proposed Alignment
- Required Right-of-Way
- Property Required
- Municipal Boundary
- Altalink Tower

KEY PLAN:



McElhanney
Consulting Services Ltd.

THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by HD	Approved by

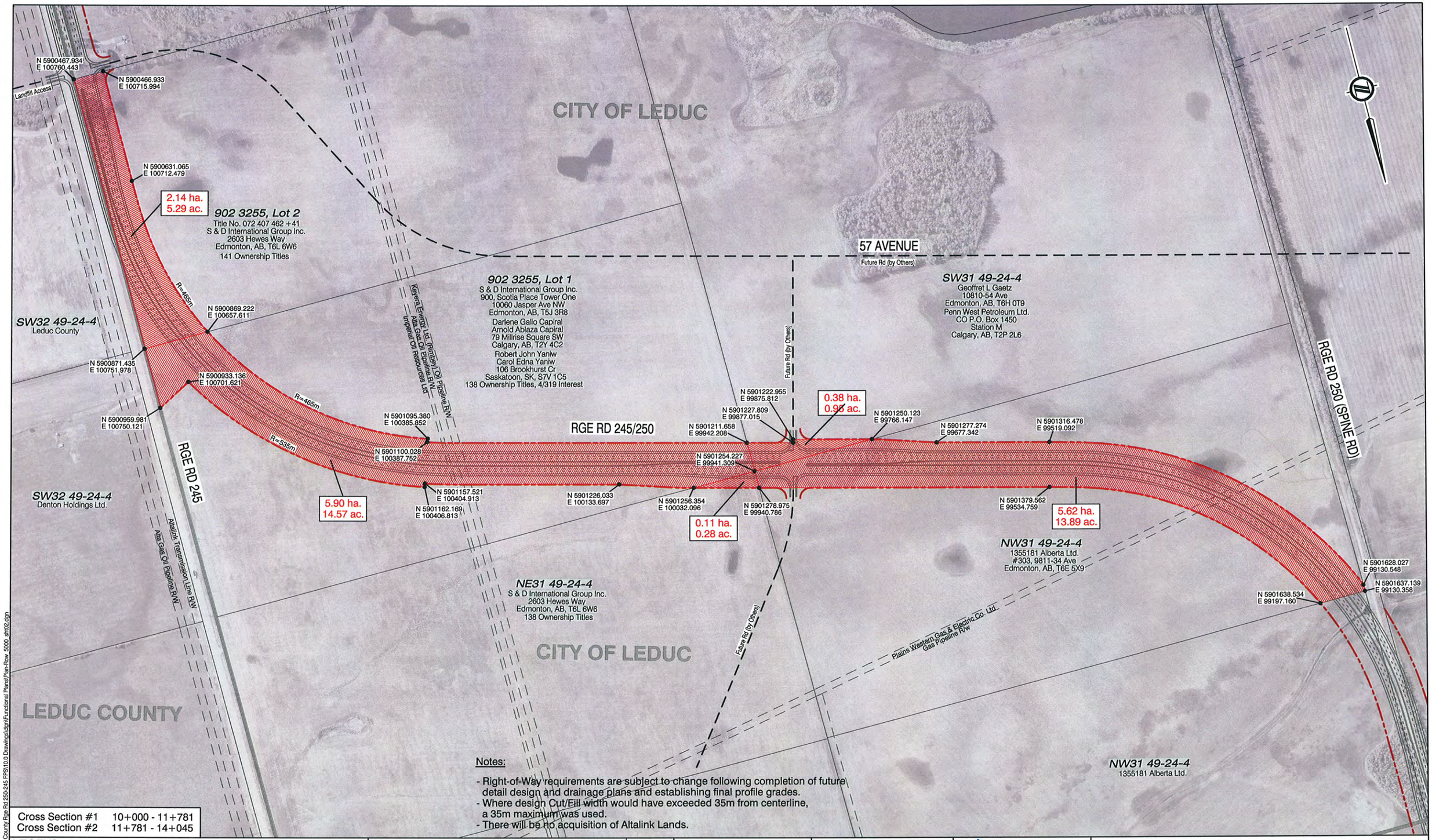
Exhibit 3.1
Right-of-Way Requirements

Range Roads 245 / 250
Functional Planning Study

DEC 21 2010

50m 0 100m

21/01/2011 Q:\Jobs\79_0_Leduc County Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\Plan-Row_5000_sht01.dgn



Notes:

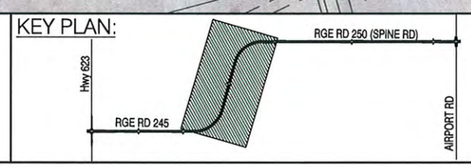
- Right-of-Way requirements are subject to change following completion of future detail design and drainage plans and establishing final profile grades.
- Where design Cut/Fill width would have exceeded 35m from centerline, a 35m maximum was used.
- There will be no acquisition of Altalink Lands.

Cross Section #1	10+000 - 11+781
Cross Section #2	11+781 - 14+045

LEGEND

- Proposed Alignment
- Required Right-of-Way
- Property Required
- Municipal Boundary
- Altalink Tower

KEY PLAN:



McElhanney Consulting Services Ltd.

THE CITY OF LEDUC — The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by HD	Approved by

Exhibit 3.2
Right-of-Way Requirements
Range Roads 245 / 250
Functional Planning Study

DEC 21 2010

50m 0 100m

21/01/2011 Q:\Jobs\79 0_Leduc County Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\Plan-Row_5000_sht02.dgn

CITY OF LEDUC

LEDUC COUNTY

65 AVE

TWP RD 500

RGE RD 250 (SPINE RD)

RGE RD 245

HWY 623

AIRPORT RD

ALLARD AVE (75 AVE)

Future Rd (by Others)

792 1548 (Blk A)
Kevin J Gaetz
4512-52 Ave
Leduc, AB, T9E 5W8

SE1 50-25-4
Peter Brouer
Robin Grigat
Box 3351
Leduyc, AB, T9E 6M1

NE1 50-25-4
Harold William Grigat
Margaret Ellen Grigat
Leduc, AB
Elizabeth Wahl
Leduc, AB

NE1 50-25-4
William E G Forster
Marion Louise Klak
Cathton Holdings Ltd.

992 6636, Lot 3
Charles R. Marsden
RR 2
Leduc, AB, T9E 2X2

992 6636, Lot 2
Jacob Vos
Grace Vos
Box 3533
Leduc, AB, T9E 6M3

NW31 49-24-4
1355181 Alberta Ltd.
#303, 9811-34 Ave
Edmonton, Ab, T6E 5X9

NW31 49-24-4
1355181 Alberta Ltd.

