

**Aurum Road Crossing Site
Location Study, Edmonton,
Alberta**



Prepared for:
Aurum Industrial Development
Partnership

Prepared by:
Stantec Consulting Ltd.

Final

April 2017
110219671

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1.0 INTRODUCTION

Stantec Consulting Services Ltd. (Stantec) was retained by Aurum Industrial Development Partnership (AIDP) to complete a Site Location Study (SLS) for the proposed Aurum Road crossing over Clover Bar Creek within the Clover Bar Ravine (the Project), which is a tributary to the North Saskatchewan River (NSR). The proposed location of the Project is within portions of SE-21-53-23-W4M, Edmonton, AB (Figure 1).

The Project would be located within the North Saskatchewan River Valley Area Redevelopment Plan area (NSRVARP, Bylaw 7188), and has been deemed a transportation facility under this legislation. As a result, Sustainable Development of the City of Edmonton (the City) has requested that a SLS and an Environmental Impact Assessment (EIA) be prepared for the Project. This report presents the results of the SLS; the EIA will be submitted under separate cover.

Stantec has been contracted to complete this SLS in full knowledge of the EIA currently being prepared for the project. This SLS has been completed to meet the requirements of Bylaw 7188.

1.1 BACKGROUND

The Aurum Industrial Business Park (Aurum), which is currently accessed from Highway 16 via 17 Street NE and Range Road 232, has been under construction since approximately 2005. As construction of Aurum has continued, personnel and traffic associated with businesses within Aurum have increased, resulting in traffic congestions on roads that are not currently designed to handle existing traffic volumes. Traffic congestion within Aurum has become a regular occurrence, and is exacerbated by the CN and CP railway lines that cross 17 Street NE between 127 Avenue NE and Highway 16, and Range Road 232 between Township Road 534 and Highway 16. Trains on these tracks may cause traffic jams of 1.5 hours or longer, impacting the ability of the companies located in Aurum to do business and the commutes of people who work there.

Aurum Road, which is identified as a future arterial roadway within the Aurum Industrial Business Park Area Structure Plan (ASP) (City of Edmonton 2009a), is planned to eventually connect Anthony Henday Drive to Highway 21. Aurum Road is currently constructed between 17 Street NE and Range Road 232, and between Anthony Henday Drive and 9 Street NE. Construction of the portion of Aurum Road that passes through SE-21-53-23-W4M is required to complete the connection between 9 Street NE and 17 Street NE. This will create a bypass of the railway lines on 17 Street NE and Range Road 232, thereby alleviating traffic congestion problems within Aurum and thus creating improved access to Aurum.

1.2 SCOPE

The scope of this SLS is to examine the financial, social, environmental, and institutional opportunities and constraints associated with the development of the Project to aid the City of Edmonton's determination of the project as essential to occur at the proposed location.

The SLS is required as per the NSRVARP to understand the alternatives to the proposed project outside of a river valley location. Additional design details and alternatives have been explored through the accompanying EIA and other technical documents.

1.3 SITE DESCRIPTION

The location of the Project relative to the regional setting is provided in Figure 1. Locally, the Project is in the Aurum Industrial Business Park in the City of Edmonton, Alberta. The Project is bordered to the north and south by Clover Bar Ravine, and to the east and west by vacant, undeveloped land. Clover Bar Creek flows generally north through Clover Bar Ravine.

