

The use of IT solutions, evidence and crime science theory for the assessment of terrorism risks in complex multimodal stations

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What's coming up

- Background to project
- Research challenges, concepts and methods
- Toolkit approach
- Toolkit realisation
- Toolkit run-through – example of terrorist attack by Hostile Vehicle

Background: Project Pre-Empt

- In 2014, EU DG Mobility & Transport (DG-MOVE) asked the Applied Criminology & Policing Centre, University of Huddersfield, to identify 'best practice' solutions to help security managers protect complex stations from terrorist attacks and serious crime
- One strategic aim was to get transport agencies within Member States to start thinking about security problems, even if they had never had a terror attack
- In Phase 1 of the project, we developed an approach based on mixed methods and a practically and theoretically sound approach to knowledge, to produce an outline toolkit; this drew on concepts from situational crime prevention, a systematic review of published and grey literature, and site fieldwork/interviews
- In Phase 2, ending in December 2018, we developed a highly-interactive toolkit which DG-MOVE have disseminated

The Challenge – How to Identify What Works?

- Originally EU asked us for **meta-analysis** of evaluation literature
- But we had read Lum's (2005-9) systematic review of CT evidence
 - Scanned some **20000 studies** representing **billions of \$£€**
 - Only **7** passed a 'relaxed' methodological quality filter
 - These were **very general** and **not necessarily relevant to land transport MMPTs** – e.g. 'screening of passengers at airports is cost-effective'
- And we know that evaluating impact of interventions on **very rare events** is very difficult
 - RCT and quasi-experimental designs impossible

The Challenge – Complexity of MMPTs

Transport, Infrastructure & Land Use	Integral/ Adjoining Retail/Leisure Facilities	What varies between MMPTs
<u>Transport Mode</u>		
Over-ground Rail	Retail outlets	Environmental Design Opening/ Closing times Responsibility for security
Metro System		Training of security staff Surveillance & communications (equipment & practices)
Tram System	Supermarkets	
Bus Station		Land & property ownership Jurisdictions for security staff (patrols)
Taxi Rank	Pubs and Bars	
<u>Infrastructure</u>		
Waiting areas	Fast food establishments	Governance Structures Vetting of staff Site maintenance requirements /practices Partnership working
Concourses and platforms		Passenger flows by time Flows of other site users (employees, visitors, customers)
Walkways		Vehicles (passenger vs. freight trains)
Escalators	Restaurants	
Elevators		Open and restricted areas for site users Entry and exit points
Ticket & other barriers		Environmental Quality

The Challenge – Diversity of Attacks & Interventions

- **Rand study of terrorist attacks** identified:
 - 13 attack **methods** (marauding, bombing, arson etc)
 - 14 **weapon** types (guns, bombs, chemicals etc)
- We identified 9 **target types** (passengers, security personnel, buildings etc)
- UK Police's **Operation Griffin** identified 11 stages of generic **attack procedure**, each with a greater/lesser number of alternative script tracks
- We know from SCP that there are diverse **interventions**:
 - 25 Techniques, 5+ CPTED principles
 - 11 generic proximal causal factors for crime/terror events (Conjunction of Terrorist Opportunity)
 - 11 Ds – mechanisms by which to influence offenders...
- A helluva lot of permutations/combinations for practitioners!

Organising the research

Practitioners can't wait till strong What Works evidence arrives, if ever!

So we had to adopt a different approach

- Mapped out theoretically plausible **attacks**:

Attack methods – Weapons – Targets – Scripts

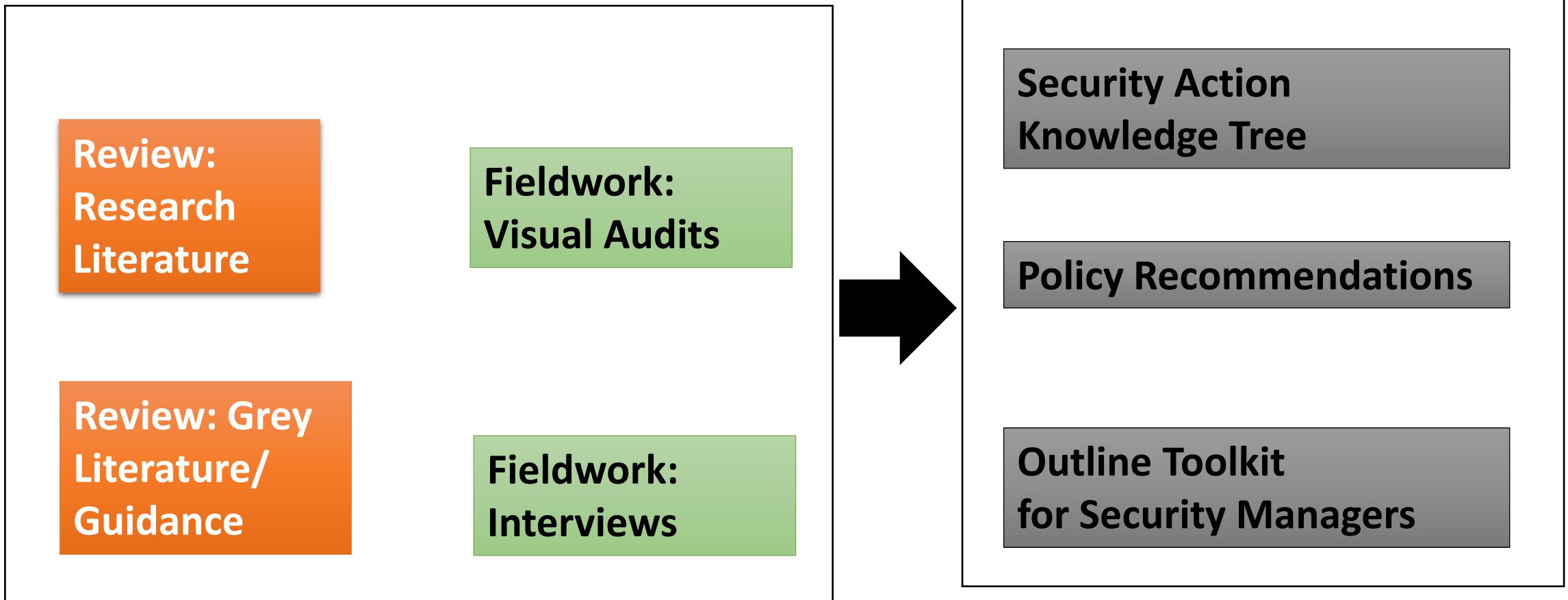
- Mapped theoretically plausible **security responses** based on tested principles of situational crime prevention
- Organised **findings** from literature, fieldwork on **knowledge trees**
- Brought everything together under a '**conceptual attack framework**'

Organising the research: Conceptual Attack Framework

Conceptual Attack Framework had to:

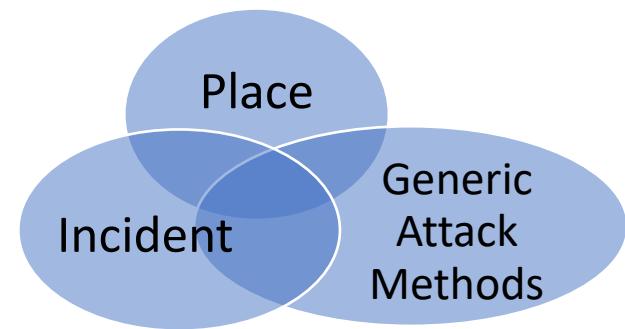
- Handle complexity of stations, complexity/ diversity of terror attacks
- Handle huge variety of findings – nature, scope, level, quality, origin
- Connect with theory & terminology in SCP, security
- Prime the planning of Literature Review and Fieldwork
- Facilitate synthesis of results at strategic and tactical levels
- Feed into/ help to structure (eventual) practical toolkit, beginning with outline version