NW6 50-24-4
Jacob Vos
Grace Vos
Box 3533
Leduc, AB, T9E 6M3

NW6 50-24-4
Angus McDonald
Leo Pernisch

0.91 ha. 2.25 ac.
1.42 ha. 3.52 ac.
1.18 ha. 2.91 ac.
1.88 ha. 4.65 ac.
0.81 ha. 2.00 ac.
0.92 ha. 2.26 ac.
0.82 ha. 2.04 ac.

R=535m
R=465m

N 5902035.329 E 98931.359
N 5902026.516 E 98931.523
N 5902055.426 E 98930.985
N 5902066.509 E 98930.778
N 5902028.935 E 99061.547
N 5902013.273 E 99077.841
N 5902068.925 E 99060.635
N 5902085.258 E 99076.334
N 5902215.202 E 99073.613
N 5902302.167 E 99076.794
N 5902863.197 E 99065.048
N 5902863.610 E 99085.587
N 5903099.730 E 99055.095
N 5903065.412 E 99060.814
N 5903264.921 E 99051.636
N 5903265.436 E 99077.146
N 5901668.789 E 99109.588
N 5901637.139 E 99130.358
N 5901857.949 E 99081.093
N 5901859.459 E 99151.077
N 5901638.534 E 99197.160
N 5902014.501 E 99147.831
N 5902030.834 E 99163.529
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N 5902070.824 E 99162.618
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N 5902462.439 E 99113.207
N 5902462.848 E 99133.443
N 5902864.530 E 99105.105
N 5902864.967 E 99125.024
N 5903185.190 E 99118.320
N 5903266.352 E 99096.492
N 5903266.908 E 99121.414
N 5902033.250 E 99293.379
N 5902042.622 E 99293.205
N 5902073.243 E 99292.635
N 5902063.306 E 99292.820

Cross Section #3 14+045 - 15+452
Cross Section #4 15+452 - 16+858

Notes:

- Right-of-Way requirements are subject to change following completion of future detail design and drainage plans and establishing final profile grades.
- Where design Cut/Fill width would have exceeded 35m from centerline, a 35m maximum was used.
- There will be no acquisition of Altalink Lands.

LEGEND

- Proposed Alignment
- Required Right-of-Way
- Property Required
- Municipal Boundary
- Altalink Tower

KEY PLAN:

McElhanney Consulting Services Ltd.

THE CITY OF LEDUC The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by HD	Approved by

Exhibit 3.3
Right-of-Way Requirements
Range Roads 245 / 250
Functional Planning Study

DEC 21 2010

50m 0 100m

3 of 4

21/01/2011 Q:\Jobs\79_0 Leduc County Pkg Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\Plan-Row_5000_ahf03.dgn

ALLARD AVE (75 AVE)
Future Rd (by Others)

82 Ave
Future Rd (by Others)

AIRPORT RD

RGE RD 250 (SPINE RD)

CITY OF LEDUC

LEDUC COUNTY

R=25m N 5898894.511 E 100753.501

NE1 50-25-4
William E G Forster
Marion Louise Klak
CO Covey & Behm
357 Melton Building
Edmonton, AB
Cathton Holdings Ltd.
Of 210, Riviera Plaza
5324 Calgary Tr
Edmonton, AB, T6H 4J8

SE12 50-25-4
Cathton Holdings Ltd.
Of 210, Riviera Plaza
3524 Calgary Tr
Edmonton, AB, T6H 4J8

NE12 50-25-4
Sturgeon Homes Inc.
Of 2100 Premier Way
Sherwood Park, AB, T8H 2G4

354TR, Lot A
Sturgeon Homes Inc.
Of 2100 Premier Way
Sherwood Park, AB, T8H 2G4

NW6 50-24-4
Angus McDonald
Leo Pernisch
CO 2501, CN TOwer, 10004-104 Ave
Edmonton, AB, T5J 0K1

SW7 50-24-4
Martin Madu
Huxley, AB
Harold Madu
Gibbons, AB
Reinhold Madu
RR 1, Fort Saskatchewan, AB
Esther Collinge
Of 11019 S. Victoria Rd
RR2, Summerland, BC
Ottilie Elbers
Of 3609-36 Ave
Vernon, BC
Lawrence Rufus Burgess
4210-102 Ave, Edmonton, AB
Terraspan Investments Ltd.
CO 2501 CN Tower
10004-104 St
Edmonton, AB
Martha Madu
Of General Delivery
Rollyview, AB
Ethel Salomi Maku
Box 621, Leduc, AB

NW7 50-24-4
718721 Alberta Ltd.
106, 4207-98 St
Edmonton, AB, T6E 5R7

9021595, Lot 1
1343576
Alberta Ltd.

2392 MC, OT
AltaLink
Mangament Ltd.

N 5903264.921 E 99051.636	
N 5903265.436 E 99077.146	
1.02 ha. 2.53 ac.	
N 5903666.744 E 99043.223	
N 5903667.261 E 99068.705	
2.07 ha. 5.12 ac.	
N 5904471.048 E 99026.384	
N 5904471.149 E 99031.383	
0.42 ha. 1.04 ac.	
N 5904670.987 E 99027.199	
N 5904671.375 E 99048.362	
N 5904969.265 E 99020.655	
N 5904992.535 E 99019.462	
1.48 ha. 3.65 ac.	
N 5905153.016 E 99006.558	
N 5905134.403 E 99007.589	
N 5905261.226 E 99000.972	
N 5905249.632 E 99004.099	
N 5905261.901 E 99036.361	
N 5905270.498 E 99054.709	
N 5905250.559 E 99055.121	
N 5905270.967 E 99074.646	
0.01 ha. 0.02 ac.	
N 5903266.352 E 99096.492	
N 5903266.908 E 99121.414	
1.01 ha. 2.50 ac.	
N 5903668.174 E 99087.879	
N 5903668.749 E 99113.197	
2.03 ha. 5.01 ac.	
N 5904472.574 E 99096.368	
N 5904472.455 E 99091.369	
N 5904639.702 E 99087.868	
N 5904724.682 E 99091.090	
1.37 ha. 3.39 ac.	
N 5904885.901 E 99082.713	
N 5904886.005 E 99087.712	
N 5904926.768 E 99081.858	
N 5904996.557 E 99079.326	
N 5905113.733 E 99069.304	
N 5905154.048 E 99066.576	
N 5905153.827 E 99057.121	

Cross Section #4 15+452 - 16+858
Cross Section #5 16+858 - 17+443

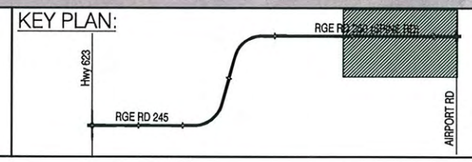
Notes:

- Right-of-Way requirements are subject to change following completion of future detail design and drainage plans and establishing final profile grades.
- Where design Cut/Fill width would have exceeded 35m from centerline, a 35m maximum was used.
- There will be no acquisition of Altalink Lands.

