

Why Arup?

People are drawn to urban areas as centres of economic activity, opportunity and innovation. Today, a city's ability to be competitive, whilst supporting the wellbeing of its citizens, can be compromised by unforeseen risks.

And as a truly independent firm, Arup has the freedom to recommend solutions to our clients based entirely upon their business needs.

With a multidisciplinary, security-cleared team, fluent in multiple languages, we maintain the highest accreditation for handling sensitive client material.

Why Arup?

Arup's protective intelligence gives clients an accurate picture of their exposure to malicious risk, aiding appropriate spending on mitigation measures. We advise organisations on which risks to protect against, which to mitigate and which to accept.

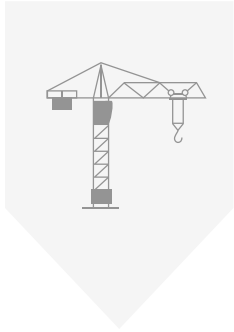
Arup works with property developers, infrastructure operators, corporate real estate and security managers, and national and city governments, to understand their needs and help them respond to threats.

We recognise that every client faces their own unique challenges. Through regular interaction and by drawing on the diverse range of professional disciplines at Arup we provide tailored and transparent advice to suit each client.

Arup combines proprietary and established risk assessment methods and structured analytical tools to bring rigour to our assessments.

We are transparent about the level of confidence we place on our assessment of risk; dynamic malicious risks are inherently uncertain.

Commercial property – design



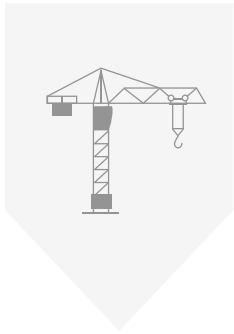
Achieve resilient buildings

Make your proposed development less vulnerable to malicious shocks and stresses. Reduce the need for expensive and disruptive retrofitting by early identification and mitigation of threats.

Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment

Reward security



Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment

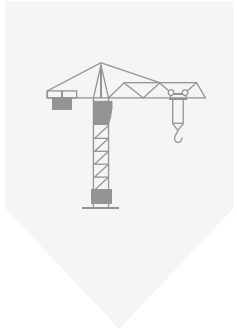
Supporting the case for new buildings to be awarded the BREEAM credit for security

BREEAM sets the standard for best practice in sustainable building design, construction and operation and offers a credit for ‘Security of site and building’ (Hea 06).

Arup helped our client, an international real estate investor, make their proposed commercial office in the heart of the City of London more attractive to potential tenants.

Arup produced an evidence-based Security Needs Assessment and mitigation recommendations to help our client show that their building would meet the standard required to achieve BREEAM credit Hea 06 (Security of site and building).