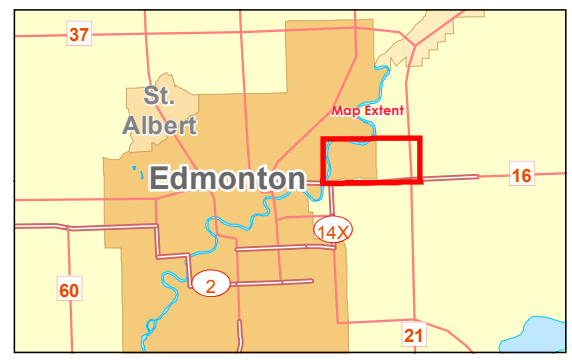
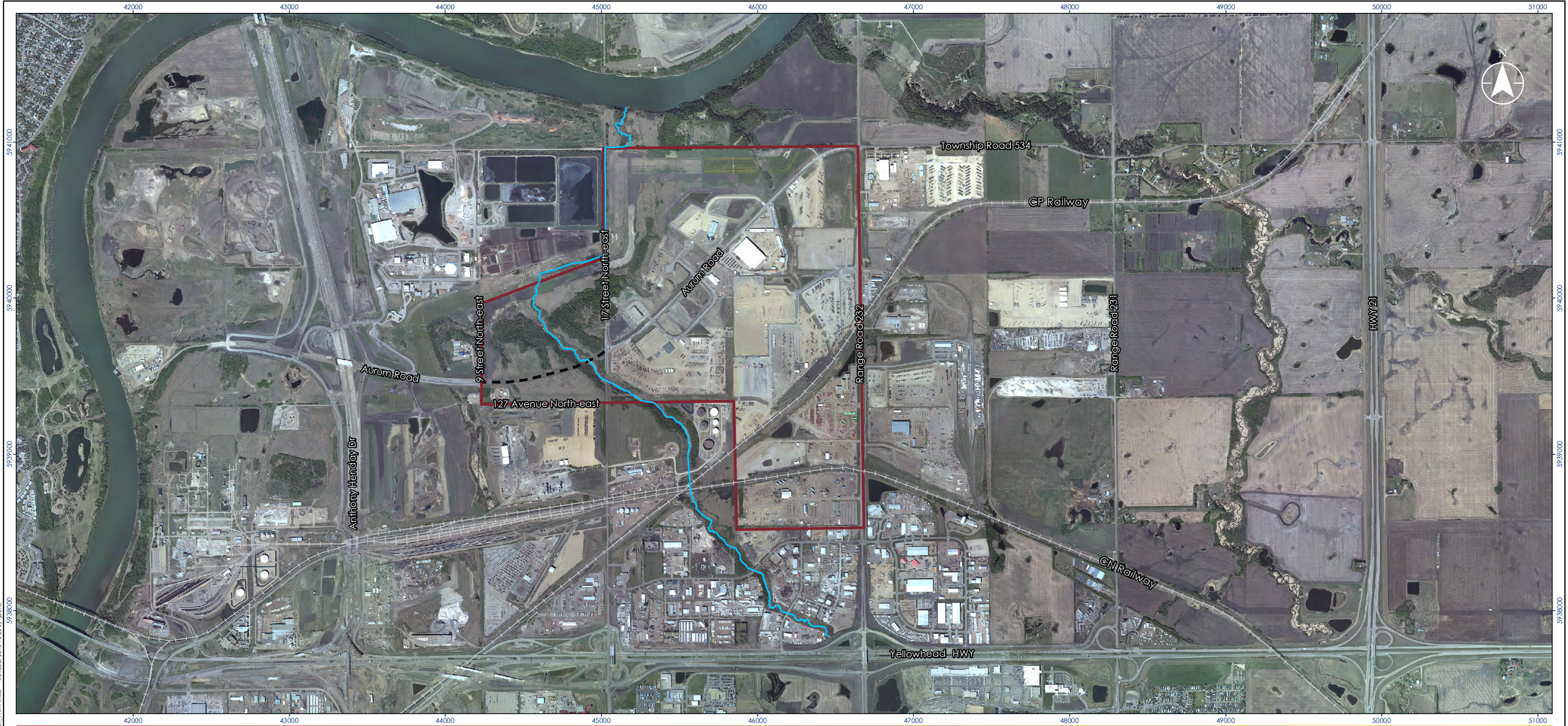
Various environmental studies have been completed in the Clover Bar Ravine over the past several years. These have identified use of this ravine by several wildlife species moving through the area. Further information on these studies and other technical information is provided and outlined in the EIA.

1.4 PROJECT DESCRIPTION

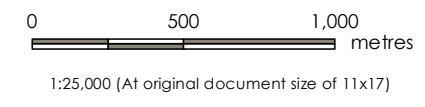
Aurum Road will ultimately be built out to a six lane arterial road with channelization (i.e. turning lanes). The crossing length of Aurum Road over the Clover Bar Ravine will be approximately 200 m. The culvert will be designed for aquatic passage of fish and will be sized appropriately for large mammals. Because of terrain limitations the portion of the creek that is to pass through it will need to be realigned to facilitate the culvert's construction. This creek is a Class C (refer to the EIA for rationale), fish bearing watercourse and appropriate mitigations measures for fish passage and fish habitat will need to be incorporated into the design.

The arch culvert will be built to the ultimate width of the six lane arterial as identified within the previously council approved ASP; however, only two lanes of Aurum Road and a turning lane will be constructed at this time. The remainder of the roadway will be constructed at a later date when traffic volumes warrant the additional lanes. Utilities (i.e., sanitary, storm water, gas, power, potable water, and telecommunications) will be installed within the road alignment as the Project is constructed. To shorten the culvert and facilitate use by wildlife Mechanically Stabilized Earth (MSE) retaining walls will be constructed on either side of the road alignment rather than back-sloping the fill material used to construct the road.

Environmental effects from the construction of this facility are assessed in the EIA. Detailed impacts and mitigation measures from the proposed construction have been identified as per Schedule D of the NSRVARP and are contained within the accompanying EIA.



