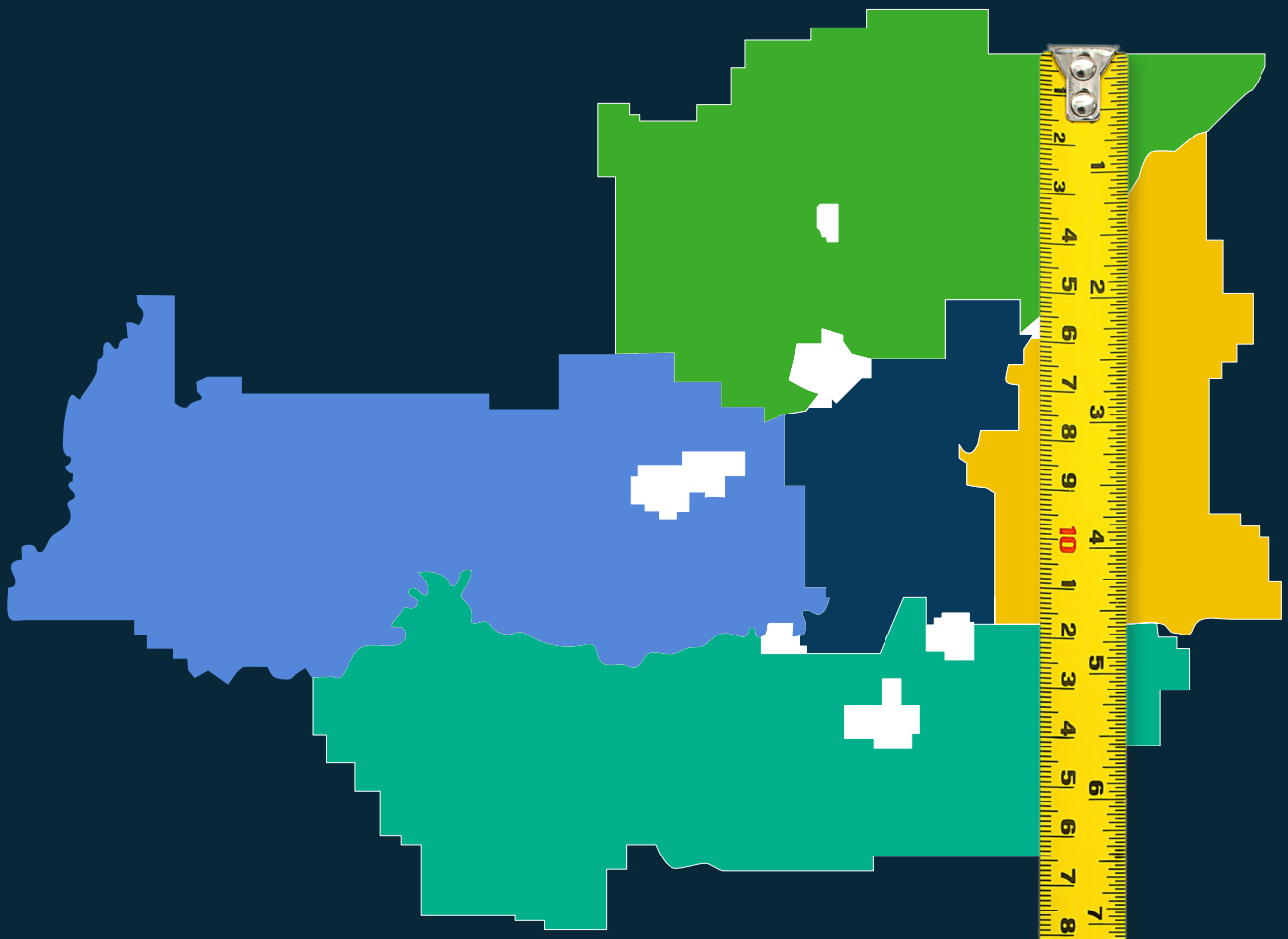


RIGHT-SIZING PUBLIC INFRASTRUCTURE

Opportunities for Change

Urban
Development
Institute
Edmonton Metro

CONTENTS

This research and exploration of issues and opportunities related to public infrastructure is supported by a range of UDI members with expertise in all facets of real estate development. We wish to thank them for their generosity of time and insights shared. This publication would not have been possible without their involvement.

EXECUTIVE SUMMARY

In 2023, the Urban Development Institute – Edmonton Metro (UDI – EM) identified right-sizing public infrastructure requirements as a top advocacy priority.

