QBE
At the heart of it

From blueprints to breaches

Digital transformation is reshaping cyber risk across construction and infrastructure projects

Three things to takeaway:

1. Why adoption of digital systems is expanding the cyber attack surface in the construction sector
2. How cyber incidents can now disrupt physical construction operations
3. Why cyber resilience must extend across supply chains and operational systems

Introduction

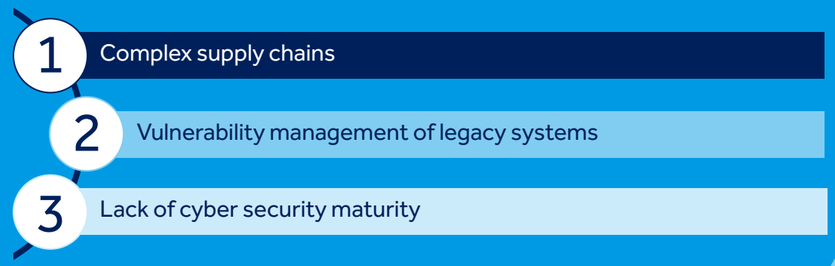
Digital transformation is reshaping the construction sector, but risk governance has not consistently kept pace. As organisations adopt connected technologies and digitise project delivery, new exposures emerge across corporate systems and operational environments leading to digital disruption with real-world consequences.

Large construction projects rely on complex supply chains, tightly managed timelines and interconnected digital tools, creating significant cyber vulnerabilities. Legacy systems, rapidly deployed digital solutions and poorly secured third-party connections can introduce weaknesses that threat actors are increasingly able to exploit. To this evolving backdrop, regulators are placing greater emphasis on robust cyber risk management across information technology (IT) systems, operational technology (OT)[1] and third-party suppliers.

As digitalisation continues to accelerate, construction and infrastructure companies face growing cyber and digital risks. High uptime requirements and dependence on multiple contractors and suppliers make the sector a particularly attractive target for ransomware and extortion attackers. Meanwhile, rising geopolitical tensions have fed a sharp rise in disruptive cyber activity targeting critical infrastructure and related sectors.

Convergence threats are also increasing. Threat actors are exploiting poorly secured legacy systems and the growing integration between IT and OT environments to maximise disruption or financial/geopolitical gain. Disruption to critical systems and/or suppliers can lead to project downtime, contractual disputes, safety concerns, and wider financial, regulatory and/or reputational consequences.

Figure 1: Top three digital risks posed to the construction sector according to Control Risks experts[2]

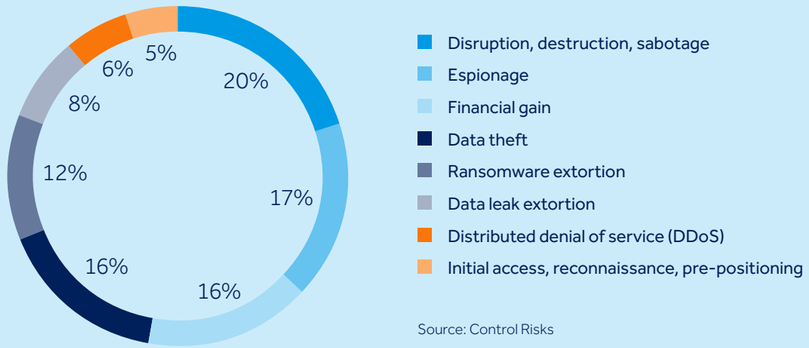


1 Operational Technology: hardware and software that detects or causes a change in the physical world, through the direct monitoring and control of physical devices, industrial equipment/processes, and infrastructure.
2 Based on a survey of Control Risks' senior Digital Risks experts across cyber threat intelligence, cyber advisory and incident response functions.

Adoption of digital solutions and emerging technologies increase cyber exposure in construction

The construction sector has accelerated efforts to digitalise operations in recent years. Organisations are increasingly integrating emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT) devices[3] and sector-specific tools, including Building Information Modelling (BIM).

Figure 2: Objectives of cyber incidents targeting the construction sector and adjacent critical infrastructure sectors (share of significant incidents, 2023-26)



Source: Control Risks

Digitalisation offers clear benefits including improved safety oversight, enhanced compliance monitoring, business process automation and more efficient project delivery. For example, technologies like BIM can be used by construction contractors to collaborate remotely on the same project, ensuring that all participating parties share the same up-to-date view of key information such as building drawings and models.