Conceptual Attack Framework



Realist Review of literature

- Based on relevance
 - Developing a synthesis of knowledge
 - Less concern with quantification, effect sizes and standardisation
 - More concern with theoretical plausibility, context
 - Include 'experience based knowledge'
- Searched 15 Bibliographic Data Bases
 - Keyword searches
- Approached relevant organisations and experts
- 409 relevant items identified (abstract/title)
 - 143 published/266 grey literature
- 139 documents reviewed in depth
 - Inclusion/Exclusion Criteria



Fieldwork

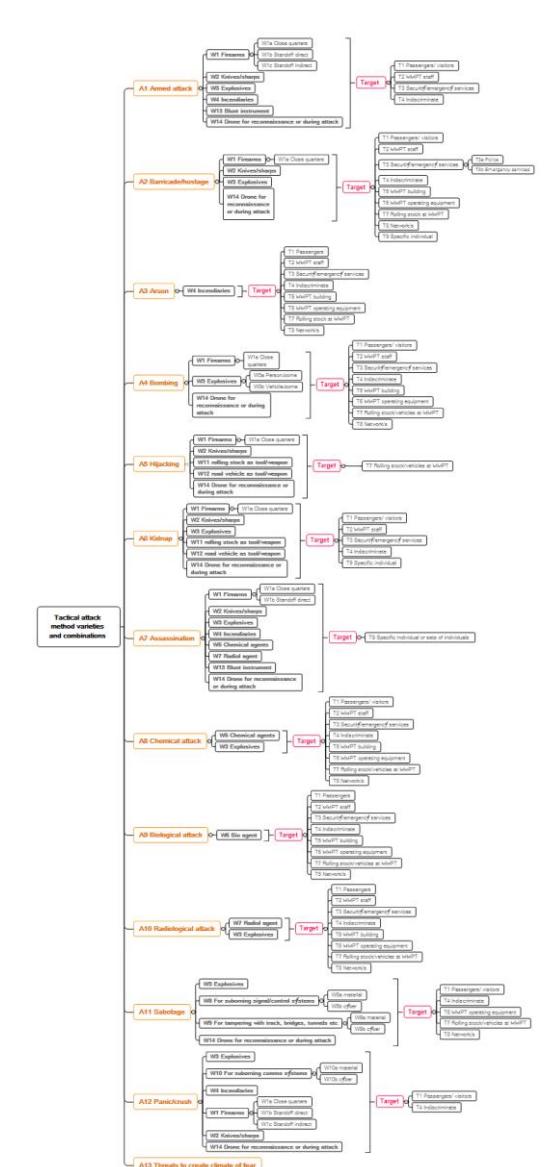
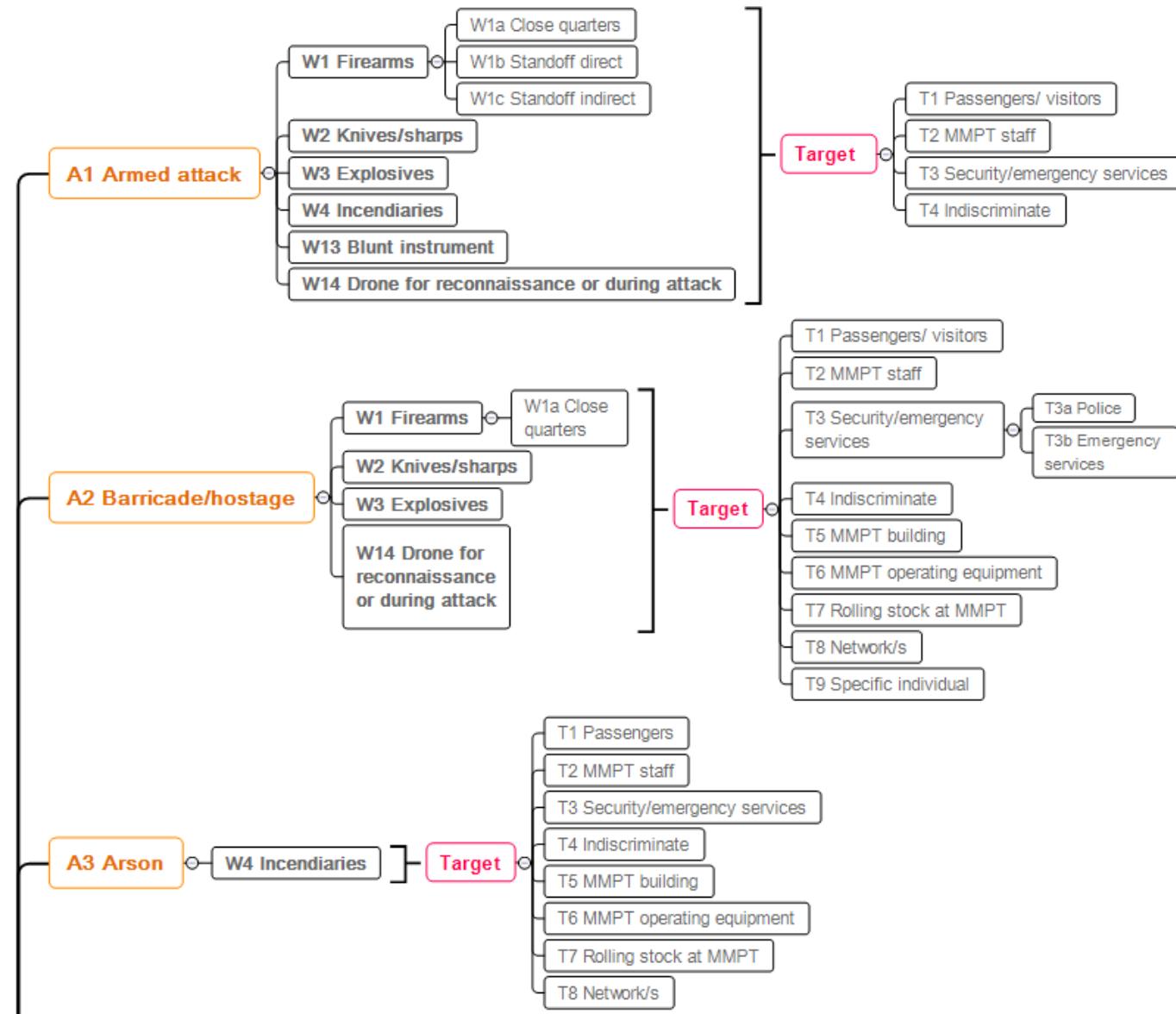
- To gain experience of contrasting MMPT environments
 - Visited 4 stations in several EU countries
 - Interviews with police officers, counter-terrorism security advisers, other security personnel and site managers
- To gain insights/capture experience based knowledge
 - Management of security incidents
 - Different agencies involved
 - Partnership working
 - Available resources
 - Existing security interventions
 - Recognised good practice
 - Areas of concern