Identify building vulnerabilities



Related solutions

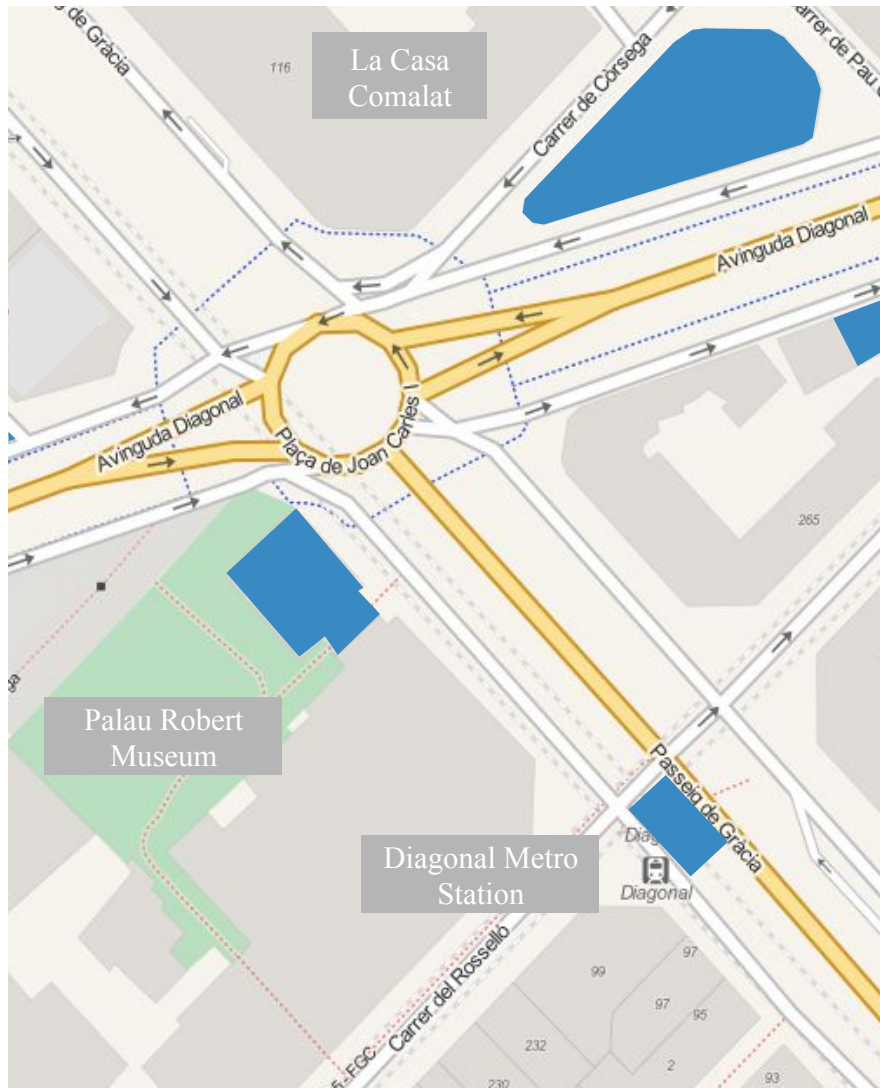
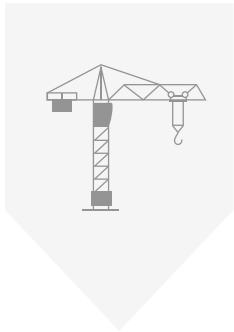
- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment

Identifying malicious risks and building design vulnerabilities

Existing vulnerabilities in a proposed building may increase the impact of malicious attacks. Arup can identify vulnerabilities and propose proportionate and cost-effective mitigation options to reduce the potential impact of an attack.

Arup informed the security design and strategy for a proposed new shopping mall in Saudi Arabia. Arup identified potential vulnerabilities in the design of the mall and then proposed mitigation options that would make the mall and its users less vulnerable to the impact of an attack.

Reduce exposure to malicious attack



Location, location, risk...

Your building's exposure to malicious attack is highly likely to be influenced by its immediate environment. Arup can identify co-located and proximate risks to your building and design mitigation options to ease your exposure.

Arup informed a major international bank's decision on where to locate its new office in London. Arup compared the relative likelihood and severity of malicious and non-malicious threats at several urban plots in London to assess which site would entail the lowest risk to the client's people, property and operations.

Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment

Commercial property – management



Manage changing malicious risks

The risk environment around your property is not constant. Arup can offer tools to help you manage risks to better protect your staff, property and operations.

Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment
- Security Capability Building

Demonstrate duty of care



Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment
- Security Capability Building

Looking after your people, property and operations

Arup can help you to assess your exposure to malicious risks across a multi-country portfolio of properties to identify hidden risks to your business.

Arup helped a multi-national business to identify and prioritise which of its 90 offices were at greatest risk of sustaining damage and disruption from an indirect malicious attack. Arup's solution supported the client's internal decisions on where to allocate finite security budgets as well as help to demonstrate evidence of an employer fulfilling its duty of care obligations.

