

## 3.0 METHODS

### 3.1 General Methods

Following is a summary of the main steps and activities employed in the preparation of this EISA. These were not necessarily sequential steps; many were iterative.

- We participated in Connected Transit Partnership (CTP) design meetings, workshops and presentation held during the period October 2011 to March 2013, to enhance understanding of the project.
- Discussions were held with City of Edmonton LRT D and C personnel regarding project implementation and stakeholder group consultations.
- Discussions were held with City of Edmonton Sustainable Development to identify the appropriate level of environmental assessment, scope of work and issues to be addressed in the EA pursuant to Bylaw 7188 and P3 project implementation, project issues.
- Discussions were held with City of Edmonton Community Services and Office of Biodiversity to identify issues, site-specific information and select potential mitigation measures.
- In October 2011, we convened a round table meeting of municipal, provincial and federal regulators with potential jurisdiction regarding environmental review and approvals to ascertain environmental review scope and permitting.
- We reviewed all public information and group stakeholder materials to the end of March 2013, and incorporated relevant public concerns into the EISA.
- We identified Valued Environmental Components (VECs) for purposes of environmental assessments by referring to City of Edmonton guidelines for the environmental assessment process for river valley projects. Further, we identified VECs by examining the study area and aerial photographs.
- Necessary field investigations, as identified in the concept planning phase of the project, for historical resources, amphibians, breeding birds and rare plants were conducted in autumn 2011, and spring/summer 2012. Detailed information review and field inspections, including mapping of VECs, were undertaken at this time
- We reviewed all pertinent reports on existing biophysical conditions.
- We reviewed all Design Detail Reports and other drawings and memos available to 04 April 2012.
- Based on the descriptions of existing conditions and available design information, the potential impacts were identified, analyzed and rated according to direction, magnitude, duration and predictability.
- Appropriate mitigation measures to minimize potential adverse effects and enhance positive effects were developed.
- We assessed synergies among residual impacts, in order to identify particular measures, practices, approaches or objectives that could effectively mitigate multiple identified impacts.

## 3.2 Detailed Methods

The following sections provide more detail for select methods used in preparing this EISA.

### 3.2.1 Scoping the Assessment

Following determination by City of Edmonton Urban Planning and Environment that the appropriate level of Bylaw 7188 environmental review was Environmental Impact Assessment, we held discussions with several branch representatives to identify issues, key stakeholders and essential Valued Environmental Components.

As a result of the repealing of *CEAA* and the promulgation of *CEAA* in 2012, a federal environmental assessment became unnecessary for a project of this nature. Specific *CEAA* assessment requirements, not required for Bylaw 7188 assessments, were dropped from the project scope.

Some additional environmental information will be necessary to support permit applications that will occur as part of detail design, therefore consultations with two federal departments remained ongoing: Transport Canada and Fisheries and Oceans Canada.

### 3.2.2 Issue Identification

Key project issues were identified through consultation with the public, with the project team members, with federal, provincial and municipal representatives and based on experience with other projects of similar nature.

Key issues are tracked throughout this document to illustrate the process of examining issues, to determine which are associated with potential impacts and can or cannot be mitigated, which can be resolved with more project information and which were not resolved.

### 3.2.3 Selection of Valued Environmental Components

No environmental assessment can be so broad in scope that it investigates potential impacts on all components of the natural, social and heritage environments. To be effective, investigations must focus on selected environmental features that are considered most important within the context of the proposed development. Three types of Valued Environmental Components (VECs) were identified:

- **Valued Ecosystem Components:** species or features of the natural environment.
- **Valued Socio-Environmental Components:** features of human settlement / development or cultural values.
- **Valued Heritage Components:** sites, paleontological and historic artifacts or structures of our natural and human history.

VECs were selected based on five criteria:

- relative abundance or status,
- public concern,
- professional concern,
- economic importance, or
- regulatory concern.

Relative abundance or species status refers to those resources within the study area that are considered rare, threatened or endangered at a provincial or national level. It can also include those that have a limited distribution or abundance within the local or regional study area.

Resources of public concern include attributes or features that were raised as issues by the public during public involvement sessions or from precedent studies. Professional concerns are related to those features of the environment known to be critical for sustaining the ecosystem, or maintaining social or heritage values within the affected site. In the case of the City of Edmonton's River Valley system, professional concerns might include any resources or features considered an integral component of the river valley as a "Ribbon of Green" and the main corridor in Edmonton Ecological Network, or, an attribute important for maintaining the current quality of life in the river valley system or the adjoining communities.