However, the integration of new digital systems also expands cyber attack surfaces and introduces new forms of risk from a range of attackers. While cloud-based remote collaboration can streamline coordination, cloud-based infrastructure is regularly targeted by cybercriminals and nation-state actors seeking to steal sensitive data or identify access routes to broader corporate IT infrastructure.

The same patterns of insecurity are also applicable for other technologies increasingly integrated into construction operations. For example, a 2025 report identified a 410% year-on-year increase in IoT malware activity targeting the construction sector.[4] The continued use of legacy systems, highly complex supply chains and strict project delivery timelines further complicate cyber risk management.

3 The internet of things (IoT), or machine-to-machine (M2M) communication, describes the billions of items and gadgets that are connected to the internet and that communicate with each other with little or no human intervention. Such items include domestic white goods, cars, credit cards, lifts and CCTV cameras.
4 https://www.zscaler.com/resources/industry-reports/threatlabz-mobile-iot-ot-report.pdf

Recent industry data highlights the scale of this transformation

56%

of investors in construction are looking to allocate more funds for AI adoption.[5]

61%

of industry leaders report strategically prioritising technology and innovation for investment.[6]

34%

of professionals reported being engaged in early pilot testing of AI implementation, with another 14.5% reporting regular use of AI across one or multiple business processes.[7]

USD $17.72bn

The global BIM construction market was valued at USD $4.38 billion in 2024 and is expected to grow to USD $17.72 billion by 2034.[8]

> **In the construction sector, cyber attacks no longer simply compromise the confidentiality of information; they disrupt delivery, stall operations, strain supply chains and expose how quickly digital dependency can become operational risk. As the sector continues to embrace digitalisation and automation, the reality of the threats and risks emanating from the digital space are becoming increasingly existential.**
>
> **Partner in Digital Risks**
> Control Risks

5 https://www.rics.org/news-insights/artificial-intelligence-in-construction-report#
6 https://kpmg.com/dk/en/insights/market-trends/global-construction-survey.html
7 https://www.rics.org/news-insights/artificial-intelligence-in-construction-report#
8 https://finance.yahoo.com/news/bim-construction-industry-research-report-125300365.html

Extortion and geopolitical tensions drive disruption risks for construction and infrastructure

79%

of Control Risks experts see ransomware as the threat most likely to significantly impact construction sector organisations.

The construction sector is particularly vulnerable to operational disruption. Projects typically run on tight timelines and rely on complex supply chains, meaning delays can quickly lead to escalating costs and contractual consequences. These characteristics make the sector an attractive target for ransomware and extortion actors, who frequently exploit organisations' sensitivity to operational disruption to increase pressure to pay ransom demands.

A 2023 survey examining data resilience in the construction sector found that 77% of respondents tolerate no more than five days without access to project documentation before experiencing severe operational impacts.[9]

In 2025, ransomware incidents resulted in an average of 24 days of downtime.[10] In construction, such disruption has the potential to cause significant delays, impact on third-party subcontractors and suppliers, and generate long-term reputational damage.

Exact costs of extortion incidents vary significantly across victims, depending on factors like the extent to which operational disruption occurs and whether sensitive data has been stolen as part of the incident. However, some indication of costs to constructors comes from a 2020 data theft extortion incident targeting a UK-based entity, wherein recovery and advisory fees totalled £7 million and fines from the UK Information Commissioner totalled £4.4 million.[11]

9 https://www.construction.com/reports/enhanced-data-resilience-will-help-the-design-and-construction-industry-face-the-risks-that-impact-their-businesses/
10 https://www.totalassure.com/blog/average-ransomware-recovery-time-2025
11 https://constructionmanagement.co.uk/poor-cyber-security-cost-interserve-11m-to-clean-up/