LEGEND

- Proposed Alignment
- Required Right-of-Way
- Property Required
- Municipal Boundary
- Altalink Tower

KEY PLAN:



McElhanney Consulting Services Ltd.

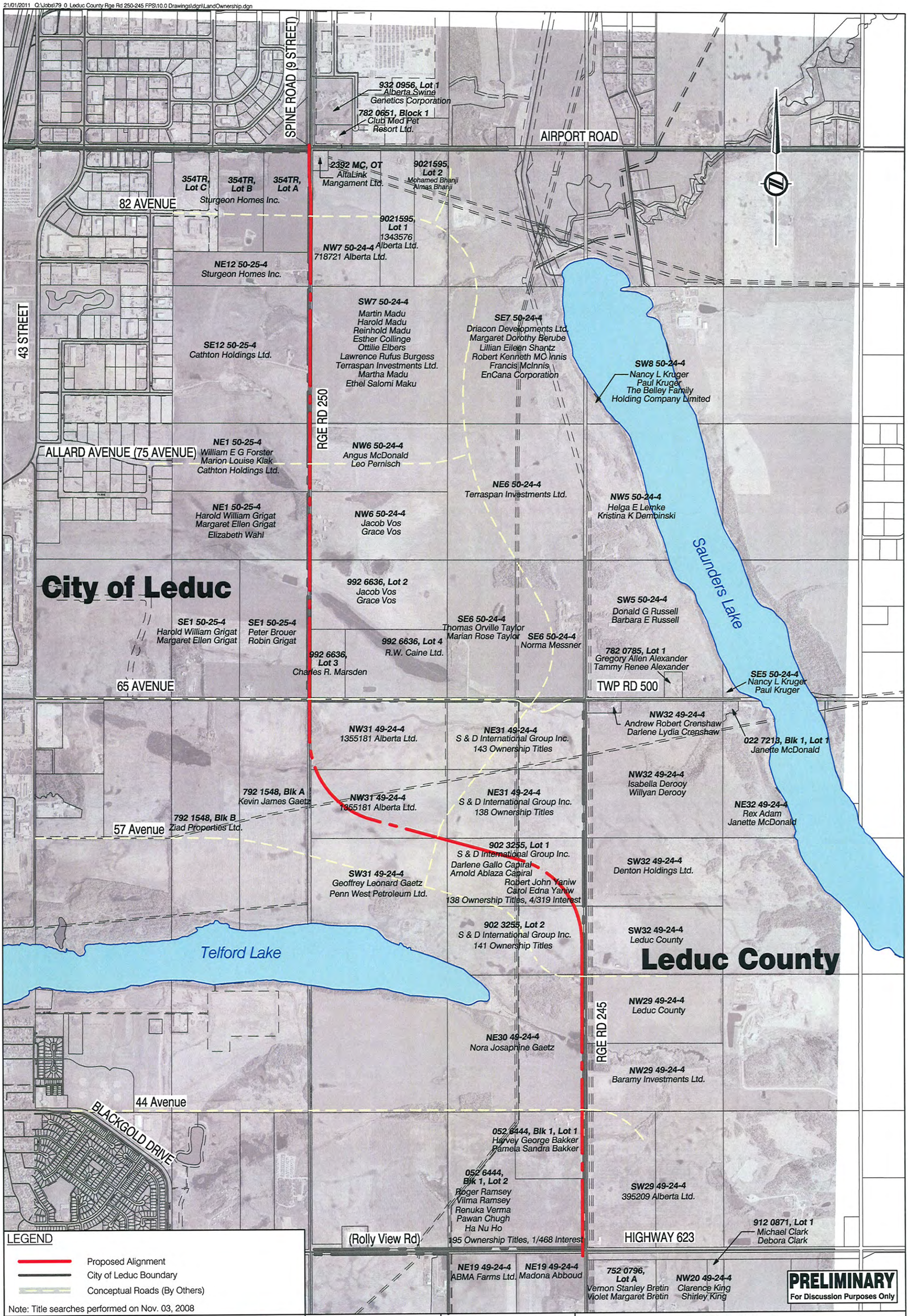
THE CITY OF LEDUC — The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by HD	Approved by
DEC 21 2010	50m 0 100m		4 of 4

Exhibit 3.4
Right-of-Way Requirements
Range Roads 245 / 250
Functional Planning Study

21/01/2011 Q:\Jobs\79.0_Leduc County\Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\Plan-Row_5000_sht04.dgn



McElhanney Consulting Services Ltd.

