

Infill Fire Protection Assessment and Fire Risk Assessment of Mature Neighbourhoods

Infill Fire Protection Assessment

The City and EPCOR have implemented a new review process to determine whether water infrastructure for on-street fire protection is needed for rezoning, subdivision and development permit applications. During the review of an application, EPCOR may condition water infrastructure upgrades for the highest use permitted in the Zoning Bylaw. Conditions are based on the City of Edmonton Construction and Design Standards (the Standards). Fire Rescue Services can subsequently complete a more detailed review to address deficient hydrant spacing and fire flows, of which the primary assessment tool is the Fire Underwriters Survey.

The outcome of the assessment either:

- Establishes / confirms the need for water infrastructure upgrades; or
- Provides a technical basis to ease the upgrades conditioned by EPCOR should the fire flows and hydrant spacing be found to be sufficient for the subject site.

This new process can potentially eliminate or reduce large financial barriers for projects that are critical for completion. This new review process was implemented in July 2019. The Fire Rescue Services review team at the City of Edmonton has reviewed approximately 210 files since then. Fire Rescue Services was able to adjust the water infrastructure upgrades for 168 (80 percent) of the files reviewed resulting in an average cost savings of \$250,000 per project and a total avoided cost of \$41.8 Million. This cost avoidance review process reduces the number of projects that require the assistance of the Infill Fire Protection Cost Share Pilot project. Fire Rescue Services is evaluating this assessment process to ensure review timelines are optimized.

Fire Risk Assessment of Mature Neighbourhoods

Edmonton Fire Rescue Services supports City goals for infill development, and has rapidly responded to a need to innovate their review process further. A data-informed, risk-based approach for application of the Standards to infill developments will ensure public safety is not compromised. The risk assessment takes into account the following neighbourhood-level factors and adjusts the fire protection standard to address the relative level of risk to that area:

- Fire Probability
- Fire Consequence

- Hydrant Availability
- Water Network Capacity
- Occupant Sensitivity
- Water Network - Future Utility

The factors are assessed and weighted using a risk-indexing methodology, and the neighbourhood given a relative score. Low scores indicate that adequate fire protection exists and no further analysis is required. A mid range score indicates that further site specific analysis is required through the Infill Fire Protection Analysis process outlined above. A high risk score indicates that improvements in fire protection are required according to the Design and Construction standard.

Application of this risk assessment process is currently underway and has already supported several infill projects in advancing to construction. The outcomes of this process improvement include ensuring a consistent approach to supporting infill development, decreased review timelines/volume, increased transparency and ability to communicate components of fire risk, and a reduction in miscommunication of water standard/requirements with infill applicants.