- Proposed Road
- Aurum Energy Park
- Clover Bar Creek
- Railway
- Quarter Section





Project Location
 12704-17 Street NE
 SE¼ 21-053-23 W4M
 Edmonton, Alberta

110291671
 Prepared by JC on 2016-12-20
 Quality Review by MK on 2016-12-20
 Approved by DRAFT on 2016-12-20

Client/Project
 Aurum Industrial Development Partnership
 Aurum Industrial Business Park Site Location
 Study

Figure No.
1

Title
Site Location Plan

Notes

1. Coordinate System: NAD 1983 3TM 114
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved., GeoLOGIC Systems Ltd. 2015.
3. Imagery: City of Edmonton Transportation Department, 2015

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Construction of the Project is anticipated to begin in spring 2017 with the goal of the road being open to traffic in the fall of 2017.

1.5 PROJECT ALTERNATIVES

Current access to Aurum is through 17 Street NE and Range Road 232. This access was not intended to be a long term solution for transportation of goods and personnel in and out of Aurum. The Aurum Industrial Business Park ASP (City of Edmonton 2009a) identifies long term access to and through Aurum via Aurum Road (referred to in the ASP as Future 137 Avenue NE).

The existing conditions inhibit the ability of the companies located in Aurum to conduct their business because of the frequent and lengthy delays caused by the rail traffic on the nearby rail lines. The existing roadways are also not ideal in terms of size, turning radiuses, etc. for the heavy truck traffic that the industries located in Aurum generate.

A slight realignment of Aurum road was reviewed but was not considered because the east and west segments of Aurum Road are already constructed and therefore realigning this last middle segment is not possible. The roadway is designed to be a six lane arterial roadway and therefore there are standards in place as to how sharp the curves can be, along with other factors that force this roadway to cross the ravine where it crosses the ravine. The current alignment is also what was outline in the ASP for the site area.

Additionally, utilizing 127 Avenue NE as the arterial roadway was not considered as an option due to many factors. The existing ATCO compressor station and infrastructure on either side of the intersection of 9 Street NE and 127 Avenue NE is a barrier to the upgrade of this roadway to an arterial standard. These facilities are placed in very close proximity to the existing road, and in fact infringe on the road right-of-way at one location, making it difficult to upgrade this roadway to the size needed to function as the primary access to the area. The turning radius required by the large trucks that move in and out of the industrial park cannot be accommodated by this intersection. Furthermore, there are pipelines located below 9 Street NE and both north and south of 127 Avenue NE that constrain largescale upgrade of this roadway. The pipelines under 9 Street would make certain utility installations very challenging at this location.

Three alternatives, examined below, were considered to address the issue of access and traffic congestion to Aurum.

1.5.1 Option 1 (Preferred option) – Construct Aurum Road in the proposed location as approved within the Aurum Industrial Business Park ASP

Completing the construction of Aurum Road in its proposed location satisfies the approved ASP for alignment between 33rd Street NE and 9th Street NE and requires a crossing over Clover Bar Creek. To construct this crossing, an arch culvert has been identified to facilitate water passage and allow for continued wildlife and fish movement within the Clover Bar Ravine. This option also requires addition of a large volume of fill to adequately elevate the road.

1.5.2 Option 2 – Maintain access through 17 Street NE and Range Road 232, but upgrade these roads to create better access

Maintaining the access points into Aurum at 17 Street NE and Range Road 232 was considered as an alternative to address traffic congestion within Aurum. Continuing to use these roads as the main access points would necessitate upgrading each road to increase the number of traffic lanes in both directions. It would also require re-building the existing 17 Street NE crossing of Clover Bar Creek to facilitate a wider road profile. This option would also require construction of overpasses over the railway lines that cross each road.

1.5.3 Option 3 – Status quo (do not upgrade Range 232 or 17 Street NE and do not construct Aurum Road as proposed)

Continuing with the status quo for access into Aurum would mean no changes to the lanes of either 17 Street NE or Range Road 232, and no additional crossing of Clover Bar Creek. Periodic re-paving of these roads may be required as traffic volumes continue to increase. This option impacts the ability of the companies located in Aurum to conduct their business because of the frequent and lengthy delays caused by the rail traffic on the nearby rail lines. The existing roadways are also not ideal in terms of size, turning radiuses, etc. for the heavy truck traffic that the industries located in Aurum generate. In addition, this option results in the lost opportunity for reducing pressure on the Yellowhead Highway in northeast Edmonton that could be provided by construction of this multi-lane roadway intended to ultimately connect Highway 21 to Anthony Henday Drive (refer to Figure 1 for a view of the region).

