Fort Edmonton Park

Capitol Theatre - Environmental Impact Assessment

Submitted June 10, 2010

EIDOS

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Date June 10, 2010 File: 09-2474

Attention: Robb Heit, Project Manager

Re: Council Consolidation

Please find attached the Fort Edmonton Park Capitol Theatre Environmental Impact Assessment (EIA) and Site Location Study. The attached documents have been subject to inter-departmental review, and these comments are provided following this letter.

All requirements of the River Valley Bylaw No. 7188 pertaining to Sections 2.3 to 2.6, and Sections 3.2 to 3.6 have been satisfied and addressed (including Major Facility Development).

Yours truly,

EIDOS Consultants Incorporated
Landscape Architecture • Urban Design • Environmental Stewardship

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June 3, 2010

EIA Circulation Responses -

Capitol Theatre – Fort Edmonton Park

Comments	Proponent's Response
City of Edmonton – Asset Management & Public Works **Melissa Bain (780) 496-1037** *Planner, Parks Branch*	
Parks Planning has coordinated the review of Y-11 Environmental Impact Assessment Report for the Construction of the Capitol Theatre Project located at Fort Edmonton Park and has received the following comments. Comments/Questions: 1. Noise – will noise resulting from the proposed project negatively impact nesting animals/birds in the area? 2. Stormwater - have any options been explored to retain water on-site (U/G holding tanks, rain barrels, etc.) to use on other areas within Fort Edmonton Park site for watering? Conditions: 1. Please coordinate public consultation and neighbourhood notification with the Community Recreation Coordinator to ensure that adequate notification has occurred. Please contact Shelley Kwong (780-496-1473) to coordinate community notification. 2. Upon Parks' approval of the plan, a site meeting with Forestry (Travis Kennedy 780-496-4954) will be required to review construction plans and tree protection during construction. This meeting will need to be scheduled a minimum 2 weeks in advance of	1. The construction site is separated from the nearest riparian forest by a distance of approximately 55m. Note also that the service road is immediately adjacent and any species nesting there will be well habituated to human activity. Noise impacts are not expected to affect nesting birds. . 2. No underground storage will be provided, given the proposed roof retention and controlled release. 1. Please refer to Proponent response to Kirk Bacon's comments on Page 3. 2. Noted.

the construction start date. Please be advised that all costs associated with the removal, replacement or transplanting of trees shall be covered by the Proponent as per the Corporate Tree Management Policy (C456). Forestry will schedule and carry out all required tree work involved with this project. 3. Any damage to entry or access roads, adjacent areas, parking lots and/or laydown areas will be the responsibility of the contractor/project to repair to the satisfaction of Parks. 4. Any damage to areas due to utility line installations will be the responsibility of the contractor/project to repair to the satisfaction of Parks. 5. Any new drainage issues (grading) caused by construction will be the responsibility of the contractor/project to repair to the satisfaction of Parks. 6. Please ensure archaeological review of site is conducted prior to construction. 7. Please ensure Parks Design and Construction receives detailed design drawings for circulation and review and final as-built drawings, including all grades and utility installations so site plans may be updated. 8. Please ensure that coordination occurs with other projects in area (John Janzen Nature Centre, Whitemud Amenity Building, Quesnell Bridge widening, etc.)	3. Noted. 4. Noted. 5. Noted. 6. The Historic Resources Management Branch of Alberta Culture and Community Spirit provided Historical Resources Act clearance for this project on March 3, 2010. Please see page 6 of the comments. The letter is included in the Appendix. 7. Noted. 8. Noted, interface with proposed site servicing initiatives will also be monitored closely.
City of Edmonton - Asset Management & Public Works **Michael Silzer (780) 944-5588** *Ecological Planner, Office of Natural Areas, Parks Branch*	
The Office of Natural Areas (ONA) has reviewed the Site Location Study and Environmental Impact Assessment. As the proposed building construction does not affect any identified natural areas, the ONA does not have any comments or concerns with this proposal.	1. Noted. Thank you.

Thank you for the opportunity to comment. Please contact Michael Silzer at 780.944.5588 with any questions or concerns.	
City of Edmonton - Asset Management & Public Works **Sincy Modayil** *Environmental Engineer, Environmental Planning Section, Drainage Services*	
Upon review of the above noted report, the Environmental Planning Section of Drainage Services provides the following comments: 1. On-roof stormwater management: has this servicing concept been vetted through Private Development section of Drainage Services? Since rooftop storage may affect the structural integrity of the building, this specific design would need to be signed off by an engineer. 2. Have you considered the option of underground cistern storage, with controlled release to the storm sewer? If you require additional information, please contact me at 780-496-2653.	1. Stantec Consultants are engaged as the project structural engineers. All initiatives that impact the structure will be approved by them. The design of the retention system has not been finalised. All decisions and calculations will be submitted as part of the Building Permit submission to the City. 3. No underground storage will be provided, given the proposed roof retention and controlled release.
City of Edmonton – Planning & Development **Kirk Bacon (780) 496-3142** *Development Planner, Development Permitting Section, Current Planning Branch*	
I have reviewed the submitted EIA and have the following comments: 1. On page 12 it is stated that an EIA must include public participation. On page 43 the report states that the required public consultation will be held at a later date in accordance with the development process requirements. The public participation / consultation requirements of this project are from the Environmental Impact Assessment as required by the North Saskatchewan River Valley Area Redevelopment Plan. There is no public participation / consultation requirement in the Zoning Bylaw regulations. Therefore, the public participation / consultation component of this EIA is outstanding.	1. A public consultation was held in March, 2010, which presented a summary of the proposed plan and artist renderings with text for the entire park, including the Capitol Theatre. The Fort Edmonton Park 2010 Master Plan Update is available online at the following link: 2010 FEP Master Plan Update, and the corresponding Council Report is also available online. The amount of public consultation was extensive and included focus groups, a stakeholder workshop, general population online survey, and a web-accessed survey. The Capitol Theatre was identified specifically in the PowerPoint presentation with graphics and text to identify the concept of the theatre. No concerns were raised about whether the theatre belonged in the river valley, or about constructing a new facility in the river valley. The only concern regarding the Capitol Theatre pertained to

	the use of technology in the theatre. Fort Edmonton Management response to the concern of technology is that "New exhibits and activities at Fort Edmonton Park may draw on the use of audiovisual materials, projections and other well-established museum methods to tell the stories of people and events of the past. The innovative use of technology will be combined with more traditional artifacts and costumed interpreters. Throughout the Plan, technology is used to complement, not drive, the story telling." At the May 12, 2010 City Council meeting, the motion to approve the Master Plan Update was passed. A member of the Fort Edmonton Management Company, Buildings Design and Construction, and Community Services was on hand at the Council meeting to answer any questions. The Office of Public Involvement (Angela Turner) concluded that since public consultation occurred to develop the Master Plan, the only requirement at this stage would be to make the information available to the patrons and neighbours of the park. Mary Lou Reeleder of Communications identified that an addition to the Fort Edmonton Park website would fill this requirement, and a web page is currently under development to provide the information to the public. Ed Egyedy has accepted the above-mentioned strategy to deal with the public presentation requirements. The above mentioned correspondence is included in the Appendix of this report.
2. In reference to the Zoning Bylaw 12800 comments on page 18, please note that a development application has been made for the Capitol Theatre on April 21, 2010. The scope of the development application is to construct a Public Libraries and Cultural Exhibits / Spectator Entertainment Establishment building. A Public Libraries and Cultural Exhibits is a Permitted Use within the (AN) River Valley Activity Node Zone, and a Spectator Entertainment Establishment is a Discretionary Use within the (AN) River Valley Activity Node Zone. NOTE: No development decision will be made until this EIA and the Site Location Study have been passed by Council.	2. Noted. Edmonton Capital Construction is preparing the appropriate Council reports for approval of the EIA and Site Location Study.

3. Will the proposed 13 cubic meter Sanitary Sewer storage chamber at the lift station by the JB Little building be visible to the public?	3. The chamber will be a below-grade structure, so only the access manhole cover would be visible.
4. Please note that in accordance to Section 541.4(3) the recommendations contained within this required EIA review shall be met as condition(s) of the issuance of a Development Permit, to the satisfaction of the Development Officer.	4. Noted.
City of Edmonton – Transportation **Paul R. Lach (780) 496-6358** *Senior Geotechnical Engineer, Engineering Services, Transportation Department*	
May 3, 2010: I reviewed the EIA Report for the Capitol Theatre Project located at Fort Edmonton Park prepared by EIDOS Consultants Incorporated, dated April 21, 2010. In particular, I reviewed the appended geotechnical reports prepared for the adjacent Selkirk Hotel Reconstruction, as follows: • Selkirk Hotel Reconstruction, Fort Edmonton Park, Geotechnical Investigation, prepared by Thurber Engineering Ltd., dated January 30, 2002, and; • Selkirk Hotel Reconstruction, Fort Edmonton Park, Supplemental Geotechnical Recommendations, dated August 1, 2002.	
1. These investigation reports documented geotechnical recommendations for site and facilities development and foundation design and construction for the Selkirk Hotel Development. Based on the information provided in the reports, it would appear that the proposed development of the adjacent Capitol Theatre is viable from a geotechnical perspective provided that good local construction techniques and practices are employed in accordance with proper engineering design.	1. Noted.
2. I would recommend that a site- and development-specific geotechnical investigation and recommendations be obtained to support this proposed development. The information from the preceding investigations will provide important information to the geotechnical consultant in the establishment of the scope of a current investigation and in the engineering assessment	2. A site-specific supplementary geotechnical investigation has been completed and has been submitted to Paul Lach for review.

for the Capitol Theatre Project. 3. Geotechnical engineering recommendations provided in the investigation report should be adhered to in order to reduce uncertainty relative to the geotechnical design for the proposed structure and facilities. The geotechnical consultant should also be provided the opportunity to evaluate the detailed design drawings and inspect construction to ensure that their design requirements have been met. Should you have any questions regarding these comments, please call me at (780) 496-6358.	3. The geotechnical engineer will be required to do the following: a) Review the foundation drawings and complete the Alberta Building Code Schedule B2; b) Review the construction of foundations and complete the Alberta Building Code Schedule C2.
City of Edmonton – Transportation **Dave Lapp (780) 496-6782** *Environmental Scientist, Transportation Department*	
April 30, 2010: 1. I have reviewed the above-noted April 2010 report by EIDOS Consultants that you provided with your referral memorandum of April 27, 2010. As a result I have no concerns with the description of the work proposed as long as the ECO Plan described in the EIA is prepared and implemented as described. 2. However, the project should not proceed until such time as the Fill Quality Assessment is completed and demonstrates that there are no environmental impacts in the fill material present on the site. Should any questions arise, please call me at 496-6782. **June 2, 2010:** I have reviewed the above-noted May 12, 2010 letter report by Thurber Engineering that [Robb Heit] had forwarded to me. The consultant submitted four soil samples from four different sample locations for analysis to an environmental laboratory. One sample, from 0.75 of a metre depth in TH10-4, was taken within a suspected layer of fill. All of the samples were analyzed for total metals and petroleum hydrocarbons. It is reported that all parameters in the fours samples were found to be	1. Noted. 2. A Fill Quality Assessment has been completed for the site within the proposed building footprint, and no contaminants of concern were found. The report was reviewed by Dave Lapp (see Dave Lapp's June 2, 2010 comments), and he has indicated that "there are no constituents of concern within the soils at the proposed Capitol Theatre site."

below the Residential/Parkland values of the **Alberta Tier 1 Soil and Groundwater Remediation Guidelines** developed by Alberta Environment in 2009, except for concentrations of boron. The four soil samples had total boron concentrations ranging from 3.0 to 7.0 ppm. The consultant concludes that the boron concentrations exceeded the Tier 1 limit for boron which is 2.0 ppm. Since it is known that boron concentrations in the Edmonton area can occur naturally at concentrations above the Tier 1 limit, it was concluded that the higher concentrations found in the four soil samples were indicative of background conditions. Boron can affect the growth of certain sensitive plants (e.g. canola and strawberries) but does not impact human health. The conclusion of the consultant is incorrect. The Tier 1 limit was established for that amount of boron that is available for plant uptake, not the total amount of boron present in soils. This amount of boron is determined in soil by a hot-water soluble testing method. The samples of soil submitted for metals analysis by Thurber were analyzed by the ICPMS (inductively coupled plasma mass spectrometry) method, which measures total metal concentrations. So the hot-water soluble portion of boron in soil was not determined, only the total concentration. There is no direct correlation between total boron and the portion of that total that is hot-water soluble boron, but it is known that the total concentration is always higher than the hot-water soluble concentration. As a result, for this site, it is very likely that the hot-water soluble concentration of boron in the four soil samples would be much lower than the total concentrations reported. Therefore, there are no constituents of concern within the soils at the proposed Capitol Theatre site.	These comments will be passed on to the consultant for a direct response, including the shared conclusion that there are no contaminants of concern.
City of Edmonton – Transportation **Kelly Sizer (780) 496-1787** General Supervisor, Development Planning & Engineering, Transportation Planning Branch	
The Transportation Department has reviewed the above-captioned report, and does not object to the findings and recommendations contained therein. Should you require additional information please contact Charan Lotey at 780-944-5572.	Noted. Thank you.

Government of Alberta – Alberta Culture and Community Spirit **Barry Newton (780) 431-2300** Land Use Planner, Historic Resource Management	
Altamira Consulting Ltd. has provided the Historic Resources Management Branch (HRMB) of Alberta Culture and Community Spirit with an Historic Resources Statement of Justification package for the captioned project. Staff of the HRMB have reviewed the potential for the proposed development to impact historic resources and have concluded that an Historic Resources Impact Assessment (HRIA) is not required. Therefore *Historical Resources Act* clearance is granted for this project as outlined in the Statement of Justification package.	Noted. Thank you.

FORT EDMONTON PARK – CAPITOL THEATRE

ENVIRONMENTAL IMPACT ASSESSMENT

Prepared for

HIP ARCHITECTS

Submitted to

EDMONTON PLANNING and DEVELOPMENT

Prepared by

EIDOS Consultants Incorporated

June 2010

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Acknowledgements

EIDOS Consultants Ltd. would like to thank the following:

Client Representatives

Allan Partridge – HIP Architects

Robert Wyatt – EDG Company

Bill Demchuk – Edmonton Community Services

Robb Heit – Edmonton Capitol Projects

Edmonton Environmental Approval Authority

Ed Egyedy – City of Edmonton - Planning & Development

Assessment Team

Robert Gibbs, Project Manager - EIDOS Consultants Incorporated

Linda Yee, Environmental Planner – EIDOS Consultants Incorporated

Brian Thompson – B & F Thompson Management Services Inc.

Bruce Ball, Sheila MacDonald and Kirstin Soucey – Altamira Consulting Ltd.

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Executive Summary

This report reviews the environmental effects, mitigation measures, and residual effects of the proposed Capitol Theatre (the "Project") in Fort Edmonton Park.

Project Description

For over 50 years, the Capitol Theatre existed on Jasper Avenue, in Edmonton, Alberta. The Proponent aims to re-create this historically significant movie theatre on the 1920's Street in Fort Edmonton Park, which features notable commercial businesses of the time. Situated in the undeveloped lot adjacent to the Selkirk Hotel and the Blatchford Field Hangar (see Figure ES1), the 4D theatre will project 15 minute movies narrating Edmonton's history through the eyes of key historical characters. Pending City approvals and permits, construction will begin June 2010, with the intention of opening for the May 2011 park season.

The 11,000ft^2, 2 storey, Neo-Classical style, 260 seat theatre will be constructed adjacent an existing boardwalk. The Project will include excavation, utilities installation, foundation and building construction.

Environmental Screening Review Process

The Project location is within the jurisdiction of the area governed by the North Saskatchewan River Valley Area Redevelopment Plan Bylaw #7188 ("River Valley ARP"). The River Valley ARP requires that all development projects within the river valley undergo an environmental review. The Environmental Impact Assessment Report ("EIA"), prepared by EIDOS Consultants Incorporated, on behalf of HIP Architects, identifies potential environmental effects and recommends possible mitigative measures for the proposed work.

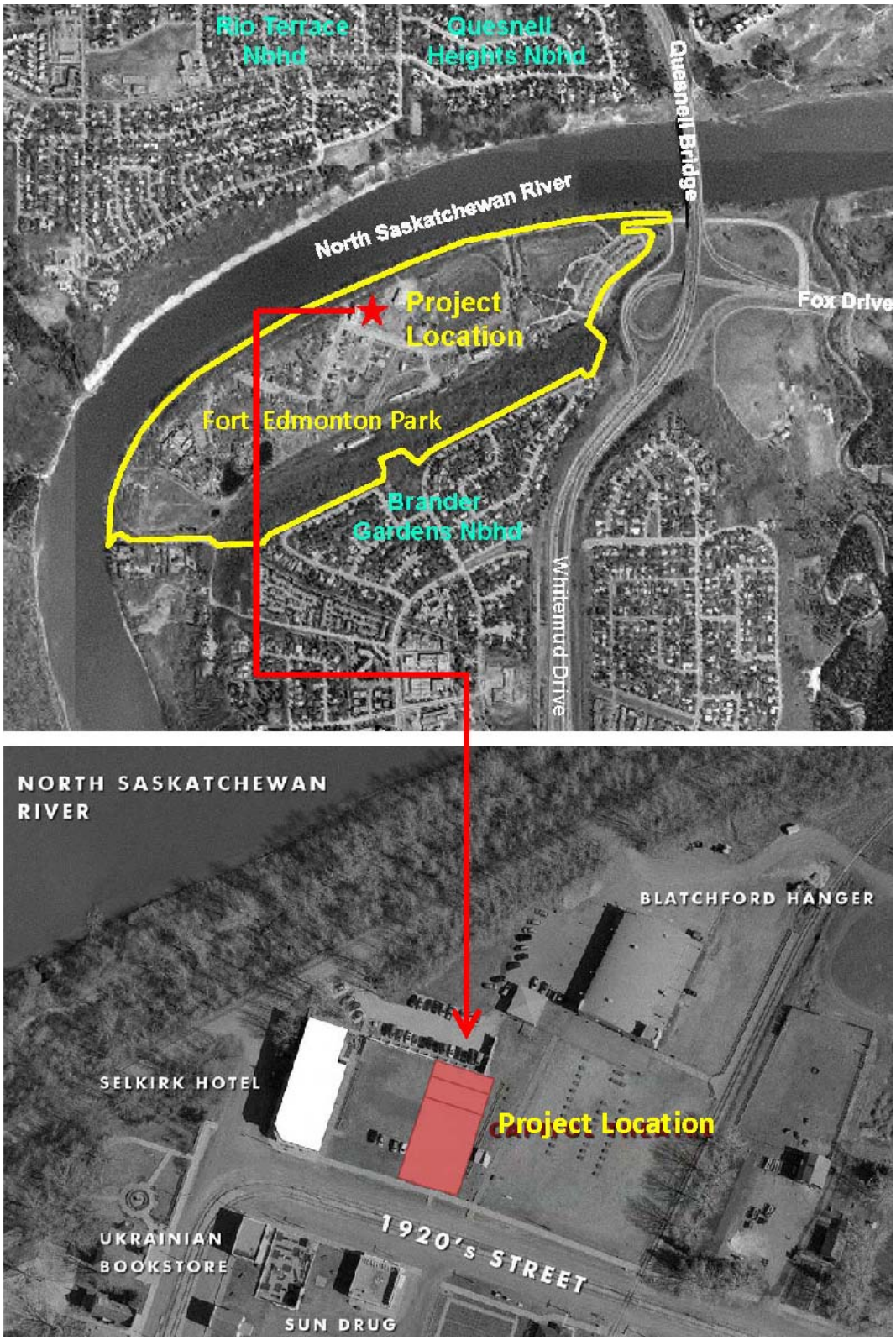

Figure ES1 North Saskatchewan River Valley Location

The EIA assesses the potential effects the Project may have on the physical, biological, and community environments of the immediate Project site and the surrounding area. Mitigation measures are recommended where project-environment interactions may cause a potential adverse effect. The remaining potential residual effects are then assessed for significance. The EIA also documents the public consultation that occurred with respect to the Project.

The COE Planning and Development department circulates the EIA to the appropriate civic departments and regulatory/permitting agencies for their review of the Project, comments, and approval-in-principle to support the EIA. Once satisfied that the EIA meets the requirements of the River Valley ARP bylaw, the Planning and Development department signs-off that the requirement for an EIA has been met. In this case, the Planning and Development department has also determined that the EIA should be reviewed by City Council.

Public Consultation

Public consultation occurred in March 2010 for the FEP Master Plan Update, with a strong focus on the Capitol Theatre Project. There was no opposition to the idea of developing a major facility in the river valley. The only concerns raised pertained to the use of technology in the Capitol Theatre. Fort Edmonton Management has clarified the use of audiovisual technology as a complement to, but not replacement for, traditional artifacts and costumed interpreters. The overall feedback was supportive for the Project.

Physical Environment Effects Assessment

The Project is part of a larger initiative to complete Fort Edmonton Park, as per the vision of the updated FEP Master Plan.

Construction activities of the Project may result in adverse effects which can be reduced or mitigated through design and planning. A geotechnical investigation and supplemental recommendations has identified no significant geotechnical concerns on site, but provided recommendations regarding site preparation, building materials and performance standards that will inform the design and construction process.

Construction contractors will be required to prepare an Erosion & Sediment Control Plan, a Contractor's Environmental Responsibilities Acknowledgement Form, and an Environmental Construction Operations Plan to eliminate any significant adverse effects from these concerns.

Biological Environment Effects Assessment

Although there are no documented rare species occurrences within the Project site, the Peregrine Falcon and the Short-Eared Owl are listed as species of special concern with COSEWIC within a 1km radius of the Project site. There are no trees within the Project site, and no removals are required. However, the Contractors will adhere to requirements outlined by the City of Edmonton or the Province should any concerns arise with trees along the service road (construction access route) regarding damages or wildlife.

Community Environment Effects Assessment

No historical, paleontological, or archaeological sites, materials, or features were identified within, or adjacent to, the Project area.

No parkland trails will be affected by the Project. Existing river valley vegetation screens the Project site from view and will help dissipate construction noise. The current parking facilities available are adequate and will not be impacted by the Project. The Contractor will hoard the construction area to protect park visitors, and adhere to the City of Edmonton noise bylaw. To ensure safety of the public, this EIA recommends the Contractor develop a Construction Accommodation Plan for Fort Edmonton Park and John Janzen Nature Centre visitors.

Recommendations are made to ensure the utility systems support the Project and future Windsor Hotel, prevent contamination of the North Saskatchewan River, and attenuate storm runoff.

Summary of Mitigation

The report reviews the Project effects, mitigation measures, and residual effects. Further to the mitigation measures, the report recommends an Environmental

Construction Monitoring Program which provides quality assurance of all construction activities through ensuring all mitigation measures and regulatory requirements are adhered and monitoring of construction activities. The following are a summary of Project Mitigation Measures recommended as a result of the environmental impact assessment:

M1. Construction Contractors will prepare an Erosion and Sediment Control (ESC) Plan for the Project as per the requirements and recommendations of the City of Edmonton Erosion and Sediment Control Guidelines and the City of Edmonton Erosion and Sediment Control Field Manual. The ESC plan is to be prepared and monitored by a qualified specialist.

M2. Construction Contractor will minimize disturbance area around the Project site, and will provide fencing and/or hoarding around the construction site. Any compacted soils are to be scarified and re-graded.

M3. Construction Contractor will adhere to any standards and recommendations provided by Thurber Engineering Ltd's *Geotechnical Investigation* and *Supplemental Geotechnical Recommendations*.

M4. The solid hoarding will feature conceptual illustrations of the Project and/or the future 1920's Street in its completed state in order to screen construction activities and create public anticipation for the Project and future developments, while functioning to protect park visitors from construction activities.

M5. The Prime Consultant will ensure that the Contractor must review and understand the contents of the Construction and Maintenance Contractor's Environmental Responsibilities Package and the City of Edmonton's Environmental Policy (C512), and complete and submit a Contractor's Environmental Responsibilities Acknowledgment Form.

M6. The construction Contractor will prepare and implement an Environmental Construction Operations (ECO) Plan.

M7. FEP staff will minimize the use of chemical substances in and around the Project site.

M8. The Proponent will observe best practices which prohibit tree removals from April 15 to July 31. If removals, relocations or pruning are necessary during that time, an Alberta registered biologist would need to provide a nesting survey and letter of clearance.

M9. The Construction Contractor will protect all trees identified by the Project design team following the procedures outlined in the City of Edmonton Corporate Tree Management Policy, specifically the sections entitled "Guidelines for Work Near Trees" and "Hoarding Requirements to Protect Trees on Public Property", or as identified otherwise by the City of Edmonton Community Services.

M10. The Proponent to consult with the City of Edmonton Forester to assess the value of the trees in and around the Project site to be removed, if removals become necessary, and that the value is applied to equivalent naturalization in and around the Fort.

M11. Sanitary Sewerage: Concurrent with the Capitol Theatre project, construct a 13 cubic meter (or larger) storage chamber at the sanitary lift station to accommodate the increased sanitary flows from the Capitol Theatre, the Midway, and the Selkirk Hotel. This measure will reduce the likelihood of wet weather overflows from the lift station to the North Saskatchewan River. At the same time, consider replacing the aging pumps in the Lift Station, which will also serve to improve reliability of the station under high flow conditions where there is risk of overflow to the river.

M12. Stormwater Drainage**:** Institute on-roof stormwater management for the Capitol Theatre in order to minimize the impact of the development. If the flows from the roof can be limited to 3.33 litres per second, then the pre-development condition will be protected.

M13. Water System**:** Install a standard water service connection to the existing 200 mm watermain in 1920 Street to service the Capitol Theatre and initiate Preliminary Engineering studies for upgrading the Fort Edmonton Park water system, so that it will have the capability to deliver a fire flow of 300 litres per second at such time as the contemplated infill building, the Windsor Hotel, is constructed

M14. The Contractor will plan and implement a construction access management plan, designed to minimize the risks and inconvenience related to local traffic, parkland users, FEP users, and damage to roadways and along the construction access route, This may include, but is not necessarily limited to construction notification signage at key locations and detour routes.