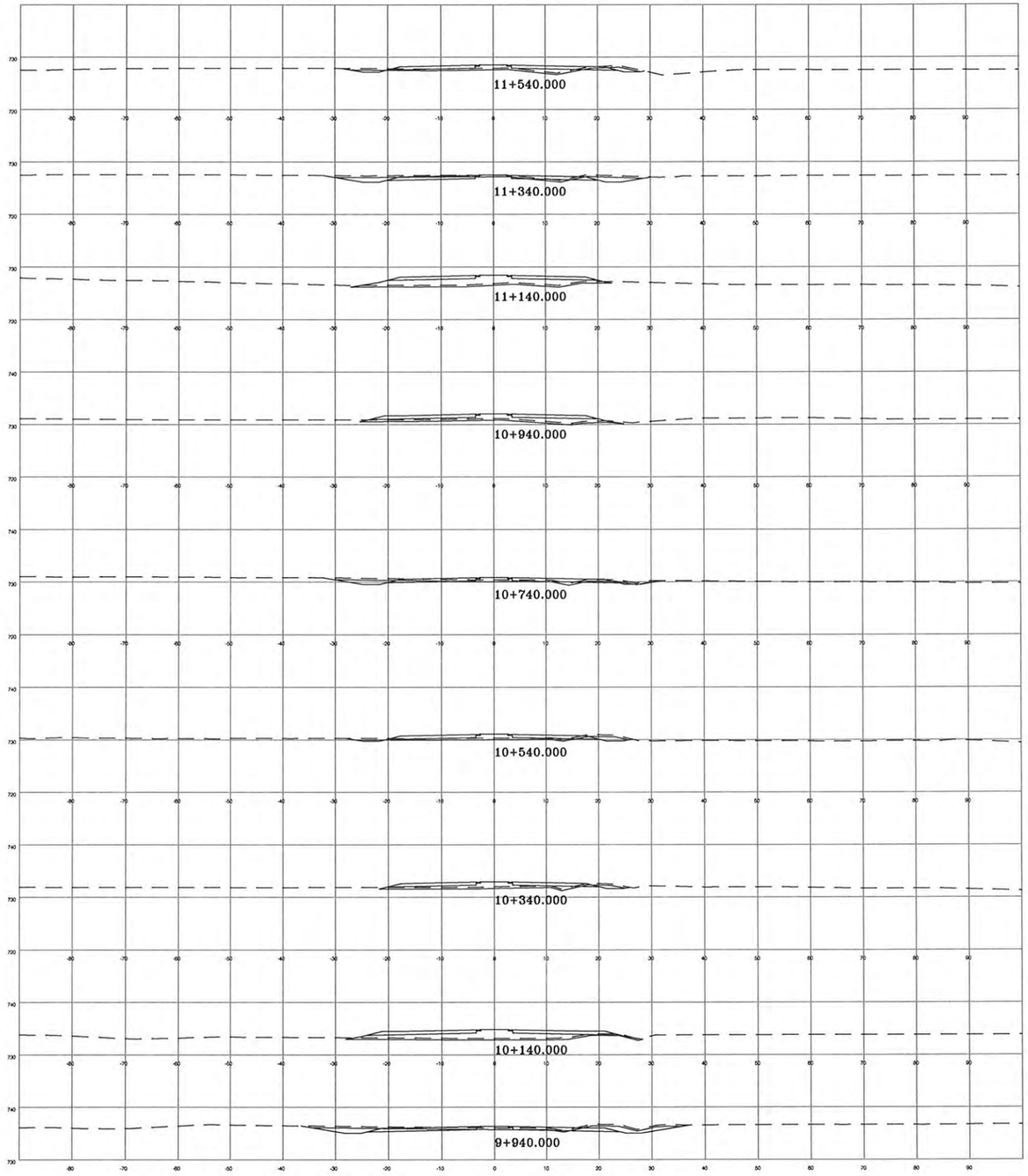
THE CITY OF LEDUC The Outdoor Experience