2.0 OPPORTUNITIES AND CONSTRAINTS ANALYSIS

The following discusses financial, social, environmental and institutional opportunities and constraints of the proposed project and its alternatives.

2.1 FINANCIAL OPPORTUNITIES AND CONSTRAINTS

Constructing Aurum Road in the proposed location, as approved in the ASP (Option 1), will cost less than upgrading the existing access roads (Option 2). Option 1 requires the construction of a crossing over Clover Bar Ravine that is estimated to cost \$9,500,000. Conversely, Option 2 requires widening of both 17 Street NE and Range Road 232 to increase the number of traffic lanes, construction of three to four overpasses over the CP and CN railway lines, and likely purchase/expropriation of land from businesses along 17 Street NE and Range Road 232 to accommodate the road widening and overpasses. The cost of each overpass is estimated as four times greater than the one new crossing (Option 1) over Clover Bar Creek (Pers. Comm. Obaid Rizvi, Stantec). Therefore, when all aspects of Option 2 are combined, the costs associated with Option 2 would be much greater than for Option 1.

When compared to Options 1 and 2, remaining with the status quo (Option 3) will have lower direct costs. However, Option 3 may require periodic repaving of 17 Street NE and Range Road 232 to address road deterioration associated with current and future traffic volumes and is not the most effective option to manage the traffic concerns discussed in Section 1.1. Indirectly, the financial opportunity associated with both Options 1 and 2 is that improved traffic flow in Aurum may encourage new businesses to establish in Aurum and encourage existing businesses to maintain their operations there. This would result in a financial benefit to the City of Edmonton through expansion and maintenance of the tax base. Although Option 3 is considered more cost effective, Options 1 and 2 more clearly meet the overall objective of reducing traffic congestion while also facilitating economic growth.

2.2 SOCIAL OPPORTUNITIES AND CONSTRAINTS

Construction of Aurum Road in Option 1 will likely pose some inconveniences to businesses along 17 Street NE due to increased traffic traveling to and from the construction zone. However, once construction is complete, traffic congestion will be lessened, which will reduce travel time and inconveniences to personnel working within Aurum. In addition, completing the connection of Aurum Road between Anthony Henday Drive and Township Road 534 will allow heavy traffic and other large truck and trailer rigs entering and exiting Aurum to avoid traveling on Highway 16. This will reduce potential conflicts with commuter traffic and the general public on Highway 16 and will reduce congestion resulting from large trucks merging and exiting on Highway 16. The future connection of Anthony Henday Drive and Highway 21 will also allow heavy traffic to exit Edmonton and travel to northern industrial sites more quickly.

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Disturbance to historical and palaeontological resources may occur as a result of the physical works required for Option 1 due to the proximity to the North Saskatchewan River and the likely presence of these resources to occur within the immediate area. The potential effects of Option 1 on these resources will require mitigation as directed by Alberta Culture and Tourism.

Upgrading the existing access roads (Option 2) would likely need to be staged so that road upgrading and overpass construction occurs on only one of 17 Street NE or Range Road 232 at a time. This would maintain the current access points into Aurum, but would result in increased traffic congestion on the road that is not being upgraded due to traffic re-routing. Option 2 would also take more time to complete and allow traffic congestion to continue for a longer period than Option 1, because Option 2 has a greater amount of construction components (i.e., widening of two roads, construction of multiple overpasses over the railway lines). A complicating factor of Option 2 is that businesses in Aurum along 17 Street NE and/or Range Road 232 may not be able to release a portion of their lots for widening of the roads or construction of the overpasses due to the presence of buildings and infrastructure that are already in place.

When compared to Option 1, maintaining the status quo (Option 3) does not solve the issue of traffic congestion in Aurum and still forces heavy traffic and truck and trailer rigs to enter and exit Aurum via Highway 16, placing them in potential conflict with commuter traffic and the general public. In addition, traffic flow through the west portion of Aurum to and from Anthony Henday Drive would not be smooth due to the numerous intersections and turns that must be navigated on existing roads. Many of the large truck and trailer rigs entering and exiting Aurum are of a length that would physically prevent them from being able to negotiate those turns. Alternatively, if Option 3 were chosen, access to Aurum could occur from Highway 21 via Township Road 534; however, this would increase the travel distance and time for traffic coming from the west and does not solve the issue of traffic congestion associated with the railway lines.

Option 3 does not meet the overall objective of reducing traffic congestion within the project area. Although Option 2 does meet the overall objective due to the project duration, unresolved traffic congestion, additional construction component and potential space constraints, it is not likely to result in a positive social outcome. Therefore, Option 1 represents the highest likelihood of a positive social outcome, and consultation with Alberta Tourism and Culture has revealed that mitigation for the historic resources identified can be undertaken in the form of an additional study.

