

4.0 KEY ENVIRONMENTAL AND SOCIO-ECONOMIC ISSUES

The following are the key project issues identified for consideration in this EISA, based on professional knowledge, regulatory requirements, and concerns expressed by the City and members of the public. This EISA seeks to clarify these issues and determine if they have potential to be project impacts. In that sense, these issues are foundational to impact analysis. Key project issues are organized by subject area. Brief contextual notes are presented, followed by specific issues, in bold type and in the form of questions. Chapter 7 revisits these issues, presents conclusions about which ones represent actual impacts, and summarizes the steps taken toward issue resolution.

4.1 *Valued Ecosystem Components*

4.1.1 *Geology/Geomorphology*

The project area is known to include steep unstable or potentially unstable slopes. For example, slopes proposed for works in Louise McKinney Park have a history of instability. Realignment of Connors Road requires cutting into a steep slope; installation of retaining walls; and installation of subsurface support structures for a new pedestrian bridge.

- **Will construction activities on the north bank and north valley wall, including demolition of the existing Cloverdale bridge impact slope stability?**
- **Does slope instability have the potential to affect the structural integrity of LRT infrastructure?**
- **Can the upper south valley wall (Connors Hill) remain stable following construction?**
- **Is there potential for slope stability issues to cause unexpected delays in construction?**

4.1.2 *Soils*

The history of development in the study area suggests that the area supports a combination of fills and native soils. Construction will occur in both and on steep slopes, raising concerns around erosion potential and soil quality. Concerns associated with native soils include the potential for high-quality topsoils, necessary for reclamation, to become unsuitable for revegetation activities. The presence of historical landfills also introduces the potential for the project to intersect with contaminated fill/soils that require isolation and careful handling.

- **Will project activities trigger surface erosion?**
- **Will project activities cause soil compaction, degradation or loss?**
- **Do contaminated soils occur within the project site? Could the project result in mobilization of contaminants or contaminated soils?**
Will use of staging areas for fuel, lubricants and other supplies pose a risk for soil contamination during construction?

4.1.3 *Hydrology (Surface Water/Groundwater)*

Several aspects of the project have potential to affect river water quality. Construction (isolation works) in the river, in support of bridge demolition and new bridge construction, could have implications for river hydraulics. The new arrangement of bridge piers could result in temporary or permanent alteration of downstream hydrology. A historic landfill is located in the vicinity of the existing and new bridges, creating potential for impact to the river water quality. As with any project, work on valley slopes and instream work creates potential for effects on river sedimentation. Introduction of new infrastructure requires management of increased surface runoff. Specific key issues are as follows:

- **Will the existing river bed, and therefore hydraulics, be permanently altered by placement of fill material for temporary berm construction or by the new pier arrangement?**
- **Will work on slopes in the valley and in the river (for demolition and construction activities) result in release of deleterious substances into the North Saskatchewan River?**
- **Could bridge piers or supporting subsurface structures in the vicinity of the abandoned landfill create preferential pathways for leachate migration?**
- **Will the addition of impermeable surfaces lead to increased runoff and have an adverse effect on existing stormwater infrastructure or river water quality?**
- **Will (new) bridge deck runoff be released into the North Saskatchewan River, resulting in introduction of deleterious substances?**
- **Will LRT maintenance activities adversely affect river water quality?**

4.1.4 *Fish*

The need for demolition and construction work in the river, introduces the potential for alteration to, and possibly degradation or loss of, fish habitat.

- **Will pedestrian bridge demolition temporarily alter river flows and consequently, downstream fish habitat?**
- **Will it be possible to restore fish habitat after demolition and removal of the existing bridge piers?**
- **Will new bridge construction or operation activities introduce deleterious substances into the North Saskatchewan River, either directly or through the stormwater management system, thereby affecting fish habitat?**
- **Will any rare or sensitive fish species be affected by the project footprint?**
- **Will any permanent habitat loss or alteration result from new permanent structures associated with the project?**

4.1.5 *Vegetation*

Clearing of native vegetation and stripping of landscaped areas will be required to accommodate construction work areas, staging and access. Some of that area will permanently support infrastructure but the remainder will be reclaimed to various states.

- **Will the project result in significant disturbance to, or loss of, natural, semi-natural and manicured plant communities?**
- **Will naturally-occurring or ornamental trees on City lands be removed or damaged during construction?**
- **Does the project have the potential to affect rare, threatened or endangered plants or plant communities?**
- **Will vegetation in recognized Natural Areas be affected?**
- **Will the project result in the introduction of or increase in weeds within the river valley?**

4.1.6 *Wildlife*

The downtown river valley supports significant wildlife habitat and, more specifically, many species of wildlife. Construction of the LRT requires removal of some natural habitat.