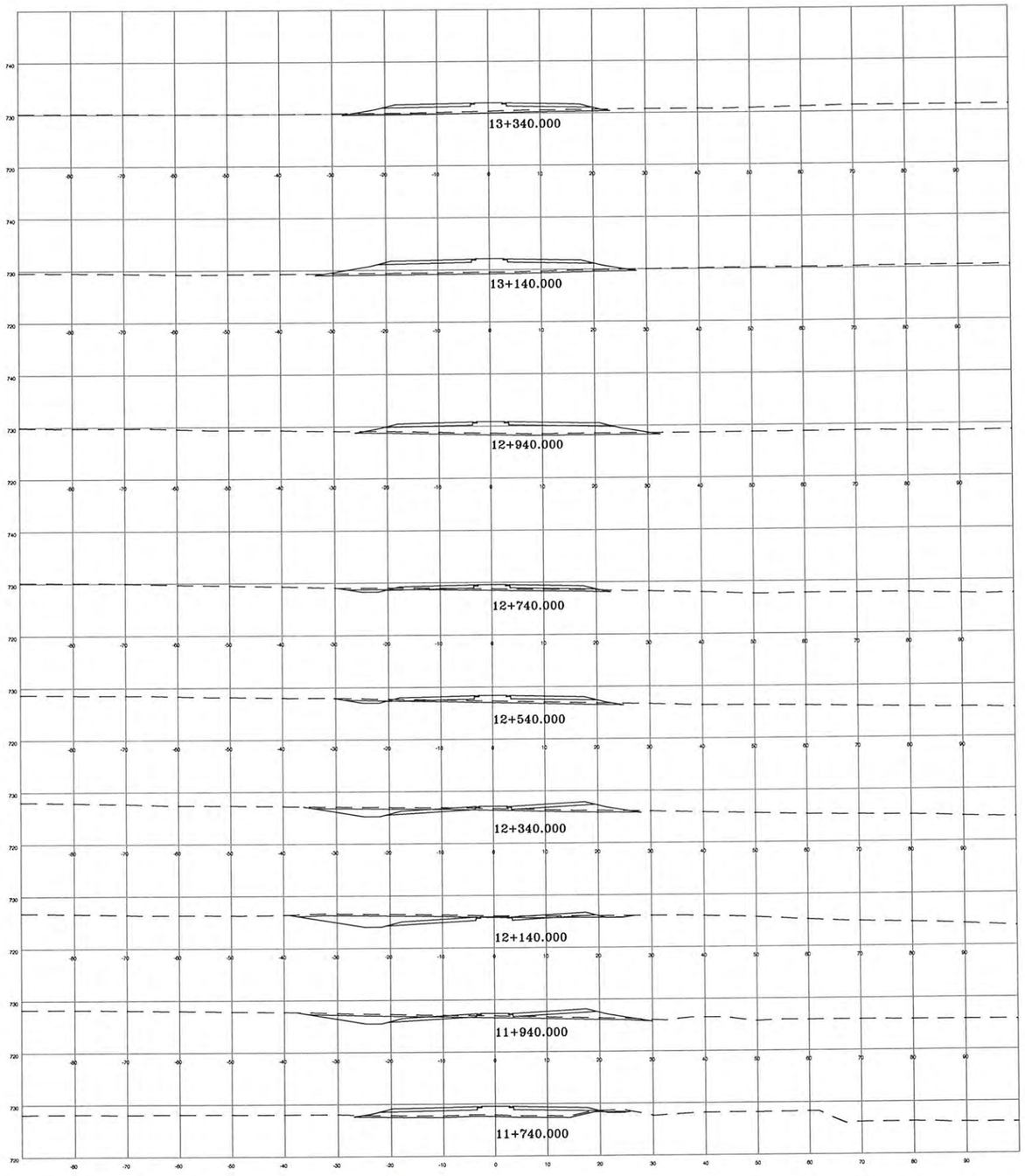
LEDUC COUNTY

Exhibit 4
Land Ownership
Range Roads 245 / 250
Functional Planning Study

Drawn by	Designed by	Checked by	Approved by	
ML		HD		OCT 28 2009

200m 0 400m





LEGEND

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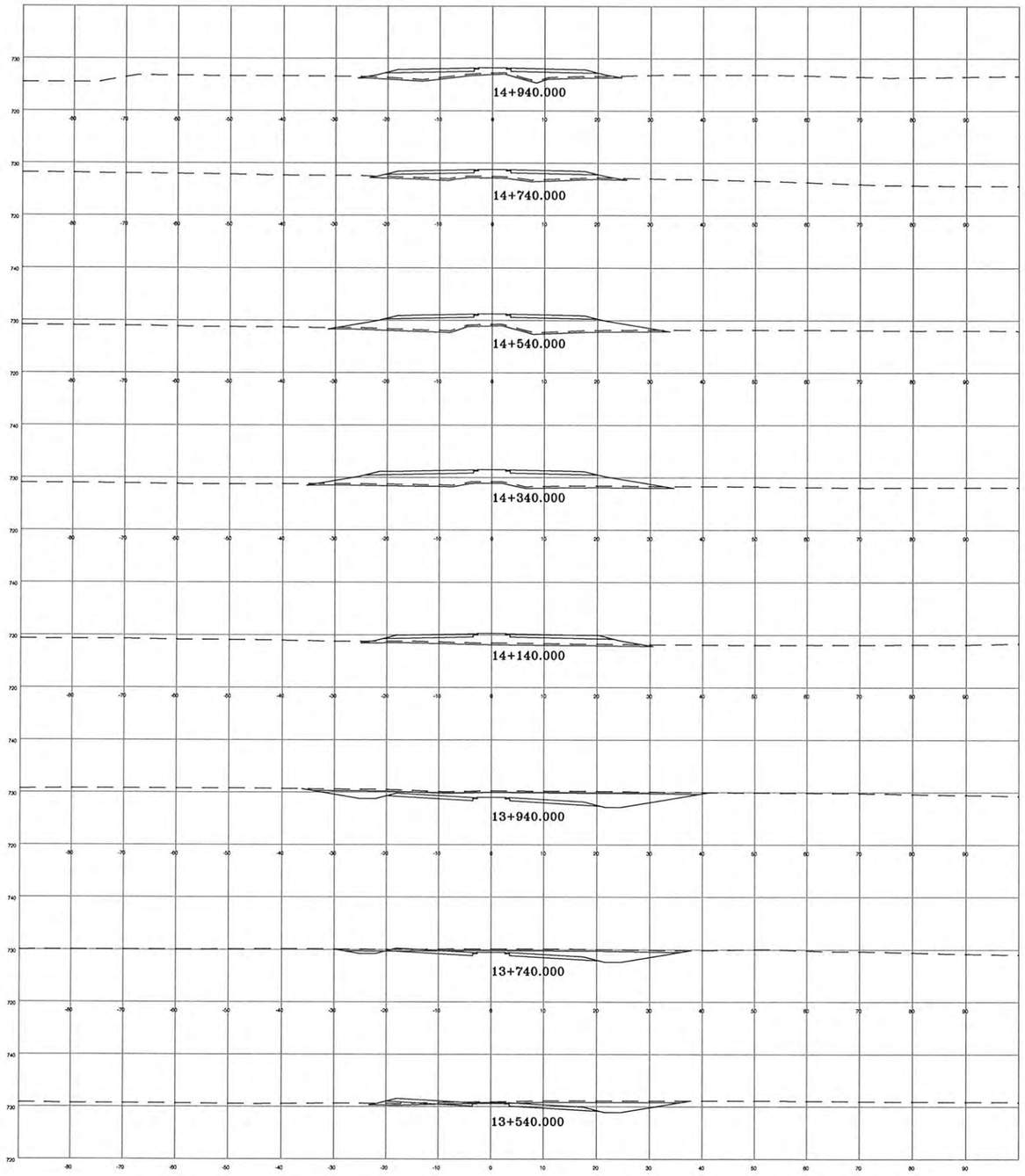
THE CITY OF LEDUC
The Outdoor Experience

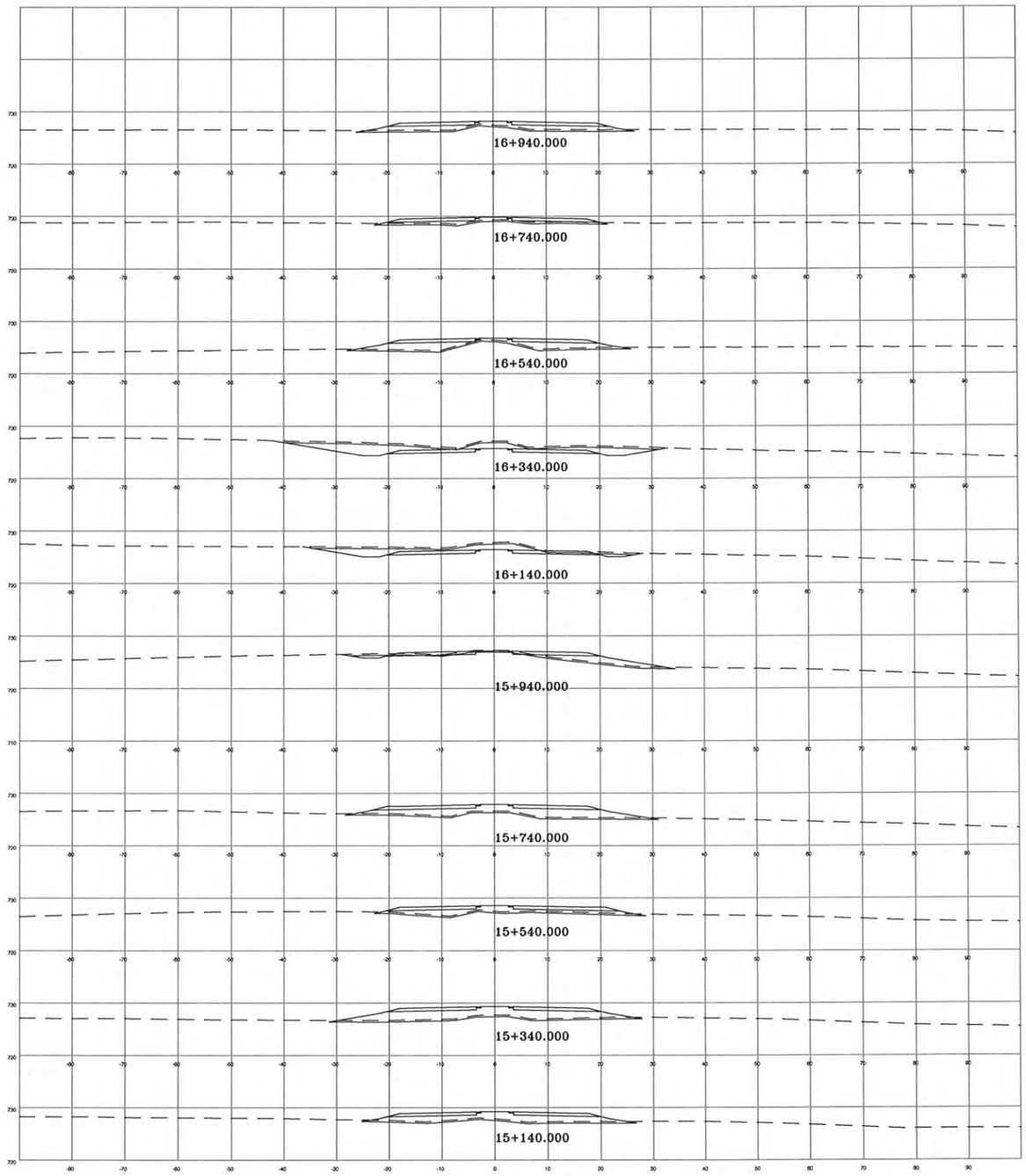
LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by DF	Approved by