Arup offered a cost-effective but rigorous method to assess the relative risk at each of the client's locations. This facilitated an easy comparison across the client's portfolio of properties.

Build your case for additional mitigation



\$1.2bn

OSLO VEHICLE-BORNE
IED, **2011**

\$113m

MUMBAI TERRORIST
ATTACKS, **2008**

\$1.8bn

BANGKOK ANTI-GOVERNMENT
PROTESTS, **2010**

\$98m

NAIROBI WESTGATE
MALL ATTACK, **2013**

\$72m

ISTANBUL GEZI PARK/
TAKSIM SQUARE
PROTESTS, **2013**

\$391m

LONDON RIOTS, **2011**

Estimated financial losses from significant malicious incidents in major cities.

Developing the business case for funding enhanced threat mitigation

To retain or improve building resilience against malicious attack, Arup can help you develop your internal case for funding more effective mitigation.

Arup identified the best-value mitigation options for a financial services client to support their funding bid for increased protection for their building from terrorist attack. Our client aimed to build a case to present to their board of directors, which Arup's solution directly supported.

Arup conducted a tailored terrorism risk assessment and an engineering-based vulnerability assessment of the client's building in London. Arup brought its design experience to advise on the likely cost and design impact of potential mitigation options to inform the client's decision on where to prioritise security mitigation spending.

Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment
- Security Capability Building

Infrastructure



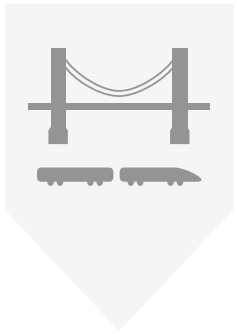
Assessing malicious risks to critical urban infrastructure

Minimise disruptive outages at major urban infrastructure assets such as airports and bridges by identifying, prioritising and mitigating risks in the design phase.

Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment
- Security Capability Building

Identify threats early on to inform design



Related solutions

- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment
- Security Capability Building

Design resilient roads and railways

The criticality of road and rail transport in cities means that railway hubs and highways infrastructure must be resilient against a range of malicious threats.

Arup informed the security design for a proposed new major road bridge in the UK to help our client make this piece of critical infrastructure more resilient to the effects of a range of malicious and non-malicious risks. Arup developed a risk register that was used by the client to inform subsequent stages of the design, including a vulnerability assessment of the bridge.

Arup's solution enabled the client to take evidence-based decisions on whether to tolerate or mitigate the risks to the bridge.

Act on risk intelligence with confidence



Related solutions

- Strategic Aviation Security Consulting
- Physical Security Design
- Counter-Terrorism Design
- Natural Hazards Risk Assessment
- Accidental and Safety Risk Assessment

The threat to aviation infrastructure is enduring

The evolution in terrorist methods of attack against aircraft and airport infrastructure worldwide means that the industry must respond to a dynamic threat.

Arup refined our client's security decision-making process according to best practice principles. This enabled our client, an airport operator, to improve the speed and confidence on which they assessed and acted on new threat intelligence to ensure that their airport operations were less exposed to emerging risks.

Arup provided an independent review of the client's existing intelligence assessment process to ensure its airport security measures were risk-based. Additionally, Arup's solution enabled our client to better define roles and responsibilities within their existing intelligence system.

Government and National Security



What are the emerging risks on the horizon?

Engage Arup to provide an independent risk assessment and help you develop the tools and methods to scan the horizon for malicious threats relevant to your policy areas.

