Zero damage - Zero harm - Zero disruption

Discussion Paper

PAPER TO PORTAL:
Australia's Call to Action on Underground Data

Before You Dig Australia
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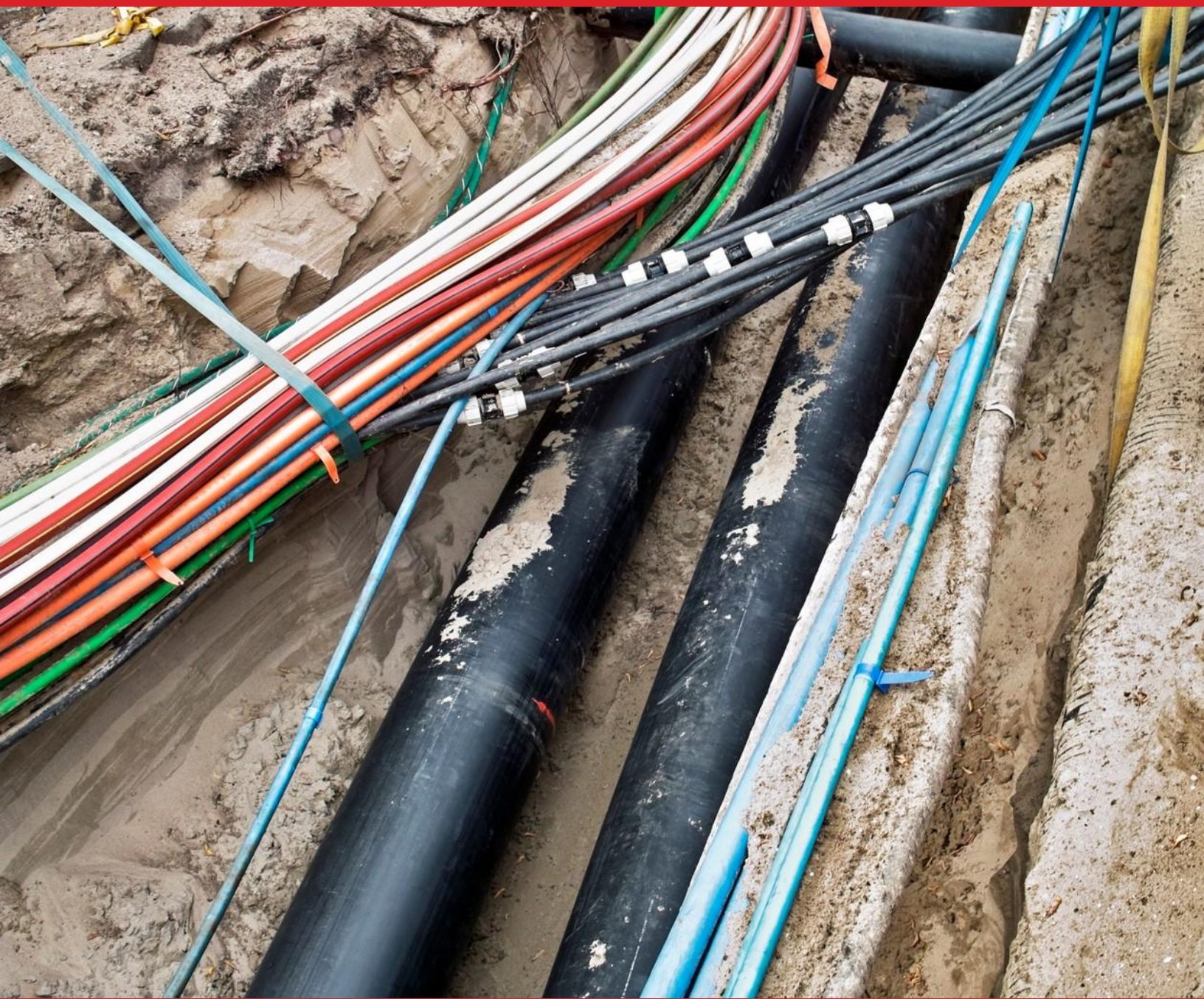

Discussion Paper

Paper to Portal:
Australia's Call to Action on Underground Data

At a glance

Despite advances in digital technology, Australia's infrastructure sector continues to rely heavily on paperwork to manage excavation risks. While forms, permits, and safety procedures are well established, the underlying data that informs them is often inconsistent, outdated, or incomplete. We ask field crews to operate safely, but send them into complex environments with fragmented PDFs, and plans marked "indicative only," and vague disclaimers. In this system, accuracy is optional yet risk is real.