M15. The Proponent will provide temporary detour walkways around the Project site which connect to unaffected pedestrian pathways, and will extend the concrete sidewalk from the Selkirk Hotel to the Capitol Theatre upon completion of the Project.

Conclusion

If all the mitigation measures recommended in this environmental impact assessment are implemented, it is anticipated that the Project will not result in any significant adverse effects to the environment.

The Proponent and Community Services department are committed to following the recommendations of the Environmental Impact Assessment.

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1.0 Introduction

1.1 Project Overview

The City of Edmonton (COE) Community Services Department and the Fort Edmonton Foundation ("the Proponent") is proposing to develop within Fort Edmonton Park (FEP), a re-creation of the Capitol Theatre (herein referred to as "the Project") that had existed on Jasper Avenue in Edmonton. The 1920's Street in FEP is meant to depict several downtown core businesses of the time, including the Capitol Theatre. The Project is part of the City Council-approved FEP Master Plan, which also prescribes its proposed location between the Selkirk Hotel and the Blatchford Field Hangar.

The Project is located within the City of Edmonton's (COE) North Saskatchewan River Valley Area Redevelopment Plan Bylaw 7188 (herein referred to as the "River Valley ARP"). This location places a requirement on the COE proponent to undertake an Environmental Review under the River Valley Bylaw. The COE Planning and Development Department, which administers the River Valley Bylaw, indicates that an Environmental Impact Assessment (EIA) and Site Location Study are required. The scope of the Environmental Review was crafted to ensure that the project impacts associated with both the construction of the theatre as well as the operational phases of the development are identified and addressed.

The City has engaged EDG Company, a U.S.-based firm specializing in entertainment projects, to implement the Capitol Theatre project and they in turn have engaged HIP Architects to design the building and manage the related approvals. HIP Architects has retained EIDOS Consultants Incorporated to complete the EIA and Site Location Study. These documents draw from the following sources: geotechnical information provided by Thurber Engineering Ltd; a Phase I Environmental Site Assessment completed by Crimson Environmental Ltd.; parking assessment by Bunt and Associates; and utilities impact assessment by Brian Thompson, P. Eng. of B & F Thompson Management Services Ltd.

1.1.1 Project History

Fort Edmonton Park is a living museum, whose aim is to allow its visitors to experience the cultural history of Edmonton between the pioneer era and the 1920's. The re-created Capitol Theatre is an initiative of the City of Edmonton (COE) Community Services Department and the Fort Edmonton Foundation, and is the next scheduled priority project within the 1998 FEP Master Plan Update, approved by City Council.

1.1.2 Study Area and Context

Fort Edmonton Park (FEP) is the largest living museum in Canada, dedicated to portraying the history and development of Edmonton. The legal description for FEP is Plan 8521469, Block A, and the property is located within a portion of 23-052-25 W4M. The municipal address for the 62.7 hectare park is 7000 - 143 Street NW in Edmonton, Alberta. FEP is bounded to the north and west by the North Saskatchewan River, and to the east by the Fox Drive/Whitemud Drive interchange, and to the south by the Brander Gardens neighborhood (see Figure 1.1).

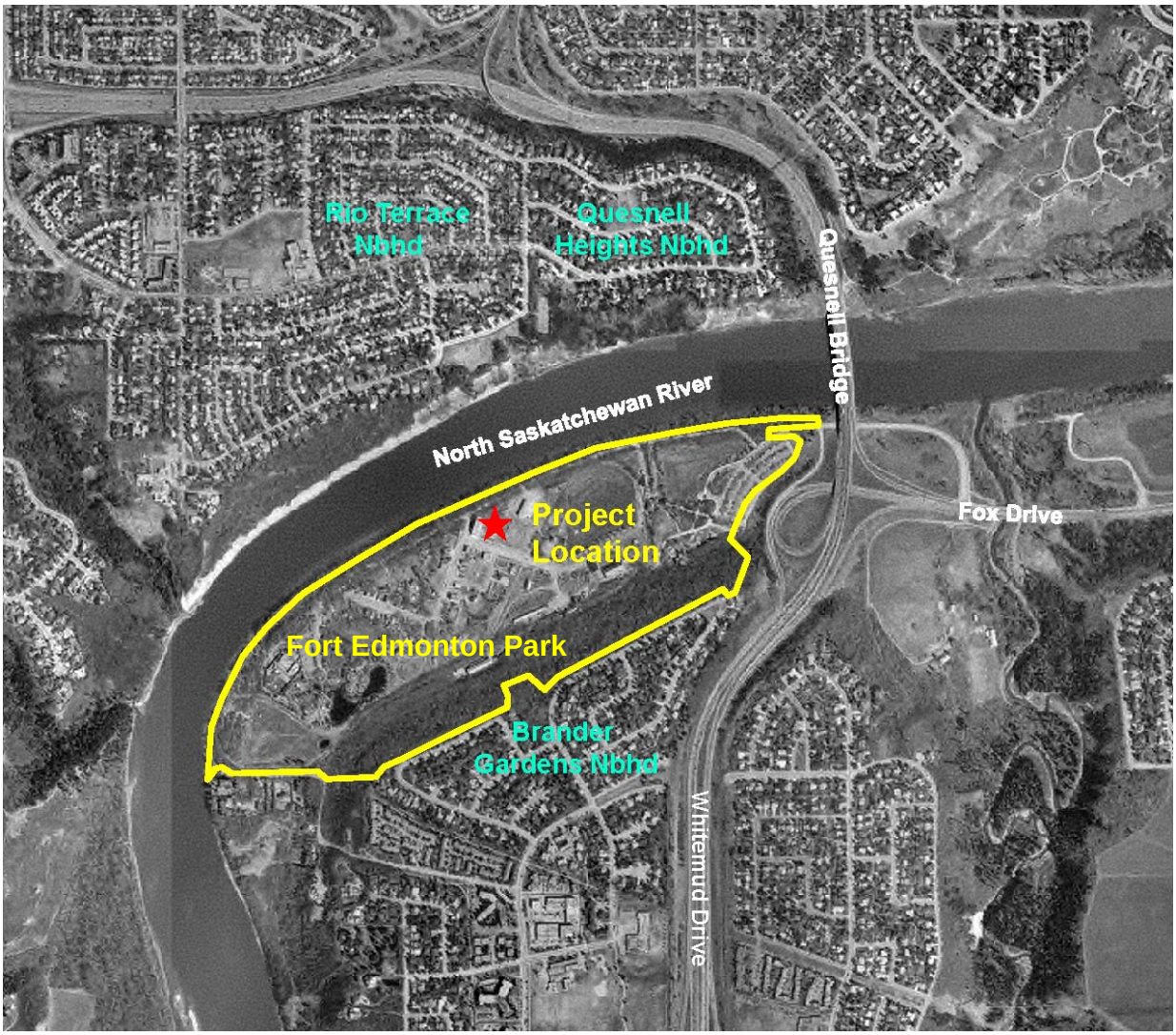

Figure 1.1 North Saskatchewan River Valley Location

The Park Master plan was approved by City Council in 1968 and updated in 1987, 1998, and 2001. Continuous improvements have been occurring at the Park initiated by the Fort Edmonton Historical Foundation and the Park administration. The Capitol Theatre is the newest project related to the post-World War 1 / 1920's Street exhibits reflected in the Master Plan.

Fort Edmonton Park is one of the most popular tourist attractions in Edmonton and provides an opportunity for people to learn about Edmonton's history through interpretive vignettes and historical settings. The park is open to the public for

about four months of the year, from the May long weekend to the Labor Day long weekend in September. During this time frame, the park is open 7 days a week. Hours of operation vary over the season. Fort Edmonton Park is open between 10am and 4pm in May and June and from 10am to 6pm during July and August. Fort Edmonton hosts approximately four major events annually which include Spring Carnival (Opening Weekend), Highland Gathering, Canada Day, and the Harvest Fair.

In addition, the park operates some programs during the winter months. Various Park venues and facilities can be reserved and booked to accommodate meetings and special events (banquets, private functions, etc.) on a year round basis. Facility rentals typically occur on off-peak days and in the evenings, therefore parking associated with these events in and of themselves is not a concern.

The Project Site: Capitol Theatre on the 1920's Street

The site for the proposed Capitol Theatre is on 1920 Street within Fort Edmonton Park between the Selkirk Hotel to the west, the Blatchford Field Air Hangar to the north, and the Mellon Farm to the east (Figure 1.2). The train tracks line the south edge of the Project site, which is currently undeveloped land. Figure 1.3a and 1.3b reflect the existing conditions on site.

Figure 1.2 **Project Site** (HIP Architects 2010)

Looking west towards the Selkirk Hotel. Capitol Theatre site in the foreground.

Looking east along the 1920's Street.

(Left) Drainage ditch parallel to the 1920's Street, terminating on the east side of the Selkirk Hotel.

(Right) The concrete sidewalk in front of the Selkirk Hotel transitions to a boardwalk that continues east.

Figure 1.3a Existing Conditions (B & F Thompson Management Services Ltd. 2010)

Selkirk parking lot screening. Project site is located in front the right half of the screening.

Looking south at the back of the parking lot screening. Selkirk Hotel to the right.

Another view of the Selkirk Hotel parking area, which has roughly 20 stalls.

Figure 1.3b Existing Conditions (B & F Thompson Management Services Ltd. 2010)

1.2 Fort Edmonton Park Master Plan & Project Justification

1.2.1 Fort Edmonton Park Master Plan

When the original Fort Edmonton was moved from its location south of the Legislature in 1915, a cooperative process between various local organizations – including the Historical Society of Alberta, the Northern Alberta Pioneers' and Old Timers Association, and the Edmonton Council of Women – was initiated with the aim of restoring the Fort. In 1966, Edmonton City Council formally approved this initiative and the following year, Fort Edmonton Park was dedicated as a Centennial project. During 1967, the City of Edmonton acquired the North West Pioneer Village. Its buildings were moved to the Fort Edmonton Park site, and the City commissioned the preparation of a Master Plan for the new Fort Edmonton Park (FEP) (Hawker).

On September 1, 1968, Edmonton City Council endorsed the first Fort Edmonton Park Master Plan (Master Plan). The Master Plan directed that Fort Edmonton Park become a "living museum" and proposed a street ground plan to display various stages of Edmonton's development through time. The original concept was to begin with a geological display of Edmonton, depict aboriginal culture pre- and post-horse, followed by the Fur Trade (Fort Edmonton), Edmonton as a Village (1885), Edmonton as the Capital of the Province (1905), the Bush Pilot era (1920), the rise of Oil Refining and Manufacturing (1950), Edmonton as an International City (1960), and finally Edmonton's proposed future. The Plan positioned Fort Edmonton Park as a joint initiative between private sponsors and the City of Edmonton. In 1969, the Fort Edmonton Historical Foundation (Historical Foundation) was created in an effort to encourage corporate and private sponsorship of the Park and manage construction funding (Hawker).

By 1987, both the City of Edmonton and the Historical Foundation realized that more definite policy was needed to guide further development of the Park and called for the preparation of an updated Master Plan. Many of the buildings provided to the Park through the advocacy of private sponsors were too costly to maintain and did not generate revenue. Furthermore, the time frame proposed in

the original Master Plan was too extensive; the 1930's era train station set at the entrance of the Park effectively limited the time frame from 1795 to the 1930's (Hawker).

Edmonton City Council approved an updated Master Plan for Fort Edmonton Park in 1988. The 1968 Master Plan was conceptual in nature by establishing the Park's internal structure, layout, activities, and guidelines for themes and elements to be including in the park. The 1988 Master Plan built upon these features and confirmed the direction of Fort Edmonton Park as a "living museum" but implemented new policies. It emphasized that the requirement for new features to fit within the abbreviated time frame and constraints dictated by the existing features; that new projects should be potentially capable of generating revenue to help offset Park expenses; and that the Park be oriented around the interpretive themes of agriculture, commerce, transportation/communication, socio-cultural, government, and settlement (Hawker; City of Edmonton et al. 2001). The updated Master Plan also identified 131 projects that the Fort Edmonton Historical Foundation deemed important for inclusion in the Park (City of Edmonton et al. 2001).

Between 1988 and 1998, a number of the identified projects were constructed. Additionally, the Historical Foundation conducted extensive research to update the range of acceptable candidate projects and subsequently developed a revised list of 120 candidate projects (City of Edmonton et al. 2001). Both the City of Edmonton and the Historical Foundation acknowledged that all of these projects could not be realistically developed within the Park. In 1998, therefore, the Historical Foundation's Board of Directors established a Master Plan committee to review the list of 120 projects. The committee developed a set of selection criteria and prioritized a list of 31 projects which would be integral to bringing the development of the Park to completion based on these criteria (see Appendix A 2001 Fort Edmonton Park Master Plan Update).

The Historical Foundation felt it was then necessary to undertake another update to the Fort Edmonton Park Master Plan in order to obtain City Council approval of the revised list of 120 candidate projects – including the list of 31 priority projects

– and align these 120 candidate projects within the established regulatory framework for the river valley through a new River Valley Activity Nodes Development Approval Model. At that time, the master planning and regulatory framework to evaluate and approve developments in the river valley was formed through the combination of Plan Edmonton, the North Saskatchewan River Valley Area Redevelopment Plan, the Ribbon of Green Master Plan, and the Edmonton Zoning Bylaw. The Historical Foundation felt that a new model was needed to help streamline the development approval process for Fort Edmonton Park and other potential River Valley Activity Nodes, such as the Muttart Conservatory (City of Edmonton 2001).

In 2001, a new River Valley Activity Nodes Development Approval Model was presented to Edmonton City Council to be implemented through City Council's approval of three separate action items. First, on July 17, 2001, City Council approved the Fort Edmonton Park Land Use Master Plan Update – which included the palette of 120 candidate projects and the list of 31 priority projects. Second, City Council approved Bylaw 12835 on September 5, 2001 to amend the Edmonton Zoning (Land Use) Bylaw to include a new zoning designation, (AN) River Valley Activity Node Zone, which provided the opportunity to regulate the use, design, and extent of development within Fort Edmonton Park in order to achieve the planning objectives of the Fort Edmonton Park Master Plan and streamline the development approval process. Thirdly, City Council approved Bylaw 12836 on September 5, 2001 to rezone Fort Edmonton Park from (A) Metropolitan Recreational to the new (AN) River Valley Activity Node Zone designation.

1.2.2 Project Justification

The Capitol Theatre project is an integral component of an overall endeavour to make Fort Edmonton Park a "living museum" of Edmonton's municipal heritage. Within the 31 priority projects listed under the 2001 Fort Edmonton Park Master Plan Update, the Capitol Theatre is ranked as #4 on the list. Since the top three projects, including the Blatchford Hangar, Selkirk Hotel, and 1920's Midway and Exhibition are already complete, the logical next step is the addition of the Capitol

Theatre. The location is prescribed by the approved Master Plan to be adjacent to the Selkirk Hotel and Blatchford Hangar on the 1920's Street. Capitol Theatre will be an essential venue on the themed street to illustrate Edmonton during the 1920's.

The original theatre was part of Edmonton's cultural history for over 50 years in the downtown core. This new facility will provide another point of interest in the park to enrich the visitors' experience. The nominal fee collection and potential for facility rental (conferences, period movie presentations, live theatre and music) fits in with the Fort's business model that new additions shall be financially self-sustaining.

1.3 River Valley Area Redevelopment Plan (Bylaw 7188)

Development within the North Saskatchewan River Valley in Edmonton is governed by the North Saskatchewan River Valley Area Redevelopment Plan Bylaw 7188 (River Valley ARP), adopted by City Council in 1985. This bylaw is a land use policy administered by the COE Planning and Development Department, which sets aside the entire river valley and ravine system for open space and recreation. Other land uses and purposes are secondary. The objectives of the River Valley ARP are:

- to control the construction of major facilities within the North Saskatchewan River Valley and ravine systems;
- to minimize the potential adverse environmental effects of all existing and future public works on the natural environment of the North Saskatchewan River Valley and ravine systems; and
- to control the design and construction of future public works in a manner that will enhance the natural environment of the North Saskatchewan River Valley and ravine systems (City of Edmonton 2009).

In order to achieve these objectives, the River Valley ARP requires that all development projects within the river valley undergo an environmental review, which is to incorporate the following elements:

- an assessment of the potential impacts of development on the natural and man-made environments;
- a review of construction methods, proposed alternatives, and recommended development options; and
- recommend appropriate and economically feasible measures that mitigate or eliminate the potential adverse impact(s) on the environment resulting from the project (City of Edmonton 1992).

The Project is located within the River Valley ARP (Figure 1.4), triggering the need for an environmental review under the River Valley ARP.

The River Valley ARP identifies three levels of environmental review that can be required depending on the nature of the project and the proposed location: an Initial Project Review (IPR), an Environmental Screening Report (ESR), and an Environmental Impact Assessment (EIA). The Project has been deemed as a major facility under the Bylaw, which will require a full EIA, plus a Site Location Study (City of Edmonton 2000, Section 3).

An EIA must (City of Edmonton, 2000):

- describe the proposed activity and provide rationale, including alternatives considered;
- describe the existing environment including the biophysical and socio-economic elements;
- include public participation;
- predict and analyze the possible effects of the activity on the environment;
- recommend mitigation measures that would reduce, eliminate or compensate for the environmental impacts of the activity; and
- describe how mitigation measures will be monitored over time to ensure effectiveness

This report will meet the requirements of an EIA by the River Valley ARP (City of Edmonton Bylaw #7188). A companion Site Location Study will fulfill the submission requirements of the Bylaw.

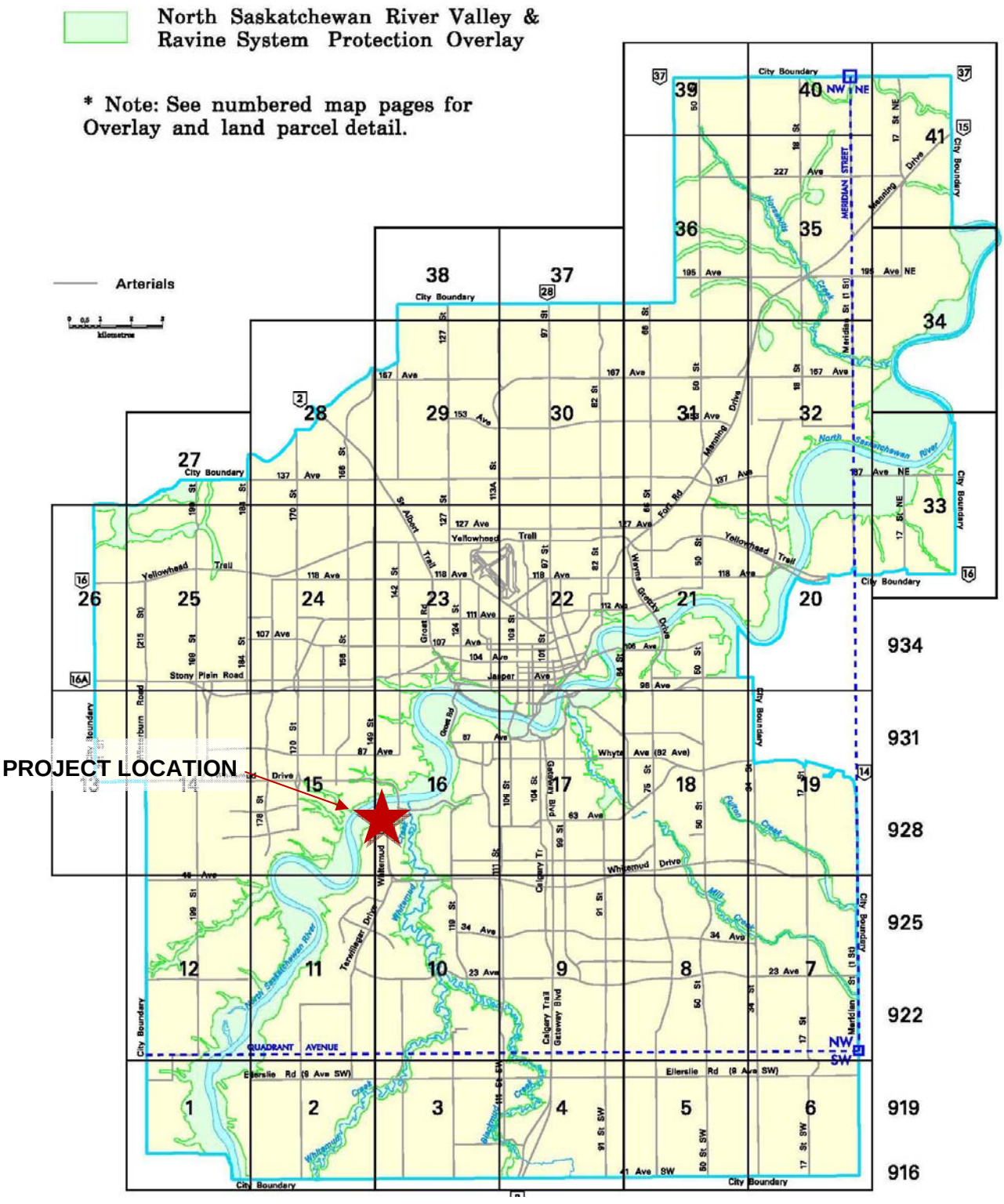

Figure 1.4 Project Location Within the River Valley ARP (City of Edmonton 2010 http://webdocs.edmonton.ca/InfraPlan/zoningmaps/zb_rvpo.pdf)

1.4 Other Environmental Legislative Requirements

Environmental regulatory laws affecting the execution of the Project are embedded into a variety of laws, regulations, policies, bylaws and plans of all levels of government. A review of the applicability environmental regulations was conducted in Appendix B, which summarizes:

- a description of environmental regulations,
- targeted environment features,
- control mechanisms, and
- applicability to this Project.

The regulations found directly applicable to the Project and this EIA are outlined in the following discussion:

1.4.1 City of Edmonton

Through the COE's Office of the Environment and Energy, Asset Management and Public Works, Office of Natural Areas, and the Planning and Development Department, a number of environmental policies, plans and bylaws are applicable.

Environmental Strategic Plan and Environment Policy

The COE adopted an Environmental Strategic Plan (ESP) in 1999 with the intent to "provide long-term direction through policies and programs for maintaining and enhancing the quality of the natural environment" and in accordance with Plan Edmonton, to "enable Edmonton to become a leader among municipalities in maintaining and enhancing the local and global environments" (City of Edmonton, 1999). To ensure that the plan remained current and relevant, an upgraded and updated plan was completed in 2006 along with the City's Environmental Policy (C-512).

The ESP outlines ten strategies related to specific environmental risks and opportunities. From Clean Air to Solid Waste Management, the ESP recommends

actions, programs and targets focused on these issues, to make Edmonton a more environmentally sustainable city.

EnvISO and Environmental Management Systems Policy

EnvISO is the COE's Environmental Management System (EMS). It is based on the International Standard ISO 14001 and provides a systematic method of managing and improving environmental performance. Achieving and maintaining ISO 14001 registration demonstrates that the City is doing everything in their power to effectively manage their environmental responsibilities (http://www.edmonton.ca/environmental/enviso-iso-14001-environmental-management.aspx). ISO 14001 establishes a management framework for organizations to comply with relevant environmental legislation and regulations, prevent pollution and continually improve its environmental performance. The Edmonton Environmental Management Systems Policy (C-505) was approved in 2004.

Corporate Tree Management Policy

Through the Corporate Tree Management Policy (C-456), the COE's Parks Branch requires notification prior to construction of any construction work planned within 5 meters of City-owned trees. This regulation applies:

- to all development, regardless of magnitude, where trees are situated within 5 metres of the project site, or where, in the opinion of the Parks Branch, trees are being adversely affected by development, and
- regardless of whether activity is initiated by the public or private sector.

Advance planning of construction around trees reduces the possibility of damage. Any unauthorized excavations, removals, relocations, pruning, or damage in part or to the whole of the existing trees adjacent to the work site is not allowed. Restitution for the damage to City trees will be assessed on the value of the plant material as well as the cost of any removals, relocations or repairs.

Details that must be provided prior to construction include:

- Provide a site map outlining the construction area, the location of City trees, the material storage area, the designated wash-out zone (on private property) and the location of the temporary site accesses.
- Work with an Urban Forester for the best solutions to protect the trees and reduce potential costs to your project.

During and after construction, contractors are responsible to:

- protect all City trees based on the specifications of the Corporate Tree Policy and the Urban Forester,
- only use the approved temporary site access for equipment, and
- provide compensation for all assessed tree damage and after care.

Urban Parks Management Plan

The Parks Branch of the COE released the Urban Parks Management Plan (UPMP) in 2006, which provides strategic direction for the acquisition, design, construction, maintenance, preservation and use of parks (City of Edmonton, 2006). The UPMP spans ten years and provides direction for community, City and school facility land planning. The strategic direction also outlines parkland management principles for the City and all its development partners. The Plan drives policy upon which future park decisions will be made.

Natural Connections Strategic Plan and Biodiversity Action Plan

In 2007, the COE approved a new Natural Area Systems Policy (C-531), which included a commitment to conserve, protect and restore Edmonton's biodiversity, and to balance ecological and environmental considerations with economic and social considerations in its decision making. The Policy was expanded on in Natural Connections, a strategic plan for the conservation and restoration of Edmonton's natural systems and the biodiversity they contain. Natural Connections outlines an ecological network approach to protecting biodiversity, managing if for the long-term, and engaging the community in this effort. The plan identifies Edmonton's natural areas and articulates a strategic conservation

planning approach for the COE, applying the research conducted in the 2006 State of Natural Areas report (City of Edmonton, 2008).