Exhibit 5.1
200m Design Cross Sections
Range Roads 245 / 250
Functional Planning Study

DEC 22 2012





LEGEND

McElhanney
Consulting Services Ltd.

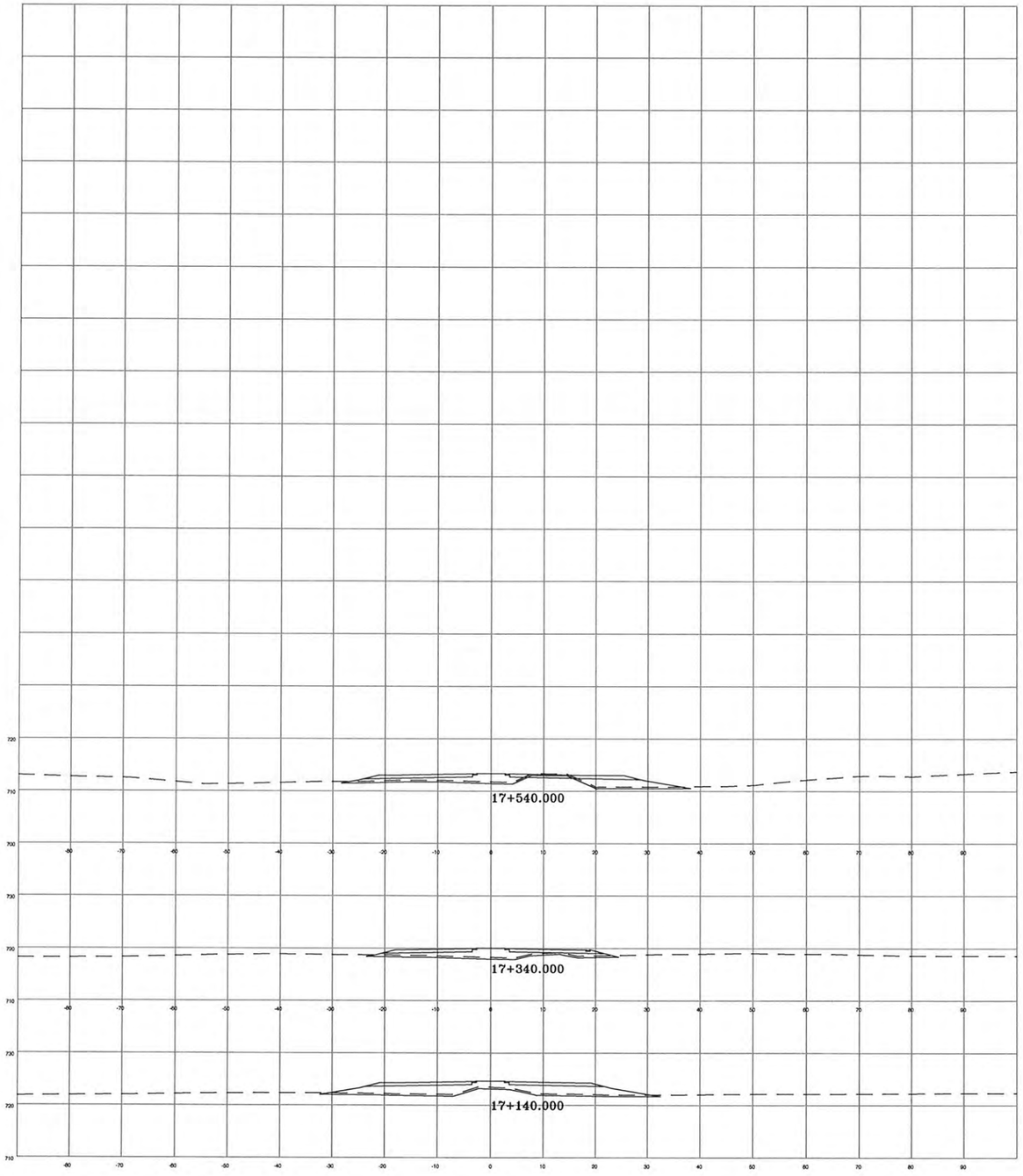
THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

Drawn by TD	Designed by TD	Checked by DF	Approved by	DEC 22 2012		2 of 3

Exhibit 5.2
200m Design Cross Sections
Range Roads 245 / 250
Functional Planning Study

21/01/2011 Q:\Jobs\79.0_Leduc County\Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\xsecs.dgn



LEGEND

McElhanney
Consulting Services Ltd.

THE CITY OF LEDUC
The Outdoor Experience

LEDUC COUNTY

Exhibit 5.3
200m Design Cross Sections
Range Roads 245 / 250
Functional Planning Study

Drawn by TD	Designed by TD	Checked by DF	Approved by	DEC 22 2012		3 of 3

21/01/2011 O:\Jobs\79_0_Leduc County Rge Rd 250-245 FPS\10.0 Drawings\dgn\Functional Plans\xsecs.dgn

F) Noise Policy and Model Output

CITY POLICY

POLICY NUMBER: C506

REFERENCE:
City Council 14 09 04
City of Edmonton Urban Traffic Noise Policy Study (1983)

ADOPTED BY:
City Council

SUPERSEDES:
Repealed Policy C411

PREPARED BY: Transportation and Streets Department

DATE: 2004-06-15

TITLE: **URBAN TRAFFIC NOISE POLICY**

Policy Statement:

Mitigating the impact of traffic noise in the urban environment is governed by the following criteria:

The City of Edmonton will seek to ensure that no new residential development less than three storeys will be allowed adjacent to transportation facilities (arterial roadways, light rail transit, and future high speed transit) unless the developer proves to the satisfaction of the City that the projected noise level in outdoor amenity areas will not exceed 60 dBA Leq_{24}. Construction of any noise attenuation measures necessary to achieve this threshold will be funded and undertaken by the developer of the adjacent property, unless specific site characteristics, such as topography or existing land uses, necessitate the consideration of relief from the requirement. Under these circumstances, the attenuated noise level in outdoor amenity areas should be the lowest level technically and economically practicable with an objective of up to 65 dBA Leq_{24}.