This disconnect has tangible, nationwide consequences. BYDA's economic modelling shows that over 15,000 utility strikes are reported annually, costing the country an estimated $4.6 billion per year. These incidents delay major public infrastructure projects, reroute traffic, knock out services, and cause cascading impacts across utility supply chains. Often, they are entirely preventable.

But despite current industry claims, the solution is not just more training or better process compliance. We need a system-wide shift: from administrative control to data confidence. From paper artefacts to real-time, digital asset intelligence. From siloed effort to shared national data via industry owned portal infrastructure.

The choice before us is clear. Either we design a governed, secure, and scalable system for underground information or, we allow uncoordinated, vendor-led workarounds to shape the future for us.

Better information, fit-for-purpose, current, and verifiable, isn't a luxury. It's a safety control, a productivity lever, and a public expectation.

> **More than 15,000 utility strikes reported annually cost the Australian economy an estimated $4.6 billion.**

Why better information matters: Costs, Consequences, and Credibility

Each underground utility strike is a data failure. Whether it's a ruptured water main or a severed fibre optic line, it starts with missing, inaccurate, or hard-to-use information. Yet, for too long, these incidents have been treated as isolated mistakes rather than systemic symptoms of a workflow relying of hundreds of pages of disconnected paperwork for every request for underground data.

The stakes are high. According to BYDA's 2024 economic report[1], Australia suffers more than 15,000 reported strikes per year, with many more going unreported. The average direct cost of repair is conservatively estimated at $9,000 per strike, but the real cost balloons to $4.6 billion every year across all strikes across Australia when social and economic disruption is factored in.

This includes emergency callouts, halted projects, diverted traffic, worker injury and downtime, and ripple effects on local businesses and residents. A single fibre cut may knock out internet and EFTPOS across hundreds of premises. A damaged water pipe may close a childcare centre and delay construction by days.

With the construction sector under pressure to deliver more with less, these aren't just safety failures, they are productivity killers. More critically, they erode public trust. Communities are losing patience for repeated disruptions that stem not from technical complexity but poor information management.

When project teams are forced to make educated guesses or rely on "mark-out theatre," risk multiplies. Good data isn't about convenience – it's the foundation of safety and performance.

Why we're stuck: Six barriers to better information

Despite strong safety intentions and procedural maturity, the industry remains stuck in a cycle of reactive risk management. On paper, everything aligns: permits, Safe Work Method Statements (SWMS), contractor inductions. But in practice, we often start with a data deficit.

Why? First, **administrative controls have become our comfort zone**. They are auditable, repeatable, and appear to meet compliance needs. A toolbox talk can be logged. A permit can be signed. But the accuracy of an underground asset plan? That often goes unverified. "Find it in the field" has become the default mitigation.

Second, **there is no legal obligation for data accuracy**. Asset owners respond to Before You Dig enquiries, but they are not required to guarantee the quality of their data. Disclaimers shift the liability downstream. Disclaimers and vague asset plans effectively shift the burden of risk onto those breaking ground: contractors and field crews, who are expected to manage safety without being given reliable information to do so.

Third, **the financial and operational consequences of these failures are dispersed**, rarely appearing on the balance sheets of the organizations best positioned to prevent them. The community bears much of the burden through traffic disruption, utility outages, and repeated excavation. The costs are spread across households and businesses, never landing clearly on any one ledger. That invisibility makes inaction easier to justify.

Fourth, **leadership inertia persists**. Changing data quality practices or governance models is seen as a high-risk move. There's more reputational downside in pushing for reform than there is in maintaining the status quo.

Fifth, **myths about technical and legal obstacles discourage innovation**. Concerns around cyber security, liability, and data sovereignty are legitimate but manageable. Other nations have solved for these. We can too.

Finally, **construction and utility sectors are chronically out of sync**. Projects move fast. Utilities plan slow. The result is that data is stale by the time it's used and when crews discover errors, there's no structured way to correct them.