Lastly, features of regulatory concern apply to resources that have been identified as of special concern by provincial or federal regulatory agencies. These could include parkland and associated tree cover and/or rare or migratory species depending on the project type and location. Selected VECs and the jurisdiction used for their selection for this project are listed in Table 3.1.

#### 3.2.4 *Assessment Spatial and Temporal Boundaries*

The spatial boundaries, or study area, for this assessment are shown in Figure 2.1. Study area boundaries were developed by considering, at a high level, the potential for the project to exert direct and indirect effects on the selected Valued Environmental Components. The assessment recognizes that project access routes will extend beyond these boundaries along established City roads. For some VECS, the study area was contracted or expanded to suit the subject matter. These adjustments are noted in VEC-specific sections of Existing Conditions. Within the study area, for many VECS, the project area (Figure 2.1) comprised the most intensively studied lands, as this is the area expected to be directly physically affected.

Temporal assessment boundaries were set as the anticipated construction period, 2015 to 2018, as this is the phase of the project that is expected to have the greatest environmental impacts. That said, anticipated impacts during the operations phase were also considered.

**Table 3.1. Justification for the selection of VECs**

<b>Valued Environmental Components</b>	<b>Relative Abundance or Status</b>	<b>Public Concern</b>	<b>Professional Concern</b>	<b>Economic Importance</b>	<b>Regulatory Concern</b>	<b>Trigger</b>
<b>Valued Ecosystem Components</b>						
Geology/Geomorphology		√	√		√	• Bylaw 7188
Soils		√	√		√	• Bylaw 7188
Hydrology Surface Water/ Groundwater		√	√		√	• Bylaw 7188 • Alberta <i>Water Act</i>
Fish and Fish Habitat	√	√	√		√	• Bylaw 7188
Vegetation	√	√	√		√	• Bylaw 7188 • Federal <i>Species at Risk Act</i> • Alberta <i>Weed Control Act</i>
Wildlife	√	√	√		√	• Bylaw 7188 • Federal <i>Species at Risk Act</i> • Federal <i>Migratory Birds Convention Act</i> • Alberta <i>Wildlife Act</i>
Habitat Connectivity	√	√	√		√	• Bylaw 7188
<b>Valued Socio-economic Components</b>						
Land Disposition and Land Use Zoning		√	√		√	• Bylaw 7188
Residential Land Use		√	√		√	• Bylaw 7188
Recreational Land Use		√	√		√	• Bylaw 7188
Utilities		√	√	√	√	•
Worker and Public Safety		√	√		√	• Bylaw 7188
Visual Resources		√	√		√	• Bylaw 7188
<b>Valued Historic Components</b>						
Historical Resources		√	√		√	• Bylaw 7188 • Alberta <i>Historic Resources Act</i>

### **3.3 Description of Existing Conditions**

The description of existing conditions provides a current snapshot of the project area, over which the proposed project area and project components can be overlaid to identify potential interactions. For the Edmonton NSRV and associated ravines, environmental conditions are well-documented. A biophysical assessment conducted in 1981 provides a comprehensive overview of the river valley that has since been regularly used in environmental assessments of numerous small and large-scale projects proposed for the river valley (EPEC Consulting Western Ltd 1981). That document formed the basis of many of our descriptions. This information was supplemented and updated with site-specific field studies undertaken within the study area in 2012 and 2013. Specific field methods used for these studies are detailed in VEC-specific sections of Chapter 5. Several other CTP members undertook discipline specific studies such as noise and vibration, geotechnical and contaminant investigations to support design. CTP landscape architects also supported us by providing the foundation for the recreation and visual resources sections. We reviewed these studies and the information was used as required to develop descriptions of study area existing conditions. Finally, City maps, zoning information and other data held by City branches were consulted as required.

Characterization of existing visual resources consisted of observing and photographing the project area from a variety of key, near and distant vantage points, and characterizing the visual quality of the views. This involved consideration of views in summer and winter conditions.

### **3.4 Impact Analysis**

#### **3.4.1 Potential Impacts**

Potential impacts were identified through the following sequential steps. We developed a matrix with project activities along one axis and VECs along the other (see Section 6) and considered potential interactions between the elements of each axis. Each identified interaction was then analysed with regard to the potential to effect change on the VEC.

