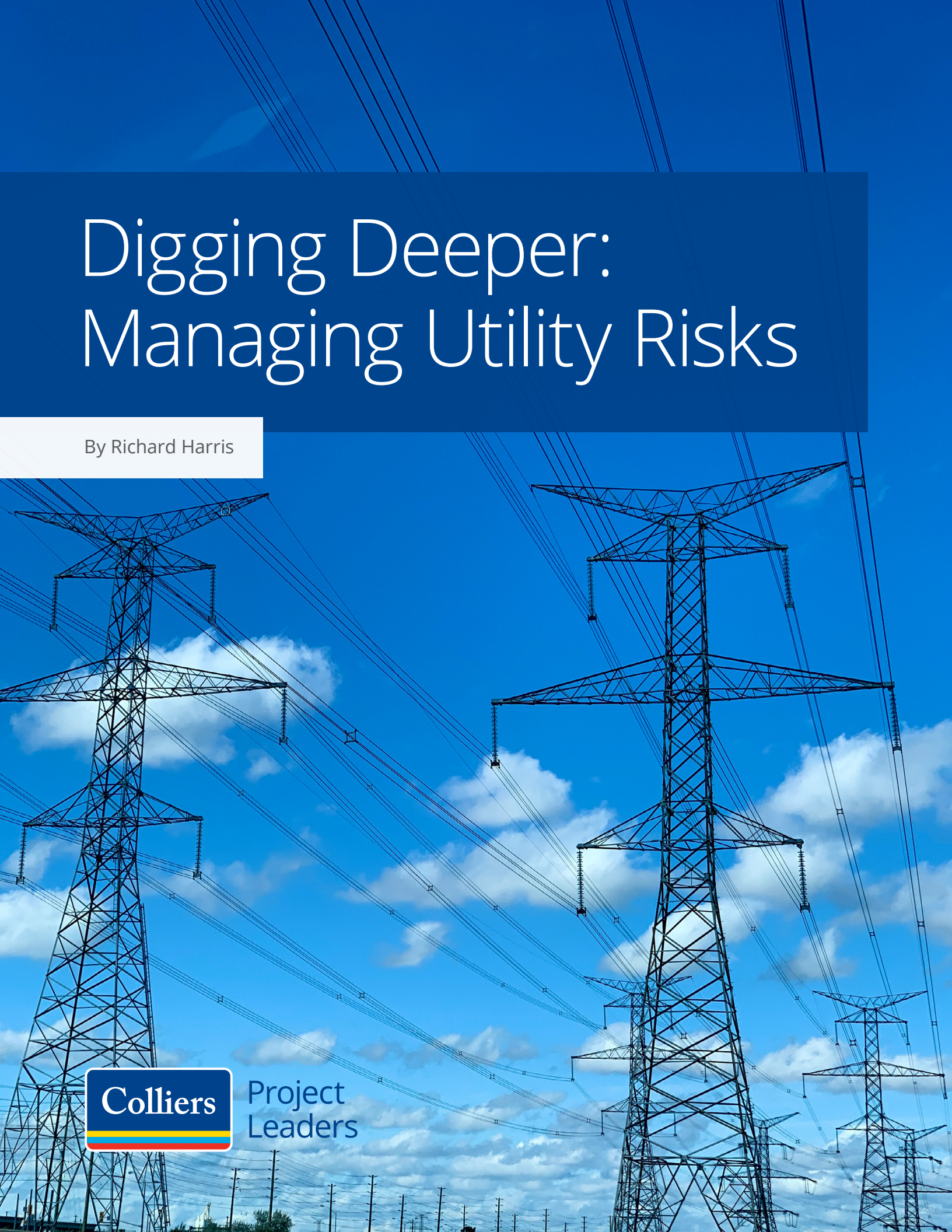
Digging Deeper: Managing Utility Risks

By Richard Harris



Colliers Project Leaders

Beneath the ground or towering overhead, every urban centre has exposed and hidden networks of cables and pipes that keep us connected.