Case Study

Double extortion operation targets construction and civil engineering company

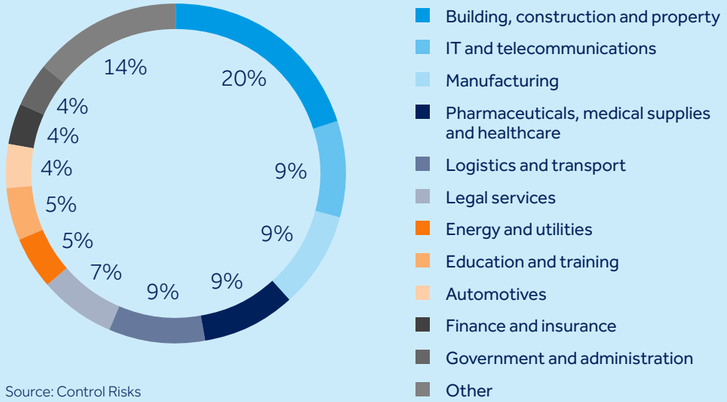
In February 2023, the UK-based construction and civil engineering company Lagan Specialist Contracting Group (Lagan SCG) was targeted in a double extortion operation. The incident was later attributed to Lockbit, a highly sophisticated cybercriminal organisation with a long history of high-impact ransomware operations.

The incident resulted in theft of a significant amount of sensitive data relating to employees, including passport numbers and bank details. The stolen dataset was later leaked on the dark web, putting employees at risk of further fraudulent activity. In May 2023, a group action lawsuit was launched with the aim of investigating how the sensitive data breach was allowed to happen and how it affected employee safety.[12]

There is no public record of impact to Lagan SLC from encryption of systems as part of the incident. However, only a few weeks earlier, the same threat actor targeted Royal Mail in a similar incident, causing severe disruption to business operations. Reportedly, Royal Mail spent £10 million on cyber recovery and cyber resilience measures in the wake of this incident, demonstrating the potential financial impact from a successful encryption.

12 https://www.kpl-databreach.co.uk/lagan-specialist-contracting-group/

Figure 3: Sectors targeted in ransomware incidents in 2025[13]



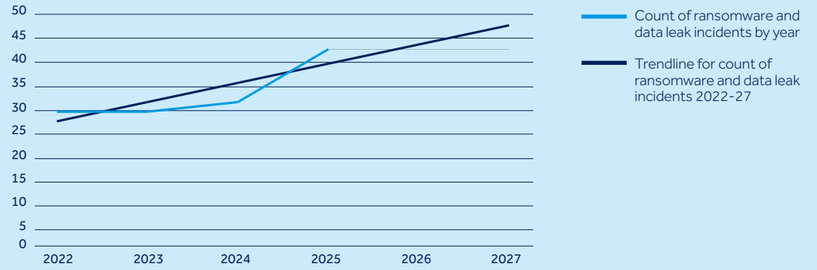
Source: Control Risks

Cybercriminal groups are also exploiting expanding attack surfaces within the sector. As construction firms establish remote connections across networks of contractors and suppliers, for example to facilitate collaborative BIM systems, the number of potential entry points for attackers multiplies.

Similarly, ransomware actors have become more capable of targeting OT infrastructure. A cyber security report released in February reported that 119 groups targeted industrial organisations in 2025, representing a 49% year on year increase. Collectively, these groups impacted 526 organisations in the construction sector, with significant operational disruption observed in all cases where ransomware was deployed within OT environments.[14]

Where deployed within OT infrastructure, ransomware can disrupt industrial control systems (ICS) – specialised software, hardware and network technologies that monitor and control industrial processes – causing shutdowns of physical machinery and limiting or fully removing user control over sensors, built-in safety systems and physical components like valves and pumps.

Figure 4: Ransomware and data leak extortion operations targeting construction and adjacent critical infrastructure sectors (based on significant incidents, 2022-25)



Source: Control Risks

13 The Control Risks data combines incidents targeting building, construction and property, including real estate, property management and other building and property-associated subsectors. Control Risks' data shows that building, construction and property was the number one target of ransomware incidents in 2025. While the construction sector has been a primary target of ransomware actors in 2025, this data is also driven by a significant number of incidents against building and property sector entities.

14 https://5943619.hs-sites.com/hubfs/312-Year-in-Review/2026/Dragos-2026-OT-Cybersecurity-Report-A-Year-in-Review.pdf?hsCtaAttrib=205683189348

Case Study

General contractor targeted in double extortion incident[15]

In March 2024, the US-based general contractor Skender Construction was targeted in a double extortion operation by an undisclosed threat actor.

As part of the operation, the threat actor accessed and exfiltrated sensitive data relating to over 1,000 individuals. Stolen data reportedly included passport information and social security numbers, likely raising risks of fraud activity targeting affected individuals in the short to medium term.

The threat actor also successfully encrypted IT systems associated with Skender Construction. However, the company had prepared data back-ups to safeguard themselves against operational impact from a data encryption event, enabling it to fully restore systems at speed and limit operational impact of the ransomware incident.