Related solutions

- Foresight & Innovation
- Security Capability Building

A second pair of eyes to watch the horizon



Anticipate future threats and risks

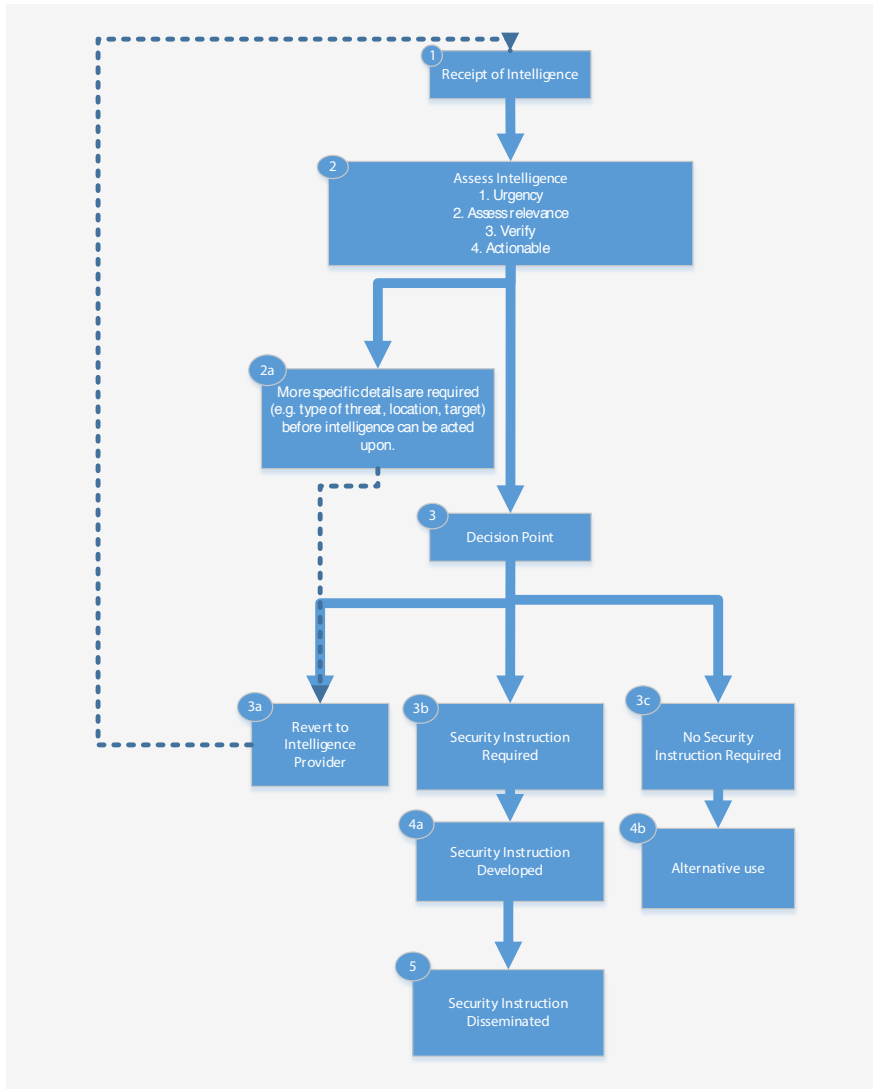
An accurate assessment of the direction of future terrorism and civil unrest trends is essential in order to develop successful policy responses.

Arup's Protective Intelligence and Foresight & Innovation teams produced an in-depth assessment of the future of terrorism in the UK in the 15-year outlook for the UK government. Arup collected relevant open source data and intelligence to identify specific trends as well as hinge events and weak signals that may suggest a change in the future direction of these trends. Arup drew on a wide range of professional disciplines to develop the risks, opportunities and implications of these trends. Our client used Arup's deliverables to independently audit its own conclusions and inform policy and strategy.

Related solutions

- Foresight & Innovation
- Security Capability Building

Assess your own malicious risk exposure



Giving you the tools, techniques and methods to tackle your existing risk and security challenges

We offer methodology development and training in risk assessment and horizon-scanning to help empower our clients to assess and reduce their risk exposure.

Arup developed a tailored security capability solution for a national aviation industry in Asia. Arup’s solution gave our client a truly risk-based national aviation security framework.