2.3 ENVIRONMENTAL OPPORTUNITIES AND CONSTRAINTS

The primary natural area of concern in the context of this project is the Clover Bar Ravine including Clover Bar Creek. The North Saskatchewan River Valley is in close proximity, but is not anticipated to be affected by any of the three options being discussed in this report.

Currently, Clover Bar Ravine is crossed by roads and railway lines several times between the proposed location of the Project and Highway 16 to the south (refer to Figure 1). Constructing



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Aurum Road in the proposed location (Option 1) will create an additional crossing and additional temporary and permanent disturbance in Clover Bar Ravine that may result in effects on wildlife, water quality, hydrology, vegetation and, historical and palaeontological resources. These potential effects are discussed in further detail below.

Construction of the Project will cause a temporary disturbance to wildlife due to the presence of construction equipment and personnel and the noise associated with construction activities and a permanent removal of habitat within the footprint of the new crossing. The arch culvert selected for this design option will be engineered to facilitate continued wildlife movement through the area. In addition, fish habitat and vegetation will be permanently altered due to the physical works required for Option 1. The effects on fish habitat will be mitigated by the involvement of a Qualified Aquatics Environmental Specialist (QAES) in designing mitigation measures. The intent is that design will result in an overall change to fish habitat that is anticipated to be neutral. Although vegetation in the area will be permanently altered, the disturbed areas outside the roadway will be revegetated with native vegetation using vegetation assemblages appropriate to the ravine. The physical works required for Option 1 will also affect water quality and hydrology due to the isolation and realignment of the creek. Mitigation will include implementation of environmental protection measures during construction.

Upgrading 17 Street NE and Range Road 232 (Option 2) will require less disturbance within Clover Bar Ravine than Option 1. This is because a new watercourse crossing on Clover Bar Creek will not be created. This eliminates the need for vegetation removal in the proposed location of the Project and does not create an additional barrier to wildlife movement through Clover Bar Ravine. However, upgrading the 17 Street NE crossing will require widening of the road, which will result in a temporary disturbance to wildlife, fish habitat and water quality and hydrology, potentially impact historical and palaeontological resources and necessitates permanent vegetation removal and habitat disturbance on either side of the existing crossing. Although Option 2 does not include the construction of an additional crossing of Clover Bar Ravine, widening of 17 Street NE may weaken existing connectivity for wildlife within Clover Bar Ravine assuming the crossing isn't completely redesigned to incorporate better wildlife passage.

Maintaining the existing access (Option 3) presents the greatest environmental opportunities when compared to Options 1 and 2. This is because no additional disturbance will take place within Clover Bar Ravine or Clover Bar Creek. A new crossing would not be constructed and 17 Street NE would not be widened. Current wildlife habitat and movement through Clover Bar Ravine would not change, and vegetation removal, and therefore habitat removal, would not take place.

Option 3 has the least potential for negative environmental effects on the landscape but does not meet the overall objective of reducing traffic congestion. Option 1 and 2 both have the potential to cause negative environmental effects. Option 1 will create a new crossing where there was none previously, further fragmenting the Clover Bar Ravine. This is proposed to be mitigated through the design of an arch culvert wildlife passage and fishery enhancements in



the stream bed as well as implementing other environmental protection measures for vegetation, water quality, hydrology and cultural and palaeontological resources. Option 2 could also increase the fragmentation of the ravine by widening a crossing that currently does not incorporate wildlife passage in its design. Moving forward with this option does present the opportunity to improve this ravine crossing should the existing 17 Street NE crossing be removed and reconstructed in a fashion similar to that proposed in Option 1; however, this would result in additional cost not discussed above in Section 2.1 (i.e. cost of removal for the existing crossing on top of construction of a new one). This alternate means of constructing Option 2 would likely result in a greater net gain to the ecological network of the area.

2.4 INSTITUTIONAL OPPORTUNITIES AND CONSTRAINTS

The City of Edmonton has policies and bylaws that regulate and guide the construction of new facilities below the top-of-bank within the North Saskatchewan River Valley system. These policies are in place to protect Edmonton's natural features from increasing development pressures. Policies that may apply to the Project include, but are not limited to, Bylaw 9809, Bylaw 7188, Bylaw 15100, The Way We Green, The Way We Live, The Way We Move, and Policy C531. Each of these is discussed below in regards to how they relate to construction of the Project.

Unlike Sections 2.1 through 2.3 above, this section will only examine the proposed project for conformance to the City's policies and bylaws rather than provide a comparison of the three project alternatives.

