

City of Edmonton

**Site Location Study:
Whitemud Creek Boardwalk Replacement**

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1.0 INTRODUCTION

A detailed Site Location Study as set out in Policy 3.5.3 of the North Saskatchewan River Valley Area Redevelopment Plan (ARP) is required to address the questions of whether the proposed major facility belongs within the protected ARP lands or if existing major facilities should be perpetuated through upgrade or replacement.

Policy 3.5.3 reads:

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...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.”
(City of Edmonton, 1985).

The purpose of the Site Location Study is to examine the social, financial, environmental, and institutional constraints, and to detail how they make locating the project within the North Saskatchewan River Valley ARP boundaries essential.

2.0 PROJECT BACKGROUND

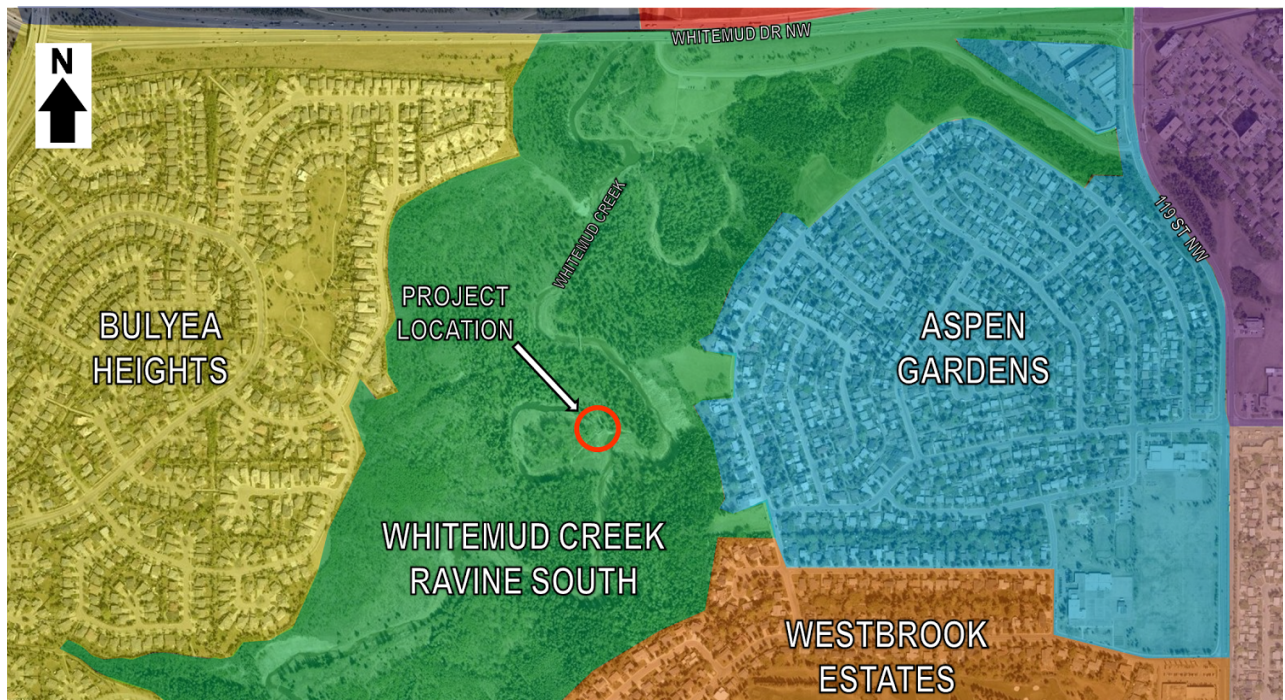


Figure 1: Project Location

The Whitemud Creek Boardwalk and Staircase create a vital trail connection within the Whitemud Creek Ravine, as they allow passage through an area that is often too wet or muddy to cross. On numerous occasions over the past decade, the boardwalk has been significantly

damaged by ice heave, and has required multiple interim repairs. As a result, the boardwalk has become exceedingly uneven, and poses potential safety concerns. Due to these safety concerns and the general disrepair of the boardwalk, a project was initiated to replace it.

In order to avoid future ice heave, while maintaining the existing trail connection and limiting impacts to the surrounding natural environment, the City of Edmonton has explored a potential new design for the boardwalk.