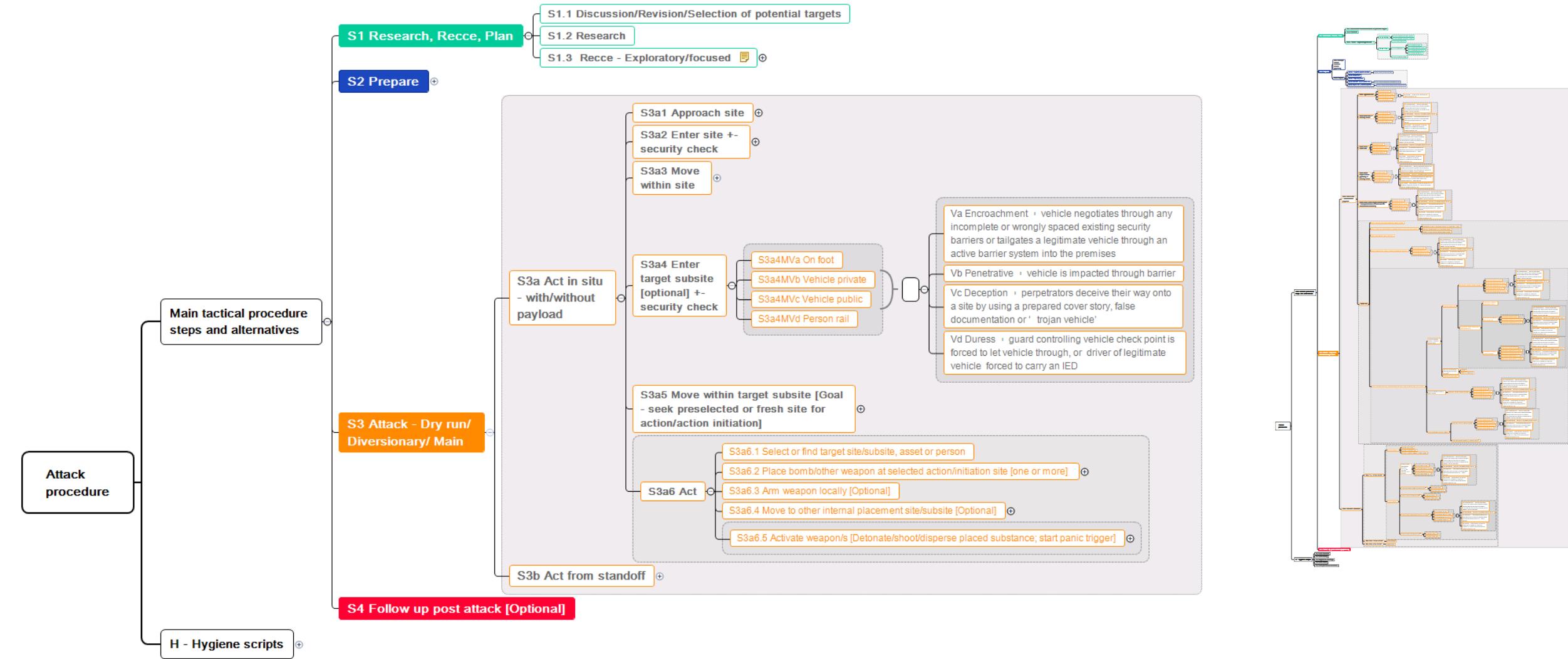
Conceptual Attack Framework – construction principles

- CAF maps out theoretically plausible **attacks**
 - Attack **Methods – Weapons – Targets**
 - Attack **Procedures** (scripts)
- Maps out theoretically plausible **security responses**
 - Covers both **Prevention** (centred on opportunity) and **Preparing for first response**
- Takes detailed **findings** from literature and fieldwork
- Assesses the **quality of evidence and of action** in each case
- Organises findings on a '**knowledge tree**', which
 - Aids retrieval
 - Links with theory
 - Puts like with like
 - Identifies knowledge missing from literature and practitioner experience: 'for gaps you need maps'

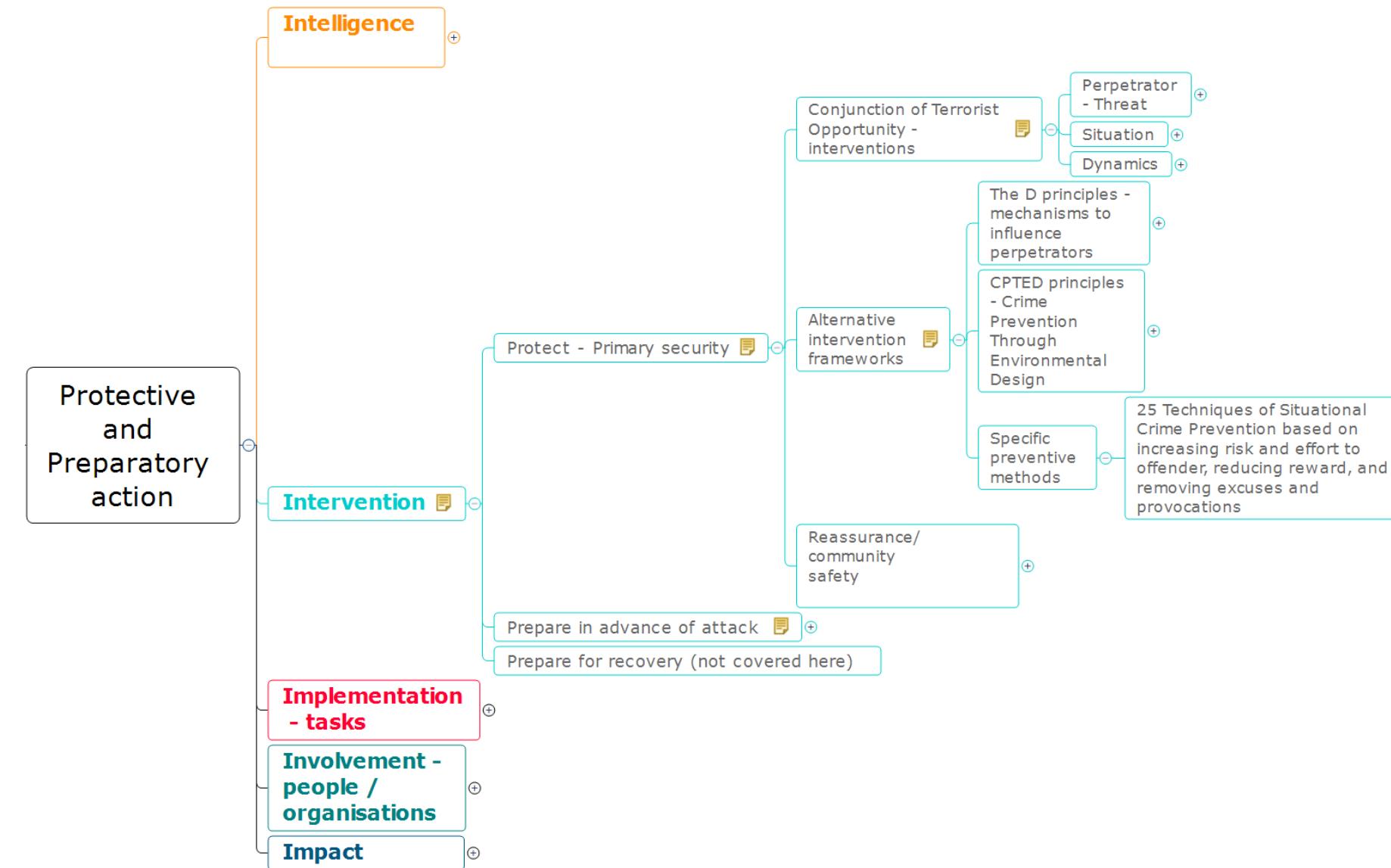
Conceptual Attack Framework – Tactical Attack Methods – Based on RAND Database