2.4.1 Bylaw 9809: Aurum Industrial Business Park Area Structure Plan

Bylaw 9809: Aurum Industrial Business Park Area Structure Plan (City of Edmonton 2009a) was created to establish a framework for future land use planning and the provision of municipal infrastructure, services, and amenities in conformance with established planning policies, objectives, and requirements of the City of Edmonton. As described within the document, the transportation network within the Aurum Industrial Business Park ASP is designed to safely accommodate the efficient movement of vehicles, trucks, and rail traffic. To this end, Aurum Road (referred to as 137 Avenue NE in the document) is a major east-west arterial roadway providing a connection to Anthony Henday Drive to the west and Strathcona County to the east. Aurum Road is planned to be developed in stages, with the first stage to be a two lane cross section and including a crossing of the Clover Bar Ravine.

The Project satisfies the intent of this bylaw through the construction of Aurum Road in the proposed location as approved by City of Edmonton Council when Bylaw 9809 was passed.

2.4.2 Bylaw 7188: North Saskatchewan River Valley and Area Redevelopment Plan

The NSRVARP (City of Edmonton 1985) was developed to protect the North Saskatchewan River Valley and Ravine System as part of the City of Edmonton's open space heritage. The NSRVARP envisions a major portion of the River Valley and Ravine System used as an environmental protection area. The major goal of the NSRVARP is to ensure preservation of the natural character and environment of the North Saskatchewan River Valley and Ravine System.

The Environmental Protection Objective that applies to the Project is:

2.4.2 *To consider environmental factors when planning for use in the River Valley.*

The Transportation Objective that applies to the Project is:

2.5.1 *To support a transportation system which serves the needs of the City and the Plan area, yet is compatible with the parkland development and the environmental protection of the River Valley and its Ravine System.*

The Policies of the NSRVARP that apply to the Project are:

3.2.17 *Urban Design and Architectural Guidelines*

It is the policy of this Plan that all public development will conform to Council approved environmental, urban, and architectural design guidelines to be developed in future studies and park development plans.

3.3.3 *Application of Environmental Impact Assessment*

It is the policy of this Plan to ensure the application of an environmental impact screening and assessment to all proposed public development and development on public land.

3.4.1 *Direct River and Direct Ravine Crossings by Major Transportation Corridors*

It is the policy of this Plan that new transportation corridors will not be approved except for direct River and direct Ravine crossings which are deemed essential and approved by City Council as in Policy 3.5.3.

3.5.3 Site Location Study and Environmental Impact Screening Assessment

It is a policy of this Plan that all proposals for the development of a major facility that is publicly owned or is developed on public lands shall be subject to an environmental impact screening assessment as outlined in Schedule D, and a detailed site location study detailing costs, and social, environmental, and institutional constraints which make a River Valley location essential must be prepared for Council approval.

The Project meets the requirements of the NSRVARP in the following ways:

- The environment was a key consideration in choosing the type of crossing structure proposed for the preferred option.
- The Project meets the needs of the City through the development of an arterial transportation corridor through an industrial development area and will be designed to facilitate continued passage of fish and wildlife through the ravine
- The Project conforms to all design guidelines provided by the City
- An SLS has been prepared (this report) and an EIA will be prepared for the proposed Project.
- The Project is a direct crossing of the Clover Bar Ravine; this report is being undertaken to determine if the river valley location is essential

2.4.3 Bylaw 15100: The Way We Grow

The Way We Grow (City of Edmonton 2010a) is the City of Edmonton's Municipal Development Plan, and is designed to guide the City's growth and development until 2040. This bylaw includes the following policies that are relevant to the Project:

6.3.1 *Increase employment opportunities and municipal revenues through attraction, growth, and development of industrial business targeting value-added good and services and research and technology rich industry.*

6.3.1.7 *Build infrastructure and provide services to support land development, goods movements, and ongoing business operations.*

7.1.1 *Protect, preserve, and enhance a system of conserved natural areas within a functioning and interconnected ecological network.*

7.1.1.7 *Public projects, new neighborhoods and developments will protect and integrate ecological networks, as identified in the Natural Connections Strategic Plan, by adopting an ecological network approach to land use planning and design.*

7.1.1.11 *Require new developments, adjacent to natural areas, to demonstrate that they have incorporated ecological design best-practices to mitigate negative consequences.*

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7.3.1 *Protect, preserve, and enhance the North Saskatchewan River Valley and Ravine System as Edmonton's greatest natural asset.*

7.3.1.1 *The City will work in partnership with local, regional, and provincial organizations to conserve, protect, restore, and enhance the North Saskatchewan River Valley and Ravine System for its ecological, recreational, aesthetic, educational, and natural resource value.*

7.3.3 *Mitigate the impact of development upon the natural functions and character of the North Saskatchewan River Valley and Ravine System.*