3.0 PROJECT SCOPE

3.1 Project Location/Setting

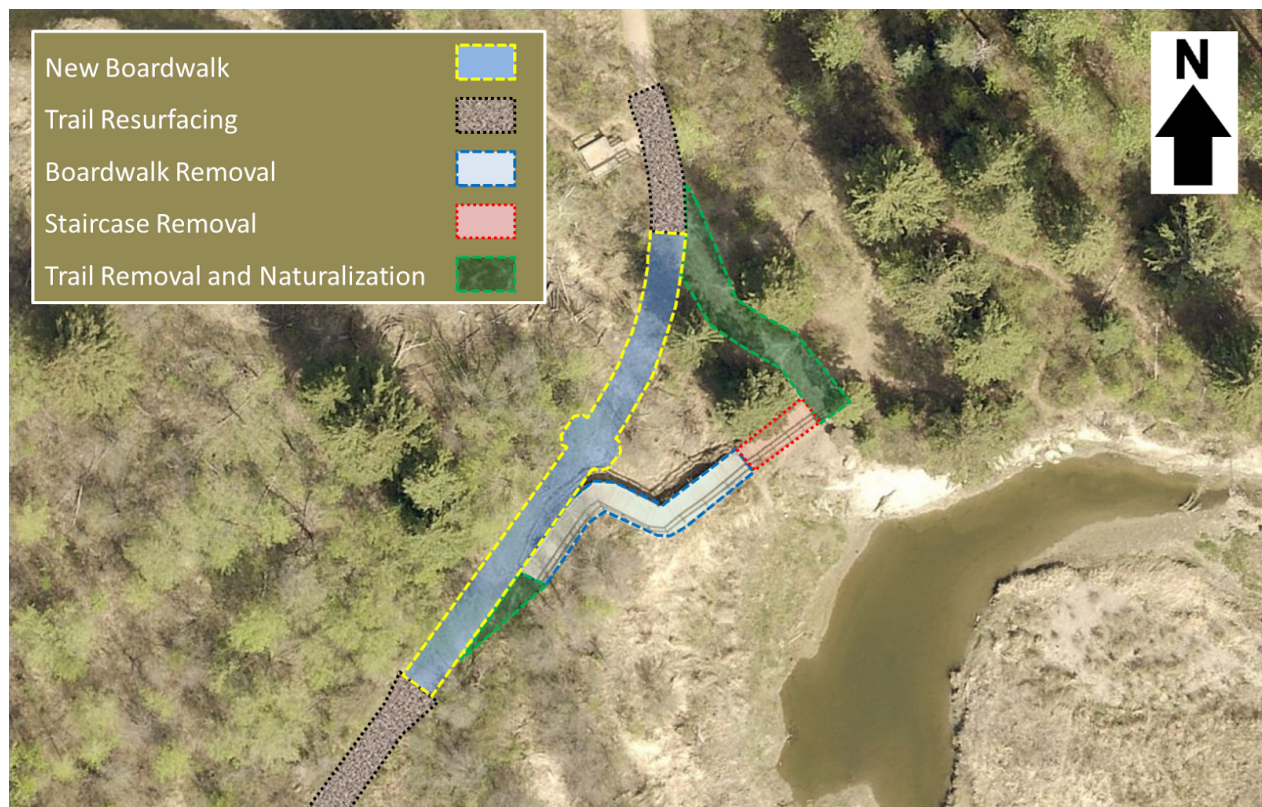


Figure 2: Project Area

The existing boardwalk is located approximately 5 metres away from the northwest edge of Whitemud Creek, near an oxbow of the creek. The boardwalk acts as the only connection between a trail that leads from the Whitemud Creek Ravine Park parking lot, to the two other trails in the ravine, which lead to the nearby Aspen Gardens and Bulyea Heights neighbourhoods (see Figure 3). The proposed new boardwalk will be approximately 18 metres from the creek and will provide the same connections as the existing boardwalk.

As per the Ribbon of Green Master Plan (1992), this project is located within a preservation area of Whitemud Creek Ravine South. Additionally, it is also within the River Valley and Ravine System Area Redevelopment Plan, *Bylaw 7188*, boundaries.