A year later, the COE produced the Natural Connections Biodiversity Action Plan (BAP), which articulates actions through which to implement the vision, goals and strategic directions identified in Natural Connections.

Sustainable Building Policy

The purpose of the Sustainable Building Policy (C-532) is to "ensure that City-owned new facilities and major renovations are designed and constructed to an environmentally sustainable standard that benefits all Edmonton residents, now and in the future". The policy states that "the City is committed to environmental, economic, and social stewardship of City owned buildings and facilities and continues to demonstrate environmental leadership in the community. Effective January 1, 2008, all new City-owned buildings and major renovations will be designed and constructed to meet LEED Silver Standard as a minimum, and be formally LEED certified." Procedures are outlined in the Policy document.

Community Standards Bylaw – Noise Control

Part 3 of the Community Standards Bylaw regulates Noise Control. The bylaw identifies noise as any sound that is reasonably likely to disturb the peace of others. The bylaw specifies that a person shall not cause or permit any noise that disturbs the peace of another individual, and that a person shall not cause or permit property they own or occupy to be used so that noise from the property disturbs the peace of any other individual. Criteria considered in determining if a sound is reasonably likely to disturb the peace of others include the type, volume, and duration of the sound; time of day and day of week; nature and use of the surrounding area; decibel level, if measured; and any other relevant factors.

Ribbon of Green Master and Concept Plan

The Ribbon of Green Plan guides recreational development of the North Saskatchewan River Valley parks and trail system, of which Fort Edmonton Park is an integral part.

Zoning Bylaw 12800

The Zoning bylaw supports the Fort within the North Saskatchewan River Valley. The Fort is a zoned as (AN) River Valley Activity Node Zone (Bylaw 12835). "The purpose of this Zone is to allow for limited commercial development within activity nodes in designated areas of parkland along the river, creeks and ravines, for active and passive recreational uses, tourism uses, and environmental protection in conformance with Plan Edmonton, the Ribbon of Green Master Plan, and the North Saskatchewan River Valley Area Redevelopment Plan" (Edmonton Zoning Bylaw 12800). Cultural exhibits are listed as a permitted use under Section 541.2, and "General Retail Stores, as accessory use to a permitted use" is identified in Appendix I, Section 2, Item 8 as a discretionary use.

Sewers Bylaw C-9425 and Sewer Use Bylaw C-9675

The purpose of the Sewers Bylaw is to "regulate connections between private drainage systems and the City of Edmonton sewerage system, to regulate the use of storm water management facilities, to prevent damage or misuse of the sewerage system and to allow the collection of sanitary sewer trunk charges and other cost assessments" (COE 2009a). Bylaw 9675 outlines requirements for connection, public use of stormwater management facilities, damage or misuse of the sewer system, offenses and penalties. The purpose of the Sewers Use Bylaw is to "regulate the release of matter to the City of Edmonton's sewerage system and watercourses and to levy sewer service charges for services provided" (COE 2009b). Bylaw 9675 discusses approved and restricted releases to the sanitary or combined sewer system, and release into the storm sewer system or watercourse; the monitoring and control of releases; damage or misuse of the sewer system or watercourse; permits and approval requirements; offenses and penalties; and rates.

City of Edmonton Design & Construction Standards

All construction work completed for the City of Edmonton must adhere to the City of Edmonton Design and Construction Standards. The document outlines design requirements, specifications, and drawings regarding roadways, drainage, water, landscaping, street lighting, power and pavement marking. In addition, Volume 1 General outlines general requirements including contracts, administration and approvals.

1.4.2 Regional Planning

Regional bodies that contribute regulatory development of land use planning and ecosystem protection include the River Valley Alliance and the Capital Region Board.

A Plan of Action for the Capital Region River Valley Park

With similar purposes and goals as the COE Ribbon of Green Master Plan, this Plan encompasses the Capital Region municipalities along the North Saskatchewan River from Devon to Fort Saskatchewan. The Plan supports the development of Fort Edmonton Park while ensuring protection of the River Valley.

Integrated Watershed Management Plan (in progress)

The North Saskatchewan Watershed Alliance provides planning and voluntary controls with the principle of watershed protection. Fort Edmonton Park is located within the North Saskatchewan watershed, and as such, the expansion can utilize the plan's voluntary controls.

1.4.3 Province of Alberta

Some aspects of provincial environmental regulations may apply to the Project depending on the nature of construction and environmental conditions.

Environmental Protection and Enhancement Act - Alberta Environment

The Alberta Environmental Protection and Enhancement Act is Alberta's provincial legislation governing many aspects of the environment, including environmental assessments and a series of regulations. Its purpose is to promote the protection, enhancement and wise use of the environment. A crucial element of this goal is to recognize the importance of preventing and mitigating the environmental impact of development and of government policies, programs and decisions.

Alberta Wildlife Act - Sustainable Resource Development

A portion of the Wildlife Act addresses conservation of species at risk (endangered or threatened). While no disturbances to wildlife habitat are anticipated as a result of the Project, the Project proponent will contact Alberta Sustainable Resource Development to determine if any approvals, concerns, and/or special actions are required. This correspondence will be forwarded to the COE Planning and Development.

Historical Resources Act – Alberta Culture and Community Spirit

The Historical Resources Act is a result of the need to preserve and study historical resources. Historical resources are non-renewable in nature and are susceptible to the effects of time and damage caused by activities of modern society. Section 37 of the Act provides a special framework for Historical Resource Impact Assessments (HRIA) and other mitigative studies which may be required by Alberta Community Spirit (ACS) for activities which may result in the alteration, damage, or destruction of an historic resource. Persons or organizations conducting the activities may be required to conduct an HRIA on lands affected by the activity, submit a report to ACS discussing the results of the HRIA, avoid any historic resources endangered by the activity, and/or mitigate potential impacts by undertaking comprehensive studies.

1.4.4 Government of Canada

The federal government has a series of environmental regulations which often influence projects in the North Saskatchewan River. Because the Project is outside the flood boundary of the North Saskatchewan River and no federal funding is involved, there are no triggers which would invoke the Canadian Environmental Assessment Act. Federal legislation which may influence the Project includes:

Migratory Birds Convention Act - Environment Canada

The Migratory Birds Convention Act and complementary regulations ensure the conservation of migratory bird populations in Canada by regulating potentially harmful human activities. A permit must be issued for all activities affecting migratory birds.

There are no trees on the Project site itself. However, construction access may or may not affect trees lining the internal access road, and adverse effects on migratory birds are a possibility. If removals are required, the Project proponent will observe best practices which prohibit tree removals from April15 to July 31, unless otherwise permitted with clearance by a professional biologist.

Species at Risk Act

Prevention of wildlife species from being extirpated or becoming extinct, providing for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and management of species of special concern to prevent them from becoming endangered or threatened.

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2.0 Project Description

2.1 Program Statement

The 1920's Street in FEP is meant to represent the downtown core of a burgeoning young Edmonton at a time when descendants of earlier immigrants, as well as newcomers to Canada, were settling in urban centers (HIP Architects 2010). The 1920's Commercial Block will consist of replications of several businesses that existed in Edmonton during that time, including the Capitol Theatre, LaFleche Bros., the Mite Block, Diller's Book Shop, United Cycle, and Campbell's Furniture, and paving and lighting.

The Project will be a balance of historically authentic features and modern construction methods (and compliance with the Alberta Building Code). The Capitol Theatre façade will resemble the 1929 building after its restoration (Figure 2.1). The structure will not be a simple facsimile of the original theatre as the program demands a more interactive environment that cannot be contained within the confines of the original plan (HIP Architects 2010). HIP Architects (2010) further describes the theatre as:

> *…a captivating "4D" multi-media experience recounting the history of Edmonton through the eyes of some of its most colourful characters. Starting with the area's earliest inhabitants, you'll journey through time, celebrating Edmonton's place and context in the world as it evolves from First Nations village to its 'modern' incarnation as a emergent community of high-tech and business. The Capitol Theatre will also provide a venue for year-round opportunities for local drama, theatre and music requiring a small, intimate [260] seat setting.*

The theatre will provide a unique, state of the art visitor experience, and is not intended to be a conventional, commercial movie theatre such as those found elsewhere in the city. Figure 2.2 and 2.3 illustrates the concept drawings for the exterior and interior experience of the Capitol Theatre.

Figure 2.1 Original Capitol Theatre on Jasper Avenue (Glenbow Archives ND-3-5140a)

Figure 2.2 Concept Drawings – Façade on 1920's Street (EDG 2009)

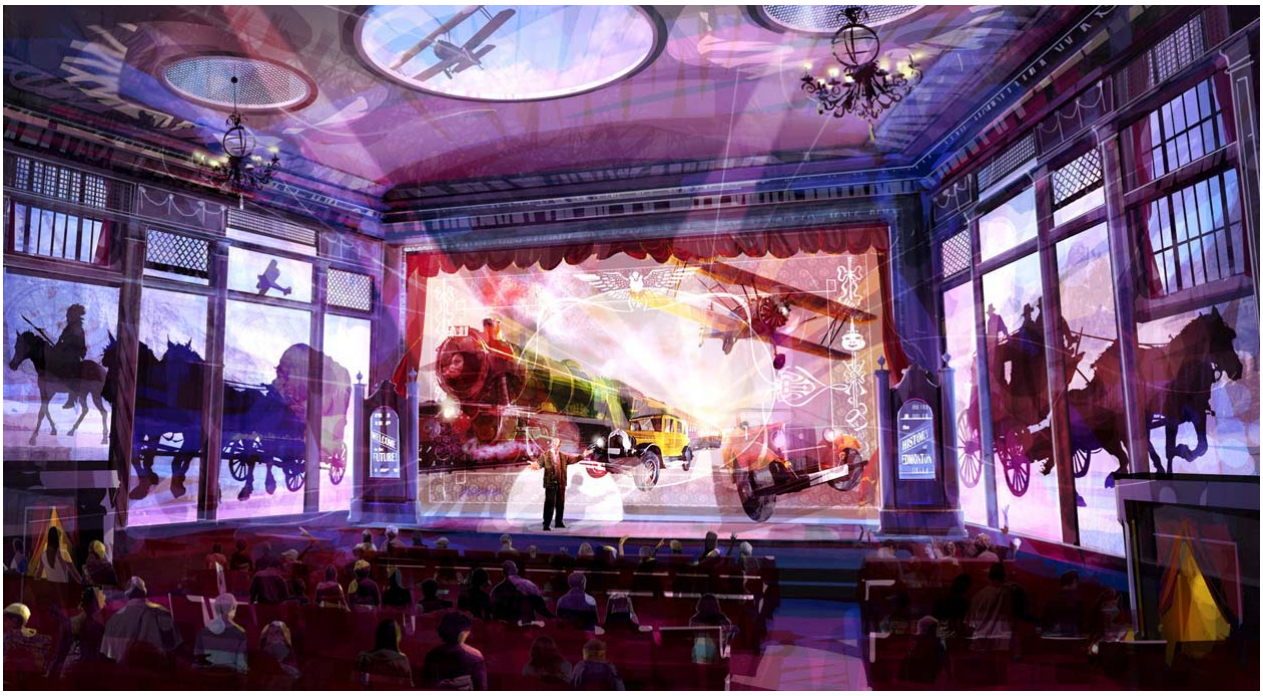

Figure 2.3 Concept Drawing – Interior Theatre Experience (EDG 2009)

2.2 Building Plans, Site, Access and parking

The Capitol Theatre will be situated east of the Selkirk Hotel and south of the Blatchford Field Hangar, on the 1920's Street, as illustrated in Figure 1.2.. The building will be set right up to the sidewalk, as are the other commercial buildings planned for the street. As such, there is no landscaping component in the design.

The main structure of the 11,000 ft^2 theatre will be approximately 10m high (2 storeys), with the parapet to the 1920's Street façade extending to 12.5m in height. Essentially, the theatre will be on-grade, but slightly set into the ground. The front and back exterior will have a red brick façade, with wood sides. The authentic marquee will serve as a way-finding element for evening visitors, and serve as a canopy that allows for protection from the elements. Design effort has been made to simplify the roof form so that mechanical equipment will be concealed from view.

As shown in Figure 2.4a, 2.4b and 2.4c, the interior of the 260-seat theatre is designed in a similar fashion to the original (which had 1000 seats), with the room

curved towards the proscenium, offering every seat a direct and unobstructed viewing experience. The lobby and pre-show gathering area will be more spacious than the original to accommodate a waiting audience, and a functional stage has been added. The theatre will be decorated in the Neo-Classical style with gilded plaster mouldings, silk-covered walls, tiled floors, plush carpet, bevelled and coloured glass, and artwork authentic to the period. For operational purposes, the main floor will include a ticket booth, lobby, a retail bay, washrooms, storage areas, projection booths, audience chamber, stage, dressing rooms and showers, green room, receiving area and office. The second floor will house the electrical/mechanical equipment room, control room, storage area, and tech room (HIP Architects 2010).

Typically the theatre will be open during the park's regular operational hours, and so visitors may gain access on foot, via streetcar or train, once they are through the main admission gates. Parking is provided in the main lot shared with the John Janzen Nature Centre. Vehicular entry into the park is restricted, night function users and service vehicles will utilize the service road along the north side of the park, and use the Selkirk Hotel parking lot.

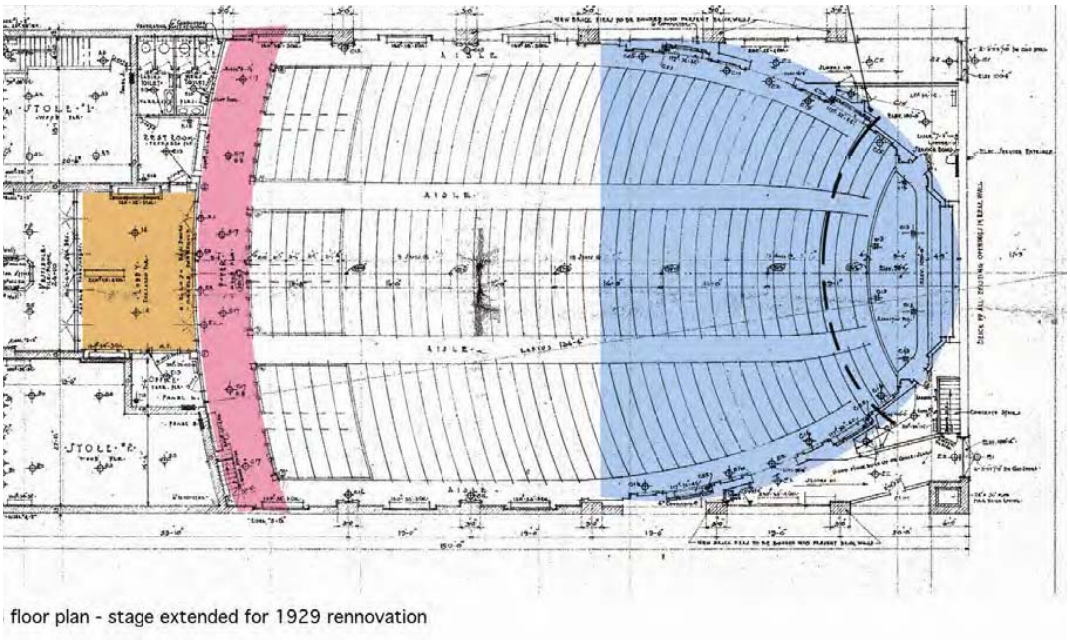

Figure 2.4a **Original Interior Layout of the Theatre** (HIP Architects 2010)

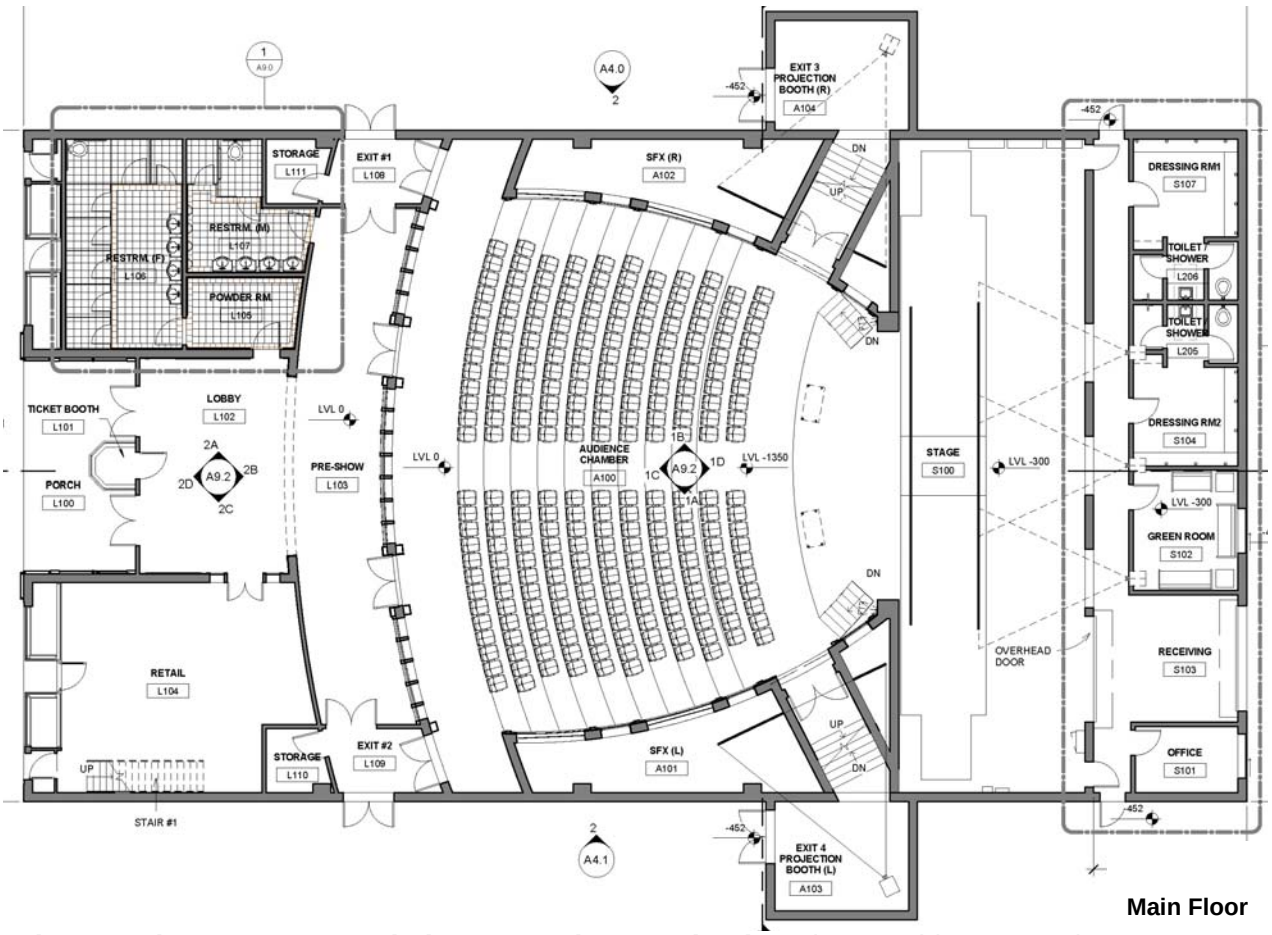

Figure 2.4b **Proposed Theatre Design – Main Floor** (HIP Architects 2010)

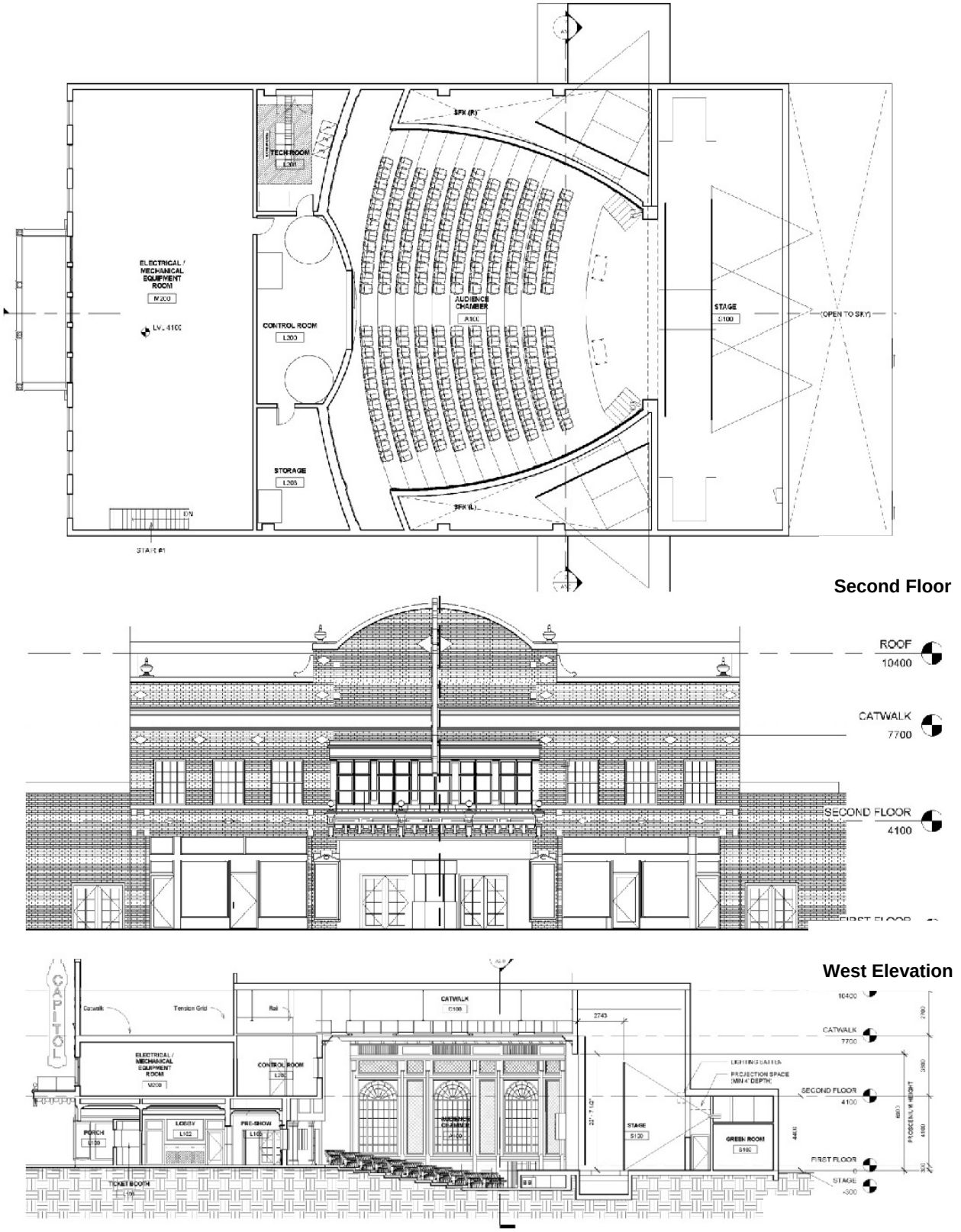

Figure 2.4c **Proposed Theatre – Second Floor, Elevation & Section** (HIP Architects 2010)

2.3 Construction Program

After the completion of working drawings by HIP Architects and after development and building permits have been obtained from Edmonton Planning and Development, construction is set to begin construction this spring.

A great deal of care is being taken to minimize the impact of construction activities on Park patrons and operations and the surrounding community including:

- Solid hoarding around the project
- Access restrictions for crew and material deliveries
- No construction during the four major weekend Park events
- Noise mitigation program

The intent is to limit the contact that park patrons will have with the construction process.

2.4 Facility Operation

Initially, the Capitol theatre will operate, starting in 2011, between May to September, corresponding with the park's regular operating season. The occupancy of the Capitol Theatre will generally be governed by the operating hours of FEP, although the venue will be available for special events during off-hours. The Proponent aims to operate on a year-round basis by 2012 or 2013. Visitors will be entertained with 15 minute shows illustrating the history of Edmonton through the eyes of Edmonton's historically notable characters. This theatre is not a commercially operated, conventional big-box-style movie theatre. The facility could accommodate live theatre, music, corporate presentations, 1920's movies, educational programs, stand-up comedy or speaking engagements, but nothing has been specifically planned at this time.

2.4.1 Pedestrian Vehicular Traffic and Public Use (Viewing)

Visitors to the Capitol Theatre will arrive through the FEP's main admission gates, and proceed on food via the boardwalk, by streetcar or by train during the park's

regular daytime operating hours. Night function users will drive along the service road and park at the Selkirk Hotel parking lot

Service vehicles will typically deliver or pick-up when the park is closed to the public, and will utilize the service road to access the Capitol Theatre.

2.4.2 Building Operations and Maintenance

The Capitol Theatre will operate during FEP's regular daytime operating hours, plus any scheduled evening functions. Building operation and maintenance activities include:

- Operation of A/V 4-D equipment
- Janitorial / cleaning
- Building and equipment maintenance or upgrades
- Operation of the HVAC system
- Washroom & ticket booth operation
- Retail sales in the retail bay of the building
- Stage/lobby set-up as required for functions
- Deliveries and waste collection

2.5 Project Schedule

The Project team aims to begin construction in June of 2010, and have the Capitol Theatre operational for the start of the May 2011 season.

2.6 Construction Activities

In aggregate, construction of all the components of the Capitol Theatre will involve the following activities:

- Construction Staging, Traffic, Access, Crew Parking
- Site Construction (excavation, utilities)
- Building Construction
- Heavy Construction Equipment Operation

- Emergency / Accidental Release

Construction Staging, Storage, Parking and Access

The construction area will be accessed via the service road to the north of the Project site that services the Blatchford Field Hangar and Selkirk Hotel. The construction area will be hoarded with solid fencing to maintain the historical façade of the rest of the park and for public safety.

Details required and/or illustration – where will materials be stored, construction crew parking, site trailer, overhead protection for park visitors, etc.