Conceptual Attack Framework – Attack Procedures based on ‘crime scripts’ approach

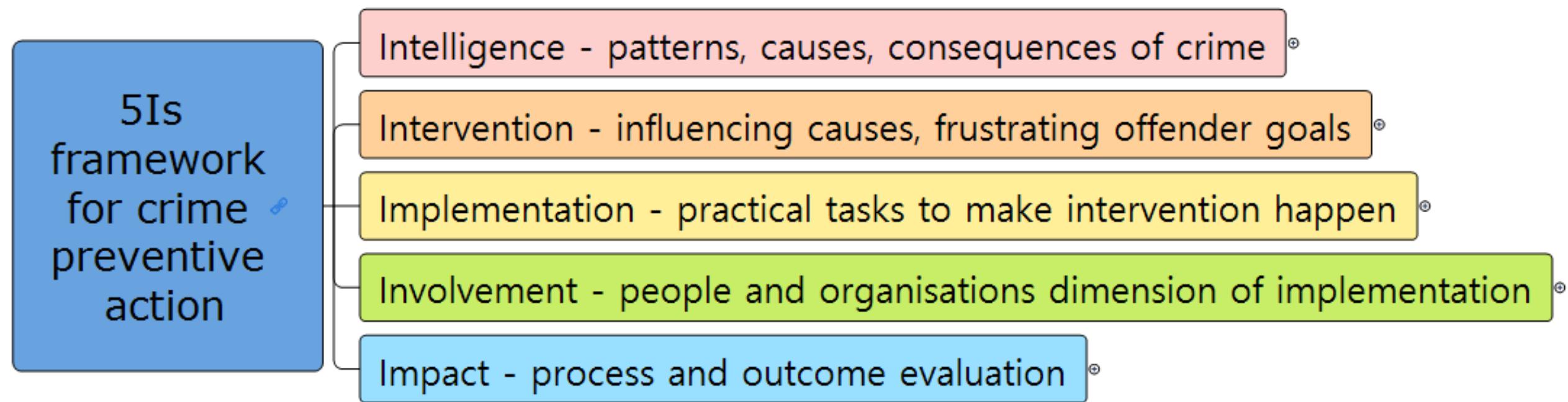


Conceptual Attack Framework – Security action – Based on 5Is Process Model, and Conjunction of Criminal Opportunity for Causes & Interventions



5Is Process Model

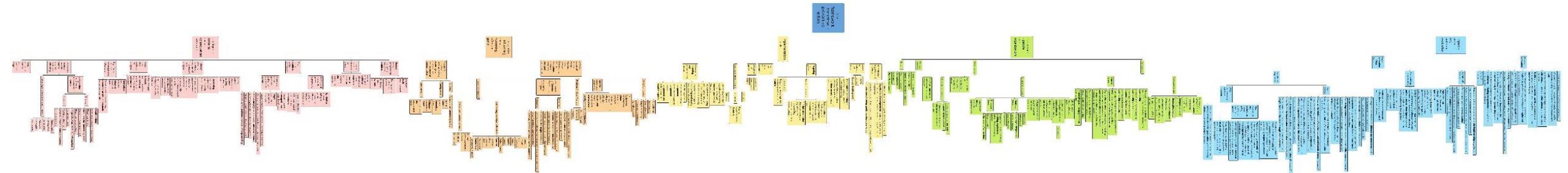
- The 5Is are the top-level tasks of the crime prevention process



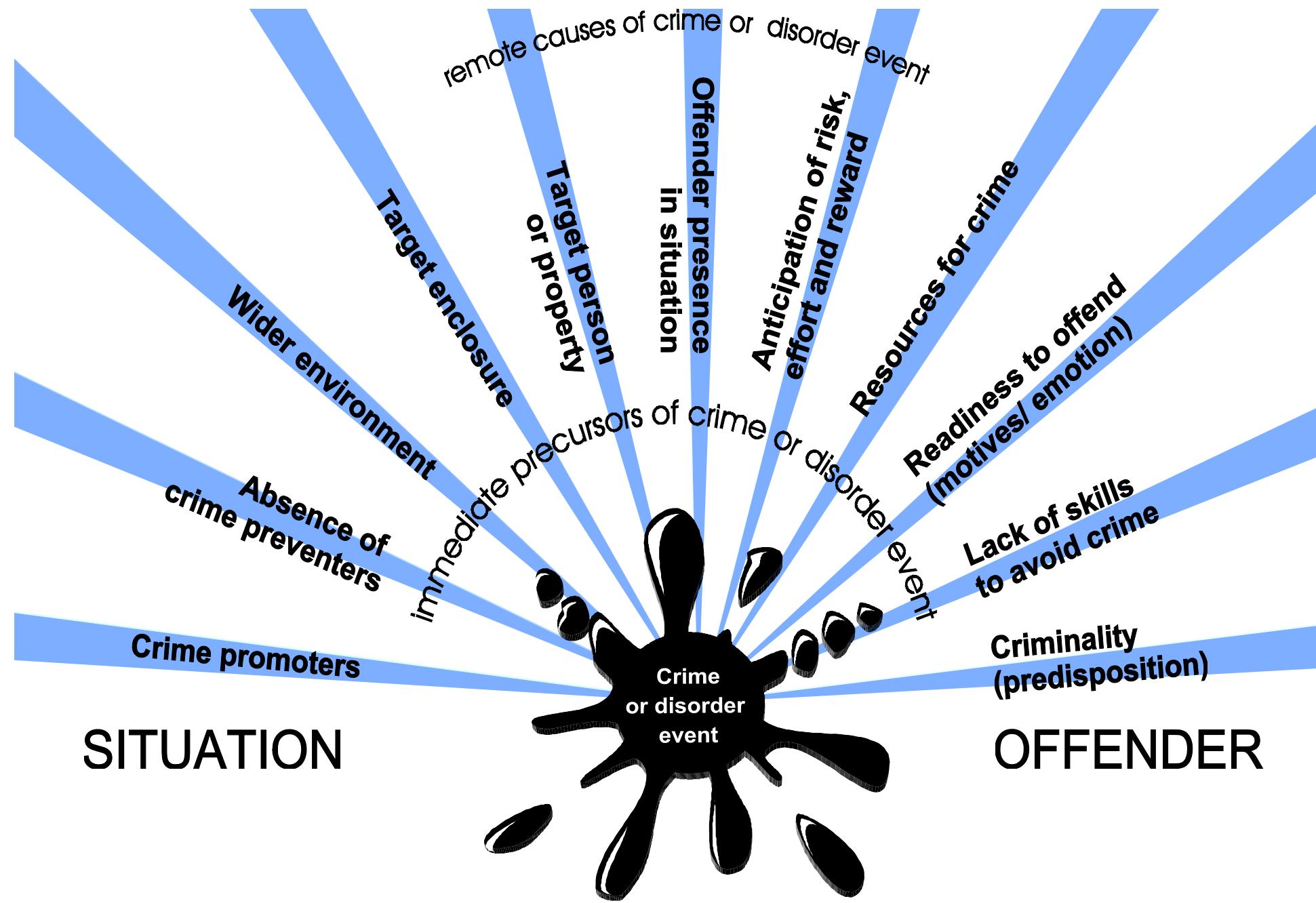
- Each top-level task expands into lots of detailed sub-tasks