15 https://www.constructiondive.com/news/skender-ransomware-attack-chicago-maine/712844/

Beyond cybercrime, there has been a significant uptick in disruptive cyber events since 2024, linked to state-aligned actors targeting critical national infrastructure (CNI) across Western countries.[16]

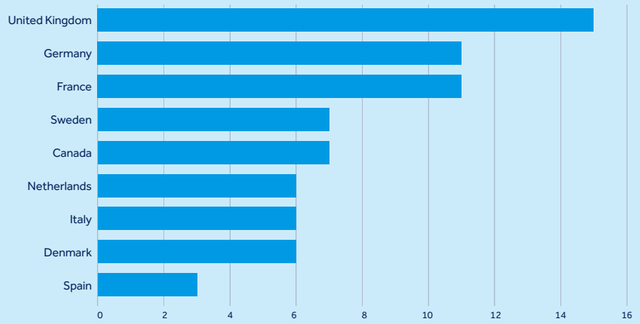
These incidents are often connected to broader geopolitical tensions, particularly between Russia and NATO members, alongside developments related to the US-Israel-Iran conflict. Cyber attacks increasingly form part of wider hybrid warfare strategies.

Although construction companies are unlikely to be the primary target of such operations, their proximity to CNI, through their role in designing and building physical infrastructure, makes them a credible intentional or collateral victim. For example, a construction firm may be compromised as part of an attack chain targeting a critical infrastructure operator or suffer disruption from a cyber incident directly affecting a supplier or partner.

> **Convergence of construction projects with critical national infrastructure build up is likely to inspire geopolitically motivated or influenced targeting of the sector where it hinders development of critical projects. This is particularly pertinent in states adjacent to geopolitical flashpoints where cyber capable states will look to have economic impact on rivals.**
>
> **Global Head of Cyber Threat Intelligence**
> Control Risks

16 Control Risks

Figure 5: Number of disruptive incidents by state-aligned groups targeting Canada, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden and the UK (significant observed incidents, 2022-26)



Source: Control Risks

Pro-Russia cyber activist targets water infrastructure

In 2024, pro-Russia group Z-Pentest carried out a destructive cyber attack against a Danish water utility. After gaining access to control systems, the group manipulated water pressure levels, causing at least three pipes to burst and leaving 500 households without water for several hours.[17]

In April 2025, the same actor targeted a Norwegian dam, opening outflow valves and releasing millions of litres of water over a four-hour period before operators regained control over the system. The attack was traced to weak password protection on a web-accessible control panel and a failure to properly separate OT systems from internet-connected IT systems.[18]

Similar incidents have since occurred, including an attempted cyber attack against a Polish water facility.[19] These operations form part of a broader pattern of disruptive cyber activity targeting CNI. Although such attacks have so far primarily targeted utilities and energy sector entities, it is likely that similar tactics could affect adjacent sectors, such as construction, in the future.

17 https://www.euronews.com/2025/12/19/denmark-blames-russia-for-cyberattacks-on-water-utility-and-election-websites
18 https://www.reuters.com/technology/norway-spy-chief-blames-russian-hackers-dam-sabotage-april-2025-08-13/
19 https://www.reuters.com/en/poland-foiled-cyberattack-big-citys-water-supply-deputy-pm-says-2025-08-14/

IT and OT convergence is widening the attack surface and increasing operational risk

As digitalisation accelerates, construction companies are increasingly integrating IT systems with OT environments. When implemented effectively, IT/OT convergence can streamline operations by enabling automated communication between systems and improving both project oversight and key processes.

However, this convergence also heightens cyber risk. If systems are not securely integrated, attackers who gain access to IT networks may be able to move laterally into OT environments undetected. A 2026 report found that inadequate segmentation between IT and OT systems[20] was a contributing factor in 81% of OT incident response cases in 2025.[21]

The risks introduced by architectural insecurities in IT/OT convergence are further compounded by the continued use of legacy systems, the provision of privileged remote access to third parties, and poor cyber security practices, such as credential reuse.

Threat actors are increasingly intent on targeting OT systems directly. Since 2024, there has been a rise in cyber incidents involving state-linked proxies targeting industrial control systems (ICS) in the utilities sector across Europe and North America. Cybercriminals are also targeting OT more frequently. One OT cyber security provider reported that 23% of incident response cases handled in 2025 involved ransomware targeting OT systems.[22] Meanwhile, many cyber actors are exploiting vulnerabilities in legacy systems. In 2025, 67.5% of exploit attempts involved known vulnerabilities that had existed for some time.[23]

With many OT systems relying on older software or hardware that cannot easily be patched, this trend creates significant security concerns. By exploiting unpatched systems, attackers may gain initial access to networks, move between systems and ultimately compromise critical operational environments.