Natural Vegetation Clearing, Relocations and Removals

The Project site itself is highly disturbed and void of any natural or ornamental vegetation. No removals or relocations are required. If there is potential that existing vegetation along the access route may be compromised during construction, the Forestry branch will be contacted for direction and valuation as required.

Site Construction - Excavation & Utilities

Excavation for the building foundation and underground utility installations (including water, sanitary sewer, power, gas, and communications) are required.

Building Construction

The components of the Capitol Theatre building includes the following set of construction operations:

- Foundation
- Structural Components: erection of building frames and superstructure components including columns, beams, joists, structural walls
- Building Mechanical Systems: including plumbing, heating and air conditioning and fire protection systems and controls

- Building Electrical Systems: including illumination, power supply, communications and controls
- Building Finishes and Glazing: including insulation, vapour barriers, roofing system, exterior weatherproof finishes interior finishes, floor finishes and glazing

Refer to Figure 2.4b, 2.4c for selected building floor plans, elevation and section drawings, and Appendix C for the complete building design drawing package.

Landscaping

The Project does not include any landscaping, as the building will front the 1920's Street boardwalk/sidewalk, and abut adjacent buildings (see Figure 2.2).

Heavy Construction Equipment Operation

Heavy Equipment operation is a component of construction activities. This type of equipment is important in and environmental assessment because of the potential for collateral damage and emergency incidents related to fuelling and maintenance.

Emergency / Accidental Events

Human error can cause undesirable events during construction such as a fuel or chemical spill to impact the natural environment. Management of such emergencies must be integral to the construction environmental management of the Project.

2.7 Sustainability Considerations

The construction of the Capitol Theatre aims to combine an authentic representation of the building, while combining modern construction techniques and building materials to minimize its environmental footprint. The materials have been chosen to replicate the historic materials used in the original theatre. The environmentally sustainable design strategy includes minimizing the energy usage compared to similar venues, storm water management and A/V/Lighting electrical load reduction to 25% less than comparable 4D experiences (HIP Architects 2010). The design

team aims to optimize the performance of the building envelope relative to the mechanical and electrical loads that the building will be exposed to. This will be facilitated by the use of the Green Building Studio and E-quest analysis software. Durable and fire-resistant materials will be chosen for the building's exterior, but heating and ventilation loads on the building are controlling factors in the building design.

2.8 Project Alternatives

The long term development of Fort Edmonton Park has been reviewed several occasions. In the 1998 Fort Edmonton Park Site Plan Update, the Fort Edmonton Park Master Plan Committee reviewed 119 potential projects for the 1920s Street, and chose 31 priority projects that would be most suitable to the vision for the park. The Capitol Theatre is a part of a set of themed buildings on the 1920s Street, and is identified in the Master Plan as a necessary component. After the construction of Selkirk Hotel, the construction of the adjacent Capitol is the next logical step. The location for the Project is fixed and approved by City Council through the Master Plan. There are no alternatives to this proposed location (see Site Location Study report).

2.9 Project Schedule

Pending approvals from the City Council and Planning and Development, construction is scheduled to begin in June 2010.

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3.0 Assessment Methods

Methods employed in this EIA are based on the Canadian Environmental Assessment Act and current assessment practices; these have been adapted for use in environmental assessments prepared for the City of Edmonton River Valley ARP. The overall process is outlined as follows:

1) Scoping: establish temporal and spatial boundaries, scope the project and factors or issues to be considered;

2) Assessing Environmental Effects: describe the existing environment that would be affected, description of project-environment interactions including effect on physical, biological and community/social conditions;

3) Mitigation of Environmental Effects: measures which reduce or eliminate identified effects;

4) Determination of Significance of Adverse Effects: determine the likelihood of significant adverse environmental effects;

5) Prepare Report: including:

    - Background,
    - Project rationale,
    - Project description,
    - Existing environmental description,
    - Identification of project-environment interactions, and
    - Proposed mitigation or monitoring programs

3.1 Scoping of Assessment

The scope of the environmental effects investigated in this report was determined in a three-step process: 1) identification of issues, 2) determination of Key Value

Indicators (KVI's), which would be effected by the Project, and 3) determination of study temporal and spatial boundaries, for each KVI.

3.1.1 Issue Identification

Environmental issues were identified through discussions with project managers, engineers and architects; meetings with COE representatives; review of previously published reports; review of environmental regulations, site reconnaissance visits and air photo interpretation; and communication with stakeholder groups.

3.1.2 KVI Identification

The resources in the study area were analysed to determine the appropriate Key Value Indicators (KVIs) on which to base the EIA. KVIs are selected based on their potential for interaction with the project and relative abundance or status, public concern, professional concern and economic importance. They are examined in terms of three major categories:

1) Valued Physical Components: land, water, air, energy, and material resources for which adverse effects should be avoided and/or mitigated.

2) Valued Biological Components: sensitive ecosystems, species of concern, species or features of the terrestrial and aquatic ecosystem for which adverse effects should be avoided and/or mitigated.

3) Valued Community Components: social, economic, historical and traditional use aspects for which adverse effects should be avoided and/or mitigated.

Conclusions of the assessment scoping are identified in Table 3a. This table identifies the KVI's that are likely to be affected by the Project and require investigation in the EIA. This list is dynamic and could expand or contract based on a number of influences, including regulatory review and public consultation.

Table 3a Scoping Summary

Key Value Indicator:	Potential Adverse Effect:	Criteria for Selection						Legislative Imperatives & Comments	
		Relative Abundance or Status	Public Concern	Professional Concern	Jurisdictional Concern	Economic Importance	Regulatory Policy Concern		Applicability to Project
Physical Components									
Land / Geology	Soil Erosion & Sedimentation			•			•	Bylaw 7188, Edmonton City Policy	√
	Soil Loss / Degradation			•			•		√
	Soil Compaction			•			•	Bylaw 7188	√
	Land Stability								√
	Productive Land Depletion								x
Water	Groundwater Consumption / Contamination			•				Environmental Protection and Enhancement Act	x
	Regional Water Supply								x
	Stormwater							Sewers Bylaw C-9425	√
	Transport & Dispersion of Suspended Material							Bylaw 7188, Edmonton City Policy	x
	Wastewater Receptor Contamination								x
Air	Outdoor Air Quality		•	•	•		•	Environmental Protection and Enhancement Act	x
	Indoor Air Quality			•	•		•		√
Energy & Climate Change	Renewable & Non-Renewable Energy Resources Consumption			•	•	•	•		√
	Greenhouse Gas Emissions		•	•	•		•	Kyoto Accord, Environmental Protection and Enhancement Act	√
	Ozone Depletion		•	•	•		•	Montreal Protocol	√
Materials	Renewable & Non-Renewable Resources Consumption		•	•	•	•	•		√
	Solid Waste		•	•	•	•	•		√
Chemicals & Contaminants	Deleterious Materials Release		•	•	•	•	•	Water Act of Alberta, Fisheries Act	√
	Hazardous (Solid) Waste		•	•	•	•	•	Environmental Protection and Enhancement Act	√
	Contaminated Soils / Buried Fill		•	•	•	•	•	CCME Soil Quality Guidelines	√
Biological Components									
Sensitive Ecosystems	Threat to Species of Concern							Bylaw 7188, Natural Areas Strategic Plan, Species At Risk Act (SARA), Committee On the Status of Endangered Wildlife In Canada (COSEWIC)	x
	Rare & Special Places Degradation								√
	Wetland Degradation								x
Vegetation	Natural Vegetation Removal	•						Bylaw 7188, Edmonton Corporate Tree Policy	√
	Tree Removal								√
Terrestrial Wildlife	Habitat Destruction	•						Bylaw 7188, Migratory Birds Convention Act	√
	Individual Mortality - Mammals	•							√
	Individual Mortality - Birds	•							√
	Individual Mortality - Amphibians & Reptiles	•							√
Aquatic Ecosystems	Suspended Solids & Turbidity							Fisheries Act	x
	Disruption of Spawning, Rearing, Food Supply, & Migration								x
	Harmful Alteration, Disruption or Destruction (HADD) of Fish Habitat								x
Community Components									
Adjacent Neighbours	Noise Intrusion							Bylaw 7188, noise bylaw	√
	Visual Intrusion								x
Local Transportation & Parking	Access Limitations or conflicts on Local Streets		•	•	•		•		√
	Parking Area Loss								x
Historical Resources	Loss or Damage to Historic Sites & Features		•	•	•		•	Bylaw 7188, Historical Resources Act of Alberta	√
Parks & Open Space Users	Loss of Trails / Access							Bylaw 7188	x
	Loss of Parkland								x
	Degradation of Aesthetics								x
	Loss of Horticultural Trees & Shrubs							Bylaw 7188, Edmonton Corporate Tree Policy	√
	Limitations to River Navigation							Navigable Waters Protection Act	x
Public Safety	Injury		•						√

3.1.3 Study Area

The specific study areas vary according to the KVI:

- Physical Environment: The Project area plus immediate surroundings.
- Biological Environment: The Project area plus immediate surroundings.
- Community/Social Environment: North Saskatchewan River Valley and Ravine System; and adjacent/nearby neighbourhoods and communities of Laurier Heights, Quesnell Heights, Rio Terrace and Brander Gardens.

3.2 Project-Environment Interactions

An EIA examines the effects of the project on the surrounding environment. The effects assessment does not initially give consideration to mitigation, which could minimize, reduce or negate the type and term of effect.

The Project actions which could affect the environment are identified for the entire Project life cycle and are divided into three categories and six project actions:

1) Design and Construction Activities

    - Staging and Access: the logistical and support activities such as construction traffic, crew parking, site access, and building of temporary storage facilities and solid hoarding.
    - Facility Construction: concrete, granular materials, excavation and trenching, grading and filling, foundation and building construction, pathway, utilities.
    - Emergency or Accidental Conditions: unexpected construction problem or construction accident.

2) Operational Activities:

    - Normal Operations: building system operations including routine maintenance, deliveries and waste collection, retail operation,

janitorial, HVAC operation, A/V equipment operation, stage/function set-up, ticket booth operation, administration

- Emergency or Accidental Conditions: unexpected operational problem or operational accident, such as contaminant spill, flooding, etc.

3) Redevelopment or End of Life:

- Redevelopment or End of Life: major redevelopment, upgrades, and/or renovation of facility. Decommissioning or end of life is not anticipated in the foreseeable future. When this happens, all legislation of the day will be followed.

All construction and normal operation activities of the Project throughout its life cycle are considered with respect to their potential to affect the Project's KVI's. At the beginning of each of the study area assessments, Project-Environment interactions are identified in a matrix and the resulting potential effects are addressed. The anticipated results can either be adverse effect, no effect, positive effect or reverse effect. Reverse effects are those where the environment adversely affects the project, which may, in turn, require mitigation action that has adverse effects on the environment.

3.3 Mitigation Measures

Mitigation measures, incorporated into the design, construction and operations of the project, can reduce or eliminate the identified adverse effects. Mitigation strategies fall into several categories:

- Avoidance: project actions are relocated or discontinued
- Isolation: project actions are spatially and temporally separated from KVI's which could be affected by project activities.
- Dissipation: project actions are modified to produce effects which fall under the normal tolerance range of environmental conditions in which a KVI exists.

- Restoration: the project includes actions to replace or reconstruct KVI's which are adversely affected by project actions/activities
- Compensation: adverse effects are redressed through equivalent capabilities which restore the KVI's status and health (actions could vary in form and location to the project disturbances)

Mitigation measures may adopt one or more of the above strategies. The ideal opportunity to address adverse effects is during the design phase where environmental strategies can be cost-effectively developed in conjunction with the design of the project. Mitigation measures are included for each project-environment interaction described in the following chapters.

3.4 Summary Assessment

The summary assessment at the end of each chapter will consider any adverse or positive effects, recommended mitigation, quantify residual effects, and determine if the result is significant. The assessment of adverse effects is based on four criteria (see Table 3b) including: severity, duration, geographical extent, and probability.

3.4.1 Residual Effects and Significance

Residual effects are those adverse or positive effects which remain after mitigation measures have been implemented. They are also evaluated for significance using the following operational definitions:

1) Significant (S): severity, duration, extent, and probability of residual effect are high to moderate in all categories. If the significant effect is seen as a positive effect, it is demarcated with a 'P'. If the effect is a significant negative effect, it is demarcated with an 'S'.

2) Not Significant: severity, duration, extent, and probability of residual effect are Low to Zero in any category.

Table 3b Criteria for Assessment of Adverse Effect – Physical/ Biological/ Community-Social

ASSESSMENT CRITERIA	MAGNITUDE OF EFFECT
Severity: expected degree of changes to the valued environmental component (KVI)	**Positive (P):** positive effect **Zero (0):** no detectable change to the resource/ population or habitat/ quality of life **Low (L):** in area of effect, affects less than 10% of the resource / population or habitat/ quality of life (nuisance) **Moderate (M):** in area of effect, affects 10-25% of the resource/ population or habitat/ quality of life (disruption) **High (H):** in area of effect, affects greater than 25% of the resource/ population or habitat/ quality of life (preclusion)
Duration: length of time the effect is expected to last	**Zero (0):** no effect **Low (L):** during construction (short-term) **Moderate (M):** during life of project (long-term) **High (H):** beyond the life of the project
Geographical Extent: area affected by the effect	**Zero (0):** no effect **Low (L):** effect occurs within the project footprint **Moderate (M):** effect occurs within the study area **High (H):** effect occurs beyond the study area
Probability: likelihood the effect will occur	**Zero (0):** not expected to occur **Low (L):** low probability of occurrence during the life cycle of the project **Moderate (M):** expected to occur infrequently during the life of the project **High (H):** almost certain to occur during the life cycle of the project

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4.0 Public Consultation

One of the requirements of an environmental impact assessment, as outlined by the COE, is to document the extent to which the public was consulted with respect to a project. This is important for a number of reasons. First, this requirement communicates to project proponents the importance of ensuring that community stakeholders and the general public are both informed and have the opportunity to contribute to the project. It helps to keep project proponents accountable and ensures that public consultation is an integral part of project planning and design. Second, documenting the public consultation process in the EIA will provide a record of how the public has been informed and included in the planning and design process. It demonstrates how the project proponent made efforts to both inform and involve public stakeholders in the project planning and design.

4.1 Stakeholders

Various stakeholder groups were engaged in the consultation process, and provided feedback regarding the March 2010 Updated Fort Edmonton Park Master Plan. These stakeholder groups included:

- Regular Fort Edmonton Park visitors, pass holders who visit FEP multiple times a year, and casual public visitors (who visit no more than once per year)
- Members of the Edmonton Historical Board (EHB) and the Edmonton Heritage Council (EHC)
- The general public

4.2 Open House and Public Presentation

Public consultation was conducted in March, 2010, which presented a summary of the proposed plan and artist renderings with text for the entire park, including the Capitol Theatre. The amount of public consultation was extensive and included focus groups (including infrequent casual public visitors, moderate and frequent visitors), a stakeholder workshop (EHB and EHC), a general population online

survey for Edmontonians, and a web-accessed survey (accessible by anyone). The Capitol Theatre was identified specifically in the PowerPoint presentation with graphics and text to identify the concept of the theatre. No concerns were raised about whether the theatre belonged in the river valley, or about constructing a new facility in the river valley. The only concern regarding the Capitol Theatre pertained to the use of technology in the theatre. The Fort Edmonton Management response to the concern of technology is that "New exhibits and activities at Fort Edmonton Park may draw on the use of audiovisual materials, projections and other well-established museum methods to tell the stories of people and events of the past. The innovative use of technology will be combined with more traditional artifacts and costumed interpreters. Throughout the Plan, technology is used to complement, not drive, the story telling." Overall, the feedback reflected strong support for the Capitol Theatre. The comments and concerns were taken into account, and revisions were made for the May 2010 FEP Master Plan Update. Upon recommendation by the Office of Public Involvement, the Fort Edmonton Park Foundation website (http://www.fortedmontonfoundation.org/) and the Fort Edmonton Park website (http://www.fortedmontonpark.ca/pages/FortEdmonton/default.aspx) have been updated to further inform the public about the FEP Master Plan update and the Capitol Theatre project. At the May 12, 2010 City Council meeting, the motion to approve the Master Plan Update was passed.

5.0 Physical Environment Assessment

The interaction between the Project and the physical environment is concerned with four categories:

- the consumption of environmental resources for the construction and operation of the Project;
- the absorption and processing of wastes and by-products of the Project by the environment;
- the local effects on landforms, soils, water, and air; and
- maintaining a contaminant-free natural environment.

Human consumption of natural resources and waste streams impact the natural environment. At the project level, the technology and management systems of constructing and operating a project needs to be addressed.

5.1 Existing Conditions

The North Saskatchewan River in the crossing reach is located within an entrenched, post-glacial stream-cut valley. The river has cut through successive zones of Lake Edmonton lacustrine deposits, till and alluvial sands and gravels, into underlying bedrock (Edmonton Formation) that largely consists of poorly consolidated sandstones and shale. Valley depth – valley rim to floodplain level – is about 60 m; valley widths at rim and valley flat levels are 730 and 550 m, respectively. Bank full width is 230m (Gibbs & Brown Landscape Architects Ltd. et al. 2001).

Fort Edmonton Park is located on a flat river terrace bounded on the north and west by the North Saskatchewan River, roughly the Quesnell Bridge to the east, and the Brander Gardens neighbourhood to the south (66 Avenue NW southward). The park is located within the larger North Saskatchewan River Valley and Ravine System. The Project site is located on the vacant lot just east of the Selkirk Hotel on 1920 Street within Fort Edmonton Park, and is significantly disturbed. Although the Project site is generally flat, surface drainage flows towards the ditch at the south end of the site, and internally to a groundwater table.

The Project site is situated on the inside of a river bend (and therefore not subject to river undercutting action), and well above the 100 year flood boundaries ("Flood Way" and "Flood Fringe") of the North Saskatchewan River as shown in Figure 5.1. The 1:100 year flood line is located roughly at the Park service road with an approximate geodetic elevation of 625.58m. There are no flowing water bodies or ponds on the Project site.

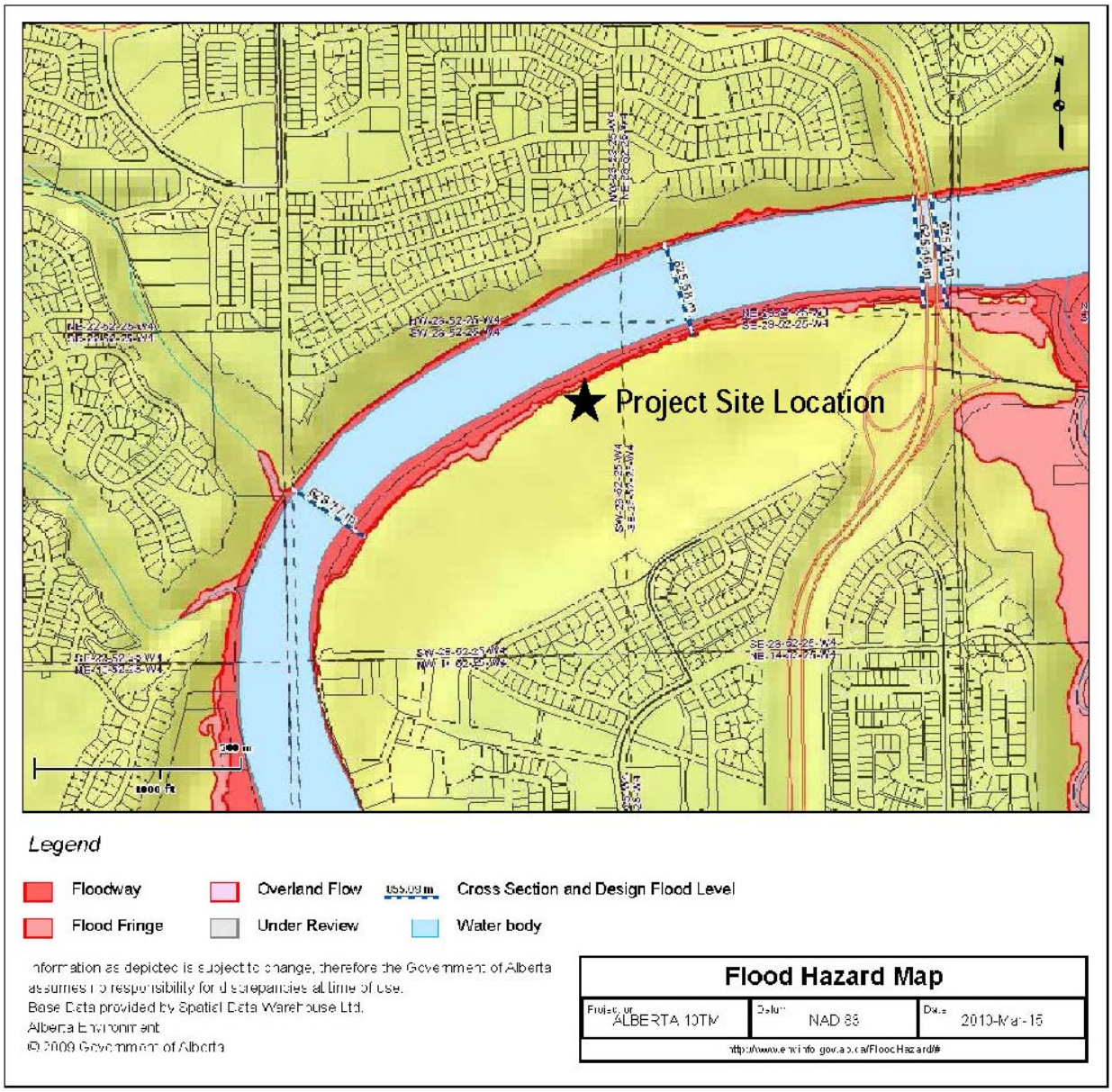

Figure 5.1 **Flood Risk Map** (Alberta Environment http://www.envinfo.gov.ab.ca/FloodHazard/ 2010)

Thurber Engineering Ltd. Completed a Geotechnical Investigation (Appendix D) dated January 30, 2002 to determine the existing soils and groundwater conditions of the adjacent Selkirk Hotel site, and provide recommendations regarding foundation construction. A Supplemental report was also completed, dated August 1, 2002, to inform the installation of a proposed storm sewer extension, road and sidewalk (Appendix D). Between the two investigations, a total of six test holes were drilled, with an additional one test hole that was not completed due to an encounter with a water main. Test holes one through four (TH02-1 to TH02-4) are nearest to the Project site.

Three test holes were drilled to a depth of 8.1m during the initial geotechnical investigation (dated January 30, 2002) where the Selkirk Hotel was to be located. TH02-1 and TH02-3 were located within the building footprint of the hotel, while TH02-2 was centrally located within approximately 10 feet of the west side of the hotel. TH02-4 is part of the Supplemental Geotechnical Recommendations, and was drilled to a depth of 7.3m roughly halfway between the south wall of the hotel and the train tracks, where the proposed storm sewer extension was to be located. TH02-1 and TH02-4 had a 1.2m and 2.0m depth (respectively) clay fill layer at the surface, ranging from a firm to stiff consistency, to very stiff consistency. The subsequent layers for these two test holes are clay and gravel, with the exception of the bottom of TH02-4, where a 0.45m thick compact sand layer was encountered. The clay layer was thinner towards the south end of the Selkirk site, at a thickness of 5.65m (TH02-4) and 5.5m (TH02-1), and thicker towards the north - 6.7m at TH02-2 and 7.1m at TH02-3. Thurber Engineering Ltd. Identified the gravel layer to be dense to very dense, and varied in thickness between 0.75m and 1.4m. Trace groundwater seepage was encountered in TH02-1 at a depth of 3.8m, and at a depth of 6.1m at TH02-3. However, TH02-1 was considered dry at the end of drilling, and a standpipe piezometer was installed to monitor the ground water level. On July 17, 2002, the standpipe was dry, and Thurber Engineering Ltd. concluded that the groundwater levels appeared to be relatively deep at the Selkirk site. Seasonal fluctuations could cause the groundwater levels to vary.

Thurber Engineering Ltd. estimated the mean annual frost penetration to be 1.5m for clay, and 2.2m in a 50 year return period, but recommended the 50 year return

period be used as a guideline for design and construction, since the Selkirk Hotel would be there for a long term period.

5.2 Project – Physical Environment Interactions

During both the construction and operating phases of the Project, elements of the physical environment are being consumed and/or altered. This chapter of the EIA will evaluate the interactions between the Project and the physical environment, and will make recommendations on how to mitigate against any anticipated adverse effects that result from this interaction. In this manner, the ecological footprint of the Project and cost of environmental goods and services utilized by the Project will be minimized.

Table 5a outlines the project - physical interactions anticipated for the Project. Construction and normal operation activities are listed along the top with the selected KVI's along the left side. A grey box or '+' sign has been used to indicate where the Project is anticipated to interact with the environment. A grey box signifies a potential adverse effect on the environment as a result of the Project, whereas a '+' sign signifies an anticipated positive effect. A grey box with an 'R' signifies a potential adverse effect (reverse effect) on the Project as a result of the environment.