5Is Process Model

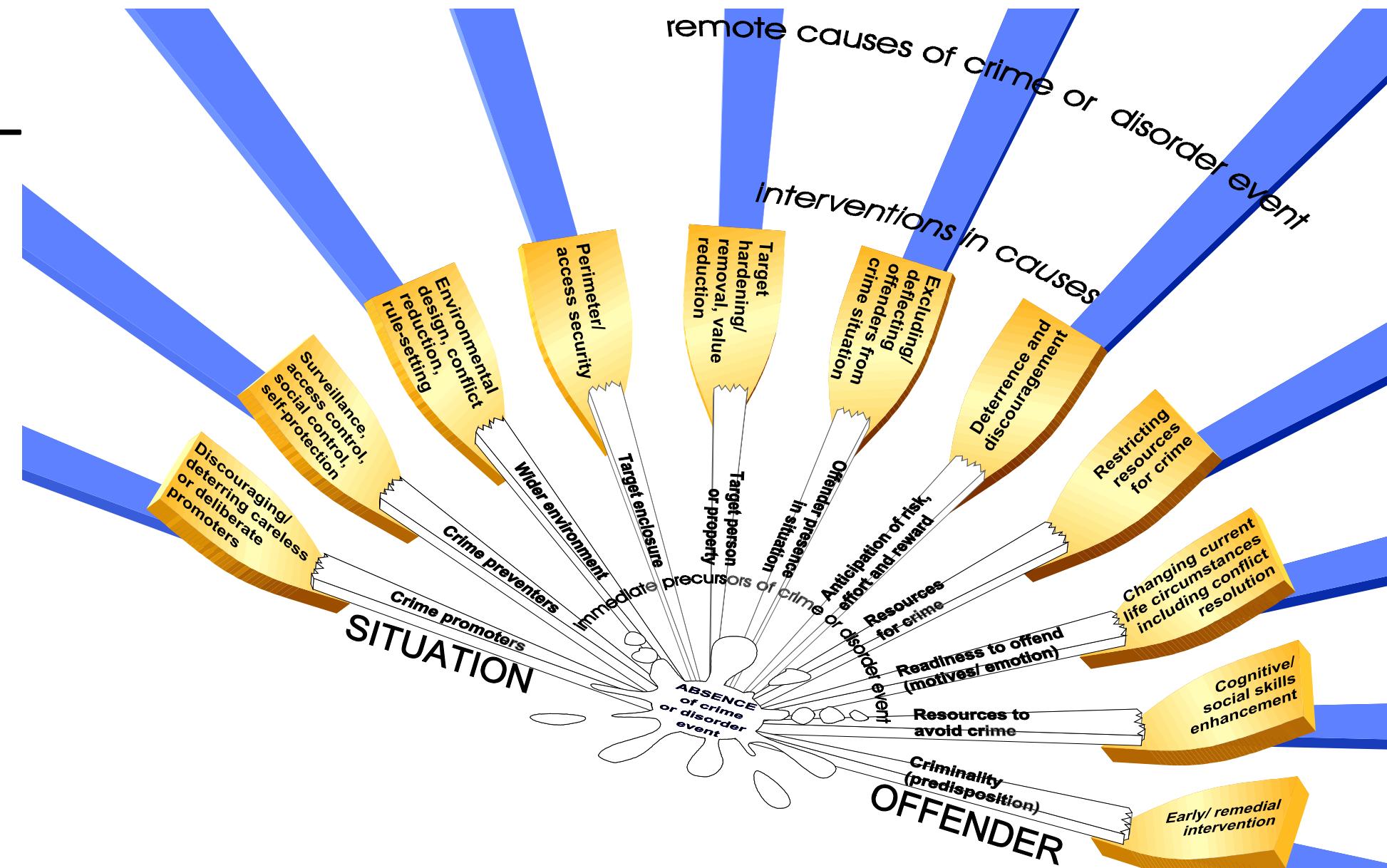
- Lots of detail for capturing/organising/transferring practice knowledge
- Each task is broken down into many **subheadings** to capture necessary detail
- But every heading represents a distinct aspect of **practice knowledge**



Conjunction of Criminal Opportunity – Immediate Causes of Criminal/Terrorist Events



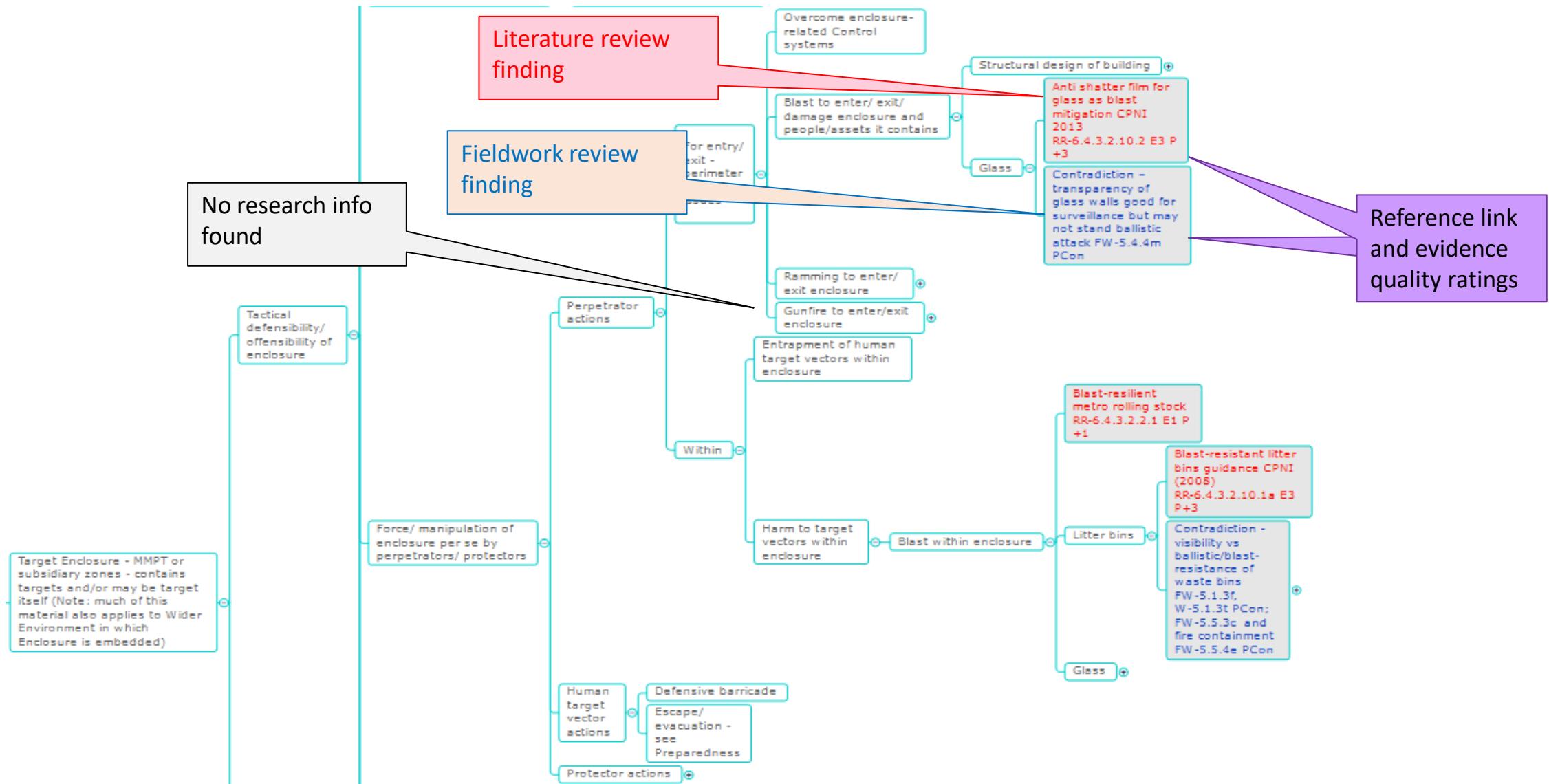
Conjunction of Criminal Opportunity – Intervention Principles