7.3.3.1 *New development within the North Saskatchewan River Valley and Ravine System will be planned according to, and will demonstrate that it embodies, the following priorities:*

- *Conservation and protection of natural areas and the connections that link them, from and within the North Saskatchewan River Valley and Ravine System.*
- *Public utilities installations, services, and facilities.*

7.3.3.3 *Require development projects within the North Saskatchewan River Valley and Ravine System to undertake an Environmental Impact Assessment as specified in the North Saskatchewan River Valley Area Redevelopment Plan (Bylaw No. 7188).*

7.3.3.4 *When City owned facilities must be located within or adjacent to the North Saskatchewan River Valley and Ravine System they will be located, designed, and operated in a way that mitigates ecological impacts.*

7.5.2 *Protect, maintain, and continually enhance the water quality of the North Saskatchewan Watershed.*

7.5.2.2 *Adopt and enforce regulations and guidelines that will enhance the quality of Edmonton's watershed.*

7.5.3 *Water resources are conserved and used efficiently by the public, industry, and the City of Edmonton.*

7.5.3.2 *Ecological design best-practices will be used in the operation and design of City owned and/or managed facilities and infrastructure.*

7.5.3.5 *Design, arrange, and located new infrastructure and buildings to mitigate impacts on the water system.*

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The Project meets the requirements of this bylaw in the following ways:

- Completion of Aurum Road will support the continued development and movement of goods to and from the Aurum Industrial Business Park as discussed in Section 2.
- The crossing structure chosen for Option 1 facilitates wildlife movement and was designed with the intent of not degrading the area's ecological network any further
- An EIA is being conducted to evaluate environmental effects of the construction of this road crossing and recommend mitigation measures that are being worked into the design
- Runoff from Aurum Road will be directed to a Storm Water Management Facility that is proposed to be constructed to the west of the Project. A comprehensive Erosion and Sediment Control plan/strategy will be developed and implemented to protect the watercourse during construction
- The design of the creek realignment will incorporate several enhancements to fish habitat to offset the impacts of the realignment

2.4.4 The Way We Green

The Way We Green: The City of Edmonton's Environmental Strategic Plan (City of Edmonton 2011) outlines the principles, goals, objectives, and strategic actions and approaches for Edmonton to live in balance with nature. The focus of the plan is to address the sustainability and resilience challenges related to the ecosystem (land, water, and air), energy/climate change, food, and solid waste.

The main objectives of this plan relevant to the Project are the same items identified in The Way We Grow (City of Edmonton 2010a) as discussed in section 2.4.3.

2.4.5 The Way We Live

The Way We Live: Edmonton's People Plan (City of Edmonton 2010b) is designed to outline how to improve the quality of life of Edmontonians in a socially, environmentally, and financially sustainable way and puts a focus on relationships between people, their neighborhoods, local government, and the world.

The objectives of this plan that apply to the Project are:

6.2 *The City of Edmonton is an environmentally sustainable society.*

6.2.2 *Protects, maintains, conserves, and restores the biodiversity of Edmonton's natural environment.*

6.2.6 *Maintains and conserves natural spaces and ecological connectivity in the North Saskatchewan River Valley.*

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The Project will be constructed in a manner that protects the Clover Bar Ravine, with the appropriate mitigation in place. In addition, the arch culvert included at the base of the Aurum Road crossing will maintain the ecological connectivity within the Clover Bar Ravine.

2.4.6 The Way We Move

The Way We Move (City of Edmonton 2009b) is the City of Edmonton's Transportation Master Plan, which establishes the framework for how the City of Edmonton will address its future transportation needs. This document is aligned with The Way We Grow (City of Edmonton 2010a) and focuses on essential infrastructure that is a primary determinant of the City's environmental, financial, and social sustainability.

The objectives of this plan that apply to the Project are:

Strategic Goal: Sustainability – Transportation decisions reflect an integrated approach to environment, financial, and social impacts

- 7.1 *Road Systems and Responsibilities: (Road Design): The City should consider flexibility in design to develop roads that fulfill their intended purpose based on factors such as traffic volumes, speed, active modes, emergency response services access and adjacent land uses with consideration for natural areas, natural area linkages and environmental factors such as water and air quality. Roads, streets and parking areas increase the amount of impervious land area which contributes to higher storm water flows and higher pollutant loads in urban storm water. It is possible to reduce impervious surfaces by retaining natural landscaping. Minimizing pavement and promoting natural infiltration to the soil through landscaping.*
- 8.1 *The City will work with other jurisdictions, the Province, and external service providers to ensure that Edmonton has a safe and efficient goods movement network that connects and interchanges well with other facilities.*
 - d. *Giving priority to road construction projects that enhance goods and services movement and that facilitate access to developing and established business and industrial areas.*

The Project meets the needs of this document through the development of Aurum Road, which will enhance the current access to Aurum, as well as the movement of goods to, from, and within Aurum. It also connects to a six lane roadway and interchange that the Province invested in and constructed as part of the development of the northeast leg of Anthony Henday Drive.