Table 5a Physical Environment: Project – Environment Interactions

Table 5a Physical Environment: Project - Environment Interactions
Environmental Impact Assessment Matrix

Legend
- Anticipated Adverse Effect (to be addressed in the EIA)
- No Anticipated Effect (not addressed in the EIA)
- \+ Anticipated Positive Effect
- R Anticipated Reverse Effect

								Operation										
Key Value Indicator:	**Potential Adverse Effect:**	Earthworks (excavation & trenching)	Site Construction (utilities & foundation)	Building Construction	Heavy Construction Equipment Operation	Construction Staging, Traffic, Access, Parking	Emergency / Accidental Release	Pedestrian Traffic & Public Use (Viewing)	Vehicular Traffic (Service Road)	Building Operations and Maintenance	Washroom & Shower Operation	Ticket Booth Sales	Office & Administration	Retail Bay Operation	Movie Projection & Theatre Presentations	Storage	Emergency / Accidental Release
Physical Components																	
Land / Geology	Soil Erosion & Sedimentation	■	■														
	Soil Loss / Degradation	■	■														
	Soil Compaction	■	■	■	■												
	Soil Stability																
Water	Groundwater Consumption / Contamination						■										■
	Stormwater			■													
	Transport & Dispersion of Suspended Material	■	■	■	■												
Air	Outdoor Air Quality									■							
	Indoor Air Quality	■	■														
Energy & Climate Change	Renewable & Non-Renewable Energy Resources Consumption	■	■	■	■					■							
	Greenhouse Gas Emissions	■	■	■	■					■							
	Ozone Depletion	■	■	■	■					■							
Materials	Renewable & Non-Renewable Resources Consumption			■						■							
	Solid Waste			■						■							
Chemicals & Contaminants	Deleterious Materials Release						■										■
	Hazardous (Solid) Waste						■										■
	Contaminated Soil / Buried Fill						■										■

5.2.1 Land / Geology

Geology

The Project site is located on a flat river terrace and is contains deposits comprised of alluvial silt, sand and gravel, which also underlie most of the Fort Edmonton Park property (Crimson Environmental Ltd. 2009). Crimson Environmental Ltd also reports that a thin colluvial cover resulting from erosion is present on the valley slopes towards the south end of the property, and is comprised of a mixture of bedrock and glacial materials. "The upper bedrock underlying the subject property is reported to be the Upper Cretaceous Horseshoe Canyon Formation which is underlain by the Bearpaw Shale. The Horseshoe Canyon Formation consists of fine-grained bentonitic sandstone,

shale and coal and is believed to have been highly eroded" (Crimson Environmental Ltd. 2009).

Geotechnical Summary

The January 30, 2002 Geotechnical Investigation and August 1, 2002 Supplemental Geotechnical Investigation (Appendix D) gave the following design criteria and construction guidelines and standards for the Project, for:

- Site preparation of the building areas including stripping deleterious material, proof rolling of the subgrade, compaction standards;
- Trenching, excavation and backfill;
- Pipe bedding;
- Foundations types suitable for use – including cast-in-place concrete friction piles, cast-in-place concrete end bearing piles, and spread footings;
- Grade beam support;
- Floor slab support;
- Cement type
- Pavement - in regards to subgrade preparation and drainage;
- Roadway and sidewalks – in regards to pavement structure composition.

Aside from diligent site preparation and following the geotechnical recommendations for construction (removal of deleterious material, excavation down to competent clay, geotechnical inspection of the base prior to foundation construction, proper compaction), there are no major factors that make the area in the vicinity of the Selkirk Hotel unsuitable for the Project.

Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (Phase I ESA) was completed for Fort Edmonton Park, dated October 22, 2009, by Crimson Environmental Ltd. The investigation complies with the recommended procedures outlined by the Canadian Standards Association Publication *Z768-01 Phase I Environmental Site Assessment*. The scope of work included a general overview of the

environmental condition of the subject property, but did not include a detailed assessment of each building, structure or activity on site. Records reviews of land titles, regulatory agencies, aerial photographs, visual inspection of the property, and current owner interviews were conducted. The investigation was completed between July 21 and August 31, 2009.

Table 5b summarizes the key findings of the records review from the Phase I ESA. There is no history that would indicate environmental contamination on the Project site. The findings relate to other areas of the park and relate to either train maintenance, fuel storage, or grease trap maintenance in buildings that serve food. The City of Edmonton provided Crimson Environmental Ltd. with 10 other Environmental Site Assessment reports to review relating to Fort Edmonton Park.

Twelve aerial photographs dating between 1952 and 2007 were reviewed in the Phase I ESA report. Between 1952 and 1967, the property was used for agricultural purposes. The 1971 photo showed early development of Fort Edmonton Park, which continued with each successive photograph reviewed.

A reverse directory search and fire insurance maps were also reviewed. Several listings for Fort Edmonton Park were found between 1975 and 1986, but there were no records noted for the property prior to 1969. The fire insurance maps did not produce any notable results. No other private records were reviewed or made available to Crimson Environmental Ltd during their investigation.

Mr. Douglas Pankewich of Crimson Environmental Ltd. visited FEP twice (August 25 and August 31, 2009). The first visit included visual assessments of publicly-accessible areas, and the second visit was guided by Mr. Ron Wheeler, Operations Site Supervisor, to non-public areas of the park. Mr. Pankewich made note of evidence of use, treatment, storage, disposal and generation of hazardous materials, landfilling, storage of wastewater, adjacent land use, presence/absence of storage tanks and containers, odours and other items of concern (Crimson Environmental Ltd. 2009). These are noted in Secton 6.0 of the report in Appendix E. Mr. Wheeler and Mr. Kevin Bokenfohr, Environmental

Supervisor, Facility Services both stated that to the best of their knowledge “no significant environmental impairments or conditions were present on site” (Crimson Environmental Ltd. 2009).

The Phase I ESA report concludes that maintenance activities on site “appear to be completed in an environmentally responsible manner”, and that based on the findings “it is Crimson’s opinion that the likelihood of any violation of applicable environmental legislation associated with the subject property is low and that the potential for environmental risks at the subject property from adjacent land uses is also low” (Crimson Environmental Ltd. 2009). The report however, did make a number of recommendations for the park as a whole including:

1) Conduct a delineation assessment at the refuelling station;

2) Register on-site fuel tanks with the PTMAA, as required by law;

3) Train related petroleum hydrocarbon impacts: assess, remediate, and create a management plan to prevent future impacts;

4) Create an inventory of all chemical products used and stored on site; evaluate on-site chemical storage containers for necessary explosion proofing and secondary containment requirements; and adopt a WHMIS system for FEP.

5) Create a management plan to ensure responsible storage and handling of road salt and pickled sand;

6) Conduct a fill quality assessment for used road sand incorporated into the base of several on-site roads during the 1980s.

7) Conduct an assessment of mould and all hazardous building materials

8) Contact Alberta Environment to determine whether a permit or registration is required for diversion and return of water from the North Saskatchewan River for on-site operations.

Two metres of clay fill was identified within the geotechnical investigation for the Selkirk Hotel by Crimson Environmental Ltd. in the Phase I ESA (2009), and subsequently a fill quality assessment was recommended to be completed. This is further discussed in Section 5.2.6.

Table 5b Regulatory Agency Records Review Summary*

Regulatory Agency	Summary Comments
Alberta Land Titles	• Titles between 1916 and 2009 reviewed – current ownership by the City of Edmonton. • Previous owners before 1969: private individuals, Great-West Life Assurance Company, North-West Trust Company Ltd., National Trust Company Ltd. • No past commercial or industrial ownership.
Alberta Energy Resources Conservation Board	• No wells or environmental records • Pipeline right-of-way present on the SW portion of FEP: one 24" dia. High pressure oil pipeline owned by Kinder Morgan Inc.
Alberta Health Services	• No outstanding orders or notices on record. • No records indicating landfills, waste sites or contamination on the property.
Alberta Environment	• Public records routinely disclosed regarding spills, releases or site contamination found, and available in Appendix B of the Phase I ESA – all relating to train maintenance.
COE Asset Management & Public Works	• Previous inspections & violations relating to maintenance of grease traps on site. • No records pertaining to drainage system or presence of a former landfill or dumpsite on or within 500m radius of FEP.
COE Planning & Development – Complaints and Investigation Section	• No information regarding adverse environmental conditions or non-compliance issues on the property.
COE Planning & Development – Planning and Policy Branch	• Several environmental records related to the environmental status of the property / **no infractions**
COE Emergency Response Department	• Records of one 20,000L above-ground oil storage tank; three tidy tanks (two 100 gallons and one 200 gallons) containing gasoline or diesel fuel; one 45 gallon used oil container
Environmental Law Centre	• Search for Tickets, Prosecutions, Administrative Penalties, Warnings, Enforcement Orders Concerning Waste, Environmental Protection Orders, Emission Control Orders, Chemical Control Orders, Water Quality Control Orders, Stop Orders, and reclamation certificates. • No enforcement actions issued pursuant to the Alberta Environmental Protection and Enhancement Act and its predecessor legislation since 1971 • No reclamation certificates on file
Petroleum Tank Management Association of Alberta	• No records of petroleum storage tanks (Crimson Environmental Ltd. recommended contacting the agency for immediate registration)

*Summary based on Phase I ESA by Crimson Environmental Ltd. for Fort Edmonton Park, October 22, 2009.

Soil Erosion and Sedimentation

Erosion and sedimentation are naturally occurring processes that involve the loosening, transport, and deposition of soil. Erosion is the wearing of soil materials by wind and water through the detachment and transport of these materials from one location to another. Sedimentation is the deposition of soil particles held in suspension by flowing water (City of Edmonton 2005).

While erosion and sedimentation are naturally occurring processes, construction-related activities, such as grading, drilling, installing concrete and other activities that wear, loosen and move soil, can result in a rapid increase in erosion and sedimentation. Construction activities can produce erosion at 200 to 400 times the rate of erosion from other land uses (City of Edmonton 2005).

If left uncontrolled, these increases can irreparably harm the environment, such as degradation of surface water quality, loss of valuable topsoil, damage to adjacent land, harm to aquatic and terrestrial habitat, and damage to water management and recreational infrastructure. The social, economic, and environmental costs associated with these damages can be significant (City of Edmonton 2005).

In order to minimize and/or eliminate any potential adverse effects from soil erosion and sedimentation, the following mitigation measure is proposed for the Project:

M1 Construction Contractors will prepare an Erosion and Sediment Control (ESC) Plan for the Project as per the requirements and recommendations of the City of Edmonton Erosion and Sediment Control Guidelines and the City of Edmonton Erosion and Sediment Control Field Manual. The ESC plan is to be prepared and monitored by a qualified specialist.

Both the ESC Guidelines and ESC Field Manual are available online from the COE's website at http://www.edmonton.ca (Home > City Government > Planning and Projects > Sewers and Water > Sewer and Water Service Connection > Erosion and Sedimentation Control).

Soil Loss / Degradation and Soil Compaction

The primary cause of soil erosion, degradation, and loss is the stripping of topsoil. Aside from excavation of the building envelope and minor earthwork to achieve proper drainage along the building perimeter, no significant earthwork is scheduled for the Project. Also, the Project site is already significantly disturbed, and there are no natural soils to preserve.

Soil compaction and loss of soil structure results from equipment, vehicles, and heavy machinery being driven on soils, particularly when wet. Soil compaction is also an issue after completion of a project when maintenance vehicles are driven off roadways onto soil.

The Project activities in the Project site will require driving of equipment, vehicles or machinery throughout the limits of construction and along the service road.

Thurber Engineering Ltd's Geotechnical Investigation (Appendix D) recommended that "all deleterious material should be stripped from the building footprint prior to site grading," and that "any remaining organic material or soft areas should b excavated down to competent clay." In addition to recommending a geotechnical inspection to verify proper excavation and compaction, the report further specifies compaction requirements and standards for engineered fill. Further requirements are noted corresponding to the various foundation types recommended for the site.

To minimize the effects of potential soil compaction during construction, the following mitigation measure is proposed:

M2 Construction Contractor will minimize disturbance area around the Project site, and will provide fencing and/or hoarding around the construction site. Any compacted soils are to be scarified and re-graded.

Fencing the construction site will minimize the potential area of impact of construction activities and prevent excessive impacts to the adjacent parkland.

Figure 2.5 depicts the proposed construction disturbance area and staging area to be contained by fencing.

M3 Construction Contractor will adhere to any standards and recommendations provided by Thurber Engineering Ltd's Geotechnical Investigation and Supplemental Geotechnical Recommendations.

Soil Stability

The Project site is relatively flat and is comprised of clay and clay fill. Providing the Construction Contractor adheres to the geotechnical recommendations provided for the site, there is no need for concern regarding soil stability and excess settling.

5.2.2 Water

There are two courses of water drainage on site – surface and subsurface. As previously noted, the Project site and surrounding area is generally flat, with surface runoff flowing towards the south to the ditch, and internally to the groundwater table. Crimson Environmental Ltd. (2009) reports that north and west lateral groundwater flow is most probable because of the proximity of the site to the North Saskatchewan River, but that a vertical component to the overall groundwater flow regime may be present due to the Empress Formation (of fluvial sands and gravels) underlying the site.

Groundwater Consumption / Contamination

Consumption, contamination of, and/or changes to groundwater reservoirs are important considerations in project design and construction techniques.

Thurber Engineering Ltd. (2002) made the observation that the groundwater appeared to be quite deep at the adjacent Selkirk Hotel site. The risk for groundwater contamination is minimal. Operationally, there will be no consumption of groundwater for domestic purposes. No mitigation measures are recommended.

Stormwater

Soil compaction decreases the infiltration potential of the soil resulting in increased surface run-off which can lead to flooding. The mitigation measures recommended in the Soil Compaction section will also mitigate the flooding potential of the Project.

Increasing development reduces the amount of ground surface available for absorption. Uncontrolled or non-designed overflow of a stormwater management system can also lead to temporary flooding. Stormwater collection pipes will eventually need to be increased (a costly and laborious task when retrofitting) if stormwater mitigation is not incorporated into urban design in some way. The opportunities for stormwater facilities on site are very limited. The recommended mitigation measure designed to compensate for the loss of ground surface, and minimize the impacts to the storm sewer is discussed in Section 7.2.1.

Transport and Dispersion of Suspended Material

Construction activities will result in the removal of vegetative cover and increases in impermeable surfaces, both of which increase the volume, velocity and chemical composition of run-off during precipitation events. These land use changes have the potential of causing downstream/surface water run-off effects including flooding, erosion, and degradation of water quality. Any impounded water within the construction site will require discharge from the site via pumping or surface release which may also cause erosion and sedimentation of suspended solids.

The mitigation measures provided to minimize or alleviate any adverse effects during construction with respect to erosion and sedimentation, soil loss and soil compaction will also minimize or alleviate any adverse effects with respect to transport and dispersion of suspended material.

5.2.3 Air

Buildings are a source of the pollution that cause urban air quality problems and contribute to ozone depletion and climate change, as discussed in the next section on energy and climate change.

Indoor and Outdoor Air Quality

Indoor air pollution can have significant health effects such as cancer and respiratory health problems. Indoor levels of pollution can be 2 to 5 times higher than outdoor air pollution. There are many sources of pollution indoors ranging from combustion sources, such as oil, gas, tobacco, and wood products to asbestos-containing insulation. Inadequate ventilation can increase indoor pollution levels by not bringing in enough outdoor air to dilute emissions from indoor sources and by not carrying indoor air pollutants out. High temperatures and humidity levels can also increase concentrations of some pollutants.

The design and management of HVAC (Heating, Ventilation and Air Conditioning) systems and of building materials can promote healthy buildings and indoor air quality and reduce the emissions of greenhouse gases (GHGs) and Chlorofluorocarbons (CFCs).

All paints and stain to be used will be have low or zero Volatile Organic Compounds where possible.

There are no significant sources of indoor pollution that are cause for concern for indoor air quality or for carrying indoor air pollutants out.

Outdoor air pollution is an issue which has a substantial impact on the health of the environment as well as on human health. Environmental problems ranging from climate change and ozone depletion to smog and acid rain are all results of the pollution released into the atmosphere.

Construction activities are expected to produce dust which is a significant impact upon outdoor and indoor air quality. Other than excavation of the building

envelope, there is little earthwork required for the Project, and therefore the dust associated with earth movement, heavy equipment machinery and construction traffic is expected to be minimal.

5.2.4 Energy and Climate Change

The world is faced with humanity's impact on the earth's climate system. While many greenhouse gases (GHGs) naturally occur in the earth's atmosphere, many human activities contribute more GHGs (refer to the Intergovernmental Panel on Climate Change, Climate Change 2007: Synthesis Report, Summary for Policymakers). The energy used to heat and cool buildings, to run machinery and appliances, driving vehicles to transport people and goods, and industrial processes all contribute to the problem. GHGs blanket the earth and trap solar radiation in the earth's atmosphere, acting like glass in a greenhouse. This process is naturally occurring and makes the earth's atmosphere habitable; however, the increase of GHGs means that less radiation is able to escape back into space. Thus, there is a direct link between rising atmospheric GHG concentrations, particularly carbon dioxide (CO_2), global warming and extreme weather patterns (Government of Canada, 2001).

Building operations are a significant source of GHG emissions through the building's long-term consumption of fossil fuel-based energy. Space and water heating, lighting, cooling, ventilation, and equipment in buildings consume approximately one-third of all energy consumed in Canada. Without efficiency improvements, this energy demand can be expected to increase at more than two per cent each year (Government of Canada, 2001). Energy consumption also has an indirect effect on the environment in that pollution is emitted when generating energy. The production of energy can lead to issues such as acid rain, mercury poisoning in lakes, and global warming.

Renewable and Non-Renewable Energy Resources Consumption

Energy efficiency is an attractive short- to medium-term strategy to address climate change and other environmental impacts from the use of conventional fuels. Since the average building lasts for more than half a century, there is the

potential for cumulative energy savings over time, making the development and adoption of energy-efficient building technologies a major societal opportunity to reduce energy consumption. Energy efficiency and environmental advancements can be achieved in all aspects of the design, construction and operation of buildings.

The Capitol Theatre's design features have given consideration to the energy consumption of the Project from a construction and operation standpoint. These energy reduction considerations include the following:

- High performance building envelope;
- Higher efficiency lighting and AV equipment; and,
- Higher efficiency mechanical systems.

For further reduction of the consumption of renewable and non-renewable energy in the Project, it is suggested for consideration that the COE Community Services Department and the Proponent review the energy performance standards of Natural Resource Canada's ecoENERGY for Building and Houses program. Through this program, FEP can seek eligible funding through the NRC's Office of Energy Efficiency. Through the ecoENERGY Efficiency Initiative, the Office of Energy Efficiency (OEE) works to improve energy conservation and energy efficiency in every sector of the Canadian economy. The OEE offers grants and incentives and other resources, including workshops for professionals, statistics and analysis, awards and hundreds of free publications. More information can be found at the online website at http://oee.nrcan.gc.ca/commercial/newbuildings.cfm?attr=0.

Greenhouse Gas Emissions

In construction of the Project, the reduction and management of energy is a benefit, not only for energy conservation, but also, and as importantly, for greenhouse gas emission reduction.

Sources and amounts of GHG emissions can be determined through a “Cradle to Grave” life-cycle analysis (LCA), which examines the entire life of a material or product from the raw materials (cradle) to disposal (grave). In regards to greenhouse gas emissions, a comprehensive ‘cradle to grave’ approach accounts for product emissions from production (extraction, processing), transport, intended use, and disposal.

Energy choices and how we manage solid waste are exceedingly significant project considerations. The reduced consumption of renewable and non-renewable energy resources will significantly contribute in the reduction of GHG emissions. GHGs are also generated from material after we are finished with it. For example, when we put food, yard, and lumber waste into a landfill (‘grave’ stage), they create GHG emissions.

It is apparent that the Project design team took into consideration the materials for use in the construction of the Project. Special attention was given to material content and choices for the Project, such as: avoiding lengthy transportation cost by purchasing from local suppliers, minimizing transportation of surplus/excess soil, using recycled materials where possible, and using materials which are inert or non-toxic to preserve the health of the environment, park staff and surrounding community. Such examples of energy conservation in materials include locally sourced concrete and concrete masonry units.

Using a sustainability approach to building design, it is suggested that to further reduce the Project’s GHG emissions, construction contractors should consolidate transportation of materials, avoid idling of vehicles and equipment, consider alternative transportation and energy efficient equipment, and minimize solid waste going to the landfill by recovering or recycling waste, or using compostable materials. Further information on material selection and solid waste minimization is in the following section on materials.

Ozone Depletion

Depletion of the ozone layer, a layer of ozone gas in the earth's stratosphere which filters the sun's harmful Ultraviolet (UV) rays, is another problem the current global community faces. UV rays can lead to many health problems such as skin cancer, cataracts, and weakened immune systems.

A leading contributor to human-caused ozone depletion and risk to human health is the emissions of CFCs in refrigeration. Use of these chemicals is controlled internationally by the Montreal Protocol and domestically by the *Canadian Environmental Protection Act*. Canada has agreed to phase out all ozone-depleting substances including refrigerants. CFCs are no longer used and hydrochlorofluorocarbons (HCFCs) will be phased out by 2020.

5.2.5 Materials

Buildings consume both non-renewable and renewable resources, both during construction and while in operation.

While the Project at this time is not pursuing LEED certification, the design team has evaluated how the Project would fit into the rating system in order to assess the applicability of LEED as well testing how the sustainable principles that the Project has undertaken are being followed. It is estimated that the project could achieve LEED Silver or greater certification if pursued.

Renewable and Non-Renewable Resources Consumption

Much of the environmental impact associated with building materials has often already occurred by the time the materials are manufactured and installed. When raw materials are extracted from the ground or harvested from forests, the environment is altered. Pollution is generated through manufacturing processes. Some materials may emit further pollution during their application, installation, or use. Some materials have a significant environmental impact when disposed of.

In the building material selection, consideration must be taken of the depletion of resources and energy consumed in construction. When constructing the project, choose environmentally sensitive materials. Use of “green” materials is recommended to reduce the impact on the environment and increase the efficiency of resource use. The following is a list of some characteristics of “green” materials:

- Materials which are as **non-toxic** as possible for the producers, builders, occupants, and the environment;
- Materials that have a **long useful life**, requiring less materials or energy over time to replace then; and
- Materials that have the **lowest embodied energy**, **lowest non-renewable content** and **lowest environmental impact** (both where installed and from where harvested).

The Project design team has given full consideration to resource consumption in the materials selected and the mitigation measures taken in the previous sections on air and on energy and climate change will account for the mitigation of resource consumption.

Solid Waste

Waste minimization, reuse, recycle and ultimate fate should be considered in all project planning, for both construction and operation stages. The Project’s construction activities will generate solid waste during the foundation excavation, and during the construction of the building itself.

The goal when considering project materials should be to minimize the necessary materials needed and waste generated (Ohio Environmental Protection Agency, 2001). The recommendations for minimizing GHG emissions, energy and material consumption are applicable to minimizing solid waste and it is recommended that salvaged, recycled and energy efficient materials be maintained throughout the construction of the Project.

Solid hoarding is necessary during construction to protect parks users from construction activities, screen the Selkirk Hotel and Blatchford Hangar parking areas, and to maintain the historical façade. In order to minimize potential construction waste, create public anticipation for the Project and future of the 1920's Street, and to utilize the opportunity to enrich the Project and the park as a whole, the following mitigation measure is recommended:

M4 The solid hoarding will feature conceptual illustrations of the Project and/or the future 1920's Street in its completed state in order to screen construction activities and create public anticipation for the Project and future developments, while functioning to protect park visitors from construction activities.

In general terms, the Project's design strategy in adopting a series of sustainable measures to address the foregoing issues of indoor and outdoor air quality, energy and climate change, and material consumption represents a significant set of mitigation measures. No additional mitigation measures are recommended.

5.2.6 Chemicals and Contaminants

Deleterious Materials Release and Hazardous (Solid) Waste

Modern construction methods and construction equipment utilize a host of chemicals and substances which can be harmful to the physical environment if they are leaked, spilled, or dumped on or around the Project site. Common substances include fuel, lubricating fluids, hydraulic fluids, methanol, antifreeze, herbicides, biocides, and other chemicals. These deleterious materials are materials or building techniques which are dangerous to health, or which are environmentally unfriendly, or which tend to fail in practice. Their release is of concern for the Project owing to its location in the River Valley and its proximity to the North Saskatchewan River.

Well-maintained construction equipment is crucial to ensure non-contamination of the physical environment by minimizing the risk of oil and gas leaks, air pollution, and unnecessary noise (e.g. through the use of mufflers). Automatic shut-off

valves are important for all service vehicles used for refuelling purposes as well as constant monitoring by the operator during refuelling activities.

A hazardous waste is waste (usually a solid waste) that poses substantial or potential threats to public health or the environment and generally exhibits one or more of these characteristics: ignitable, corrosive, toxic, radioactive, or explosive.

Modern construction operations will generate hazardous waste materials throughout the construction process. Potential adverse effects to the physical environment of the Project site and surrounding areas and community may result if the handling and disposal of solid wastes is not properly managed. The City of Edmonton has instituted local municipal guidelines that govern the proper management of waste to ensure that waste is disposed of in an environmentally acceptable manner. Weather-proof and wildlife-resistant containers and designated waste storage and collection areas are examples of good waste management practices. Hazardous materials must be stored safe distances from waterbodies or storm sewers.

Construction contractors need to implement and maintain high standards of chemical and waste handling and comply with all applicable regulations. As such, the following mitigation measures are recommended with respect to deleterious material and hazardous waste management:

M5 The Prime Consultant will ensure that the Contractor must review and understand the contents of the Construction and Maintenance Contractor's Environmental Responsibilities Package and the City of Edmonton's Environmental Policy (C512), and complete and submit a Contractor's Environmental Responsibilities Acknowledgment Form.

Prior to commencement of the work, the City of Edmonton requires all contractors to identify and understand the potential environmental impact(s) of their work and take responsibility. In the Contractor Environmental Responsibilities Package for Construction and Maintenance, the environmental considerations include, but are not limited to:

- Spills and Releases;
- Contamination Discovery;
- Air Emissions and Air Pollution;
- Noise;
- Erosion and Sedimentation;
- Water Management;
- Tree Protection;
- Pesticide Use;
- Site Management;
- Waste Management; and,
- Imported Fill Material.

The Contractor's Environmental Responsibilities Package includes the Environmental Policy (C512) and the Acknowledgement Form, available at http://www.edmonton.ca/business/business_with_city/selling_to_city/contractors-environmental-resp.aspx.

Policy C512 contains the following three key commitments:

- Continual Environmental Improvement,
- Pollution Prevention, and
- Regulatory Compliance.