Right-sizing public infrastructure (or "public infrastructure sprawl") refers to the ever-growing financial, physical, and design-related requirements for public infrastructure in the development of new communities and the redevelopment of existing ones.

Revising the scope and requirements of basic infrastructure and amenities to ensure they are fit-for-purpose is crucial to ensuring the Edmonton Metropolitan Region maintains its long-term economic advantage with regards to housing affordability. After all, it is imperative to note that the municipalities (i.e., the taxpayers) are responsible for the lifetime operational costs of ever-increasing infrastructure requirements. Right-sizing public infrastructure is also equally as critical to ensuring that all city builders are focusing on meeting and achieving goals related to environmental sustainability.

Affordability

Recent research by UDI – EM found that an increase of just $10,000 to the purchase price of an entry level home would price almost 8,000 Edmonton Metro households out of the market. Furthermore, with an increase of $50,000, the number of households priced out would escalate to almost 37,000. As housing affordability in Canada remains an extremely crucial and topical issue in 2023 and beyond, the region has rightfully lauded its relative competitive advantage. However, this local affordability advantage may be easily eroded, and it is important that all city builders are cognizant of market realities. As increased costs are downloaded onto the real estate development industry, it is ultimately the home purchaser who is impacted in the form of escalating prices.

Environmental Sustainability

Addressing climate related issues is a shared goal amongst all city building stakeholders, including the real estate development industry. Therefore, it is imperative that any policies, procedures, and standards implemented by the municipalities and the utility providers fully consider the overall impact on environmental sustainability. As an example, cement production is currently the largest single industrial emitter of CO_2, accounting for approximately 8% of global CO_2 emissions.

Requirements to fully replace (i.e., "rip out") large sections of concrete to address isolated deficiencies must be considered within this context and alternative solutions should be implemented whenever possible. Likewise, the removal of trees or the requirement to transport new topsoil from off-site locations due to overly prescriptive provisions should be viewed through the larger lens of its overall impact on environmental sustainability.

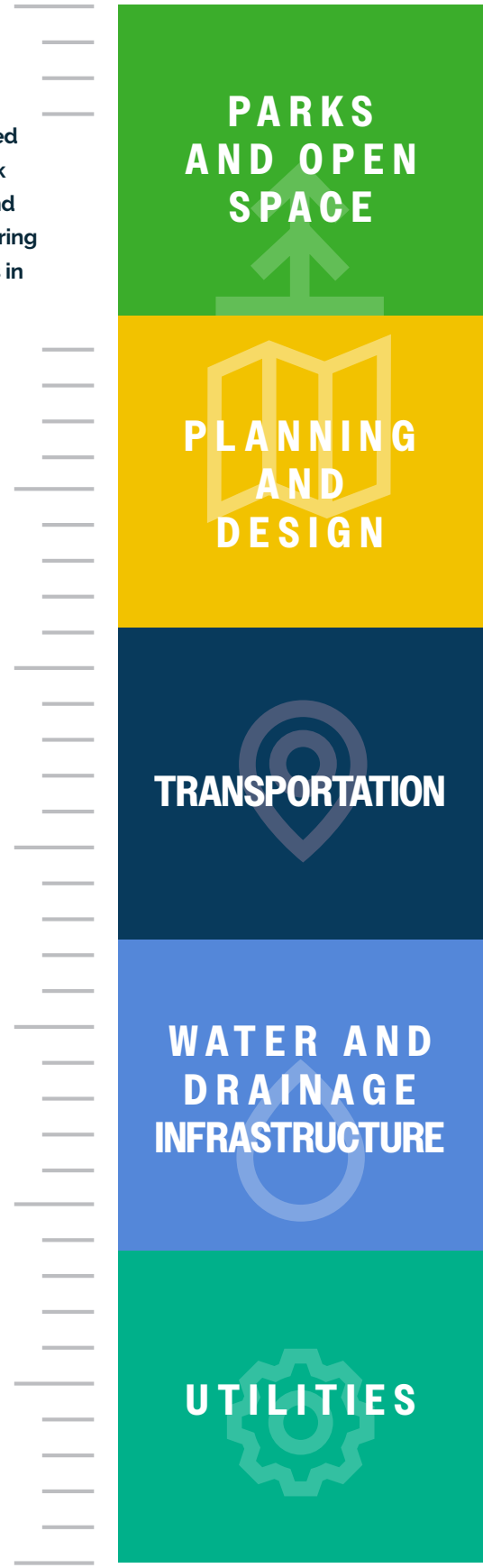
These are only two of numerous examples where city building partners in the region can identify solutions that will curtail public infrastructure sprawl and therefore contribute positively to issues of environmental sustainability.