> **Good data isn't about convenience – it's the foundation of safety and performance.**

This isn't resistance in the form of "no." It's resistance disguised as process, prudence, and risk aversion.

The policy and public context are rising in urgency. Regulators and the public are raising the bar. Compliance with the process is no longer enough. Expectations are shifting toward outcomes. Specifically, whether underground information is accurate, current, and acted upon.

The Security of Critical Infrastructure (SOCI) framework has sharpened focus on data governance. Infrastructure operators are now expected to manage business-critical data with full lifecycle accountability. That includes underground asset data, especially when errors can lead to widespread outages or safety incidents.

Work Health and Safety (WHS) law is evolving too. Under the model Code of Practice for excavation, PCBUs must take all reasonable steps to identify and communicate underground risks. Merely issuing a permit is no longer seen as meeting that duty if the supporting information is out of date or unreliable.

Community expectations are rising even faster. After high-profile failures – blackouts, burst mains – the questions will shift from "Did you do a BYDA referral?" It's "Did you, as the asset owner, know the asset was there? Was your asset data fit for purpose?". The public appetite for repeat disruption is low. So is tolerance for finger-pointing after the fact.

These regulatory and social shifts point to the same outcome: information stewardship is no longer optional. It's a shared responsibility and a reputational risk.

What will actually move the needle

What we need is not a top-down overhaul, but a pragmatic path forward. One that balances assurance with agility and enables change without disrupting essential operations.

Start by defining "fit-for-purpose" information. That means asset data that meets the specific needs of its use case. For excavation, that could mean positional accuracy within 10cm, as mandated in parts of Europe. For planning, perhaps a broader tolerance, but with clear metadata showing source, age, and confidence.

Next, build and adopt minimal shared standards. We don't need one platform to rule them all. But we do need a small, interoperable set of data attributes: asset type, location, accuracy class, verification date, and update history. These can be federated across systems while still enabling a national view.

Establish a "feedback-to-fix" mechanism that lets contractors and locators submit verified corrections. Those corrections should be logged, reviewed, and, where validated, used to improve source data. This creates a learning system, not just a reporting one.

Three key interventions could reduce strikes by 30% - harmonised laws, a national digital registry, and mandatory utility risk training

Provide credible assurance. Organisations won't participate if they don't trust the process. Sovereign data hosting, role-based access control, immutable logs, and independent governance all help create a safe environment for collaboration.

Finally, make improvement visible. Publish anonymised indicators: update frequency, correction rates, accuracy distributions. Don't shame underperformers but celebrate improvement. Show the sector learning and improving in public.

The economics support this. BYDA's modelling shows that three interventions: harmonised laws, a national digital registry, and an uplift utility risk training across the construction sector, could reduce strike incidents by well in excess of 30% and save the national economy $1.38 billion per year.

Learning from Google Maps: A Model for Trust, Feedback, and Scalability

The transformation we need in underground information isn't unprecedented, it's already happened above ground.

Consider Google Maps. When it first launched, it was far from the highly trusted, real-time tool we now rely on daily. It began with incomplete road data, static maps, and patchy coverage. But over time, Google Maps introduced structured feedback loops: users could report missing roads, flag errors, and suggest edits. GPS data from mobile users helped validate real-world conditions. With each use, the system improved. Today, Google Maps supports global logistics, emergency response, tourism, ridesharing, infrastructure planning, and even autonomous vehicles. It's deeply embedded in how the modern world moves and coordinates. And notably, despite being widely used and highly visible, it has generated little to no public concern about cybersecurity. That's because it's designed for purpose: with limited scope, layered access, and transparent updates that build trust over time.

The same principles apply to underground utility data. We don't need competing systems. We need a single, trusted backbone. BYDA is positioned to lead this role, supported by a common framework: shared language, consistent metadata, auditable update histories, and governed access. With these foundations, information can move securely and purposefully, across projects, organizations, and jurisdictions, while maintaining cyber controls, compliance, and public trust.

Most importantly, we shouldn't wait for a failure or crisis to force change. The foundations already exist: tested systems, national coordination, and proven use cases. What's missing is commitment. Progress doesn't require reinvention; it requires smarter, more connected use of what we already have. The opportunity is here now, to lead with intent, rather than react under pressure.