M6 The construction Contractor will prepare and implement an Environmental Construction Operations (ECO) Plan, to contain (at minimum) the following:

- anticipated hazardous and non-hazardous waste materials that will be used and/or stored on site
- site drawing which identifies where the hazardous and waste materials will be stored;
- estimated quantities of hazardous and non-hazardous waste must be documented;
- procedures for the proper handling, containment, storage, transportation and disposal of the materials (waste disposal receipts, waste manifests, bills of lading, etc. should be retained), and procedures must comply with applicable regulatory handing, transportation and disposal requirements; and

- the Contractor's consideration of whether the waste materials can be recycled.

The ECO Plan specifies that the Contractor must:

- Identify the potential environmental issues and environmental mitigation measures to prevent or minimize environmental impacts.
- Identify and acknowledge applicable legislation, bylaws and policies that may be triggered by project activities.
- Prepare and update the ECO Plan in accordance with this ECO Plan Framework.
- Submit copies of the ECO Plan to the City Project Manager.
- Revise the ECO Plan as required based on City reviewer comments.
- Identify an on-site individual to be the Contractor's work site representative to maintain the environmental controls and address any environmental issues or questions that arise. The Contractor must identify this individual within the ECO Plan (see the ECO Plan Checklist signature line) and at the pre-construction meeting.
- Ensure that staff and subcontractors are trained and empowered to identify, address and report potential environmental problems.
- Review the ECO Plan requirements at orientation meetings, pre-construction meetings, tailgate meetings, etc.
- Implement and maintain environmental mitigation measures in accordance with the ECO Plan.
- Take appropriate and timely action to correct and record any deficiencies.
- Take action (e.g., shut down work) when it is recognized that an impact to the environment may occur or has occurred.
- Ensure that all subcontractors comply with the ECO Plan.
- Sufficiently monitor the work site to ensure that the ECO Plan is effective for all conditions, including inclement weather and shut-down periods. All monitoring efforts must be documented.

Further information will be found at
http://www.edmonton.ca/environmental/enviso_iso14001/7829.aspx

The use of chemical cleaners has the potential for deleterious material release. Within the scope of the EnvISO program, there are identified environmental aspects associated with the theatre operations with the goal to minimize or reduce environmental impacts. To further minimize the potential effects of operational deleterious material release, the following mitigation measure is recommended:

M7 FEP staff will minimize the use of chemical substances in and around the Project site.

Contaminated Soil / Buried Fill

A Phase I Environmental Site Assessment (ESA) was conducted by Crimson Environmental Ltd (Appendix E) for the Fort Edmonton Park property as a whole in 2009. The concerns identified within the report are discussed in section 5.2.1 in this EIA report. The geotechnical evaluation identified the presence of clay fill of unknown origin within the vicinity of the Project site, and Planning and Development identified a need for a Fill Quality Assessment to check for the presence of hazardous materials. Both a geotechnical investigation and Fill Quality Assessment are under way for the Project site, and will be made available upon completion.

5.3 Summary Assessment – Physical Environment

The project-environment interaction effects for the physical environment are related most directly to land/geological issues. The mitigation measures direct the Project to ensure potential adverse effects of soil erosions and sedimentation, soil stability, air quality, and deleterious chemicals release are proactively prevented. The mitigation recommendations also direct the Project to adopt environmentally responsible building and operational practices. The recommendation to review FEP's Stormwater Management Plan will ensure that future FEP Master Plan build-outs are proactively designed and constructed to eliminate the potential for adverse effects upon soil and water quality and upon the developments. Table 5c provides a summary assessment of topics related to the physical environment. The magnitudes off residual effects are classified according to the operational definitions of Table 3b. Residual effects are

considered significant if the severity, duration, extent, and probability of the effect are found to be high or moderate in all categories. Mitigation measures will minimize and/or eliminate the adverse effects and thus no significant effects are identified. The recommended mitigation measures for the physical environment are as follows:

M1. Construction Contractors will prepare an Erosion and Sediment Control (ESC) Plan for the Project as per the requirements and recommendations of the City of Edmonton Erosion and Sediment Control Guidelines and the City of Edmonton Erosion and Sediment Control Field Manual. The ESC plan is to be prepared and monitored by a qualified specialist.

M2. Construction Contractor will minimize disturbance area around the Project site, and will provide fencing and/or hoarding around the construction site. Any compacted soils are to be scarified and re-graded.

M3. Construction Contractor will adhere to any standards and recommendations provided by Thurber Engineering Ltd's *Geotechnical Investigation* and *Supplemental Geotechnical Recommendations*.

M4. The solid hoarding will feature conceptual illustrations of the Project and/or the future 1920's Street in its completed state in order to screen construction activities and create public anticipation for the Project and future developments, while functioning to protect park visitors from construction activities.

M5. The Prime Consultant will ensure that the Contractor must review and understand the contents of the Construction and Maintenance Contractor's Environmental Responsibilities Package and the City of Edmonton's Environmental Policy (C512), and complete and submit a Contractor's Environmental Responsibilities Acknowledgment Form.

M6. The construction Contractor will prepare and implement an Environmental Construction Operations (ECO) Plan.

M7. FEP staff will minimize the use of chemical substances in and around the Project site, throughout the Fort and surrounding area.

The sum of the above environmental protection measures, conservation measures, and building techniques will establish the Capitol Theatre as an environmental example for this type of facility. Based on the above mitigation measures, the magnitude of residual effects and significance of residual effects have been characterised for the Project in the summary table. There are no significant environmental effects to the KVI's as a result of the mitigation measures.

The NRC ecoENERGY for Commercial and Institutional Building and Houses standards and the "Cradle to Grave" life-cycle analysis are offered as further considerations.

Table 5c Physical Environment Summary Assessment

Table 5c Physical Environment Summary Assessment

Key Value Indicator:	Potential Adverse Effect:	Mitigation:	Residual Effects*				
			Severity	Duration	Extent	Probability	Significance
Physical Components							
Land / Geology	Soil Erosion & Sedimentation	M1 Erosion and Sediment Control (ESC) Plan	L	L	M	M	NS
	Soil Loss / Degradation	M1 Erosion and Sediment Control (ESC) Plan M2 Construction Contractor will minimize disturbance around site, provide fencing/hoarding M5 Contractor to submit Contractor's Environmental Responsibilities Acknowledgment Form M6 Contractors implement Environmental Construction Operations (ECO) Plan	L	M	L	L	NS
	Soil Compaction	M2 Minimize disturbance area; provide construction site fencing/hoarding	L	L	L	M	NS
	Soil Stability	M3 Contractor will adhere to standards and recommendations in geotechnical reports	O	O	O	O	NS
Water	Groundwater Consumption / Contamination		O	O	O	O	NS
	Stormwater	M1 Erosion and Sediment Control (ESC) Plan M2 Minimize disturbance area; provide construction site fencing/hoarding M12 on-roof stormwater management	L	H	L	H	NS
	Transport & Dispersion of Suspended Material	M1 Erosion and Sediment Control (ESC) Plan M2 Minimize disturbance area; provide construction site fencing/hoarding	O	O	O	O	NS
Air	Outdoor Air Quality		L	L	M	M	NS
	Indoor Air Quality		L	L	M	M	NS
Energy & Climate Change	Renewable & Non-Renewable Energy Resources Consumption		L	M	H	L	NS
	Greenhouse Gas Emissions		L	M	H	H	NS
	Ozone Depletion		L	M	H	L	NS
Materials	Renewable & Non-Renewable Resources Consumption		L	M	H	H	NS
	Solid Waste	M6 - Construction Contractor will prepare & implement an Environmental Construction Operations (ECO) Plan	L	M	H	H	NS
Chemicals & Contaminants	Deleterious Materials Release	M5 Contractor to submit Contractor's Environmental Responsibilities Acknowledgment Form M6 Contractors implement Environmental Construction Operations (ECO) Plan	L	M	H	L	NS
	Hazardous (Solid) Waste	Form M6 Contractors implement Environmental Construction Operations (ECO) Plan	L	L	H	L	NS
	Contaminated Soil / Buried Fill	M5 Contractor to submit Contractor's Environmental Responsibilities Acknowledgment Form	L	M	M	L	NS

* Refer to Section 3.4.1 for ratings.

6.0 Biological Environment Assessment

The interaction between the Project and the biological environment is concerned with three topics:

- the impacts of the construction and operation of the Project on sensitive/rare species and ecosystems;
- the local effects on habitats; and
- the local effects on individual species of fauna and flora and mortality.

6.1 Existing Conditions

The Project site is located in the Central Parkland Natural Subregion (Achuff 1994) as seen in Figure 6.1, which is essentially the same as the Aspen Parkland Ecoregion identified by Strong & Leggat (1992). The Central Parkland Subregion is characterized by a continuum of vegetation from grassland with groves of aspen in the south to closed aspen forest in the north. True parkland vegetation with continuous aspen forest broken by grassland openings is now very rare due to large-scale clearing and agricultural development (Achuff 1994). Most remaining parkland sites are found on rougher terrain or areas with Solonetzic soils.

The Project is located within a flat river terrace forming part of the North Saskatchewan River Valley and Ravine System. The North Saskatchewan River Valley is an important biological corridor that contains a diversity of native vegetation communities and which contributes significantly to the biodiversity of the urban landscape. The valley and ravine system connects natural areas within the city to adjacent rural hinterlands and thus plays an important role in maintaining the ecological integrity of the North Saskatchewan River Valley. The North Saskatchewan River Valley is recognized as a nationally significant environmentally sensitive area because it represents the best example of a relatively undisturbed major river valley in an urban setting (Geowest 1993).

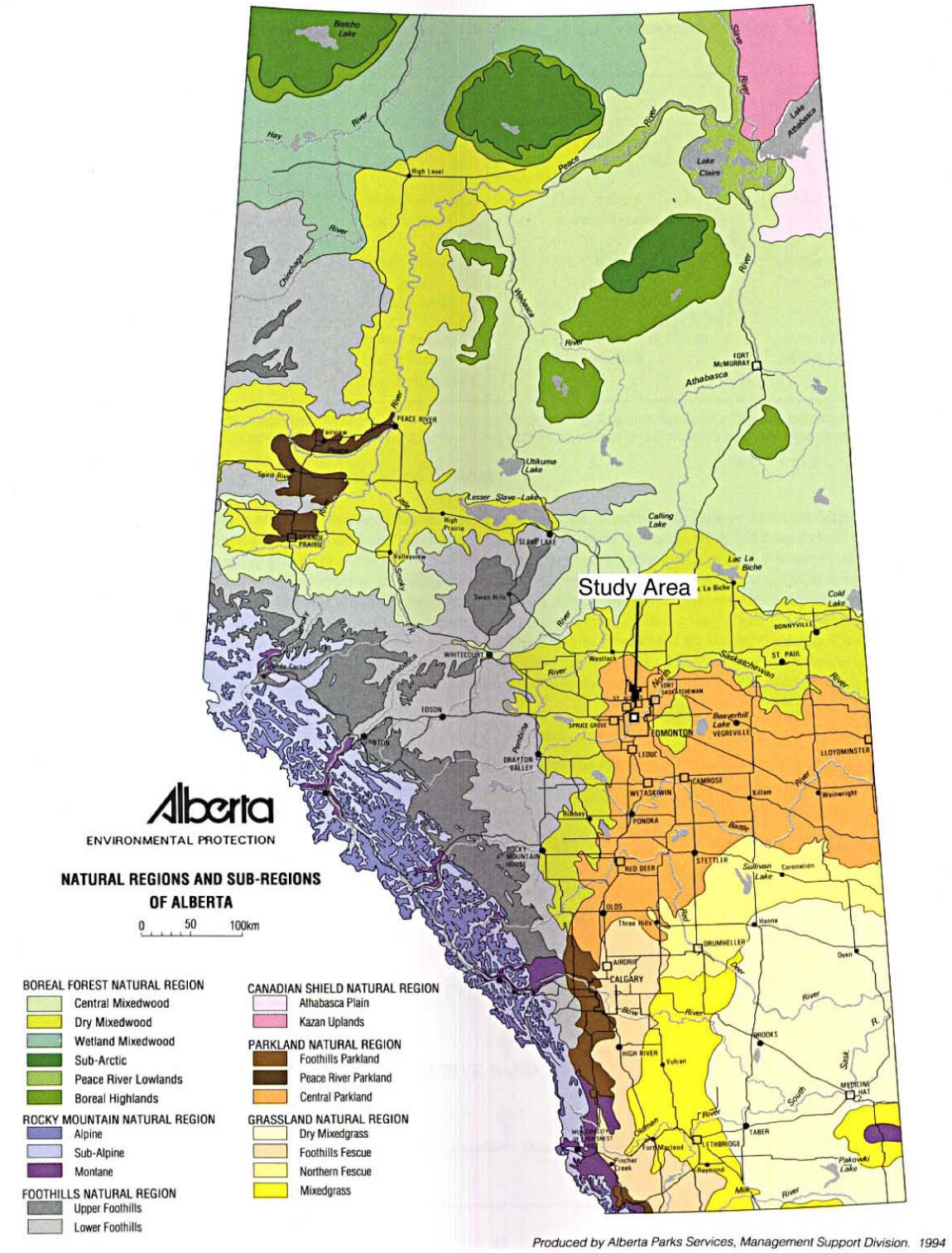

Figure 6.1 Location of the Study Area within Alberta's Parkland Natural Region *(*Achuff 1994)

This report draws on a number of baseline studies and environmental assessments by EPEC Consulting Ltd. (1981), City of Edmonton Parks and Recreation (1992), Kipen Gibbs Landscape Architects Ltd. et al. (1993), and Gibbs & Brown Landscape Architects Ltd. et al. (2001). Based on the information gathered, the study area can be divided into two main environmental zones:

1. The North Saskatchewan River bank and forested margin.

2. The relatively flat disturbed lands above the bank.

The presence of the John Janzen Nature Centre next to Fort Edmonton Park places a priority for nature interpretation on the remnant natural features of the Fort Edmonton Flats and Whitemud Creek Ravine. Interpretive trails have been completed on both the escarpment behind Fort Edmonton Park and the River Bank riparian forest.

The flat lands of the river terrace have been almost completely cleared for agriculture and subsequently developed for the major attractions of Fort Edmonton Park and the transportation corridor of the Whitemud / Fox Drive.

Vegetation

Two major vegetation community types are found in the study areas (see Figure 6.2 - Environmental Protection Areas):

Riparian Community Type: The south shore of the North Saskatchewan River has well-developed riparian vegetation along the bank up to the point where the access road to Fort Edmonton and John Janzen Nature Centre has removed floodplain vegetation. Deep-rooted vegetation such as balsam poplar (dominant), river alder, willow, red osier dogwood and sedges are well established and function to stabilize the banks. Scattered white spruce and white birch, with an understorey of low-bush cranberry, common wild rose, wild gooseberry and wild raspberry, are also found there. Drier portions of the riparian zone are dominated by shrubs such as saskatoon and choke cherry, with lesser amounts of silverberry and snowberry. Aster, western

dock, wild vetch, common pink wintergreen, wild strawberry, northern bedstraw, veiny meadow rue, bishop's cap, fireweed and goldenrod are among the species which are most conspicuous in the herbaceous layer. The presence of all age classes of dominant woody vegetation (including snags), indicates a relatively healthy riparian zone, where it is still intact. East of the Quesnell Bridge toward the mouth of Whitemud Creek, an area of sediment deposition shows regeneration of sandbar willow, reed grass and sedges. The riparian community in the vicinity of Rainbow Valley is also well developed and appears to be recovering from disturbance caused by freeway construction and parking area development. The presence of regenerating balsam poplar, red osier dogwood and willow on previously disturbed areas indicates an improving system. The white spruce-mixed wood community type is also found on the floodplain and forms part of the riparian system.

Deciduous Community Type: Dominated by balsam poplar in moist sites and aspen in mesic and drier areas, this community type is found in much of the area immediately below residential development on both east and west aspects on the tableland along Whitemud Creek. White birch is also found scattered through this community type in cooler, moist environments, except on the slopes south of John Janzen Nature Centre and Fort Edmonton, where a unique, extensive stand occurs. Shrub and herbaceous components are similar to those described for the white spruce-mixed wood community type. Additional shrub species include high-bush cranberry, wild currant, saskatoon, pin cherry and choke cherry. Additional herbaceous species include veiny meadow rue, northern bedstraw, palmate-leaved coltsfoot and fireweed.

This latter community straddles the Park access road.

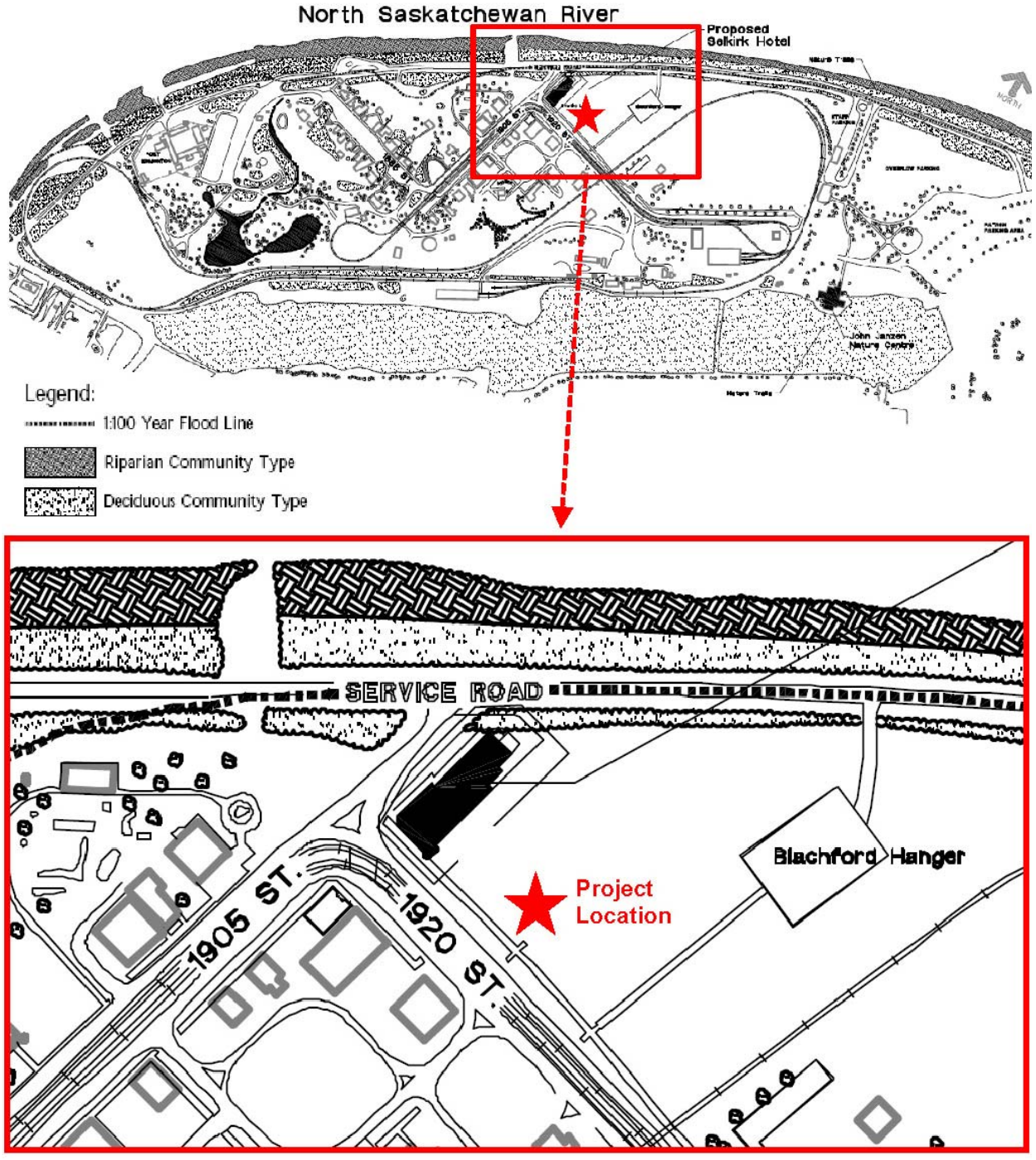

Figure 6.2 Environmental Protection Areas

Wildlife

Although detailed surveys specific to the study areas were not conducted, previous studies have indicated that over 182 species of birds (98 during winter), 30 species of mammals, 36 butterflies and skippers, and five species of herptiles have been reported in the North Saskatchewan River Valley (Mowat, 1992; Geowest, 1993).

The diversity of habitats created by vegetation types, topography, landforms, soils and moisture regimes contribute to species richness of avifauna in the study areas. Mixed wood, coniferous and deciduous habitats all provide breeding habitat for specific communities of birds. Potentially, breeding habitat could be provided for approximately 107 avian species including: waterfowl (10 species), raptors (14), grouse/pheasant (2), shorebirds (4), doves (2), hummingbirds (1), kingfisher (1), woodpeckers (5) and songbirds (68) (Semenchuk, 1993). In addition, wooded habitats along streams, rivers and fence rows provide valuable migration habitat for songbirds, particularly during fall. These same habitats provide food and cover for resident and migrant species wintering at this latitude (Gibbs & Brown Landscape Architects Ltd. et al. 2001).

Hoarding the Project site (mitigation measure M2) will help discourage wildlife from entering the construction area and minimize the potential for wildlife mortality.

6.2 Project – Biological Environment Interactions

While the River Valley as a whole is considered relatively undisturbed, the portion of the River Valley in which the Project is located has been disturbed for many years. The proposed developments of the Capitol Theatre are on an already significantly modified area, on essentially bare land. Table 6a outlines the project - biological interactions anticipated for the Project.

Table 6a Biological Environment: Project – Environment Interactions

Table 6a Biological Environment: Project - Environment Interactions
Environmental Impact Assessment Matrix

Legend
- Anticipated Adverse Effect (to be addressed in the EIA)
- No Anticipated Effect (not addressed in the EIA)
- + Anticipated Positive Effect
- R Anticipated Reverse Effect

Key Value Indicator:	Potential Adverse Effect:	Earthworks (excavation & trenching)	Site Construction (utilities & foundation)	Building Construction	Heavy Construction Equipment Operation	Construction Staging, Traffic, Access, Parking	Emergency / Accidental Release	Operation: Pedestrian Traffic & Public Use (Viewing)	Vehicular Traffic (Service Road)	Building Operations and Maintenance	Washroom & Shower Operation	Ticket Booth Sales	Office & Administration	Retail Bay Operation	Equipment & Golf Cart Washdown	Movie Projection & Theatre Presentations	Storage	Emergency / Accidental Release
Biological Components																		
Sensitive Ecosystems	Threat to Species of Concern																	
	Rare & Special Places Degradation																	
Vegetation	Natural Vegetation Removal																	
	Tree Removal																	
Terrestrial Wildlife	Habitat Destruction																	
	Individual Mortality - Mammals	■	■	■	■	■												
	Individual Mortality - Birds																	
	Individual Mortality - Amphibians & Reptiles																	

6.2.1 Sensitive Ecosystems

Threat to Species of Concern

The Alberta Natural Heritage Information Centre (ANHIC) collects information about the location, condition, status, and trends of selected elements, including invertebrates, plants, plant communities, and lichens. According to ANHIC, there are no documented rare element occurrences in the Fort Edmonton area. There are elements east of Fort Edmonton, restricted within the Whitemud Creek ravine (refer to Figure 6.3 and Appendix H - Correspondence), but they are not close enough in proximity to be impacted by the Project. As seen in Figure 6.3, the areas coloured in purple represent the mapped locations for one or more elements in the ANHIC database. The absence of records could indicate that very few inventories/surveys have been done in this part of the province. This

information only addresses known occurrence information for elements of conservation concern and does not include rare vertebrate wildlife observation data.

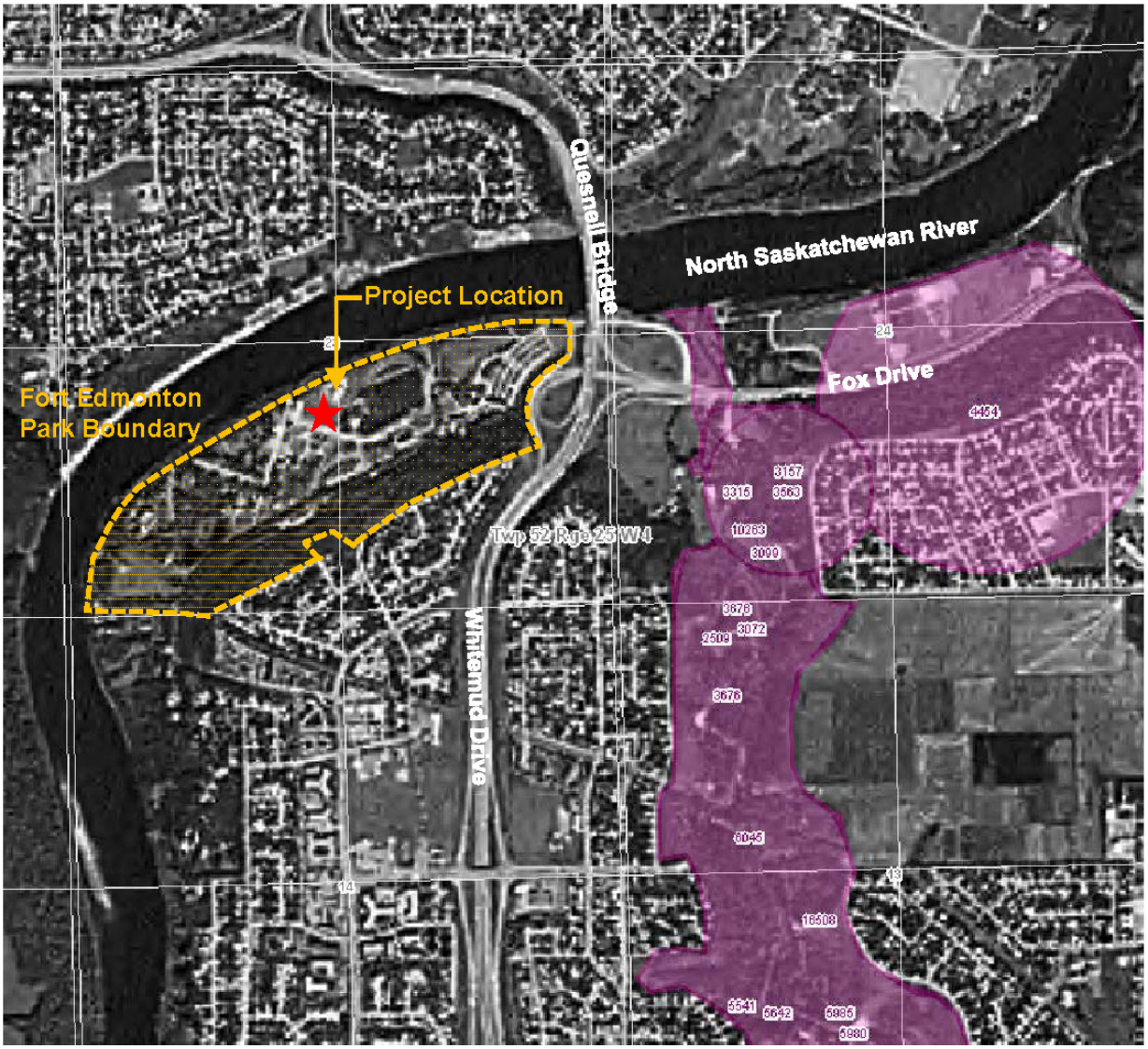

Figure 6.3 Rare Species Element Occurrence Survey (ANHIC 2010)

The Fisheries and Wildlife Management Information System (FWMIS) is the Government of Alberta's Fisheries and Wildlife database which provides a central repository where government staff, industry and the public can store and access extensive and reliable fisheries and wildlife data to support the conservation and management of Alberta's wild species and their habitat. According to FWMIS,

there are no documented rare species occurrences in the Fort Edmonton Park area (refer to Figure 6.4). However this does not indicate that occurrences do not exist in this area. The absence of records could indicate that very few inventories/surveys have been done in this part of the province. A buffer of 1km was chosen for the search parameters, which encompassed the whole park and section of the North Saskatchewan River bordering the park.