If a construction project jeopardizes this delicate utility network, the community risks losing the power, telecom, water, gas and drainage services that are so integral to our daily lives and businesses. The risks to the project itself also increase.

Coordinating and managing utilities poses one of the largest risks in urban construction today. Before you ever break ground on a project, you need to know exactly what exists underground and overhead, and how you'll manage that infrastructure. Commonly referred to as utilities coordination, and a key component of any enabling works strategy, this pre-planning work involves many stakeholders and requires a high level of partnership and accuracy to succeed.

Despite various planning and utility relocation guidelines, the challenges surrounding utilities coordination exist across construction projects in every Canadian city. By exploring examples of real-world risks and approaches to utilities management, we can identify the tactics that are working well and, in time, build a concrete set of best practices to better manage this complex issue.

What is utilities coordination?

The Transportation Association of Canada (TAC) defines utilities coordination – or utilities management – as "the coordination of projects between public land authorities and utility service providers (**Read: Transportation Association of Canada (TAC)**). [It's a] process [that intends] to provide early identification and resolution of possible delays and confusion that may add unnecessary complexity and cost to a project."

Consisting of key planning, design and construction phases, utilities coordination is a project in and of itself. Ideally complete in the years leading up to the main construction project, utilities coordination enables the project team to begin construction with clear pathways underground, overhead and at ground level.

It's the relocation of utilities that adds complexity to a project. The laws, agreements, rules and regulations that grant stakeholders, cities or utility agencies right-of-way varies based on project and location, leaving project teams to manage utility relocations on a case-by-case basis, without a clear set of best practices to support them.

Recognizing the need to minimize conflicts and encourage consistency, TAC released Guidelines for Coordination of Utility Relocations in June 2016 (**Read: Guidelines for Coordination of Utility Relocations!**). These guidelines help to define and provide clarity to the roles and responsibilities of public road authorities and utility agencies, however five years later we're still faced with project-specific questions. The Government of Ontario issued a statement in February 2020, indicating that it's working with utility agencies in the Greater Toronto Area to provide stronger coordination for transit construction projects – effectively affirming the challenges that surround utilities coordination (**Read: The Goverment issued statement**).

Why is utilities coordination challenging to manage?

Major projects rely on multiple utility agencies and stakeholders coming together to work on a project that is not of their creation. Depending on right-of-way, relocating utilities can come at the expense of a utility agency and, at times, may not align with the upcoming major project's objectives and priorities.

To complicate things further, there's a lack of consistency in how public land and utility agencies operate. The responsibility for utilities management varies depending on a project's construction approach – often leading to another important question, "How can we best manage utility risks?"

Take for example the headline news we've seen about fiber optic, gas mains, watermains and other utility infrastructure that has been adversely impacted by construction, causing major service disruptions, traffic delays or worse. A Light Rail Transit (LRT) project in eastern Canada faced these challenges. To mitigate roadway closures, a section of the project was bundled with a highway expansion project. With multiple stakeholders involved, the project teams and road authorities came together to complete the necessary enabling works. Despite best efforts and cooperation from the utility agencies, the contractor still struck a gas main during construction – leaving the highway inaccessible for several hours while the pipe was repaired.

So, how did this happen? The design and construction works were well coordinated, but the discovery that the as-built drawings on file were slightly off came too late. As-builts are vital to locating existing utilities. Many municipal and utility agencies keep them readily on file for this purpose. The accuracy of these files, however, can vary based on the agency's administrative and quality assurance protocols.

Was this avoidable? Yes.

Utility coordinators commonly face challenges due to inaccurate as-builts, vague or imprecise utility locates and unclear expectations surrounding the scope of major project work.

Inaccurate or incomplete as-builts are one of the known risks that a project may face. Although not the sole cause of coordination challenges, uncertainty, inconsistency and lack of rigour surrounding who should own and manage utilities coordination, as well as related issues resulting from insufficiently informed contracts, can lead to project delays and high project costs. As a result, contractors are becoming more and more reluctant to bid on major projects where they are expected to assume utility risk, as the stakes are just too high.