If Australians can trust Google Maps to guide them through complex urban networks in real time, without raising alarms about data misuse or security, then we can build a similarly trusted, purpose-built system for underground asset information. The public expectation is already there. The technology is proven.

When the right controls are in place, sharing information enhances safety, while withholding it only increases risk.

Digital disruption is already happening

We're standing in the middle of a digital transformation in infrastructure, and it's accelerating. This isn't a conversation about future trends. It's happening now on real projects, with real technology, and real consequences for those not ready.

From 3D spatial data integration to AI-powered scheduling, from digital twins to autonomous excavation, the sector is embracing new tools that compress timelines, reduce risk, and demand higher-fidelity data from every upstream source, including utilities.

These technologies rely on precise, real-time, interoperable information. Without that, the tools don't work. You can't run a digital twin on approximate PDFs. You can't feed a machine learning model with outdated shapefiles. And you certainly can't coordinate cross-sectoral builds using siloed, low-confidence maps with unknown provenance.

Digital disruption isn't the threat—it's the tide. The threat is being left behind.

Examples are everywhere. Major state transport projects now use integrated BIM models with embedded utility data. AI is helping contractors sequence works more efficiently, but only if the underground reality matches the digital map. Autonomous trenchers are trialled across urban corridors, but they need trusted inputs or they fail. The opportunity is huge, but only if the data layer evolves alongside the tools.

The risk? If we don't evolve underground data, we'll either:

1. **Be left behind**: projects bypass legacy systems and work around poor information, or
2. **Be locked in**: proprietary vendor solutions emerge without standards, governance or portability.

The opportunity? Australia already has BYDA: a neutral, nationally trusted, not-for-profit platform with 15 million referrals annually and deep industry ties. We can lead this shift. But we must act with urgency and coordination.

The path forward: BYDA's Digital Utility Portal (BDUP)

The BYDA Digital Utility Portal (BDUP) is how we step into the future: not by replacing everything overnight, but by building a smarter front door for early-stage project planning and design.

The BDUP is a secure, interactive, digital interface that allows users to view and query underground assets in real-time. It's designed not for dig-day, but for the earliest project scoping phases, when major decisions are being made about layout, risk, and coordination.

Right now, users receive 20 different PDFs from 20 utilities, easily adding up to hundreds of pages of information to process for every request. Instead, with the BDUP, users get one digital view of a site. With positional metadata, disclaimers, verification status, and asset owner details embedded, the BDUP enables faster, smarter decision-making and risk management.

It's been developed in partnership with asset owners, designers, contractors, and regulators. The pilot in Greater Sydney has already proven it can support hundreds of map requests, and feedback from users is strong: this tool saves time, reduces risk, and supports better planning.

Why does it matter? Because we're running out of slack in the system. Our cities are denser, our projects faster, and our expectations higher. BDUP provides the platform to coordinate early, resolve conflicts early, and reduce the strike rate before the job even hits procurement.

For asset owners, BDUP also means fewer referral requests, lower admin costs, and higher-quality engagement with major works. And with secure hosting, role-based access, immutable audit logs, and SOCI alignment, the system meets today's cyber and privacy expectations.

The portal doesn't need to replace current systems—it complements them. It gives the sector a digital capability that fits our next chapter.

> **The BYDA Digital Utility Portal is how we step into the future…by building a smarter front door for early-stage project planning and design.**

Lead it or live with it

The status quo is no longer neutral. Continuing with business-as-usual means accepting $4.6 billion in preventable annual costs, thousands of safety risks, and growing public frustration. Every missed opportunity to improve the data ecosystem is a choice to absorb these impacts.

But leadership changes that. Leadership reframes the conversation. It moves from "What's the risk of change?" to "What's the cost of staying still?" We have the infrastructure: BYDA's network, technology, trust, and legal framework. We have the evidence: economic modelling that shows billions in avoidable cost. We have the mandate: from communities, regulators, and common sense.

All that remains is collective will.

Let's move beyond referrals as a compliance checkbox. Let's treat underground information as a shared safety and productivity asset. Let's give our workers, contractors, and communities the best available information: accurate, recent, and trusted.

Let's do it together. Not by mandating one system, but by setting shared expectations, enabling safe collaboration, and learning as we go. The future is already being built. It's digital. It's fast. It's complex. It demands confidence in the ground beneath it.

Let's lead that future, not react to it.

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