Within 1 km of the Project site, there was an occurrence in 1991 of Lake Sturgeon in the river, but the location is not close enough in proximity to be impacted. Lake Sturgeon are listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), but have no status with Species at Rick Act (SARA). Within 1 km of the Project site, there are two species of special concern (COSEWIC) including the Peregrine Falcon and Short-Eared Owl (FWMIS 2010) Like the ANHIC stipulation, this does not indicate that occurrences do not exist within the Project site area. The absence of records could indicate that very few inventories/surveys have been done in this part of the province.

The Project is within a significantly disturbed area on what is essentially bare land. There are no trees on site, and so no removals are required. However, if unforeseen removals become necessary, the following mitigation measure is recommended:

M8 The Proponent will observe best practices which prohibit tree removals from April 15 to July 31. If removals, relocations or pruning are necessary during that time, an Alberta registered biologist would need to provide a nesting survey and letter of clearance.

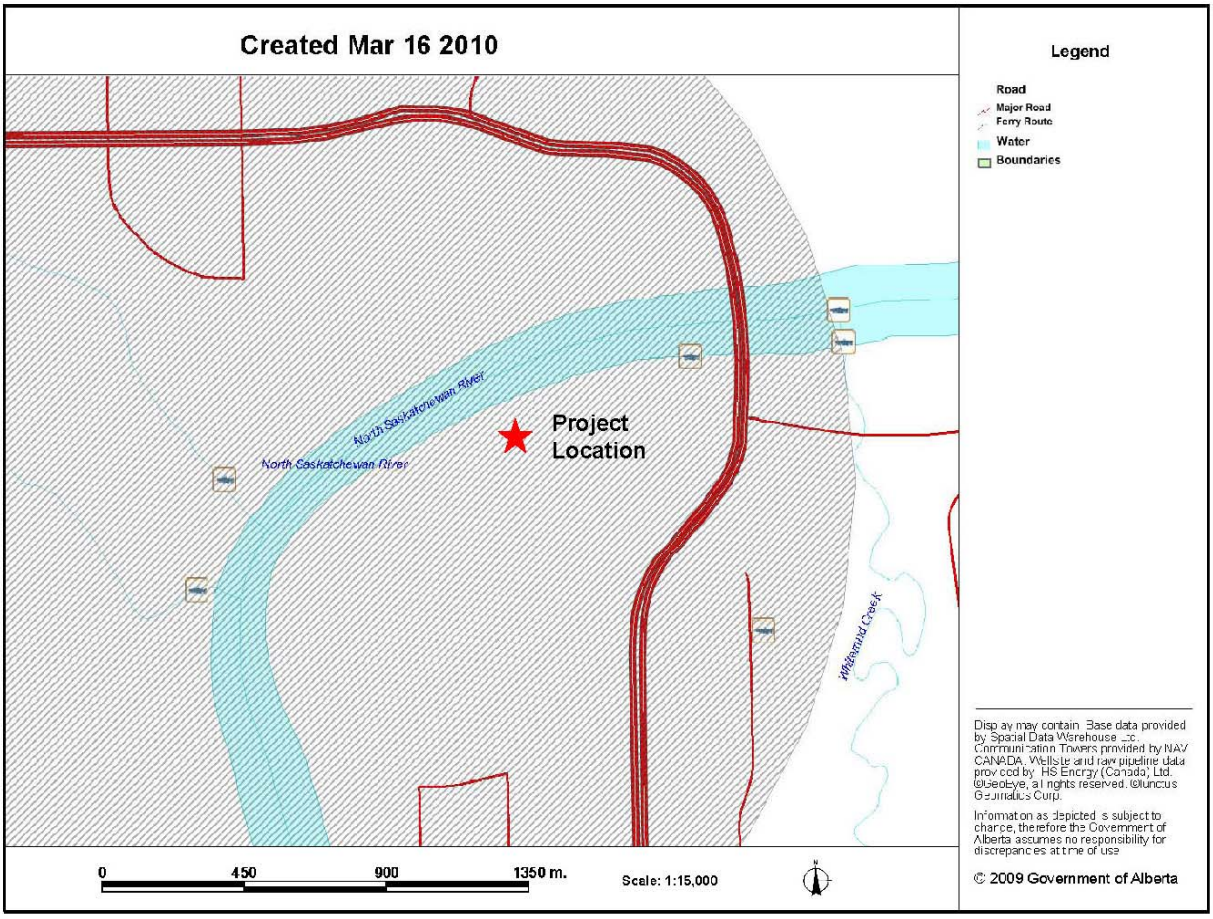

Figure 6.4 FWMIS: Fish and Wildlife Report (FWMIS 2010)

Rare and Special Places Degradation

The North Saskatchewan River Valley is a COE designated Natural Area System, which is defined as “a network of natural and/or semi-natural landscape elements that is configured and managed with the objective of maintaining or restoring ecological functions as a means to conserve biodiversity while also providing appropriate opportunities for education, research and passive recreation” (COE 2007). Policy C531 indicates that a natural area is “an area of land or water that is dominated by native vegetation and relatively undisturbed by human activity. Areas such as groomed parks, sports fields and schoolyards are not natural areas.”

The corresponding City of Edmonton Natural Areas Map (2008) shows the Fort Edmonton Park site as a developed site within the boundaries of the North Saskatchewan River Valley ARP Protected Natural Areas (http://www.edmonton.ca/environmental/documents/Natural_Areas_Map_Dec_2009.pdf). Project construction activities will not impact existing Protected Natural Areas.

6.2.2 Vegetation

Natural Vegetation / Tree Removal

Vegetation removals are not required for the Project. Any sod areas disturbed during construction will be repaired with topsoil and sod. However, the construction access route to the Project site intersects with the stands of trees lining the internal service road. It will be important that these trees are sufficiently protected during the course of construction in order to ensure their survival after the Project has been constructed. If there is a possibility that damage may occur (eg. a tight fit of equipment though the Project site access point), the following mitigation measure is proposed:

M9 The Construction Contractor will protect all trees identified by the Project design team following the procedures outlined in the City of Edmonton Corporate Tree Management Policy, specifically the sections entitled "Guidelines for Work Near Trees" and "Hoarding Requirements to Protect Trees on Public Property", or as identified otherwise by the City of Edmonton Community Services.

If pruning or removal is required within the hoarding area, the City's Urban Forestry branch must be consulted. The COE Corporate Tree Policy will apply if any trees are damaged during construction. The COE Corporate Tree Policy assesses parties damaging or removing trees/shrubs an amount sufficient to replace the value of lost large shrubs.

M10 The Proponent to consult with the City of Edmonton Forester to assess the value of the trees in and around the Project site to be removed, if removals

become necessary, and that the value is applied to equivalent naturalization in and around the Fort.

6.2.3 Terrestrial Wildlife

Habitat Destruction

The natural treed areas provide the best wildlife and bird habitat within the Project site. Any removal of natural vegetation has the potential to destroy terrestrial wildlife habitat as well as bird habitat. There are no tree removals scheduled for the Project. No significant adverse effects to local terrestrial wildlife and bird populations as a result of habitat destruction are anticipated.

Individual Wildlife Mortality

Whenever mechanized equipment and wildlife are in close proximity, as will be the case during construction of the Project, there is the potential for mortality of wildlife individuals. Measures can be implemented to minimize the potential interaction between mechanized construction equipment and wildlife individuals. The solid hoarding around the construction site will help to minimize potentially detrimental human-wildlife contact by ensuring that construction activities are contained within the identified construction disturbance zone. No further mitigation measures are recommended.

Mortality of individual birds during critical breeding periods is protected under the Canadian Migratory Birds Convention Act. The Project does not entail any tree removal. Should tree removals be required, and to prevent individual mortality and comply with the Act, the Contractor is restricted in the clearance of trees during the period between April 15 and July 31, as outlined in Mitigation Measure M8.

Should any wildlife be injured or should construction continue into spring and young animals are left abandoned due to construction or operation activities, the Wildlife Rehabilitation Society of Edmonton must be contacted immediately at 780-914-4118 (http://www.wildlife-edm.ca/). Should any wildlife die due to

construction or operational activities, City of Edmonton Animal Control Services must be contacted immediately at 780-496-8860.

6.3 Summary Assessment – Biological Environment

The project-environment interaction effects for the biological environment are in relation to natural vegetation protection and wildlife safety. The mitigation measures direct the Project to ensure that potential adverse effects on trees and small animals are avoided. Table 6b provides a summary assessment of topics related to the biological environment. The recommended mitigation measures for the biological environment are as follows:

M8. The Proponent will observe best practices which prohibit tree removals from April 15 to July 31. If removals, relocations or pruning are necessary during that time, an Alberta registered biologist would need to provide a nesting survey and letter of clearance.

M9. The Construction Contractor will protect all trees identified by the Project design team following the procedures outlined in the City of Edmonton Corporate Tree Management Policy, specifically the sections entitled “Guidelines for Work Near Trees” and “Hoarding Requirements to Protect Trees on Public Property”, or as identified otherwise by the City of Edmonton Community Services.

M10. The Proponent to consult with the City of Edmonton Forester to assess the value of the trees in and around the Project site to be removed, if removals become necessary, and that the value is applied to equivalent naturalization in and around the Fort.

The Project site is already highly disturbed, but there is River Valley forest vegetation and tree stands near the site. Based on the above mitigation measures, the residual effects are not significant.

Table 6b Biological Environment Summary Assessment

Table 6b Biological Environment Summary Assessment

Key Value Indicator:	Potential Adverse Effect:	Mitigation:	Residual Effects*				
			Severity	Duration	Extent	Probability	Significance
Biological Components							
Sensitive Ecosystems	Threat to Species of Concern	M8 If removal/pruning of trees are required, Alberta biologist to provide nesting survey & clearance letter	0	0	0	0	NS
	Rare & Special Places Degradation		0	0	0	0	NS
Vegetation	Natural Vegetation Removal	M8 No removals between April 15 to July 31 without biologist clearance M9 Contractor to protect all trees M10 COE Forester assess tree value.	0	0	0	0	NS
	Tree Removal	M9 Contractor to protect all trees M10 COE Forester assess tree value.	0	0	0	0	NS
Terrestrial Wildlife	Habitat Destruction	M8 If removal/pruning of trees are required, Alberta biologist to provide nesting survey & clearance letter M7 Contractor to protect all trees M8 COE Forester assess tree value.	L	L	L	L	NS
	Individual Mortality - Mammals	M2 Contractor to hoard construction site	0	L	L	L	NS
	Individual Mortality - Birds	M8 If removal/pruning of trees are required, Alberta biologist to provide nesting survey & clearance letter	0	0	0	0	NS
	Individual Mortality - Amphibians & Reptiles	M2 Contractor to hoard construction site	0	0	0	0	NS

* Refer to Section 3.4.1 for ratings.

7.0 Community / Social Environmental Assessment

The interaction between the Project and the physical environment is concerned with the following topics:

- Effect on and adequacy of on-site parking,
- Effect on and adequacy of park infrastructure and drainage, and related concerns about safety standards and environmental protection standards
- Effect on adjacent neighbourhoods,
- Effect on historical resources,
- Effect on river valley parkland and trail users
- Effect on FEP patrons and public safety.

7.1 Existing Conditions

The Project is located within a recreationally active area of the North Saskatchewan River Valley, since it is within Fort Edmonton Park, and in close proximity to the John Janzen Nature Centre, Valley Zoo, and Terwillegar Park. There is a paved multi-use trail parallel to the south boundary of the park, at the foot of the escarpment, which continues from under the east side of the Quesnell Bridge, and connects to an on-road signed bike route that runs south along Whitemud Rd. There are two non-motorized bridge connections across the Whitemud Creek and south of the park to the Oleskiw neighbourhood (scheduled to be complete by summer or fall of 2010). These trails and bridges are major connections that are (and will be) utilized by pedestrians, cyclists, joggers, hikers, dog walkers, tourists/facility users and school/day camp groups.

Adjacent neighbourhoods to Fort Edmonton Park are Rio Terrace, and Quesnell Heights north of the river, and Brander Gardens bordering the south side of the park (see Figure 7.1). Tree cover along the upper escapement slopes buffers views from adjacent neighbourhoods.

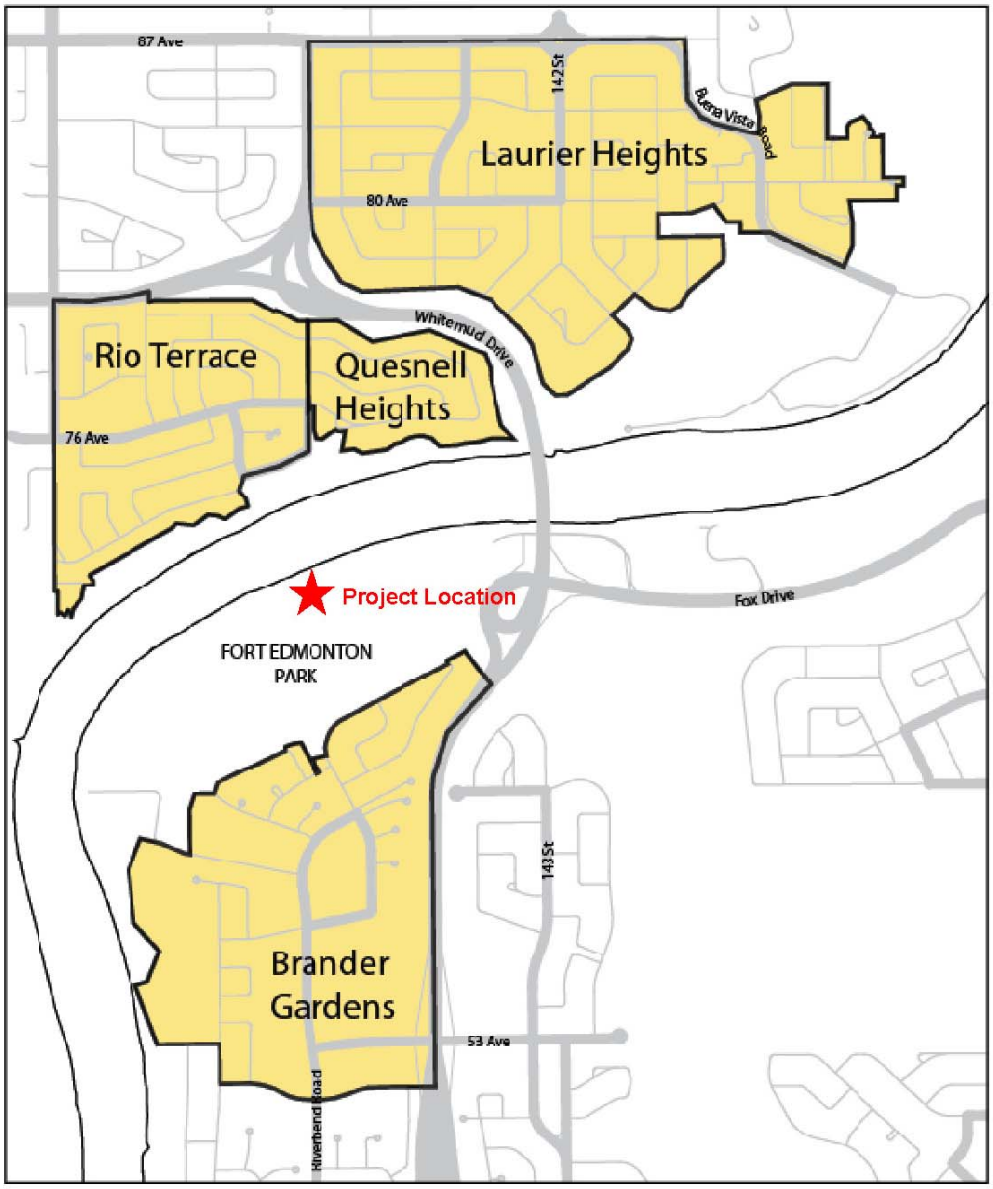

Figure 7.1 Neighbourhoods Surrounding Fort Edmonton Park

7.1.1 Parking Assessment

Parking assessments are completed to identify the existing parking situation, the parking needs associated with a project, and the resulting opportunities and constraints. Formal parking assessment studies were conducted in April 2002 (by Earth Tech Canada Ltd.) for the development of Selkirk Hotel and June 2004

(by Bunt & Associates Ltd.) for the development of the 1920s Midway and Exhibition. This report draws from those assessments.

Section 54, Schedule 1, Subsection (28) of the Edmonton Zoning Bylaw stipulates that within the Community, Educational, Recreational and Cultural Service Use Class not listed separately, the vehicular parking regulation requires 1 parking space per 3.5 seats or 3.1 parking spaces per 10 m^2 of floor area use by patrons. However, given that Fort Edmonton Park houses a number of smaller facilities with different uses within its boundaries, it is difficult to apply those regulations to the Fort in a reasonable fashion. The number of patrons using the park varies according to day of the week, time of day, between spring and summer months, and whether there is a special event occurring. The number of parking spots required on those peak attendance days is excessive to what is typically required, as is calculating the total parking requirement by considering each facility individually.

Thus both parking assessment studies for the Selkirk Hotel and the 1920s Midway and Exhibition used the alternative method of determining parking needs based on the current parking capacity and historical peak and normal attendance levels.

Fort Edmonton Attendance

Fort Edmonton Park is open to the public for roughly four months of the year, seven days a week – from May long weekend to September long weekend. School groups and self-guided tours are more prominent during May and June; while half of the annual attendance (by day camps, self-guided tours, guided tours, special events) occurs in July and August. The 2004 parking assessment completed by Bunt & Associates Ltd. (Appendix F) reported that annual attendance had been increasing yearly, until the peak of 131,000 was reached in 2001. By 2004 the annual attendance had decreased to 116,000 plus program and rental generated attendance of 70,000 to 85,000. On average, the daily attendance is about 1,000 visitors; while attendance can increase to between 4,000 and 8,000 visitors during one of the four special event days (ie. Spring

Carnival, Highland Gathering, Canada Day and Harvest Fair). Weekday attendance is typically lowest, while Sundays and long weekends are the busiest. By 2009, park attendance had increased to 130,000 visitors per year, plus an additional 120,000 from rental and group functions. The increases in rental and group functions are due to greater day camp participation and after-hours educational programs, which typically generate low parking requirements (ie typically bussing and drop-off). (Personal communication: Bill Demchuk, April 12, 2010)

The proposed Capitol Theatre accommodates 260 seats, and will provide year-round opportunities for local drama, theatre and music. The Project is intended as a component of the 1920 Street development within the Fort Edmonton Park Master Plan. The theatre would mostly serve as another stopping point for visitors already in the park. Community Services and the Proponent are expecting some incremental increase in regular daytime attendance, and evening function attendance. Use during the off-season months can easily be accommodated by the existing parking facilities.

Parking Analysis

The main paved parking lot for Fort Edmonton is shared by John Janzen Nature Centre, and accommodates approximately 448 stalls. This primary parking lot typically accommodates most daily and weekend parking needs. Overflow parking is available on the grassed areas (431 vehicle capacity immediately adjacent to the main lot, and along Fort Edmonton Park Road. There are also smaller parking zones designated for handicap use, staff use, and at Selkirk Hotel and Blatchford Hangar. There are approximately 1000 parking spots in total on site. An additional 352 vehicles were previously accommodated in the area bounded by Fox Drive, Fort Edmonton Park Road and the Quesnell bridge, but was unavailable as of the start of the 2009 season. To manage the additional parking that is needed for special event days, the City of Edmonton has an arrangement with the Province to allow FEB visitors to either park at the Neil Crawford Centre parking lot (an allocation of approximately 700 stalls) or

alternately, take the LRT to the Neil Crawford LRT station, from which FEP provides a free shuttle service to Fort Edmonton Park.

With respect to the Capitol Theatre and the current assessment, during regular or peak FEP hours of operation, the 260 seat theatre provides another point of interest along 1920 Street with the intent to attract and retain patron interest in FEP generally. As a result the existing parking facilities are expected to be adequate to accommodate incremental growth in parking demand. On regular week end days the on-site parking facilities are significantly under capacity. On the four peak event days, overflow is accommodated with a park and ride facility. (Personal communication: Bill Demchuk, April 12, 2010), During off hours, theatre use would often augment other facility bookings. The on-site main parking lot and localized guest parking capacity exceeds demand for parking.

As such, no mitigation measures are recommended.

7.2 Project – Community and Social Environment Interactions

The Project will result in a number of effects on the community, both outside and internal to the Fort. A main component of this EIA is to describe the potential community effects the Project will cause and what mitigation is recommended. Table 7a outlines the project – community / social interactions anticipated for the Project.

Table 7a Community/Social Environment: Project – Environment Interactions

Table 7a Community/ Social Environment: Project - Environment Interactions

Environmental Impact Assessment Matrix

Legend
- Anticipated Adverse Effect (to be addressed in the EIA)
- No Anticipated Effect (not addressed in the EIA)
- \+ Anticipated Positive Effect
- R Anticipated Reverse Effect

		Construction						Operation										
		Earthworks (excavation & trenching)	Site Construction (utilities & foundation)	Building Construction	Heavy Construction Equipment Operation	Construction Staging, Traffic, Access, Parking	Emergency / Accidental Release	Pedestrian Traffic & Public Use (Viewing)	Vehicular Traffic (Service Road)	Building Operations and Maintenance	Washroom & Shower Operation	Ticket Booth Sales	Office & Administration	Retail Bay Operation	Movie Projection & Theatre Presentations	Storage	Emergency / Accidental Release
Key Value Indicator: Potential Adverse Effect:																	
Community Components																	
Adjacent Neighbours	Noise Intrusion				■												
	Visual Intrusion	■	■	■													
Local Transportation	Access Limitations or Effects on Local Streets		■	■	■												
	Parking Area Loss																
Historical Resources	Loss or Damage to Historic Sites & Features																
Parks & Open Space Users	Loss of Trails / Access																
	Loss of Parkland																
	Degradation of Aesthetics																
	Loss of Horticultural Trees & Shrubs																
Public Safety	Injury		■	■	■												

7.2.1 Fort Edmonton Park Infrastructure

Brian Thompson, P.Eng of B & F Thompson Management Services Inc. has conducted the assessment of Project effects on FEP infrastructure including water supply, sanitary transmission and lift station and drainage. Similar studies by the same engineer were conducted for the Selkirk Hotel (2002), and 1920's Exhibition and Midway (2004) (see Appendix G)

ASSESSMENT OF SANITARY SEWERAGE

Description of Existing System

There is an existing 250 mm (10") diameter gravity sewer along 1905 Street, which drains into an existing 250 mm gravity sewer which then drains easterly along 1920 Street past the Ukrainian Book Store and the Sun Drug Store. This sewer is then drained by a 250 mm pipe running south to a sewage lift station located beside the J. B. Little building.

This sewage lift station is a Wet Well / Dry Well type with two sewage pumps located in the Dry Well. The pumps discharge sewage via a 150 mm (6") forcemain up the slope of the North Saskatchewan River Valley where it discharges into an existing 250 mm gravity sewer in Brander Gardens (Riverbend) subdivision.

The lift station has overflow protection via a connection to an adjacent storm sewer, plus an overflow storage tank. The function of the overflow storage tank is to reduce the likelihood of the lift station overflowing into the storm system during storm events or power outages, because that storm sewer would convey the raw sewage directly to the river.

Sanitary System Capacities and Demands

A detailed sanitary system analysis is found in the Appendix G supported by a quantitative analysis. Two critical issues have been identified:

1. Environmental Effects on river: Past discharges of sewage from the lift station to the North Saskatchewan River during wet weather flows and increased likelihood as a result of increased demands generated by new facilities.

2. System reliability: interviews with City staff indicate the lift station pumps are at the end of life and need to be upgraded.