The Framework

The goal of this document is to utilize and leverage industry expertise in identifying relevant issues that will assist in proactively leading the conversation on the importance of curbing public infrastructure sprawl, and to effect changes in this regard.

To begin this process, 10 strategic opportunities for change are listed in the pages that follow. Included under each issue are the desired outcome, a description of the issue to address, and potential solutions to pursue. This framework is intended to be a living document that may be updated annually. This will ensure that industry, utility providers, public agencies and municipalities have a solid reference point to assist in working together effectively. As city builders we can collaborate by consistently identifying areas where desired outcomes and solutions may be advanced to ensure an economically competitive and environmentally sustainable Edmonton Metropolitan Region.

The issues highlighted within the framework address common, and very fixable, engineering and design concerns in the following areas:



OPPORTUNITIES FOR CHANGE

Concrete Replacement for Repairs at Final Acceptance Certificate (FAC)

PARKS AND OPEN SPACE

TRANSPORTATION

TOPICS ADDRESSED

Parks and Open Space, Transportation

DESIRED OUTCOME

The real estate development industry and the City work together to find solutions that will minimize the concrete that is required to be fully replaced to complete repairs at FAC. This outcome would both reduce overall costs and better align with environmental sustainability goals.

ISSUE DESCRIPTION

Current standards require concrete to be repaired at the FAC stage. This process often involves the entire removal of sections of concrete for repairs – including occurrences with hairline cracks and superficial gouges.

POTENTIAL SOLUTION(S)

- Imposing a financial penalty for hairline cracks or superficial gouges rather than requiring the concrete to be replaced entirely.
  - → The City currently permits this solution for asphalt thickness on roads. Would it be possible to extend this to concrete repairs?
  - → A consideration is that this solution would require an agreement between the City and industry on which types of repairs would fall into this category.
- Utilizing mud jacking as an option to repair settled concrete.
  - → This non-invasive and non-destructive form of repair could be utilized as an alternative to entirely removing concrete infrastructure.
  - → While currently prohibited on new infrastructure, the City of Edmonton currently utilizes this option for repairing its existing infrastructure.
  - → This option is currently permitted by the City of Calgary.
- Utilizing alternate materials for concrete repairs (cracks/gouges) such as elephant armor product.

Filling and Flushing Requirements

TOPICS ADDRESSED

Water and Drainage Infrastructure

DESIRED OUTCOME

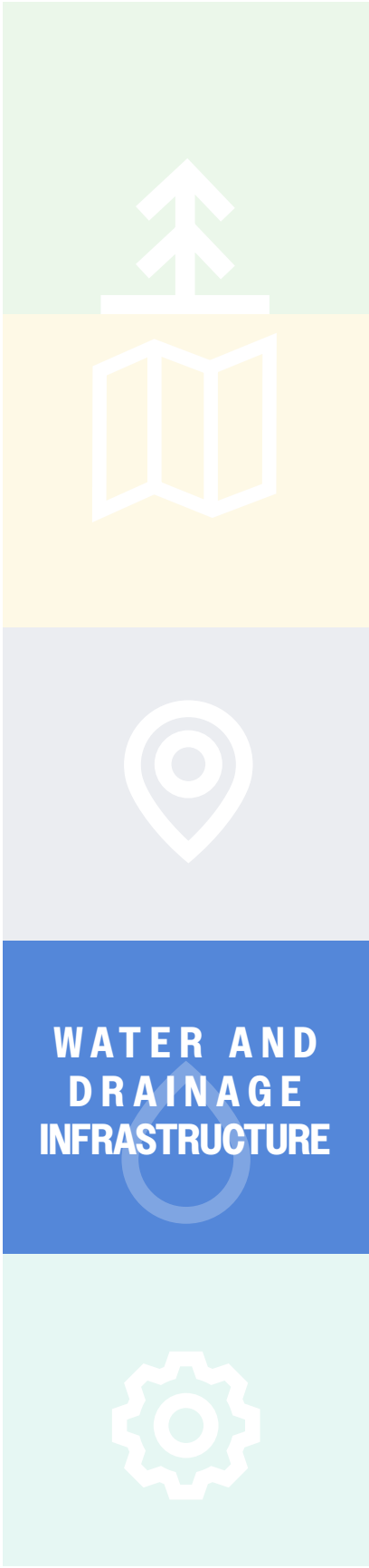
Re-evaluate the current filling and flushing requirements as they are redundant, create additional costs, and require infrastructure that is no longer necessary yet must be maintained by the utility company long-term.