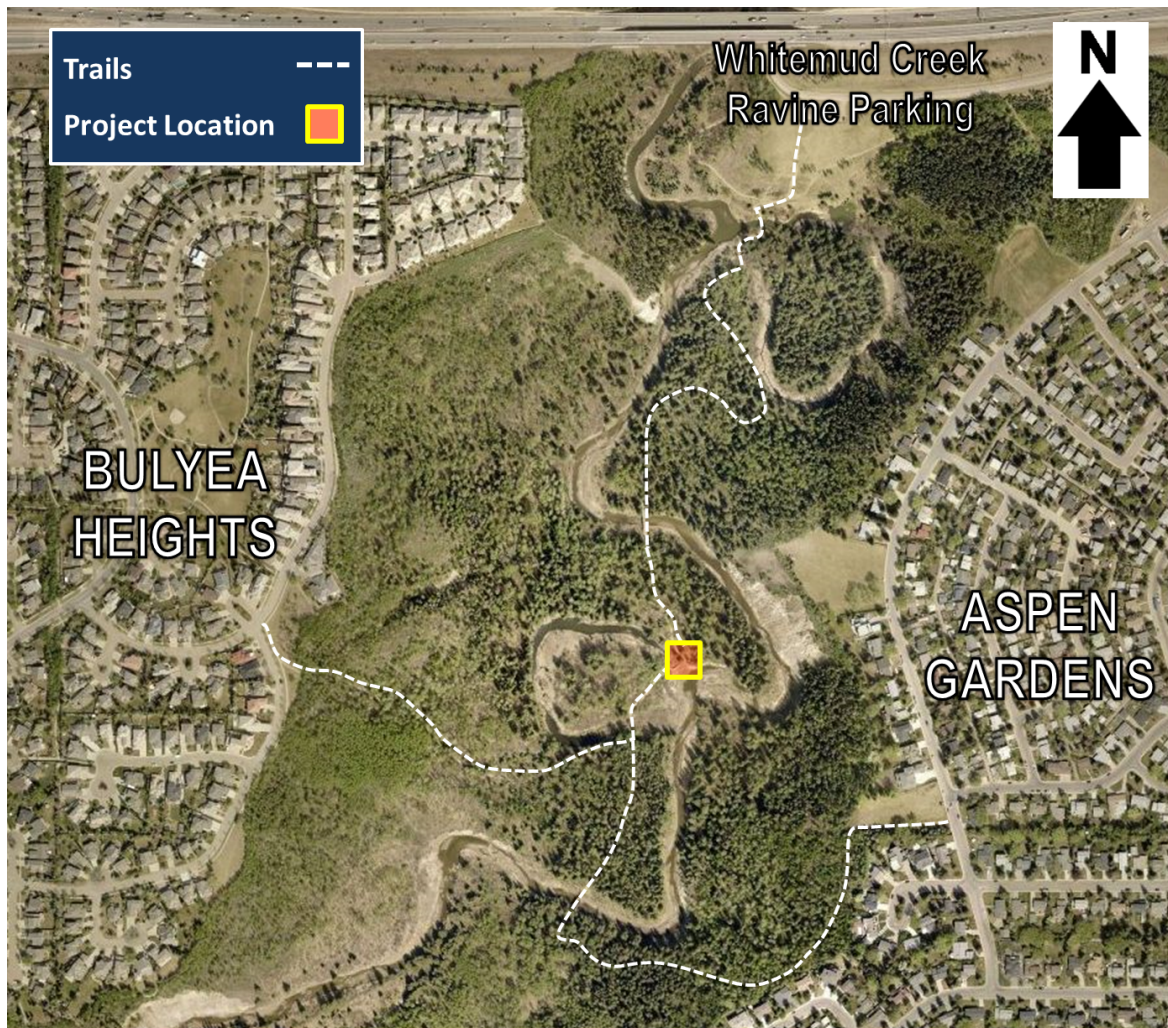


Figure 3: Nearby Trail Network

3.2 Project Elements

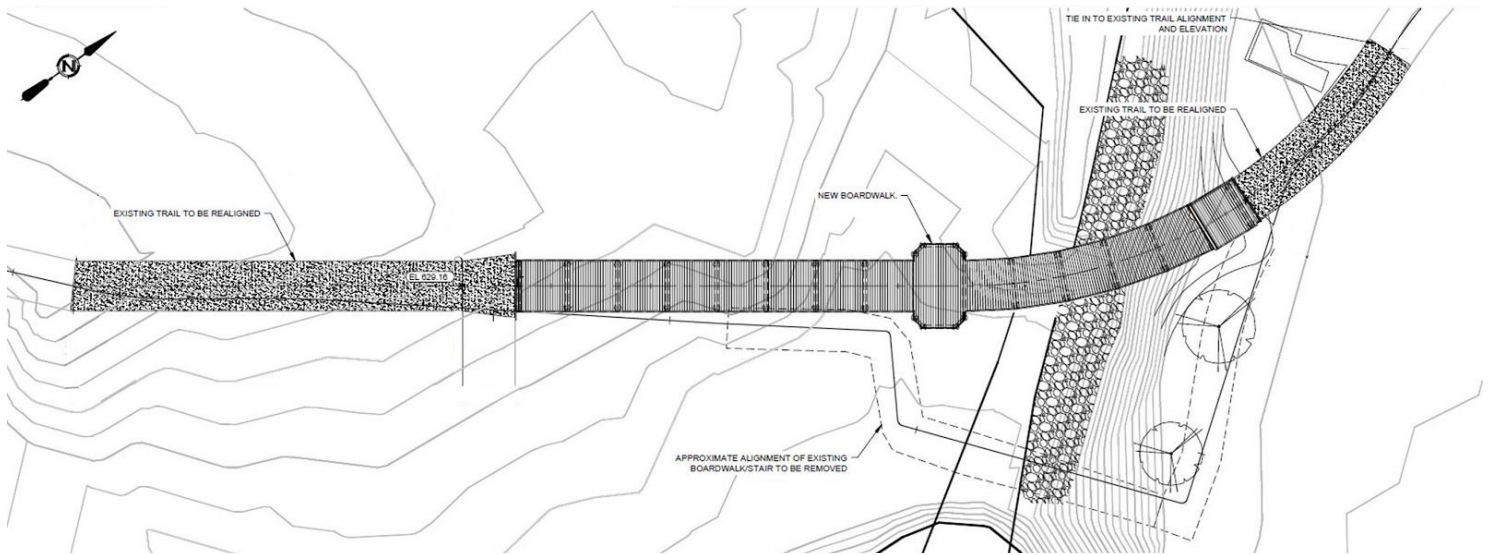


Figure 4: Concept Drawing

The boardwalk replacement will include the following elements:

1. Removal of existing boardwalk
2. Removal of existing stairs
3. Removal and naturalization of existing pathway
4. Removal of small trees and bushes
5. Installation of heavy-rock riprap
6. Installation of concrete piling
7. Installation of boardwalk
8. Installation of new rerouted trail

3.2.1 Removal of Existing Boardwalk

The existing boardwalk has been significantly and repeatedly damaged by ice heave and currently poses potential safety concerns. The boardwalk is approximately 3 metres wide and runs a length of 23 metres. It provides a critical connection between trails, and is the only way to cross between the Whitemud Creek and nearby oxbow without traversing areas that are typically wet or muddy. Removal of this boardwalk will make space for the installation of the new boardwalk 13 metres further back from the Whitemud Creek.



Figure 5: Existing Boardwalk

3.2.2 Removal of Existing Stairs

The existing staircase connects to the current boardwalk, and provides easier access up a steep incline between the trail and boardwalk. The new boardwalk will not require stairs and will allow for their removal. This will provide the opportunity to re-naturalize the area that currently lies under and around the staircase.



Figure 6: Existing Staircase

3.2.3 Removal and Naturalization of Existing Pathway

As a result of realigning the boardwalk, a 37 metre section of granular trail will no longer be required. The granular surfacing will be removed from this area and the trail will be re-naturalized to impede continued foot traffic into the area, an area which is susceptible to bank erosion.

3.2.4 Removal of Small Trees and Bushes

The removal of the small, non-mature trees and bushes will be required for the placement of the new boardwalk. Foresters from the City of Edmonton's Urban Forestry unit will be on site prior to construction to ensure proper removal and protection measures are in place. The Corporate Tree Management Policy C456A (2010) will also be adhered to. Minor additional scrubbing may also be required for a small laydown area near the trail.

3.2.5 Installation of Vegetated Riprap

Approximately 100 square metres of Class I and Class II (100mm to 500mm) vegetated riprap will be required on the north embankment of the oxbow as an erosion control measure.

3.2.6 Installation of Concrete Pilings

Thirty-six cast in place concrete piles will be required for supporting the new boardwalk structure and protecting it from ice heave. The pilings will be 6 metres deep and have a 400 millimetre diameter.