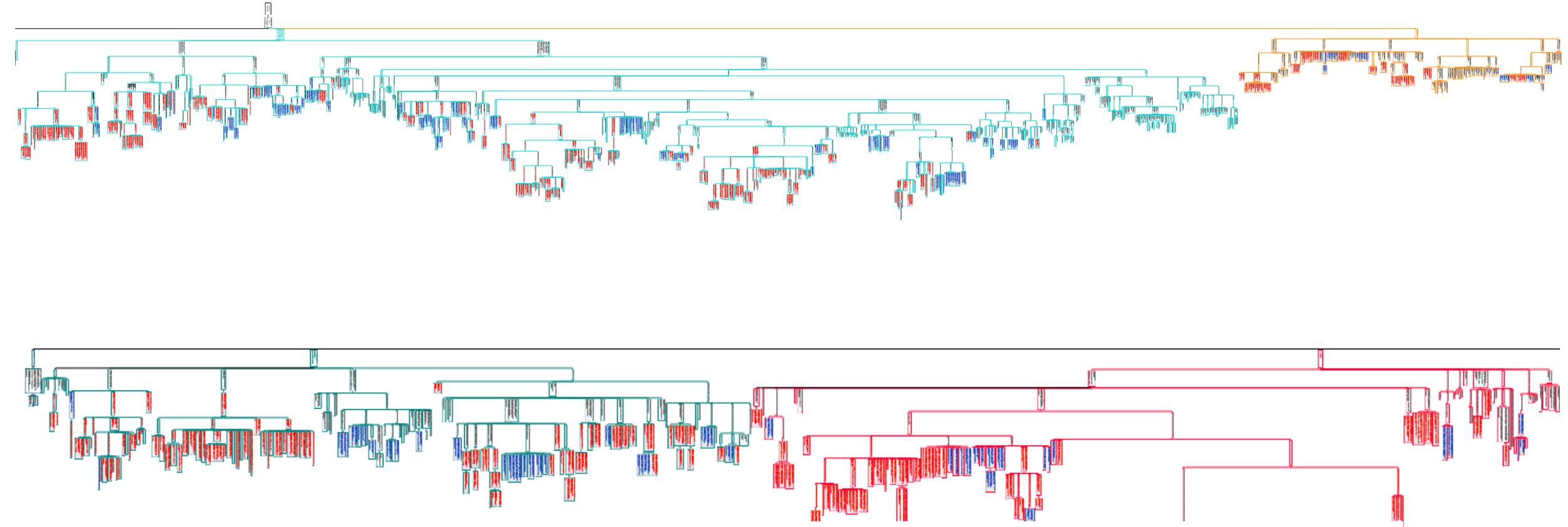
Evidence Quality Assessment – Literature

Evidence quality	Type of Evidence	Practice quality
E1	Experimental Comparative Designs	P+1 'Best Practice' – strong research evidence that the practice was effective in its implementation and impact and outperformed alternatives
E2	Experimental Observational and Simulation Designs	P+2 'Good Practice' – strong research evidence of effectiveness in implementation & impact, without comparative element; or moderate research evidence with/without comparison
E3	Expert Consensus	P+3 'Potentially Good Practice' – assessments of implementation and impact moderate to strong, with/without comparison but based on consensus of opinions from experts & respected authorities/ organisations rather than research
E4	Expert Opinion	P+4 'Highlighted Practice' – claimed as effective or ineffective in literature but without supporting evidence
E1,2,3		P- 'Practices to avoid' – literature suggests these not beneficial; and strong-moderate research evidence and/or a consensus of expert opinion to support this claim

CAF: Consolidating Findings on the Security Action tree



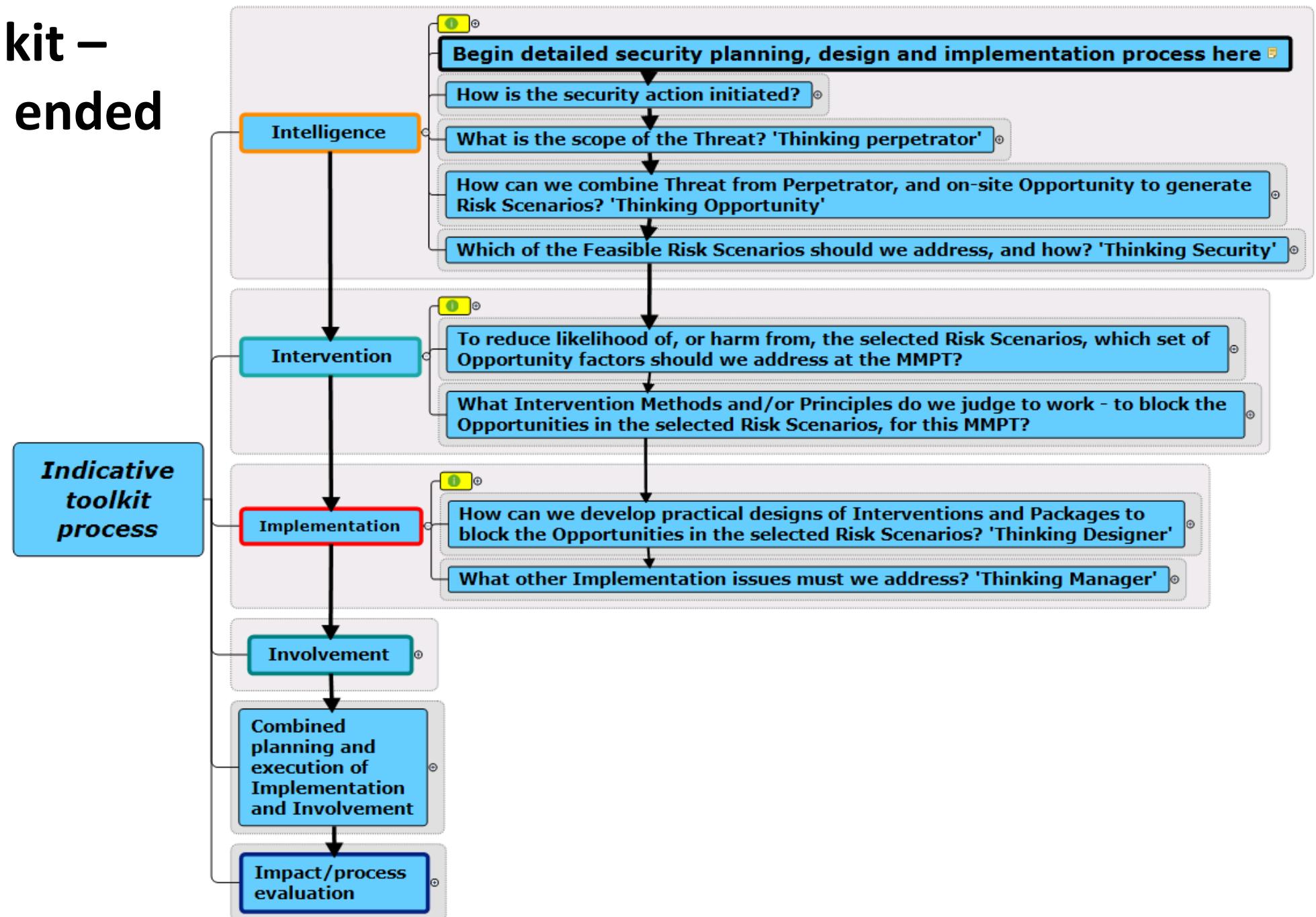
CAF: Entire Visual of findings – 130+ from **Fieldwork** and 200+ from **Realist Review**