ISSUE DESCRIPTION

- Additional requirements for filling & flushing standards are superfluous (e.g., Manual Air Vents (MAVs) and Additional Flush Points). These may lead to an additional cost of $20K per stage.
- MAV's inject chlorine when prepping a stage to be part of the overall water system. However, they are only for commissioning (i.e., are never used again afterwards). This is infrastructure that EPCOR will have to maintain long-term. These were not required 5 years ago.
- Furthermore, this degrades the quality of the roads because it lies inside the asphalt. There have been examples of requirements to go back into an existing stage and rip out the road for the purpose of chlorinating a 30-meter section of pipe). These requirements must consider not only the cost but the overall environmental impact.

POTENTIAL SOLUTION(S)

- Implement a $2,000 charge per stage for additional water flushing. This would eliminate the need for the expendable infrastructure under current requirements.



Increased Right-of-Way (ROW) Requirements

TOPICS ADDRESSED

Planning and Design, Transportation

DESIRED OUTCOME

ROW requirements are nimble, efficient, and practical to ensure public infrastructure efficiencies are maximized, thereby reducing cost requirements and the environmental footprint.

ISSUE DESCRIPTION

- Increased ROW requirements pose several complications, including (but not limited to):
  - → Wider sidewalks are being required (increased to 1.8m from 1.5m)
  - → Along with the increased cost associated with the larger infrastructure requirements, the 1.8 m sidewalks are creating additional complications as utilities (e.g., transformers) may not fit.
- The requirement to develop Shared Use Paths (SUPs) on both sides of an arterial road when building the first two lanes.
  - → In addition to the increased up-front cost for the developer, the SUPs could be damaged when the future two lanes are eventually constructed. Sometimes this stipulation makes sense but not in every case, particularly if there is no adjacent development on either side (i.e., one SUP will receive little use for 3-5 years). Additionally, there have been cases where a SUP has been "ripped out" after only 1 year to accommodate the expanded construction of an arterial road.
- Increased requests for SUPs on both sides of a collector road.
  - → This either increases the road right of way or removes street parking for residents.

POTENTIAL SOLUTION(S)

- Remove the requirement for 1.8m sidewalks and return to 1.5m.
- Condition a second SUP when development backs onto that side of the arterial (i.e., build the SUP only when the adjacent development warrants it).
- Remove the requirement for parking lanes.
  - → Potentially utilize this space for the bike lane, thereby leading to a narrowing of the cross section without requiring the expanded public infrastructure.

PLANNING AND DESIGN

TRANSPORTATION

PARKS AND OPEN SPACE

WATER AND DRAINAGE INFRASTRUCTURE

Receiving Municipal Reserve (MR) Credit for Public Utility Lots (PULs)

TOPICS ADDRESSED

Parks and Open Space, Water and Drainage Infrastructure

DESIRED OUTCOME

- The real estate development industry would receive partial MR credit for PULs.
- This option is plausible, as per the Municipal Government Act (MGA):
  - → Section 677 of the Municipal Government Act states the following: Despite section 671, a municipality or a municipality and a school board may authorize
    - (a) the construction, installation and maintenance, or any of them, of a roadway, public utility, pipeline as defined in the Oil and Gas Conservation Act or transmission line as defined in the Hydro and Electric Energy Act on, in, over or under reserve land, or
    - (b) the maintenance and protection of reserve land, if the interests of the public will not be adversely affected.

ISSUE DESCRIPTION

- As per Municipal Government Act (MGA) requirements, a developer must dedicate up to 10% of land towards MR (e.g., parks, playgrounds, schools).
- A storm pond is considered a utility and pipes can be run through it (i.e., zoned Public Utility Lot - PUL).
- Wet ponds are not ideal in all locations as they are often over-designed, cannot be used for active recreation, can be dangerous, and have aesthetic issues (e.g., bad smells, algae growth, etc.).
- Through design changes to storm pond infrastructure, dry ponds could be implemented instead of wet ponds.