3.2.7 Installation of Boardwalk

The proposed new boardwalk is 3 metres wide by 45 metres long, made of timbre, and has an 8 percent slope with a level observation platform at the halfway point. The boardwalk will provide access across the oxbow area without the need for stairs, making it more accessible for pedestrians, including people pushing strollers.

3.2.8 Installation of New Rerouted Trail

As a result of relocating the boardwalk, a small portion of trail will need to be rerouted. This will have minimal impacts on the surrounding areas as the majority of the rerouted trail will fall within the existing trail's footprint.

4.0 Location Analysis and Justification

4.1 Alternative Location Review

Due to the existing locations of trails within the Whitemud Creek Ravine, there are no other feasible locations for the boardwalk that would maintain this essential trail connection without significant trail re-alignments in the area. This includes areas inside and outside of the North Saskatchewan River Valley and Ravine System's Bylaw boundaries.

Although no other locations for the boardwalk were deemed feasible, two possible orientations at the existing site were explored. The first option was to replace the boardwalk using the existing footprint. The second option involves rotating the east end of the boardwalk 33 metres north while keeping the west side in relatively the same location. This latter option is preferred as it improves accessibility through eliminating the need for stairs, moves the structure away from erosion on the north bank of Whitemud Creek, and increases the boardwalk's distance from the creek.

4.2 River Valley Dependencies

Although it would be possible to locate the boardwalk outside of the North Saskatchewan River Valley ARP boundaries, it would run counteractive to the purpose of the proposed project. As mentioned above, the boardwalk is being proposed as a means of replacing a damaged and unsafe boardwalk. Placing the proposed boardwalk outside of the river valley would effectively eliminate the opportunity to replace the existing boardwalk, and, if the existing boardwalk were to be removed, there would be no trail connection between the trails on either side of the oxbow.

Not being able to provide a trail connection in this location would eliminate the only formal trail connection between the trail on the north side of the existing boardwalk and the trails south of it. This could potentially result in the formation of informal goat trails through environmentally sensitive areas that may be susceptible to erosion and other concerns. Additionally, locating the boardwalk outside of the river valley would require the purchase or expropriation of land, which would not be favourable or would exceed the budget of the project. As such, the proposed location within the river valley is necessary for the project to achieve its main objectives while staying within a reasonable budget.

4.3 Overview of Bylaws, Plans, and Policies

Various bylaws plans and policies were considered and reviewed in regards to the Whitemud Creek Ravine Boardwalk. They are as follows:

North Saskatchewan River Valley Area Redevelopment Plan, Bylaw 7188:

- 2.1 Concept Plan:
 - The plan “is based on the fundamental philosophy that a continuous open system, interspersed with recreational activity nodes, can meet the diverse demands for recreation in an urban setting and yet protect the river valley environment.”
- 2.2. Major Goals
 1. to ensure the preservation of the tile natural character and environment of the North Saskatchewan River Valley and Ravine System.
 2. to establish a public metropolitan recreation area.
 3. to provide the opportunity for recreational, aesthetic and cultural activities in the Plan area fare for the benefit of Edmontonians and visitors of Edmonton.
 4. to ensure the retention and enhancement of the Rossdale and Cloverdale communities in the River Valley.
- 2.4.2: To consider environmental factors when planning for use in the River Valley
- 2.6.1: To control the expansion and construction of major facilities and minimize the adverse impacts of major facilities on the natural environment and park development
- 3.5.1 Development of Major Facilities: It is a policy of this Plan that major public facilities shall not be constructed or expanded unless their location within the River Valley is deemed essential and approved by City Council

The Way We Green, Edmonton's Environmental Strategic Plan

- 3.8: The City protects, preserves and improves the North Saskatchewan River Valley and Ravine System as an accessible year-round place for recreation and activity for people of all ages
- 3.11: The City expands and enhances Edmonton's inventory of parks and open spaces for the ecological, health, recreation and educational benefits they provide

The Way We Live, Edmonton's People Plan

- 2.2: The City of Edmonton provides for the well-being of its citizens through outstanding parks, natural, green, and public spaces

Corporate Tree Management, Policy C456A

- 1.8 Take necessary steps to protect and preserve City trees impacted by construction activities

Edmonton Zoning Bylaw 12800

- 540.1 General Purpose of (A) Metropolitan Recreation Zone
 - The purpose of this zone is to preserve natural areas and parkland along the river, creeks, ravines and other designated areas for the active and passive recreational uses and environment protection in conformance with Plan Edmonton and the North Saskatchewan River Valley Area Redevelopment Plan

Historical Resources Act

- 37(2) Pursuant to this section, a Human Resources Impact Assessment (HRIA) was completed for the proposed boardwalk

5.0 Constraints Analysis

The following is an analysis of the financial, social, environmental, and institutional opportunities and constraints that make locating the Whitemud Creek Boardwalk at the proposed location within the *North Saskatchewan River Valley Area Redevelopment Plan*, Bylaw 7188 boundaries essential.