2.4.7 Policy C531: Natural Area Systems

The Natural Area Systems Policy (City of Edmonton 2007b) was developed to help conserve, protect, and restore the natural wetlands, uplands, water bodies, and riparian areas within the City of Edmonton to safeguard the City's natural capital and associated ecological services. As per this policy, the City of Edmonton will balance ecological and environmental considerations with economic and social considerations in its decision making and demonstrate that it has done so.

The main purposes of this policy that are relevant to the Project include the following:

- Conserve, protect, and restore natural area systems through the physical planning and development process; according to the provisions of municipal, provincial, and federal policy and legislation.
- Ensure consistent, uniform, and equitable conservation practices that are based on the best available science.
- Direct Administration to plan our city so that our ecological systems will function effectively at neighborhood, city, and regional scales.
- Conserve, protect, and restore natural area systems through the physical planning and development process according to the provisions of municipal, provincial, and federal policy and legislation.

Maintenance of ecological connectivity has been forefront in the design of this crossing and will be maintained through the incorporation of the proposed arch culvert at the base of the Aurum Road crossing. Additional impacts and mitigation measures related to the surrounding ecological system will be identified in the EIA.

3.0 CONCLUSIONS

This SLS was conducted pursuant to the NSRVARP (Bylaw 7188) to evaluate the proposed construction of Aurum Road crossing over Clover Bar Ravine, which is located within a portion of SE-21-53-23-W4M, Edmonton, Alberta.

Analysis of the financial opportunities and constraints revealed that the lowest direct financial costs would be incurred by the status quo option (Option 3). However, this option would not meet the objectives of reducing traffic congestion and would result in indirect maintenance costs and lost economic development opportunity. Between the two upgrade options, Option 1, the preferred option, was the lower cost.

From a social standpoint, proceeding with the preferred Project (Option 1) may result in a temporary inconvenience for businesses within Aurum due to the presence of a construction zone; however, once construction of the Project is complete, traffic congestion within Aurum will be reduced. Proceeding with either of the other two alternatives will not provide the equivalent level of relief to existing traffic congestion in the larger area.

Environmentally, maintaining the status quo would have the lowest effect on the Clover Bar Ravine. Proceeding with either the Project (Option 1) or upgrading the 17 Street NE and Range Road 232 (Option 2) will result in both temporary and permanent environmental disturbance within Clover Bar Ravine. Of the two options, Option 2 would result in the lower effect on the ravine if the crossing were to be completely reconstructed and incorporate wildlife and aquatic passage.

The institutional analysis did not identify any contraventions that would prevent the Project (Option 1) from proceeding. The proposed Project satisfies a large component of the Aurum Industrial Business Park ASP through the completion of a major arterial road within Aurum and meets the goals of several other policies.

While maintaining the status quo has lower direct costs and less potential to adversely affect the environment, it does not meet the overall objective of reducing traffic congestion. Although both Option 1 and Option 2 both meet the overall objective of improving access to Aurum, Option 2 does not have the added benefit of providing a future bypass route between Anthony Henday Drive and Highway 21. Option 2 involves multiple overpasses, widening of the existing creek crossing, and potential requirement for expropriation of land to acquire the necessary space to construct the required infrastructure. As such this outcome is suggestive of preference for Option 1.

It is therefore the recommendation of this SLS that the proposed location (Option 1) for the crossing of Clover Bar Ravine within the NSRVARP area be accepted as the preferred option in the City's consideration of whether the project location is essential under Bylaw 7188.

4.0 LIMITATIONS AND QUALIFICATIONS

In conducting the investigation and rendering our conclusions, Stantec gives the benefit of its best judgment based on its experience and in accordance with generally accepted professional standards for this type of investigation. This report was submitted with the best information to date and on the information provided. The conclusions made within this report are a professional opinion, not a certification of the site's environmental condition, or analysis of the environmental impacts of the project, and no other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of Aurum Industrial Development Partnership for the purposes of assessing the suitability of the proposed Project at the proposed location. Any use which any third party makes of this report, or any reliance on or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any other third party as a result of decisions made or actions based on this report. Our conclusions are limited by the following:

- The information contained within this report is based on the information provided to date by various agencies and the design drawings available at the time of report preparation. Should the drawings be amended in the future, revisions to the report may be required.
- The investigation was limited to those parameters specifically outlined in this report.
- The findings of this report were based off a desktop review of current information. No fieldwork was conducted.

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