Bylaw 7188 recognizes the NSRV as containing lands that will be preserved and enhanced for recreation, scenic and ecological purposes. However, the bylaw also specifically allows for transportation development, setting out a specific transportation objective: to support a transportation system which serves the needs of the City and the Plan area, yet is compatible with the parkland development and the environmental protection of the River Valley and its Ravine System. This guiding piece of legislation and its goals and objectives are foundational to the impact assessment process employed. Thus, this assessment assumes that the existing natural and recreational assets of the river valley are important resources and that change that diminishes those resources is of concern to the City. All identified impacts were described and classified as to their direction (positive, adverse or neutral), magnitude (negligible, minor, or major), and duration (short-term, long-term, or permanent) and the confidence in impact prediction (predictable or uncertain effect) noted. These descriptors were defined as follows:

***Direction:***

**Positive Impact:** An interaction that enhances the quality or abundance of natural or historical resources, or social pursuits or opportunities.

**Adverse Impact:** An interaction that diminishes the abundance or quality of natural or historical resources, or social pursuits or opportunities.

**Neutral Impact:** An interaction that changes, but neither enhances nor diminishes the quality of natural or historical resources, or social pursuits and opportunities.

***Magnitude:***

**Negligible Impact:** An interaction that is determined to have essentially no appreciable effect on the resource. Such impacts are not characterized with respect to direction, duration or confidence.

**Minor Impact:** An interaction that has an appreciable effect but does not affect local or regional populations, natural or historical resources beyond a defined critical threshold (where that exists) or beyond normal limits of natural perturbation; or, an interaction that slightly alters existing or future recreational pursuits at established facilities or well-used areas.

**Major Impact:** An interaction that affects local or regional populations, natural or historical resources beyond a defined critical threshold (where that exists) or beyond the normal limits of natural perturbation; or, an interaction that changes the character or precludes existing or future social pursuits at established facilities or well-used areas.

***Duration:***

**Short-term Impact:** An interaction resulting in measurable change that does not persist for longer than two years.

**Long-term Impact:** An interaction resulting in measurable change that persists longer than two years, but at some point dissipates completely.

**Permanent Impact:** An interaction resulting in measurable change that persists indefinitely.

***Confidence:***

**Predictable Impact:** Effects on VEC are well understood through experience in projects of a similar nature.

**Uncertain Impact:** Effects on VEC are not well understood owing to lack of knowledge of the VEC and/or its response to disturbance.

Project interactions presenting a risk to worker and public safety were not characterized using the above definitions. They were instead assessed in terms of the degree of perceived risk (i.e., likely vs. unlikely to occur). Moreover, the assessment relating to this VEC was limited to those risks directly related to natural resources or proximity to people.

Potential impacts were addressed based on the information presented in the project description. Sound project planning involves building best management practices and mitigation measures into early planning, and this was done in this case. This initial assessment assumes that built-in mitigation measures noted in the project description, such as provision of trail detours, have been applied, but that additional mitigation measures have not.

### 3.4.2 *Potential vs. Residual Impacts*

In the next step of the assessment, mitigation measures were developed to address the impacts assessed as having an undesirable impact on a VEC. Residual impacts are impacts predicted to remain *after* application of mitigation measures. Residual impacts were classified according to the above impact characteristic definitions, with one exception:

**Predictable Residual Impact:** Efficacy of proposed mitigation measures is well understood through application in similar projects or circumstances.

**Uncertain Residual Impact:** Efficacy of mitigation measure is not well understood because of lack of previous experience in similar circumstances or lack of knowledge about the VEC.

## 3.5 *Public Involvement Process*

Pursuant to the City's *Public Involvement Policy* (C513), a five stage Public Involvement Process (PIP) has been used to solicit feedback about plans for the (then) SE-W LRT line as design develop. A summary of the process is provided below. The full process is provided in Appendix C.

The alignment has been subdivided into six different areas, and Public Involvement activities have been specifically developed for each area. The project area under consideration in this EISA falls into Area 4: Strathearn to City Centre West. Consultations are being conducted over a two year period, which began in 2011, and is scheduled to conclude in 2013.