When utilities coordination goes wrong

This experience is a common example of what can go wrong with utility coordination, despite the best of intentions. But what happens when planning and communications break down or self-interests conflict?

When it comes to utilities, the preliminary planning and enabling works that go into a project can greatly impact the overall schedule and budget. A project's enabling works rely on the successful engagement and cooperation of all impacted utility agencies, road authorities and/or stakeholders, such as rail and transit operators. In some cases, there is very little guidance on how to best engage these agencies, so it's not only natural, but a fiduciary duty, for each entity to focus on priorities and projects that serve their respective interests.

This is the case for a major program of work in central Canada, where utilities coordination has been on the critical path and continues to have the most significant impact to cost and schedule. The utility agencies involved provide vital infrastructure to support the city, but are governed by complex regulations and agreements that are often outside of the direct control or influence of the municipal project owner.

In the earliest stages of design development, three project teams came together to identify and manage the need for utility relocations and enhancements as a key part of the program's scope of work. Despite this early acknowledgement, the program has progressed substantially through design and has been under construction for more than two years, with issues such as agreements for cost sharing, coordination and integration of utility design outstanding. Discussions with utility agencies started early, but most of the identified solutions extended project timelines and exceeded the owner's budget. Protracted negotiations began with the expectation that the program owner would fund most of the costs, including some of the replacement or removal of aging utility infrastructure. Design restrictions imposed by the utility agencies, such as tethering to existing structures or installing below new construction, limited technical solutions. Ultimately these complications resulted in a need to seek legal representation before governing utility tribunals to reach a resolution.

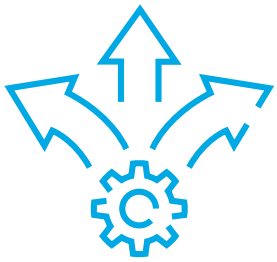
Regulated utilities control both the design and construction of their infrastructure. Consultants and contractors working under their direction are not responsible to the major project team for coordination, budget or schedule. This reliance on external entities adds schedule risk, as they do not share the same urgency to adhere to major project's timelines. This translates into a need for continuous follow-up with

external stakeholders to ensure their solutions can be implemented while also mitigating schedule and cost impacts to the core program of work.

Utility coordination has both complex technical and legal requirements. Understanding the application and impact of pre-existing utility agreements, overarching utility plans and stakeholder priorities needs to be factored early into your project plan early on along with risk mitigation strategies.

The uncertainty, inconsistency and lack of rigour surrounding who should own and manage utilities coordination is an ongoing issue. This is something we hope to learn from, and avoid, moving forward.

What's been working well?



With so many stakeholders, agencies and regulatory authorities typically involved, a utilities coordinator or coordination team must maintain clear and consistent lines of communication. The examples we've explored so far represent two very different approaches – one consisting of three separate teams coming together to coordinate the utilities on a project, and the other placing the coordination responsibility on a single entity

Simplifying the coordination approach and limiting responsibility to a single entity gives everyone on the project a single point of contact for communication. If the entity responsible for coordination can dedicate a team to focus solely on utilities management, all parties can benefit. Without the added pressures of managing utility risks, stakeholders, consultants and contractors can focus on their areas of expertise and the primary project goals.

Identifying a single entity to manage utilities also enables that team to consider the bigger picture. In urban centres, there are often several construction projects underway or in early planning stages, which can affect your coordination approach. By considering current and future projects in the area that are likely to draw more power or place a higher strain on the existing utility infrastructure, the coordination team can approach utility agencies with a comprehensive plan that's more strategic and likely to benefit all parties.

This is the approach a western Canadian city is using for its new LRT project. The city acknowledged the cost and schedule risk associated with delivering the utility relocation work as part of its main contract. On this basis, it selected a construction management approach, engaging the expertise of the contracting community in the pre-construction phase and allowing for single entity coordination of third-party utilities. Working as an extension of the city, the construction manager is able to leverage the city's pre-existing relationships with third-party utility agencies, which is helping them achieve desirable results.