The City of Edmonton will seek to ensure that no new residential development of three storeys or greater will be allowed adjacent to transportation facilities (arterial roadways, light rail transit, and future high speed transit) unless the developer proves to the satisfaction of the City that the projected noise level in outdoor amenity areas will not exceed 60 dBA Leq_{24}. Construction of any noise attenuation measures necessary to achieve this threshold will be funded and undertaken by the developer of the adjacent property, unless specific site characteristics, such as topography or existing land uses, necessitate the consideration of relief from the requirement. Under these circumstances, the attenuated noise level in outdoor amenity areas should be the lowest level technically and economically practicable with an objective of up to 65 dBA Leq_{24}. Relief from this requirement may be considered if the residential development does not include any outdoor amenity space.

For residential development without outdoor amenity areas or for residential development of three storeys or more, where the incident sound level at the façade of any dwelling unit exceeds 60 dBA Leq_{24}, the developer is to endeavour to achieve a projected interior noise level, after applying attenuation measures, of 45 dBA Leq_{24} or less. Funding and construction of noise attenuation measures, where appropriate, is provided by the developer of the adjacent property.

The City of Edmonton will seek to achieve a projected attenuated noise level below 65 dBA Leq_{24} or as low as technically, administratively, and economically practical, with an objective of achieving a noise level of 60 dBA Leq_{24}, where any urban transportation facility (major arterial roadway, light rail transit, or future high speed transit) is proposed to be built or upgraded through or adjacent to a developed residential area. Funding for noise attenuation, where appropriate, and subject to availability, is considered in the cost of the project.

Existing residential sites backing onto a transportation facility with measured noise levels of 65 dBA Leq_{24} or above in the rear outdoor amenity area will be considered for noise attenuation by the City of Edmonton, subject to the availability of funds and the endorsement of adjacent property owners. The City will also consider identified "problem" sites with measured noise levels in the discretionary range between 60 dBA Leq_{24} and 65 dBA Leq_{24} as potentially eligible for future noise attenuation.

CITY POLICY

POLICY NUMBER: C506

REFERENCE:
City of Edmonton Urban Traffic Noise Policy Study (1983)

ADOPTED BY:
City Council

SUPERSEDES:

PREPARED BY:	Transportation and Streets Department	**DATE:**	2004-06-15
TITLE:	URBAN TRAFFIC NOISE POLICY		

The purpose of this policy is to:

1. Seek to ensure that the negative impacts associated with the ongoing exposure to excessive traffic noise is mitigated in the City of Edmonton.
2. Assign the responsibility for traffic noise mitigation to the developers of new residential land uses as appropriate.
3. Assign the responsibility for traffic noise mitigation to the City of Edmonton where major transportation facilities are proposed or upgraded, subject to funding availability.
4. Govern the application of the City of Edmonton's "retrofit noise attenuation program", subject to funding availability.

CITY PROCEDURE

		POLICY NUMBER:	C506
AUTHORITY:	City Manager	**EFFECTIVE DATE:**	2004-06-15
TITLE:	URBAN TRAFFIC NOISE POLICY		

1. INTRODUCTION

Urban traffic noise is the "background" noise generated by traffic on major transportation facilities. Vehicle-related noise sources of short duration or limited locational influence, including loud stereos, mufflers, and engine retarder brakes, are not addressed by the Urban Traffic Noise Policy and Procedures.

Noise is measured in decibels. The decibel scale starts at 0, which represents the faintest sound that can be heard by a human with acute hearing. The scale progresses logarithmically; in other words, a sound level of 60 dB is perceived as twice as loud as that of 50 dB. The unit of measurement is denoted as dB.

Arterial roadways, expressways, freeways, light rail transit corridors, and future "high speed transit" corridors are considered major transportation facilities. Rail noise generated by Federally-regulated facilities is not within the jurisdiction of the City of Edmonton's Urban Traffic Noise Policy and Procedures.

The outdoor amenity area is defined as the area immediately adjacent to the housing unit, provided and designed for active or passive recreation and enjoyment of the occupants of a residential development, which may be for private or communal use and owned individually or in common.

2. PROCEDURES

2.01 The City of Edmonton Urban Traffic Noise Policy and Procedures are applied only to residential land uses adjacent to major transportation facilities (arterial roadways, light rail transit, and future high speed transit facilities).

2.02 The City of Edmonton Urban Traffic Noise Policy and Procedures are applied only to the "background" noise generated by traffic on major transportation facilities.

2.03 Noise measurements are undertaken in the rear "amenity" area for residential properties backing onto major transportation facilities. Whenever possible, the City will take noise measurements 3 metres from the rear of the residence at an elevation of approximately 1.5 metres.

2.04 Noise levels are measured in dBA Leq_{24}.

2.05 A 20-year time horizon for traffic volume projections (AAWDT volumes) is used to predict future noise levels adjacent to new developments and new or upgraded transportation facilities.

2.06 Where noise levels are projected to be above 60 dBA Leq_{24} in outdoor amenity areas, after the implementation of noise attenuation measures, the City will endeavour to have the developer inform prospective purchasers or renters of residential dwelling units which are affected by excessive noise, by posting a sign in the affected building or by letter that reads: "Purchasers are advised that despite the inclusion of noise attenuation features with the development area and/or within the individual building unit(s), noise levels may continue to be of concern, occasionally interfering with some activities of the dwelling occupants."

2.07 Noise measurements will be undertaken to establish priorities for retrofit noise attenuation.

CITY PROCEDURE

		POLICY NUMBER:	C506
AUTHORITY:	City Manager	**EFFECTIVE DATE:**	2004-06-15
TITLE:	URBAN TRAFFIC NOISE POLICY		

2.08 The City of Edmonton will undertake a survey of affected property owners to determine support for the installation of any noise attenuation measures proposed under the City's retrofit noise attenuation program. Affected property owners are those who are immediately adjacent to the proposed noise attenuation measure (berm and/or noise wall), in an area encompassing the entire length of the proposed noise attenuation device. Endorsement of the proposed project will be considered sufficient if 60% or more of property owners indicate support (targetting a 100% response rate).

2.09 In the case of an existing residential area, where noise mitigation measures are appropriate and supported, the City will seek to involve community stakeholders in the selection of suitable materials and the design of the structure.