Arup delivered customised workshops that resulted in a national risk assessment model. This model is genuinely informed by the threat and conforms to relevant international standards. Our client is now better informed of the security risks they must address. The client’s staff, including senior civil servants and airline personnel, are now empowered to conduct national aviation risk assessments.

- Related solutions**
- Foresight & Innovation
 - Security Capability Building

Insurance and reinsurance



Helping you to select which malicious risks to underwrite and which to avoid

Arup blends a technical understanding of the built environment and malicious risk intelligence to support insurers underwriting malicious risks to businesses' property, people and operations.

Arup has drawn on its civil and structural engineering expertise, blast modelling capabilities and malicious risk intelligence to assess the risk of attack to insured assets including commercial property and infrastructure.

Arup has developed enhanced intelligence on the property damage and business disruption caused by terrorist incidents in urban areas.

Arup's intelligence has been designed to inform insurers' modelling assumptions on the pricing and selection of terrorism risks to Property, Business Interruption and Accident and Health.

Innovation and insight



Dynamic terrorist, civil disorder and criminal risks to businesses' people, property and operations requires dynamic thinking to inform appropriate responses.

Arup aims to anticipate what malicious actions a threat actor might take next. We actively study threat actors' historical behaviour, read what they say first-hand and analyse their stated goals and grievances.

We look for potential upcoming changes in the malicious risk environment by scanning for weak signals of change in relevant open sources.

We analyse the commercial and design implications of changing malicious risks to understand what they mean for our clients' property, staff and business operations.

Malicious risks to urban infrastructure



Cities are the driving force of economic progress in the 21st century. The biggest 750 cities already produce over 55% of the world's total estimated gross domestic product. By 2030, cities will be home to nearly 70% of the global population.

Urban environments are already extremely complex but will become increasingly so as cities grow in size. The growing primacy of the city means that the impact of malicious destruction and disruption in urban areas is likely to become ever more significant.

The capacity to manage malicious threats will increasingly become an important measure of a city's ability to thrive in the face of shocks and stresses.