While this downtown project is a significant undertaking, it is not the only major project in the city. From beginning to end, the term of many major transit projects is so long that other impacting projects must be considered. By factoring in other projects happening or upcoming along the alignment, the team can better interpret future utility needs with each provider. This approach is necessary to mitigate the risk of continuous utility rework and ongoing disruption in the coming years.

In most major urban centres, cost sharing is governed my municipal bylaws. This may reduce the cost risk to the owner, but working collaboratively with third-party utilities can further reduce the broader cost impacts of disputes, delays and claims.

Minimizing risks

There are several steps project owners can take to reduce utilities coordination risks.

1. **Start early:** enticing all parties to share their five to 10-year capital plans is a good starting point. Why wait until the project is announced and funded?
2. **Dedicate a team:** identify and dedicate a team to manage utilities coordination and invest in your relationships with third-party utility providers, regulatory agencies and impacted stakeholders. Consider creative strategies such as seconding and co-locating utility staff to effectively engage and align third parties.
3. **Invest in locates/as-builts:** survey, map, locate and update all utility records in the right-of-way and vicinity of the project. Use technology, such as GIS and GPS, to improve accuracy and transferability.
4. **Have a plan:** build a utilities-specific risk management plan that identifies solutions to mitigate both known and unknown risks. Update and report on the plan regularly over the life of the project.
5. **Define your budget:** outline anticipated relocation costs based on your plan and allocate contingency funds for both known and unknown risks. Be cognizant of existing agreements and be transparent with stakeholders, third-party utilities and funding partners regarding cost responsibility. Consider a project contingency for unknown utility risks that falls in line with existent or non-existent agreements between the parties.
6. **Prepare for conflicts:** familiarize yourself with the agreements, laws, regulations and right-of-way proceedings related to utilities coordination. Are exceptions warranted for the major project? Prepare a governance plan to clearly define the roles, responsibilities and contractual obligations of each stakeholder, third-party agency and authority. Identify a swift means for escalation and resolution that is neither political nor legal.
7. **Avoid transferring risk to the contractor:** allow the contractor to manage utility relocations only if they have negligible risk, is within your right-of-way, and is more efficient and cost effective for you to do so. If this is not the case, the responsibility of the relocate should default to the owner, thereby minimizing project risk

Engaging with a third-party coordinator

Although trends show that owner-managed utilities coordination warrants the most favourable results, what if the city – or its design consultant – lacks the capacity or resources to dedicate to this work for a new capital project?

A third-party coordinator can take full responsibility for the coordination between stakeholders, and various agencies. Privy to the project's goals and objectives, they can mitigate risks and stay singularly focused on delivering the project successfully with no self-interest.

Engaging an experienced partner early on in the planning stages can be a benefit. Owners planning to take this approach should consider:

1. **Capacity:** an owner's representative team alleviates the need to dedicate scarce internal resources to a single project, and away from ongoing programs. This flexible and cost-recoverable solution can supplement your project team as needed.
2. **Integration capability:** the technical design and construction solutions are the easy part of coordinating utilities. The responsibility of onboarding, managing, engaging and coordinating all third-party relationships, multiple in-house departments, project stakeholders and funders is what will matter the most in the end. Working as a dedicated, single point of contact, an owner's representative brings a high level of communication and relationship management. An effective owner's representative can provide the leadership and quality of care needed to help mitigate utility risks.
3. **Risk management** is an integral part of any project. Utilities coordination is a major risk. It requires a dedicated team that is resourced and held accountable through project governance with stakeholders.

Although there's no panacea or silver bullet to solving this large and complex issue, utilities coordination is becoming widely recognized as a key project component, and as one of the largest risks facing major urban construction projects today. By listening and learning from others, we can build on practices that are working well and avoid the pitfalls of our predecessors. By doing so, we can develop a measured approach to managing utility risks in a way that serves the best interests of the project and all stakeholders.

About the author

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Richard Harris has 27 years' experience working as an owner's representative, procurement specialist, project leader and consulting engineer, serving both public and private sector owners. He leads Colliers Project Leaders' Infrastructure team across Canada and is a certified Project Management Professional and member of Engineers and Geoscientists of BC.

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