PIP design was based on City standards and BMPs for public involvement. Key objectives of the process include the following:

- Inform and consult the public, and provide opportunities for active participation in decision making, where deemed appropriate.
- Build awareness, knowledge and understanding among stakeholders and the public about low-floor LRT.
- Solicit input and feedback from stakeholders.
- Understand stakeholder and public concerns and mitigate issues to the extent possible.
- Build and maintain trusting, respectful relationships among stakeholders, the public, and the City.

The five stages of the process are:

- **Stage 1 – Pre-consultation:** This stage focused on developing the Public Consultation Plan that provides the framework for opportunities for Public Involvement. The plan was based on input and information from the Concept Planning Phase, as well as stakeholder interviews and an online survey. The PIP was also introduced to participants during Stage 1.
- **Stage 2 – Initiation:** This stage consisted of Area Meetings. Objectives of the Area Meetings are to provide background information from conceptual plans to the public, solicit feedback on certain elements of project design, provide information regarding project and PIP scheduling, present information on low-floor LRT, introduce architectural concepts, discuss issues of safety and securing, and examine property requirements and land re-development.
- **Stage 3 – Consultation:** This stage involved a second round of Area Meetings focused on presenting concept designs for each area, including changes to roadway and pedestrian/cyclist access routes, plans for noise attenuation, plans for mitigating safety and security concerns, and to provide overall project updates. Input was sought regarding designs for landscaping, structures, tunnels and changes to transportation networks.
- **Stage 4 – Refinement (ongoing):** Area Meetings during Stage 4 provide opportunities for review and input into proposed designs and key issues identified in Stages 2 and 3. Information was/is presented and input sought for refined concept designs, including changes to transportation networks and plans for noise attenuation.
- **Stage 5 – Conclusion:** This stage is focused on sharing final designs in a public information/open house format. Participants will have the opportunity to review and comment on final designs, and comments received will be posted on the project website.

Opportunities for online participation have been provided in Stages 2-5. In an effort to maximize the accessibility of PI sessions, translation and interpretation services were provided, and physical accessibility was considered when choosing meeting locations.

Stages 2 to 5 presentations included boards informing the public of environmental requirements associated with the project, including the need to undertake a Bylaw 7188 environmental review. Stages 4 and 5 also included three open houses (Table 3.2) at

which the consulting team presented project-specific information generated as part of the Bylaw 7188 environmental assessment process. Appendix C includes all environmental assessment boards displayed at PIP sessions.

**Table 3.2. Public Involvement Sessions that presented EISA information.**

<b>PI Session</b>	<b>Date</b>	<b>Location</b>
Stage 4, Areas 5 and 6	May 14, 2013	Westend Christian Reformed Church
Stage 5, Areas 1 and 2	June 5, 2013	South Edmonton Alliance Church
Stage 5, Areas 3 and 4	June 19, 2012	Old Timer's Cabin

Although the river valley is situated in Area 4, it is considered to be a City-wide resource. Thus, river valley EA information was presented at sessions that targeted all six PIP areas. Public feedback specific to the EA process was solicited by including a specific request to do so on the session comment sheet (see Appendix C), allowing for input to be attached to display boards and encouraging people to provide input on line at the City's LRT website. Feedback collected from stakeholders at public meetings, through online surveys, and email/mail/telephone correspondence has informed this EISA and the final recommended preliminary design of the Valley Line.

Until May 2013, only a few comments relevant to biophysical river valley resources were received during the preceding PIP. Most of those comments were related to wildlife movement or preserving trees and green spaces in the river valley; many more comments were received about the appearance of the proposed LRT components and potential increases in noise. All of these comments have been well documented and summarized in the formal LRT project public consultation reports that are posted on the City's website as completed. All relevant concerns raised in PIP Stages 2 and 3 were integrated into the key issues analysis undertaken for this EISA.

With the additional focus on the EISA process that was included in the May and June 2013 sessions, numerous comments were submitted to the City related to potential environmental impacts associated with the project. Feedback collected from stakeholders at public meetings, through online surveys, and email/mail/telephone correspondence is tabulated in Appendix C grouped according to the following topics: alignment/river crossing; bridge design; Muttart Stop; wildlife; Edmonton Folk Music Festival; ski club; slope stability on Connors Hill; and general. All of the issues/comments provided had already been addressed in varying ways by the draft environmental assessment that was, by that time complete. No other action specific to those comments will be taken. The final EISA will be posted to the City's website in early August.