2.10 Residential property owners with existing dwelling units with measured noise levels less than 65 dBA Leq_{24}, who do not fall within the noise attenuation responsibilities of the City, are encouraged to improve the sound environment of their property through acoustically designed building improvements, at their own expense.

2.11 Reports will be provided periodically to City Council on the status of traffic noise attenuation in the City (including a current listing of noise level measurements).

2.12 The City of Edmonton will continue to use a series of brochures and Traffic Noise Bulletins to communicate the City's Urban Traffic Noise Policy and Procedures, programs, and abatement measures that may be employed by individual home owners to improve their indoor sound environment.

2.13 The City of Edmonton will continue to use the Transportation Association of Canada (TAC) methodology to estimate noise levels where measurements are not available and to predict future noise levels based on anticipated traffic volumes. The results of other recognized noise predication models may be accepted with appropriate documentation provided by acoustical consultants in the submission of noise impact studies.

2.14 The appropriate departments within the City will continue to consult with respect to the land use planning implications of traffic noise, as appropriate, at the Area Structure Plan, Neighbourhood Structure Plan, Subdivision, and Development Application stages of the planning process.

McElhanney Consulting Services Ltd.
Gerald St. Pierre

4 February 2010
TNM 1.0

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Leduc FPS
RUN: Leduc RR 245
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 10 deg C, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Sta 200W	39	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
Sta 450W	41	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
Sta 700W	42	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
Sta 950W	43	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
Sta 1200W	44	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
Sta 1100E	47	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
Sta 850E	48	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
Sta600E	49	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
Sta350E	50	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
Sta100E	51	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	3	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

McElhanney Consulting Services Ltd.
Gerald St. Pierre

4 February 2010
TNM 1.0

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Leduc FPS
RUN: Leduc RR 245
BARRIER DESIGN: INPUT HEIGHTS
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Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Sta 200W	39	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
Sta 450W	41	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
Sta 700W	42	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
Sta 950W	43	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
Sta 1200W	44	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
Sta 1100E	47	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
Sta 850E	48	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
Sta600E	49	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
Sta350E	50	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
Sta100E	51	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

McElhanney Consulting Services Ltd.
Gerald St. Pierre

4 February 2010
TNM 1.0

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Leduc FPS
RUN: Leduc RR 245
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Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Sta 200W	39	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
Sta 450W	41	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
Sta 700W	42	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
Sta 950W	43	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
Sta 1200W	44	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
Sta 1100E	47	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
Sta 850E	48	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
Sta600E	49	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
Sta350E	50	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
Sta100E	51	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

G) COST ESTIMATE BREAKDOWN

Stage 1 - Initial 2 Lane

Estimate Type: B	Project: RR 245.250
Length: 17.5km	
From 10+000 to 17+500	
By:	McElhanney Consulting Services
Date:	20-Jan-11

Item	Unit	Quantity	Unit Price	Estimated Cost
Grading	m^3	325000	$ 10	$ 3,250,000
ACP	t	92000	$ 105	$ 9,660,000
GBC	t	105000	$ 25	$ 2,625,000
Total Estimated Cost				$ 15,535,000
Factor			1.2	$ 18,642,000
Contingency			15%	$ 2,796,300
Engineering			10%	$ 1,864,200
Total				**$ 23,302,500**

Note: All Units prices are based on 2010 Alberta Transportation Unit Price Averages

Stage 2 Twin to Add 2 Lanes - 4 Lanes Total

Estimate Type: B			Project: RR 245.250		
Length: 17.5km					
From 10+000 to 17+500					
By:	McElhanney Consulting Services				
Date:	20-Jan-11				
Item	**Unit**	**Quantity**	**Unit Price**		**Estimated Cost**
Grading	m^3	275000	$	10	$ 2,750,000
ACP	t	92000	$	105	$ 9,660,000
GBC	t	105000	$	25	$ 2,625,000
Total Estimated Cost					$ 15,035,000
Factor			1.2		$ 18,042,000
Contingency			15%		$ 2,706,300
Engineering			10%		$ 1,804,200
Total					**$ 22,552,500**

Note: All Units prices are based on 2010 Alberta Transportation Unit Price Averages

Stage 3 Add 2 Median Lanes - 6 Lanes Total

Estimate Type: B	Project: RR 245.250
Length: 17.5km	
From 10+000 to 17+500	
By:	McElhanney Consulting Services
Date:	20-Jan-11

Item	Unit	Quantity	Unit Price	Estimated Cost
Grading	m^3	145000	$ 10	$ 1,450,000
ACP	t	68000	$ 105	$ 7,140,000
Concrete Median	m	14250	$ 400	$ 5,700,000
GBC	t	87000	$ 25	$ 2,175,000
Signals	each	8	$ 300,000	$ 2,400,000
Total Estimated Cost				$ 18,865,000
Factor			1.2	$ 22,638,000
Contingency			15%	$ 3,395,700
Engineering			10%	$ 2,263,800
Total				**$ 28,297,500**

Note: All Units prices are based on 2010 Alberta Transportation Unit Price Averages

Summary

Stage	Grading	ACP	Concrete Median	GBC	Signals	Total
Stage 1 - Initial 2 Lane	$ 3,250,000	$ 9,660,000	N/A	$ 2,625,000	N/A	$ 15,535,000
Stage 2 Twin to Add 2 Lanes - 4 Lanes Total	$ 2,750,000	$ 9,660,000	N/A	$ 2,625,000	N/A	$ 15,035,000
Stage 3 Add 2 Median Lanes - 6 Lanes Total	$ 1,450,000	$ 7,140,000	$ 5,700,000	$ 2,175,000	$ 2,400,000	$ 18,865,000
Subtotal						$ 49,435,000
Factor				1.2		$ 59,322,000
Contingency				15%		$ 8,898,300
Engineering and Administration				10.0%		$ 5,932,200
Total Construction and Engineering Cost						**$ 74,152,500**

Right-of-Way	Quantity	Units	Unit Rate	Total
Agricultural Land in the City	74.4	acre	$ 40,000	$ 2,976,000
Large Parcel Agricultural Land in the County	15.0	acre	$ 15,000	$ 225,000
Small Parcel Agricultural Land in the County	2.6	acre	$ 25,000	$ 65,000
Additional to acquire Home/Farmstead on Parcel	4	each	$ 400,000	$ 1,600,000
Subtotal				$ 4,866,000
Contingency			30%	$ 1,459,800
Total Right-of-Way Cost				**$ 6,325,800**
Total Project Cost (to nearest $1000)				**$ 80,479,000**