Receiving Municipal Reserve (MR) Credit for Public Utility Lots (PULs) continued

POTENTIAL SOLUTION(S)

- Creating useful space (e.g., soccer fields) out of dry ponds. If industry could receive MR credit for this dedicated space, a significant amount of money could be saved.
  - → 1 pond is required per 1.25 section of land, but water size restrictions are no longer required. Therefore, one could have multiple dry ponds upstream of the wet pond.
  - → Design a pond used as a PUL with a designated minimum area sized appropriate for programmable space where the real estate development industry could receive partial MR credit, thereby reducing overall land requirements.
  - → A potential design could incorporate a canal on one side acting as a dry creek. It would be sized large enough to handle water from a 1 in 5-year storm event. A current example of this design exists within the City of Edmonton in the Glastonbury neighbourhood.

- The City could encourage public utilities and pipelines to run through school sites and provide MR credit. The surface is programmable, and the utilities will be easier to access for infrequent maintenance.

- The real estate development industry, the City of Edmonton, and EPCOR could work together to bolster programmable park space by programing the surface of underground reservoirs (e.g., Kaskitayo, Mill Woods reservoirs) as these are currently vacant open space.

- The City could look at reducing school site sizes identified in the Urban Parks Management Plan and reducing frontage demands to reduce single-sided servicing and promote density. This would enable more pocket parks that the City has traditionally protested due to maintenance inefficiencies.

- Reducing frontage requirements for storm ponds to reduce single-sided servicing and promote density.

Requiring Bump Outs at Crosswalks and Collector Intersections

TOPICS ADDRESSED

Planning and Design, Transportation

DESIRED OUTCOME

Ensure that bump outs are only used when appropriate and avoid a mandatory requirement at crosswalks and collector intersections.

ISSUE DESCRIPTION

- A bump out – or curb extension – is a traffic calming measure that extends the width of the boulevard and reduces the length of the crosswalk.
- In theory, they are designed to enhance pedestrian safety. However, they may serve to do just the opposite. Therefore, they should not be mandated to be used for all crosswalks and intersections.

POTENTIAL SOLUTION(S)

- Focus on bump outs where they make sense but avoid blanket implementation:
  - → Bump outs may be antithetical to safety, in practice. It is important to note that they create an increased turning movement for a bus that forces it into an adjacent lane, thereby creating potential safety hazards.
  - → Furthermore, bump outs require increased concrete. They are often forced to be replaced at FAC because they are constantly damaged by city snow clearing machinery. This leads to increased operating costs to the municipality (i.e., the taxpayer) in the future. Additionally, increased use of concrete is antithetical to environmentally sustainable goals.

Shallow Utility Items – Street Light Bases

TOPICS ADDRESSED

Utilities

DESIRED OUTCOME

Shallow utility requirements are not overly cumbersome and therefore consider the cumulative impact on costs. Additionally, the City works together with the real estate development industry on proposed changes to ensure all viewpoints are fully considered.

ISSUE DESCRIPTION

- Street light bases
  - → Following an internal APEGA audit, the required street light bases have increased nearly 200% in size. This has resulted in an additional cost of $2-5K per pole. Not only in material cost but increasing the cost of installation (labor and equipment).
  - → Furthermore, there have not been any negative issues with the previous base. This is a prime example of an unnecessary cost increase.

POTENTIAL SOLUTION(S)

- Design the poles and the bases to work with the old bases as there have not been issues with failures of the old standard.
- Working with industry to garner technical review and support, which would clarify the actual costs and practicality of various changes.

UTILITIES

Temporary Turnarounds

TOPICS ADDRESSED
Transportation

DESIRED OUTCOME
Remove the requirement that temporary turnarounds be completed prior to receiving Construction Completion Certificate (CCC).

ISSUE DESCRIPTION
- Temporary turnarounds are required for emergency vehicles access purposes.
- Previously, completion of temporary turnarounds was a requirement prior to receiving FAC. However, this has now been pushed back in the process to CCC.
- Developers are often required to install a temporary turnaround in October, only to have it removed the following May and with minimal use. This comes at a financial cost of $75 - $80 K in addition to the environmental cost of transporting gravel and then packing it into the ground.

POTENTIAL SOLUTION(S)
Find alternatives to temporary turnarounds prior to CCC.

PARKS AND OPEN SPACE

PLANNING AND DESIGN

Topsoil Efficiencies

TOPICS ADDRESSED

Parks and Open Space, Planning and Design

DESIRED OUTCOME

Topsoil requirements are implemented to maximize efficiencies, thereby reducing costs, and focusing proper stewardship of environmental sustainability.