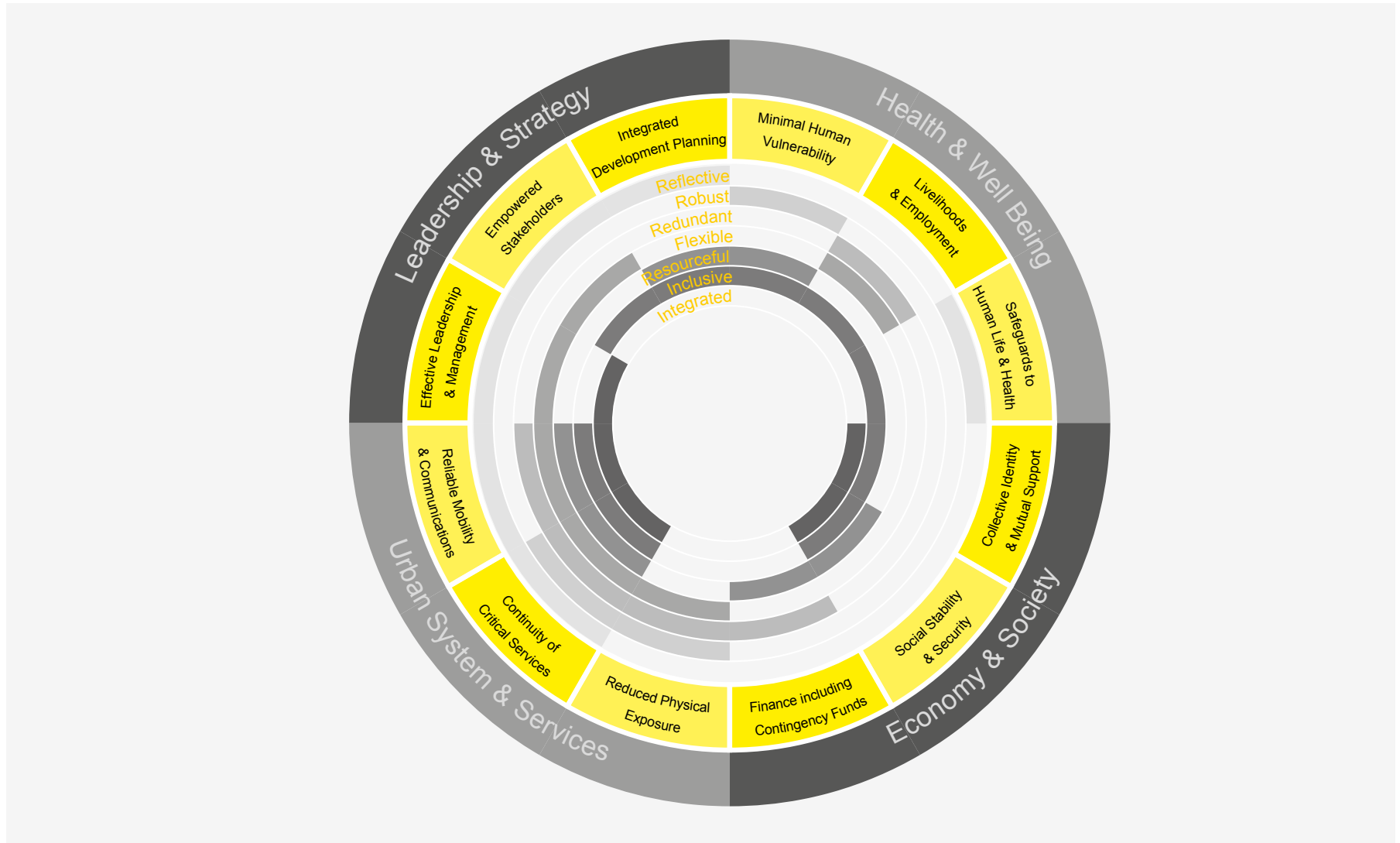
In collaboration with the Rockefeller Foundation's 100 Resilient Cities initiative, Arup created the City Resilience Framework. The value of this Framework is that it offers a model to assess the likely resilience of a city to a multitude of malicious and non-malicious hazards.

Arup's Protective Intelligence team contributed to research led by our International Development team on the resilience of urban infrastructure.

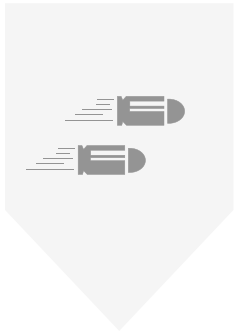
Our project identified how infrastructure could be designed and operated to be more resilient to both natural hazard risks and terrorism risks.

We produced a detailed post-attack analysis of the 2008 Mumbai terrorist attacks, which focused on the impact on Mumbai's IT and communications infrastructure.