As OT becomes an increasingly attractive target for disruptive cyber attacks, the risk to construction companies grows. In addition to immediate operational impacts and risks to safety on construction sites, such disruptions will also likely result in severe financial losses, contractual disputes long-term reputational damage and even regulatory consequences.

20 Inadequate physical or technical separation between IT systems and OT infrastructure, making it possible for a threat actor to more easily move between systems without detection and conduct malicious activity across both IT and OT infrastructure. For example, an OT system may be configured in a way that allows direct, unsecured communication with enterprise IT systems, such as email servers, enabling a threat actor to use a compromised email server to execute commands on the OT system.
21 https://5943619.hs-sites.com/hubfs/312-Year-in-Review/2026/Dragos-2026-OT-Cybersecurity-Report-A-Year-in-Review.pdf?
22 https://5943619.hs-sites.com/hubfs/312-Year-in-Review/2026/Dragos-2026-OT-Cybersecurity-Report-A-Year-in-Review.pdf?
23 https://medium.com/s2wblog/detailed-analysis-of-recent-trends-in-known-exploited-vulnerabilities-c81678a47f39

Regulatory pressures bring new expectations for cyber risk management

Figure 6: Top three drivers of intent to target the construction sector according to Control Risks experts

1. Perceived low cybersecurity maturity
2. Complex supply chains and third party networks
3. Poorly secured smart buildings and systems

Regulators are increasingly taking a broader view of cyber security and CNI protection. Regulatory frameworks such as the European Union's updated Network and Information Systems Directive (NIS2) anticipated updates to equivalent regulations in the UK, and Canada's proposed Critical Cyber Systems Protection Act (CCSPA) introduce new expectations for organisations operating CNI and their supply chains.

These regulatory requirements are likely to cascade through supply chains, including construction companies supporting infrastructure projects.

As a result, organisations across the sector will need to adopt a more structured, risk-led and resilience-focused approach to cyber risk management. This includes strengthening governance, improving IT/OT security practices and ensuring robust incident response planning is in place.

Figure 7: Key components of effective cyber risk management

Governance
- Implement comprehensive cyber risk management
- Establish senior oversight and accountability

Incident response
- Revise and update incident response and business continuity plans, ensuring compliance with reporting requirements
- Conduct regular testing against real-world threat scenarios

Supply chain risk management
- Conduct vendor risk assessments
- Include cyber security as part of contracting

Technical mitigations
- Update security controls including network segmentation between IT and OT systems, access control, endpoint detection and response (EDR) tools and updated patching
- Map legacy systems and develop mitigation strategies for systems that do not fall in normal patching cycles

Training and awareness
- Conduct regular employee awareness training
- Encourage employees to report suspicious activity

At the heart of underwriter insights

Neil Fleming
Construction Portfolio Manager

From a UK underwriting perspective, the most striking shift in the use of technology in construction is just how quickly cyber risk has become a delivery risk.

Construction projects in the UK are already operating under pressure, with tight margins and increasingly complex delivery models. Against this backdrop, disruption quickly becomes extremely expensive. When a cyber incident removes access to project data, interrupts coordination between contractors or halts site operations altogether, the consequences stack up as delays, disputes and costs.

What's also changing in the UK is the regulatory and customer environment. The proposed UK Cyber Security and Resilience Bill, introduced in November 2025, signals a clear direction of travel towards stronger cyber governance and resilience expectations, particularly across CNI and its supply chains. Given how closely much of UK construction activity is linked to transport, energy and water, many companies will increasingly find themselves in scope, whether directly or indirectly. For brokers, this means cyber resilience is becoming a more prominent part of client conversations, not just from a risk perspective, but as a requirement for securing and maintaining work. Cyber risk is overlapping with procurement, contracting and project governance in a way we haven't seen before.

From an underwriting perspective these shifts are redirecting our attention on cyber from a supporting exposure to a significant risk – one that can directly impact whether a project is delivered on time and on budget.