Both the 2002 and 2004 studies had recommended the following upgrades to the sanitary system:

1. 2002 – That a storage chamber of 5 cubic meter volume be added to the sanitary lift station to protect the Fort Edmonton Park sanitary system from any deterioration due to the addition of the Selkirk Hotel, and to provide for shutdowns and emergencies equivalent to a volume of 4 hours peak dry flow from the Hotel.

2. 2004 – That a storage chamber of 13 cubic meter volume be added to the sanitary lift station to protect the Fort Edmonton Park sanitary system from any deterioration due to the addition of both the Selkirk Hotel and the 1920's Midway, plus possible future developments within Fort Edmonton Park.

The proposed Capitol Theatre will have a seating capacity of 225 persons, plus performers will presumably use restroom facilities in the theatre, so the total contributing population for sanitary sewage generation should be in the order of 250 persons.

City of Edmonton Design Standards for Drainage, Chapter 3, Table A2 provides a guide for commercial / institutional and industrial sanitary flow generation factors on the basis of land use. For places of assembly, such as Churches, Schools, Libraries and Theatres, it recommends designing on the basis of 24 Litres/day/s.m. of floor area.

For the 1022 sq. m. Capitol Theatre, this would be 24,525 Litres/day or 24.5 cubic meters per day. The equivalent population at 350 L/C/d would be 70 people. Note that this is approximately the same or less than the theoretical volume generated by the Selkirk Hotel.

This means that the implementation of the recommended 13 cubic meter storage vault as per the 2004 recommendation would adequately take care of the Selkirk Hotel, the Capitol Theatre and the 1920s Midway, and reduce the risk of overflows to the North Saskatchewan River. If there are any other proposed additions to Fort Edmonton Park in the near future, then it would be prudent to consider an even larger diameter storage manhole be added to the lift station.

M11 Sanitary Sewerage: Concurrent with the Capitol Theatre project, construct a 13 cubic meter (or larger) storage chamber at the sanitary lift station to accommodate the increased sanitary flows from the Capitol Theatre, the Midway, and the Selkirk Hotel. This measure will reduce the likelihood of wet weather overflows from the lift station to the North Saskatchewan River. At the same time, consider replacing the aging pumps in the Lift Station, which will also serve to improve reliability of the station under high flow conditions where there is risk of overflow to the river.

A direct sanitary connection from the Capitol Theatre can be installed to the existing 250 mm sanitary sewer in 1920 Street.

ASSESSMENT OF STORMWATER DRAINAGE

Description of Existing System

While the majority of the area occupied by Fort Edmonton Park is served by a surface drainage system consisting of swales, ditches and natural sloughs or ponds, the developed portions of the site are served by underground storm sewers. One system serves the area from the west end of 1885 Street to the John Janzen Nature Centre. This system has pipes ranging in size from 200 mm to 1050 mm at the outlet to the North Saskatchewan River north of the Fire Hall.

As part of this system there is a 900 mm storm sewer along 1920 Street, which drains in a westerly direction and which leads to Outfall # 14 to the North Saskatchewan River. There are two catch basins in the intersection of 1920 Street and 1905 Street which are connected to this storm sewer.

Storm Water Management

Management of peak stormwater discharges to predevelopment conditions is a requirement of the City of Edmonton Drainage Services. Some storm retention currently exists on grate to the east of the Capitol Theatre site but this areas is designated as a future building site. Since future exhibits and parking is expected to occupy most of the area between 1920 Street and the Blachford Hanger, opportunities for on grade stormwater management detention are limited. A alternate approach would be to detain and release stormwater at a pre-development rate.

Assuming that the roof of the Capitol Theatre building is flat, then stormwater management could be utilized on the roof through the use of controlled flow roof drains. Generally, in the Edmonton area, roof structures designed for snow loads are structurally capable of storing the 100 year storm volume on the roof. If the flow off the 951.66 square meter roof area is restricted to 3.33 Litres per second, then it would be equivalent to the pre-development flow off the site.

M12 Stormwater Drainage: Institute on-roof stormwater management for the Capitol Theatre in order to minimize the impact of the development. If the flows from the roof can be limited to 3.33 litres per second, then the pre-development condition will be protected.

A direct connection for the roof drainage system can be installed to the existing 900 mm storm sewer in 1920 Street.

ASSESSMENT OF WATER SYSTEM

Description of Existing System

The water system in Fort Edmonton Park consists of a 200 mm diameter looped water main with fire hydrants. One end of this loop connects to the distribution system in Brander Gardens and the other end connects to the distribution system in Grandview Heights. Because the park is in the river valley, and is fed from the system at the top of the valley, pressures in this water loop are relatively high, in excess of 550 Kpa (80 psi). This pressure is sufficiently high as to require the service connection to the Selkirk Hotel plumbing system to be protected by a pressure reducing valve. The mechanical designer for the theatre should take this matter into account and provide accordingly.

Assessment

Refer to Appendix G for a description of and assessment of the Fort Edmonton Park water system.

The deficiencies in the Fort Edmonton Park water system are of long standing. The (old) Fort Edmonton Park Master Plan sets out deficiencies in the fire protection system in Section 4 a) iv) Fire Protection Requirements. These documented deficiencies relate to hydrant accessibility, hydrant spacing and sprinkler systems in buildings.

The Fort Edmonton Park watermain and the hydrants cannot provide the level of fire protection that would be expected in the downtown area of the City, but it can provide adequate protection to the Selkirk Hotel and to the Capitol Theatre if they are stand-alone buildings with no other immediately adjacent buildings.

The approximate separation between the two buildings will be 32.5 meters. Any infill building proposed for that zone will trigger a requirement for a significant upgrade to the Fort Edmonton Park water distribution system.

M13 Water System: Install a standard water service connection to the existing 200 mm watermain in 1920 Street to service the Capitol Theatre and initiate Preliminary Engineering studies for upgrading the Fort Edmonton Park water system, so that it will have the capability to deliver a fire flow of 300 litres per second at such time as the contemplated infill building, the Windsor Hotel, is constructed

7.2.2 Adjacent Neighbours

Noise Intrusion

The construction activities have the potential to generate noise. Construction can be perceived as a nuisance, and also a source of curiosity. People in urban areas often experience the inconvenience of construction in their normal lives and are more understanding if they are aware of the significance of the Project.

Construction noise is expected to diminish over the distance between the Project site and residential areas, and because of existing vegetative buffers. The Community Standards Bylaw (c14600/2008) will govern contractor activities which generate noise. Any public complaints about noise will be investigated by City Bylaw officers. No further mitigation measures are recommended.

Visual Intrusion

It is highly unlikely that the Project site would be visible to the public from the outside the park in residential areas on either side of the river, or from the Quesnell Bridge. Construction will occur during FEP's open season however, and the hoarded construction area will be visible to park visitors during the open hours, and facility rental users.

7.2.3 Local Transportation and Parking

During the construction of the Capitol Theatre, Fort Edmonton Park will continue to be operational. As a result, crew parking, construction staging and construction lay-down will need to be considered.

Construction Effects

Fort Edmonton Park's main parking lot (shared with John Janzen Nature Centre) is only accessible by vehicle along Fort Edmonton Park Road, which intersects with Fox Drive. A turn-off from Fort Edmonton Park Road permits access to the park's service road that parallels the North Saskatchewan River along the park's northern boundary.

Construction access to the Project site will be via Fort Edmonton Park Road and the service road. Along the service road are access points to the Selkirk Hotel and the Blatchford Field Hangar, which will subsequently form the predominant routes to the Project site. Although construction vehicles will utilize Fort Edmonton Park Road to access the service road, there should be no disruption to public parking in the main lot. Construction and construction crew vehicles will utilize the existing smaller parking areas adjacent to the Hotel and Hangar. These areas will be delineated with temporary controls. At the completion of construction, the temporary controls will be removed and the areas restored to their original condition. Pre-emptive planning is important to minimize safety hazards and inconvenience to the public. The following mitigation measure is recommended:

M14 The Contractor will plan and implement a construction access management plan, designed to minimize the risks and inconvenience related to local traffic, parkland users, FEP users, and damage to roadways and along the construction access route, This may include, but is not necessarily limited to construction notification signage at key locations and detour routes.

Emergency access to Fort and the Project site will be maintained at all times. No local streets will be impacted.

The Contractors will be required to review and meet all related COE standards and requirements during construction.

Operational Effects

The new Capitol theatre is not expected to significantly increase the peak number of Fort visitors. The existing parking facilities are adequate.

7.2.4 Historical Resources

Loss or Damage to Historic Sites and Features

Altamira Consulting Ltd (herein referred to as "Altamira") was engaged to conduct a Historical Resource Overview (HRO) assessment for the Capitol Theatre project (Appendix H). In the February 2009 report, Altamira recommends Historical Resource Act Clearance, as "there is low potential for unknown undisturbed archaeological or historic sites within the project area", and that the Project should be permitted to proceed. The overview also notes that "several HRIA's have been conducted surrounding the Capitol Theatre project area…All of these permits share the same landscape features…With the exception of the 2 flakes found, no other historical resources have been located surrounding the project area" (Altamira 2010). At the time that this document was written, an official response/acknowledgement from the Historic Resources Management Branch of Alberta Culture and Community Spirit had not yet been received.

7.2.5 River Valley Parks and Open Space Users

Loss of Trails / Access

Fort Edmonton Park is adjacent to high-use parkland and trails, including paved multi-use trails along the south and east boundary. There is also an on-road, signed bike route that connects the paved multi-use trails west of the park that connects to Whitemud Rd. The Project site is within the FEP property, with access to the site via the internal service road. There will be no disruption to public trail use in the river valley. No mitigation is required.

Loss of Parkland

As the Project site is isolated within a highly disturbed area of the Fort, there will be no displacement or loss of parkland before or after construction. No mitigation is recommended.

Degradation of Aesthetics

As with most construction projects, aesthetics are temporarily compromised for the greater aesthetic result of the project, as is the case with this Project.

As the Project scheduling involves preliminary construction preparation (excavation/grading and underground utility work) in spring of 2010, the visually affected users will be primarily FEP visitors. For the duration of construction, which will be complete for opening in May 2011, the Fort users will be directed around the fenced construction site.

Loss of Ornamental Trees and Shrubs

As indicated in previous sections, the Project site is highly disturbed and is void of trees and shrubs. In the case that trees adjacent to the access areas are damaged or require pruning, a City of Edmonton Urban Forester shall be contacted and the Corporate Tree Management Policy may apply.

7.2.6 Visitors & Public Safety

The public users that are of greatest safety concern are those that will be in the closest proximity to the Project site. The Project will have a minimal effect on the public. The Contractor will provide solid hoarding around the construction site, and overhead protection will be provided over pedestrian paths where required. As previously mentioned in mitigation measure M4, themed hoarding is recommended to not only protect park visitors and screen them from construction activities and maintain the historic façade, but there is also an opportunity to create excitement for the Project outcome and the future plans for FEP. The Construction Accommodation Plan (mitigation measure M14) will help to alleviate any risk or danger to users.

As the Project hoarding must be set back from the front of the new theatre to accommodate construction activities, interruption of the pedestrian boardwalk pathways will likely occur along the 1920's Street, and leading up to the Blatchford Hangar. Minor pedestrian detours are necessary along these two sections of boardwalk, and should be brought out around the hoarded area and reconnected to the unaffected paths. In addition, the disruption to the boardwalk in front of the Project site brings forth an opportunity to improve the 1920's Street walkway surfacing. There is a small section of concrete sidewalk that was constructed in front of the Selkirk Hotel that ties into the boardwalk to the east. In light of plans for a future Windsor Hotel adjacent to the Selkirk, there is an opportunity to extend the concrete sidewalk from the Selkirk to the Capitol Theatre, and partially realize the "downtown commercial block" streetscape vision for these buildings. These recommendations are summarized in the following recommended mitigation measure:

M15 The Proponent will provide temporary detour walkways around the Project site which connect to unaffected pedestrian pathways, and will extend the concrete sidewalk from the Selkirk Hotel to the Capitol Theatre upon completion of the Project.

It is important that FEP users, parkland users and adjacent community residents are kept well-informed of construction activities and plans. Equipped with this information, potential users will be better able to make alternative arrangements to further minimize potential adverse community effects.

7.3 Summary Assessment – Community/Social Environment

The project-environment interaction effects for the community/social environment are concerns over visual impacts and public user safety. The mitigation measures direct the Project for the duration of construction to ensure there is adequate temporary controls to ensure public safety. Table 7b provides a summary assessment of topics related to the social environment. The recommended mitigation measures for the community/social environment are as follows:

M11. Sanitary Sewerage: Concurrent with the Capitol Theatre project, construct a 13 cubic meter (or larger) storage chamber at the sanitary lift station to accommodate the increased sanitary flows from the Capitol Theatre, the Midway, and the Selkirk Hotel. This measure will reduce the likelihood of wet weather overflows from the lift station to the North Saskatchewan River. At the same time, consider replacing the aging pumps in the Lift Station, which will also serve to improve reliability of the station under high flow conditions where there is risk of overflow to the river.

M12. Stormwater Drainage: Institute on-roof stormwater management for the Capitol Theatre in order to minimize the impact of the development. If the flows from the roof can be limited to 3.33 litres per second, then the pre-development condition will be protected.

M13. Water System: Install a standard water service connection to the existing 200 mm watermain in 1920 Street to service the Capitol Theatre and initiate Preliminary Engineering studies for upgrading the Fort Edmonton Park water system, so that it will have the capability to deliver a fire flow of 300 litres per second at such time as the contemplated infill building, the Windsor Hotel, is constructed

M14. The Proponent will prepare a Construction Accommodation Plan for Fort Edmonton Park users that will include details regarding road traffic, and detour signage and routes for Fort visitors, especially along the service road.

M15. The Proponent will provide temporary detour walkways around the Project site which connect to unaffected pedestrian pathways, and will extend the concrete sidewalk from the Selkirk Hotel to the Capitol Theatre upon completion of the Project.

Based on the above mitigation measure, the residual effects are not significant.

Table 7b Community/Social Environment Summary Assessment

Table 7b Community/Social Environment Summary Assessment

Key Value Indicator:	Potential Adverse Effect:	Mitigation:	Residual Effects*				
			Severity	Duration	Extent	Probability	Significance
Community Components							
Adjacent Neighbours	Noise Intrusion	Contractor to adhere to COE Bylaw regarding noise	L	L	H	M	NS
	Visual Intrusion	Site is well screened from all directions by natural vegetation	0	0	0	0	NS
Local Transportation	Access Limitations on Local Streets	M14 Construction Access Management Plan	0	0	0	0	NS
	Parking Area Loss	M14 Construction Access Management Plan	0	0	0	0	NS
Historical Resources	Loss or Damage to Historic Sites & Features		0	0	0	0	NS
Parks & Open Space Users	Loss of Trails / Access	M14 Construction Access Management Plan	0	0	0	0	NS
	Loss of Parkland		0	0	0	0	NS
	Degradation of Aesthetics		0	0	0	0	NS
	Loss of Horticultural Trees & Shrubs		0	0	0	0	NS
Public Safety	Injury	M14 Construction Access Management Plan	L	L	M	L	NS

* Refer to Section 3.4.1 for ratings.

8.0 Environmental Protection Plan

An environmental protection plan may consist of environmental effects monitoring (during and post construction) and/or environmental compliance monitoring or audits. For the Capitol Theatre project, environmental compliance monitoring is recommended for the Project's construction due to the scale of the Project and potential adverse impacts upon the Project and the environment. Environmental construction monitoring entails data collection and evaluation of environmental parameters of processes, for the purpose of:

- determining the efficiency of environmental protection measures, including reporting on the adequacy of project impact prediction methods and mitigation measures;
- developing capability for future projects; and,
- improving on project management, planning and related programs to better protect the environment.

The Environmental Construction Monitoring Program will put in place provisions of environmental quality assurance for all construction activities and consists of a number of activities including:

- Reviewing compliance requirements of this EIA and related policy or legislation

- Preparing a monitoring checklist and reviewing with both the proponent and contractor

- Undertaking a scheduled set of monitoring inspections and completing a checklist report for each inspection

- Prepare a closure report which summarizes the inspections and environmental performance of the construction.

The Environmental Construction Monitoring Program requires the Proponent and COE Community Services to engage a consultant to monitor all construction activities to ensure the adherence of all legislative standards and policies related to the Project (as described in Section 1.4) and to all mitigation measures recommend in this EIA. The consultant engaged to provide the Environmental Construction Monitoring Program will review all aspects of the Project's construction.

The environmental monitoring identified in this report includes:

- Erosion and Sediment Control (ESC) Plan monitoring
- Environmental Construction Operations (ECO) Plan monitoring

The Consultant is to also monitor that the recommended mitigation measures in this report are followed and adhered to by the Contractor. The Consultant will monitor adherence to the:

- Construction and Maintenance Contractor's Environmental Responsibilities Package and the COE's Environmental Policy (C512)
- COE Corporate Tree Policy: Tree removal/ relocation and tree protection (if applicable)
- COE Community Standards Bylaw (c14600/2008) – Noise Control
- Temporary controls of warning and detour signage
- Construction Accommodation Plan for FEP visitors
- Standards and recommendations of the:
    - Geotechnical Report & Supplementary Geotechnical Recommendations by Thurber Engineering Ltd. (Appendix D)
    - Phase I ESA by Crimson Environmental Ltd. (Appendix E)
    - Utility Assessment by B & F Thompson Management Services Ltd. (Appendix G)
- Potential occurrence findings related to:
    - Historical resources
    - Rare invertebrates, plants, plant communities, and lichens
    - Rare fish and wildlife

9.0 Summary and Conclusion

The environmental impact assessment process for the Capitol Theatre project identified a number of physical, biological, and community/ social environmental effects that may be caused by the construction and operation of the Project. This EIA recommends a number of mitigation strategies which will lessen or ameliorate these effects.

9.1 Summary Effects Assessment

The report reviews the Project effects, mitigation measures, and residual effects. The following is a summary of Project Mitigation Measures recommended as a result of the environmental impact assessment:

M1. Construction Contractors will prepare an Erosion and Sediment Control (ESC) Plan for the Project as per the requirements and recommendations of the City of Edmonton Erosion and Sediment Control Guidelines and the City of Edmonton Erosion and Sediment Control Field Manual. The ESC plan is to be prepared and monitored by a qualified specialist.

M2. Construction Contractor will minimize disturbance area around the Project site, and will provide fencing and/or hoarding around the construction site. Any compacted soils are to be scarified and re-graded.

M3. Construction Contractor will adhere to any standards and recommendations provided by Thurber Engineering Ltd's *Geotechnical Investigation* and *Supplemental Geotechnical Recommendations*.

M4. The solid hoarding will feature conceptual illustrations of the Project and/or the future 1920's Street in its completed state in order to screen construction activities and create public anticipation for the Project and future developments, while functioning to protect park visitors from construction activities.

M5. The Prime Consultant will ensure that the Contractor must review and understand the contents of the Construction and Maintenance Contractor's Environmental Responsibilities Package and the City of Edmonton's Environmental Policy (C512), and complete and submit a Contractor's Environmental Responsibilities Acknowledgment Form.

M6. The construction Contractor will prepare and implement an Environmental Construction Operations (ECO) Plan.

M7. FEP staff will minimize the use of chemical substances in and around the Project site.

M8. The Proponent will observe best practices which prohibit tree removals from April 15 to July 31. If removals, relocations or pruning are necessary during that time, an Alberta registered biologist would need to provide a nesting survey and letter of clearance.

M9. The Construction Contractor will protect all trees identified by the Project design team following the procedures outlined in the City of Edmonton Corporate Tree Management Policy, specifically the sections entitled "Guidelines for Work Near Trees" and "Hoarding Requirements to Protect Trees on Public Property", or as identified otherwise by the City of Edmonton Community Services.

M10. The Proponent to consult with the City of Edmonton Forester to assess the value of the trees in and around the Project site to be removed, if removals become necessary, and that the value is applied to equivalent naturalization in and around the Fort.

M11. Sanitary Sewerage: Concurrent with the Capitol Theatre project, construct a 13 cubic meter (or larger) storage chamber at the sanitary lift station to accommodate the increased sanitary flows from the Capitol Theatre, the Midway, and the Selkirk Hotel. This measure will reduce the likelihood of wet weather overflows from the lift station to the North

Saskatchewan River. At the same time, consider replacing the aging pumps in the Lift Station, which will also serve to improve reliability of the station under high flow conditions where there is risk of overflow to the river.

M12. Stormwater Drainage: Institute on-roof stormwater management for the Capitol Theatre in order to minimize the impact of the development. If the flows from the roof can be limited to 3.33 litres per second, then the pre-development condition will be protected.

M13. Water System: Install a standard water service connection to the existing 200 mm watermain in 1920 Street to service the Capitol Theatre and initiate Preliminary Engineering studies for upgrading the Fort Edmonton Park water system, so that it will have the capability to deliver a fire flow of 300 litres per second at such time as the contemplated infill building, the Windsor Hotel, is constructed

M14. The Contractor will plan and implement a construction access management plan, designed to minimize the risks and inconvenience related to local traffic, parkland users, FEP users, and damage to roadways and along the construction access route, This may include, but is not necessarily limited to construction notification signage at key locations and detour routes.

M15. The Proponent will provide temporary detour walkways around the Project site which connect to unaffected pedestrian pathways, and will extend the concrete sidewalk from the Selkirk Hotel to the Capitol Theatre upon completion of the Project.

Table 9a summarizes the recommended mitigation measures for the Project. The severity, duration, geographical extent and the probability of the residual effects which remain after the implementation of the mitigation measures are included in the table. The significance of the residual effects was determined according to the methodology described in Section 3.4.

9.1.1 Operation and Maintenance Issues

There are no anticipated operational and maintenance issues assuming all mitigation measures and recommendations are followed and operational and maintenance activities are maintained and not changed.

9.1.2 Environmental Construction Monitoring Program

The environmental construction monitoring program identified in this EIA will ensure monitoring and reporting on the Project's construction activities.

Table 9a Summary of Project - Environment Interactions & Residual Effects

Table 9a Summary of Project - Environment Interactions and Residual Effects

Key Value Indicator	Potential Adverse Effect	Project Activities: Construction						Project Activities: Operation											Residual Effects*				
		Earthworks (excavation & trenching)	Site Construction (utilities & foundation)	Building Construction	Heavy Construction Equipment Operation	Construction Staging, Traffic, Access, Parking	Emergency / Accidental Release	Pedestrian Traffic & Public Use (Viewing)	Vehicular Traffic (Service Road)	Building Operations and Maintenance	Washroom & Shower Operation	Ticket Booth Sales	Office & Administration	Retail Bay Operation	Movie Projection & Theatre Presentations	Fertilizer Storage, Handling, Transport & Usage	Storage	Emergency / Accidental Release	Severity	Duration	Extent	Probability	Significance
Physical Components																							
Land / Geology	Soil Erosion & Sedimentation	■	■																L	L	M	M	NS
	Soil Loss / Degradation	■	■																L	M	L	L	NS
	Soil Compaction	■	■	■	■														L	L	L	M	NS
	Soil Stability																		0	0	0	0	NS
Water	Groundwater Consumption / Contamination						■											■	0	0	0	0	NS
	Stormwater			■															0	0	0	0	NS
	Transport & Dispersion of Suspended Material	■	■	■	■														0	0	0	0	NS
Air	Outdoor Air Quality									■									L	L	M	M	NS
	Indoor Air Quality	■	■																L	L	M	M	NS
Energy & Climate Change	Renewable & Non-Renewable Energy Resources Consumption	■	■	■	■					■									L	M	H	L	NS
	Greenhouse Gas Emissions	■	■	■	■					■									L	M	H	H	NS
	Ozone Depletion	■	■	■	■					■									L	M	H	L	NS
Materials	Renewable & Non-Renewable Resources Consumption			■						■									L	M	H	H	NS
	Solid Waste			■						■									L	M	H	H	NS
Chemicals & Contaminants	Deleterious Materials Release						■											■	L	M	H	L	NS
	Hazardous (Solid) Waste						■											■	L	M	H	L	NS
	Contaminated Soil / Buried Fill						■											■	0	M	M	L	NS
Biological Components																							
Sensitive Ecosystems	Threat to Species of Concern																		0	0	0	0	NS
	Rare & Special Places Degradation																		0	0	0	0	NS
Vegetation	Natural Vegetation Removal																		0	0	0	0	NS
	Tree Removal																		0	0	0	0	NS
Terrestrial Wildlife	Habitat Destruction																		L	L	L	L	NS
	Individual Mortality - Mammals																		0	L	L	L	NS
	Individual Mortality - Birds																		0	0	0	0	NS
	Individual Mortality - Amphibians & Reptiles		■	■															0	0	0	0	NS
Community Components																							
Adjacent Neighbours	Noise Intrusion																		L	L	H	M	NS
	Visual Intrusion																		0	0	0	0	NS
Local Transportation	Access Limitations on Local Streets		■	■	■														0	0	0	0	NS
	Parking Area Loss																		0	0	0	0	NS
Historical Resources	Loss or Damage to Historic Sites & Features																		0	0	0	0	NS
Parks & Open Space Users	Loss of Trails / Access																		0	0	0	0	NS
	Loss of Parkland																		0	0	0	0	NS
	Degradation of Aesthetics																		0	0	0	0	NS
	Loss of Horticultural Trees & Shrubs																		0	0	0	0	NS
Public Safety	Injury		■	■	■														L	L	M	L	NS

* Refer to Section 3.4.1 for ratings.

9.2 Conclusion

This Environmental Impact Assessment report conforms to the requirements of the River Valley ARP for an environmental review of a major facility. The construction of the Capitol Theatre in Fort Edmonton Park will enhance visitor experiences, promote Edmonton's cultural history, and fulfill another component of the FEP Master Plan.

If all the mitigation measures recommended in this EIA are implemented in the construction and operation of the Capitol Theatre, it is anticipated that the Project will not result in any significant adverse effects to the environment.

The Project Proponent and Edmonton Community Services department are committed to the mitigation recommendations of the Environmental Impact Assessment.

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