Malicious risks to urban infrastructure



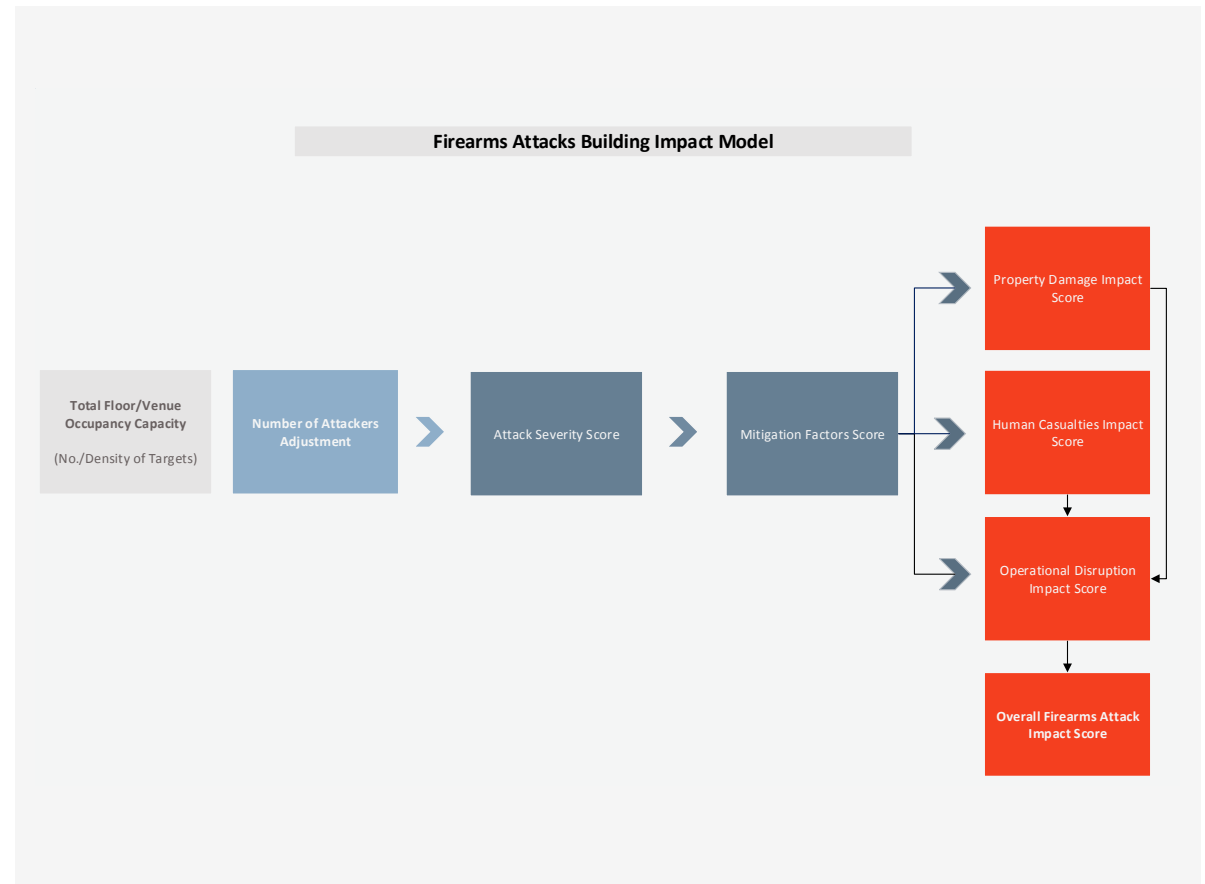
Emerging risks in cities: firearms attacks



Since the 2008 Mumbai attacks, there have been more than 40 major successful or attempted marauding firearms attacks carried out by terrorists in urban areas worldwide. This is a change in the nature of terrorist threats to businesses and infrastructure operators.

Arup has collected and analysed data on firearms attacks perpetrated since Mumbai and developed a model to help clients gain a detailed picture of the likely impact of firearms attacks on their buildings and business operations in cities.

Arup aims to help clients either design new buildings that are more resilient to a firearms attack or develop additional mitigation strategies for existing buildings if required.



About Arup

We shape a better world | www.arup.com

Arup is the creative influence at the heart of many of the world's most prominent projects in the urban environment. We offer a broad range of professional services that combine to make a real difference to our clients and the communities in which we work.

We are truly global. From offices in 85 cities our 13,000 planners, designers, engineers and consultants deliver innovative projects across the world with creativity and passion.

Founded in 1946 with an enduring set of values, our unique trust ownership fosters a distinctive culture and an intellectual independence that encourages collaborative working. This is reflected in everything we do, allowing us to develop meaningful ideas, help shape agendas and deliver results that frequently surpass the expectations of our clients.

The people at Arup are driven to find a better way and to deliver better solutions for our clients.

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