5.1 Financial Opportunities and Constraints

Situating the boardwalk replacement in the proposed location is the most appropriate site to meet the goals of the project while maintaining the surrounding natural environment. It utilizes the existing, nearby trails and maintains the connection that exists between them. Additionally, if it were possible to locate the boardwalk outside of the river valley while still meeting the objectives of the park, significant costs would need to be incurred by the City of Edmonton.

These costs would be required for purchasing land, and implementing alternative infrastructure that may be required to meet the project objectives. As such, it is not financially feasible to locate the boardwalk in a different location.

5.2 Social Opportunities and Constraints

Through maintaining existing trail connectivity within the Whitemud Creek, while removing the need for stairs, the proposed new boardwalk will improve upon existing social opportunities. By removing the existing boardwalk and replacing it with the new design, pedestrian safety will be improved. Additionally, by removing the need for stairs, pedestrian accessibility in the Whitemud Creek will be also be improved. This will most notably be the case for pedestrians with strollers and others for whom stairs may be an obstacle. As such, through improved safety and pedestrian accessibility, this project will enhance the social value of Whitemud Creek for trail users.

There are no known social constraints in regards to this project.

5.3 Environmental Opportunities and Constraints

The proposed boardwalk has to be in the noted location in order to meet the objectives of the project as they relate to the overall connectivity of the trail system in Whitemud Creek Ravine. By maintaining the connection that it provides, it will deter park users from leaving the existing pathways and walking through potentially sensitive areas. The new boardwalk will result in the removal of a few non-mature trees and bushes in order to accommodate the new orientation. These, and any other required tree removals will be completed in accordance with the City of Edmonton's Corporate Tree Management Policy.

Although the project will result in the removal of a few trees, it will also move foot traffic away from large, mature trees that are located along the north bank of Whitemud Creek, in areas that are highly susceptible to erosion. By moving the pathway away from these areas, the long-term stability of the bank, and the vegetation located on it, should be improved. As such, it is anticipated that the proposed project will have minimal adverse environmental impacts and some positive effects.

5.4 Institutional Opportunities and Constraints

The proposed boardwalk has to be in the noted location in order to meet the objectives of the project as they relate to the connectivity and overall functionality of the trails within Whitemud Park. As such, it would not be feasible to locate the boardwalk outside of the River Valley ARP boundaries.

The location and design of the boardwalk were affected by the need to ensure a safe, pedestrian friendly trail connection across the Whitemud Creek oxbow. The boardwalk will ensure the existing trail connectivity is maintained, allowing for continued recreational use by pedestrians.

6.0 Conclusion

Given the above analysis of the cost, environmental, social, and institutional constraints, this Site Location Study has concluded that locating the proposed elements within the River Valley is essential as per the *North Saskatchewan River Valley Area Redevelopment Plan*, Bylaw 7188, and also meets the goals and policies of the plan.

An accompanying Environmental Impact Assessment was also completed for the proposed project, and outlines mitigation measures and best practices to be followed during implementation of the proposed elements. The City will not commence construction on the project until Edmonton City Council has approved this Site Location Study and the accompanying Environmental Impact Assessment as per the direction provided in the North Saskatchewan River Valley Area Redevelopment Plan.

7.0 References

City of Edmonton. 1985. North Saskatchewan River Valley Area Redevelopment Plan, Bylaw No. 7188. City of Edmonton. Edmonton, Alberta.

City of Edmonton. 1992. Ribbon of Green: North Saskatchewan River Valley and Ravine System Master Plan. City of Edmonton. Edmonton, Alberta.

City of Edmonton. 2013. WinterCity Strategy Implementation plan. City of Edmonton. Edmonton, Alberta

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City of Edmonton. 2016. Edmonton Zoning Bylaw 12800. City of Edmonton. Edmonton, Alberta.

Historical Resources Act. 2000. In Revised Statutes of Alberta, 2000, Chapter H-9. Edmonton: Alberta Queen's Printer.