In my conversations with construction customers and brokers, we're focusing on digital risks more than ever before, particularly on bringing cyber into project risk planning. If losing access to systems, drawings or BIM models would delay delivery, it needs to be considered alongside other project risks, with clear contingency planning. To date, the UK is ahead of other nations on BIM adoption, but this also introduces more concentrated points of potential failure. It's important to plan for disruption, not just prevention; ransomware incidents can take many weeks to resolve so risk managers should be clear on how operations would continue (or pause safely) during that period.

I also think it's important that we're talking with brokers and customers more regularly about unpacking and understanding their supply chain exposure. In the UK market, risk is rarely held in one place. The sector's reliance on multi-tier chains, subcontractors and shared digital platforms means that while cyber exposure is distributed, the consequences may not be. This also goes for contractual liability; fixed price contracts and delay damages can kick in quickly, regardless of where the incident originated. Visibility over third-party cyber maturity is therefore becoming increasingly important.

One of the key shifts is mindset. Cyber resilience is really about protecting project delivery. While cyber cover is not typically provided within traditional construction insurance policies, these risks can be considered separately by specialist cyber underwriters. Large insurers will often bring together both construction and cyber expertise to assess these exposures holistically, before issuing separate policies for coverage. Early engagement with brokers and insurers can help ensure cyber exposures are properly understood and addressed, particularly as the risk landscape continues to evolve.

David Warr
Cyber Portfolio Manager

From a cyber underwriting perspective, the construction sector is central to how we think about operational disruption. The combination of the volume of technology being adopted, and the way it's being used, combine to make the sector particularly exposed. Construction businesses are stitching together IT systems, operational technology, third-party platforms and supply chain networks in real time, often across multiple live projects. That creates a level of connectivity and complexity that attackers can exploit.

In the UK, these trends are unfolding alongside a tightening regulatory and commercial environment. The influence of NIS2 is being felt through supply chains and customer requirements, particularly for UK firms operating across European markets. More broadly, cyber risk is being framed as part of operational resilience, with regulators and government bodies focusing on firms' ability to continue operating through disruption, not just prevent incidents. Baseline expectations are also being shaped by guidance from the National Cyber Security Centre, and for many, demonstrating cyber resilience is becoming a prerequisite for winning work, not only a technical box to tick.

We're seeing this shift reflected in incidents too – many breaches aren't limited to data loss or privacy breaches but interrupt workflows, lock access to critical systems and, in some cases, affect the physical environment through connected operational systems. In short, the line between cyber and operational risk has effectively disappeared.

What's interesting from an underwriting perspective is that many of the drivers of serious incidents are not especially sophisticated. They are often rooted in familiar issues, such as legacy systems that can't easily be patched, weak segmentation between systems, social engineering or long-term third parties that become unintended entry points.

Businesses that take a more deliberate approach to these basic fundamentals can materially reduce their exposure. Segmentation between IT and OT environments, for example, remains one of the most effective ways to limit the impact of an incident. Similarly, improving visibility over legacy systems and addressing known vulnerabilities can remove common attack paths. Furthermore, ensuring staff are trained to spot phishing emails and spoof phone calls is essential.

There is a need to think beyond prevention. Quick, clear and smooth responses, based on tested response plans, clear decision-making structures and a realistic understanding of how long recovery might take, are equally important.

For brokers, this is where the conversations are evolving. Customers are less interested in abstract cyber threats and more focused on what an incident would mean for their own business: how long they would be offline, how projects would be affected, and how quickly they could recover. That shift is an important one to pay attention to because ultimately, what we're underwriting in construction is cyber risk and business interruption together.

Survey

As part of this report, we surveyed 20 senior experts across Control Risks' Digital Risks practice for their views on the key threats, risks and vulnerabilities in the construction and infrastructure sector, from across Control Risks' EMEA, APAC and Americas teams, including London, Berlin, Copenhagen, Hong Kong, New York, Washington, Sydney, and Bogota.

The survey includes answers from experienced consultants, practice leaders and the majority of Partners in CR Threat Intelligence, Cyber Advisory and Incident Response functions. Where we reference data points or citations from "Control Risks experts", this draws from the qualitative and quantitative findings of the survey.

For more information on this report, visit **qbeeurope.com** or contact us at **enquiries@uk.qbe.com**

QBE European Operations
30 Fenchurch Street
London EC3M 3BD
United Kingdom
+44 (0) 20 7105 4000

QBEeurope.com

This report was produced by QBE with Control Risks.

QBE
At the heart of it

1220126/2603-UK