ISSUE DESCRIPTION

Topsoil requirements can be overly prescriptive or may not be implemented efficiently.

POTENTIAL SOLUTION(S)

- Relax overly prescriptive topsoil specifications and testing, and find ways to utilize site-specific existing topsoil as often as possible:
  - → More recent topsoil specifications are overly prescriptive (i.e., requiring a perfect balance of PH, organics, sand, clay, etc.). Thisf is leading to new topsoil being imported from off-site locations. Additionally, the removal of the existing topsoil creates a requirement for it to be trucked to an offsite location.
  - → Importing topsoil from off-site locations leads to substantial cost increases. It also conflicts with environmental sustainability goals when considering the carbon footprint of transporting the imported topsoil while disregarding the topsoil that is already on site.
  - → Finding ways to utilize existing topsoil on site that has been stripped from the land should be the over-arching goal.
  - → An option is to possibly examine changing planting materials or grass mix that would better respond to the topsoil found on site.

- Increasing topsoil (in relation to the size of storm ponds) to reduce the size of infrastructure:
  - → If the required topsoil on homeowner lots was increased from 6 to 12 inches, more water would be absorbed into the ground during rainstorms. This would reduce the runoff coefficient and conceivably could lead to smaller pipes and storm water management facilities (SWMFs). Less runoff would not only decrease the required downstream infrastructure, but it is also better for plant health.
  - → Furthermore, the topsoil used is often taken directly from the subdivision being developed (i.e., on-site). In other words, it stays on the land that it was taken from. Therefore, there is no need to truck in topsoil from an off-site location.
  - → There are already examples where industry has implemented deeper topsoil depths. E.g., Livingston in Calgary. Every lot has a foot of topsoil instead of 6 inches. This changed the runoff coefficient.

Wetland Retention Policy

PARKS AND OPEN SPACE

PLANNING AND DESIGN

TOPICS ADDRESSED

Parks and Open Space, Planning and Design

DESIRED OUTCOME

Wetland retention issues consider the potential negative impact on density, design inefficiencies, and the increased costs associated with engineering.

ISSUE DESCRIPTION

Wetland retention is contradictory to environmental sustainability goals and creates major land use and servicing inefficiencies.

POTENTIAL SOLUTION(S)

Administration should ensure that any policies dealing with wetland retention consider the potential negative impacts on design and density along with servicing inefficiencies.

Wildlife Crossings

PARKS AND OPEN SPACE

TRANSPORTATION

TOPICS ADDRESSED

Parks and Open Space, Transportation

DESIRED OUTCOME

Relax requirements or seek alternative solutions to wildlife crossings.
At a minimum, provide a clear and transparent rationale for their construction.

ISSUE DESCRIPTION

- Wildlife crossings in new developments may be required by the City but tend to create several issues that lead to delays in the design and approval process.
- The crossings are large in scale and expensive. They can also have unintended consequences as previous iterations have ultimately served as "a funnel" for various predatory animals. This is a prime example of good intentions going astray.
- Currently, there are no standards and requirements are unknown. This leads to a lack of transparency and escalating costs.

POTENTIAL SOLUTION(S)

Find alternative solutions to wildlife crossings that are more cost-prohibitive while still focusing on creating an environment that does not disturb wildlife.

NEXT STEPS

The industry that we work in, and the assignment before us, which is all about creating great places and spaces for people to live, work, and play, is dynamic, complex, and ever evolving. As city building partners, we are often asked to share perspectives and expertise on a range of municipal issues and challenges. Within an ecosystem of many different members, this document serves as a consolidation of our industry's top issues and challenges related to public infrastructure sprawl – and a guidepost for which we can continue to reference overtime. Moving forward, UDI will be working with City of Edmonton Administration, utility providers, and other stakeholders, to collaboratively address the opportunities for change identified in this document. At the end of each year, we will seek to provide an update to our members on the progress made to date.

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The Urban Development Institute – Edmonton Metro is a non-profit, member-driven organization representing leaders in the real estate development industry in all communities throughout the Edmonton Metropolitan Region. Our members are development companies and the professionals involved in our industry, including planners, surveyors, landscape architects, engineers, contractors, finance managers, and others. Together with municipalities who regulate and set policy related to land use, we are important city builders. We build the communities where people live, the roads they travel, the buildings they work in, and the parks where families gather.

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