- **Will critical wildlife habitat be lost?**
- **Will any special status wildlife species be affected by project construction?**
- **Will the project result in wildlife mortality?**
- **Does the project have potential to temporarily or permanently alienate wildlife from available habitat?**

4.1.7 *Habitat Connectivity*

The NSRV is known to be the main spine of Edmonton's Ecological Network and an important regional wildlife movement corridor. LRT infrastructure may involve temporary or permanent reduction in habitat connectivity or blocking of that corridor. Landscaping associated with the project may form new habitat connections. As such, the project has the potential to influence the movement of wildlife through the river valley.

- **Will wildlife movement or habitat connectivity be compromised by construction or operation of the new LRT line?**

4.2 ***Valued Socio-Economic Components***

4.2.1 *Land Disposition and Land Use Zoning*

Within the NSRV, most but not all lands are owned by the City. City holdings can be specific to a City department. Land requirements and land use zoning must be settled prior to project initiation.

- **Will any additional land acquisition be needed to construct the project?**

- **Will land use zoning changes be required?**
- **Will the project cross any other land jurisdictions, requiring right-of-way?**
- **Will any City lessees be affected?**

4.2.2 *Residential Land Use*

In the river valley, the project area and operational LRT will be located very close to some homes within the Quarters, Riverdale, Bonnie Doon and Cloverdale neighbourhoods. Some neighbourhood access roads may be directly affected. Following are the key issues relevant to residential land use.

- **Will construction of the proposed project affect traffic along 98th Avenue or Connors Road?**
- **Will construction of the proposed project affect access to the Muttart Conservatory?**
- **Will construction adversely affect local traffic or local road conditions?**
- **Will any construction activities generate high levels of particulate matter, including dust or airborne contaminants?**
- **Will construction or operation noise adversely affect residents within or at the crest of the river valley?**
- **Will vibrations associated with construction and LRT operation adversely affect local homes or associated infrastructure?**
- **Will the LRT positively contribute to improved air quality in the river valley through a reduction in motor vehicle volumes?**
- **Will the operating LRT and Muttart Stop adversely affect local traffic or parking?**

4.2.3 *Recreational Land Use*

The new LRT line in the NSRV will intersect with several parks, and with the NSR itself, and will take place in the heart of the City's recreational corridor. The area supports local and regional pathway connections both within and outside of the river valley. Many highly-valued recreational activities and programmed events occur in the area, including water-based activities. Key recreational issues are:

- **Will local pathway disruptions during the construction period be suitably mitigated for all users, including those availing themselves of wheelchair accessibility?**
- **Will access to the river, valley parks, the Muttart Conservatory or the Edmonton Ski Club be disrupted during construction and/or operations?**
- **Will the Trans-Canada Pathway kiosk, wishing tree or donor trees or benches require temporary or permanent relocation?**
- **Will gardens be disturbed by construction, and how will this be mitigated?**
- **Will LRT train operations disrupt recreational use in the study area?**
- **Will any long-term losses or alterations to recreational infrastructure occur as a result of the project?**

- **Will construction or operations interfere with special events such as the Edmonton Folk Music Festival and Dragon Boat Festival?**
- **Will bicycle parking be provided at the Muttart Stop?**
- **Will the project result in a loss of green space?**

4.2.4 *Visual Resources*

The river valley provides views from the top-of-bank that are considered locally important, possibly iconic. The introduction of construction and new infrastructure to this part of the NSRV has the potential to temporarily and/or permanently alter these views. The river valley natural areas and landscaping provides pleasing within valley views to park users and nearby residents. The Muttart Conservatory holds special events and attracts many visitors. Views from within the valley and from certain residential areas may also be altered.

- **Will construction activities adversely affect the visual resources of the North Saskatchewan River Valley?**
- **Will the new LRT components affect the quality of views from within the valley or from the top-of-bank?**
- **Will utilitarian infrastructure be screened, and will screening be natural in character?**
- **Will the new LRT components affect the quality of views from residential areas within and outside of the NSRV?**

4.2.5 *Utilities*

Several buried and overhead utilities exist in the project area and the LRT will require installation of new utilities.

- **Will relocation or installation of underground utilities increase the area of disturbance?**

4.2.6 *Worker and Public Safety*

Construction will introduce many incompatible activities in the river valley, including deep excavation, bridge work, in-stream work, above-stream work and work near former landfills. This introduces the potential for hazards to workers. Further, these construction areas will be established within public parks and near established neighbourhoods where public safety must be maintained.

- **Are there any potential interactions between project activities, the project area, and/or identified environmental impacts specific to this project and environment that could create a risk to worker and/or public health?**

4.3 Valued Historic Components

4.3.1 Historical Resources

Archaeological and paleontological resources are valued non-renewable resources protected by legislation. Surface and subsurface historical resources must be assessed prior to disturbance and approval to proceed with construction must be issued by the Province. Key issues are:

- **Are historical resources vulnerable to disturbance by the project or has the Province provided historical resources clearance that indicates that resources are not at risk and clears the project for construction?**
- **Do project activities have the potential to adversely impact any undocumented historic (including paleontological) resource sites or artifacts? Will the Province require monitoring of any subsurface construction activities?**