Toolkit approach

- We developed a process which empowers users to:
 - Think **perpetrator**, and think **threat**
 - Think **risk** for terrorism/crime, generated by **design & operation of station**
 - Think **security** – prevention and first response (Protect and Prepare)
 - Think **designer**, and wider requirements for business, users and society
 - Think **manager**
 - Think **future** – resilience and adaptability in the longer term
- Toolkit had to be adaptable to **diverse user levels, contexts, functions**

Indicative Toolkit – where Phase 1 ended



Pre-Empt 2 (2017-18) – Toolkit Realisation

As per Indicative Toolkit but:

- Fully interactive
- Terrorism PLUS multiple crime types typical of stations
- In 15 EU languages
- Adding local regulatory context
- Developed through rapid prototyping and repeated trials with end users from several Member States

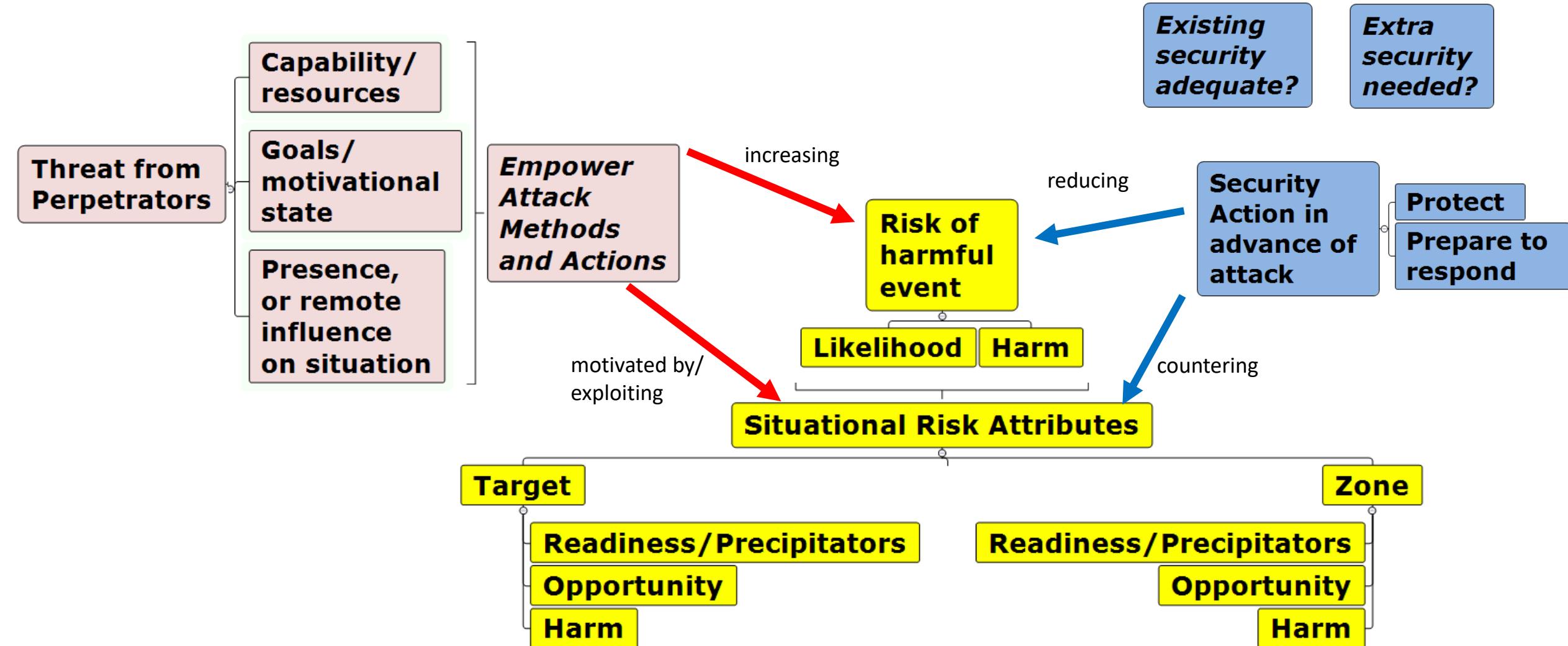
At the Heart of the Toolkit:

Reducing risk by matching security actions to the threat



At the Heart of the Toolkit:

Reducing risk by matching security actions to the threat



At the Heart of the Toolkit:

Reducing risk by matching security actions to the threat

Users set up **Zones**
within the station

Users choose **crime/
terrorism type** to focus on

Users choose **attack
method** to focus on

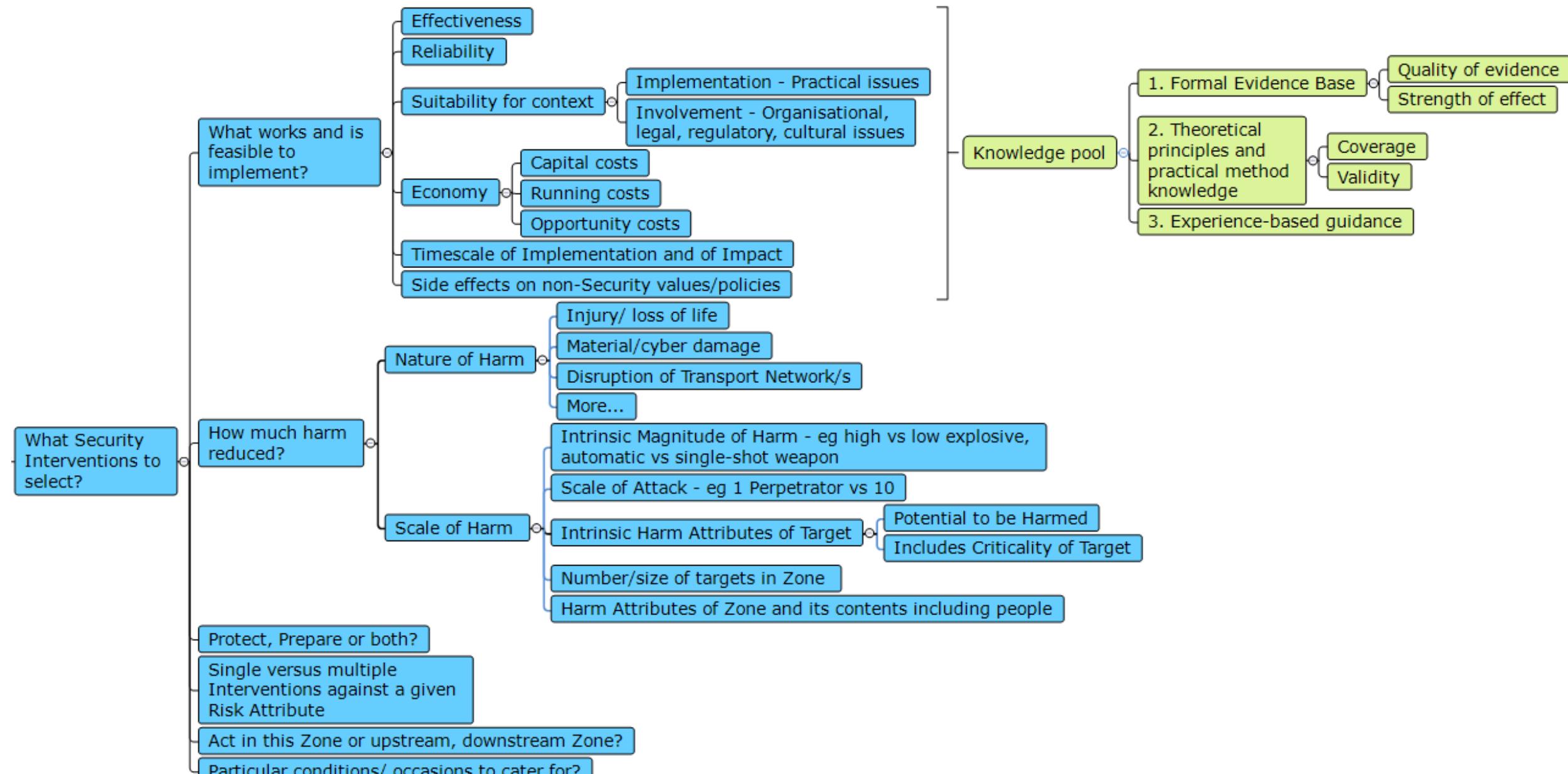
Users identify **actions of offenders in current
Zone**, in support of current attack method

Users consider **risk attributes** of Zone that
might boost likelihood or harm of action there

Users select **security actions** to counter risk attributes, noting
quality ratings, & adapt them to **context** of Station/Zone

Users **review** action list, gain
approval and **prioritise**

Selecting security actions to implement



Toolkit Runthrough – Terrorism

- Site setup
- Session (1 crime type, 1 attack method, 1 Zone)
 - Crime/terror risk
 - Offender perspective
 - Security action

- Toolkit Management
- Tutorial

Site setup – Add Zone – Type of Zone

Add Zone

Name of zone
Platforms 1-4

What type of zone is this?
Carpark

What people/users are there in this zone?
Select Some Options

What existing security measures are there in the zone?
Select Some Options

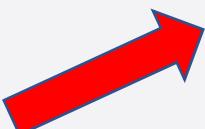
Location
Demo Station

Add



Site setup – Add Zone – Type of Users

- Add new Zone Type
- Add new Zone User
- Add new Existing Security Measure
- Add new Zone Feature



Add Zone

Name of zone

Platforms 1-4

What type of zone is this?

Platform

What people/users are there in this zone?

Passengers X Revenue inspectors X

Passengers
Revenue inspectors
Security guards
Contractors
External staff e.g. Couriers
Visitors
Military
VIP

Site setup – Add Zone – Existing Security Measures

Add Zone

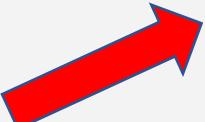
Name of zone
Platforms 1-4

What type of zone is this?
Platform

What people/users are there in this zone?
Passengers ✕ Revenue inspectors ✕ Security guards ✕

What existing security measures are there in the zone?

CCTV
Ensure st important assets are away from the perimeter (design and layout of assets)
Defensible Space at the perimeter – clear demarcation of space.
Perimeter fencing
Laminated glass (or appropriate standard glazing)
ANPR (Vehicle Number Plate Recognition)
Maximise visibility and avoid blind spots (Design and layout)
View screens, blinds, foliage or other cover (to limit external views from outside)
Physical barriers to protect assets
Vehicle Access control – includes vehicle screening – drive over inspection systems/vehicle mounted detection



Site setup – Add Zone – Location

Add new Zone Type

Add new Zone User

Add new Existing Security Measure

Add new Zone Feature

Add Zone

Name of zone

Platforms 1-4

What type of zone is this?

Platform

What people/users are there in this zone?

Passengers X Revenue inspectors X Security guards X

What existing security measures are there in the zone?

CCTV X Access control - people - includes passenger screening, ticket barriers. X

View screens, blinds, foliage or other cover (to limit external views from outside) X

Location

Manchester Picadilly

Add



Site Setup – Add Station Map

Security Toolkit Home Translations ▾ Tutorial Add/Edit ▾ Site ▾

Alert 0 ▾

Add Map

Name

Image

Piccadilly lower.png

Location

Add

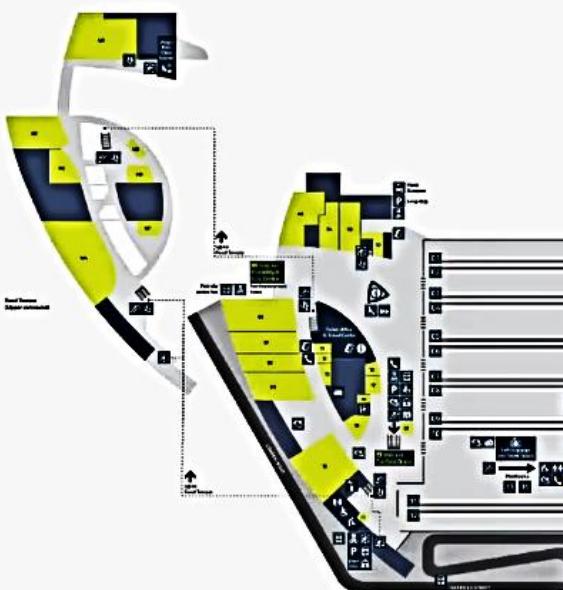


Change Language

Site Setup – Add Station Map

Security Toolkit Home Translations▼ Tutorial Add/Edit▼ Site▼

Alert 0▼ Andy Newton▼

Map [?]	Image	Delete Map
Main Site	 A detailed floor plan of a large building, likely a train station, showing various platforms, tracks, and station buildings. The map is color-coded with yellow and blue areas. A small 'Add Map' button is located in the top right corner of the map area.	Remove
Upper Foyer	 A smaller map showing the interior of an upper foyer area. It includes a yellow section labeled 'M1', a blue section labeled 'Virgin First Class Lounge', and other icons for restrooms and exits.	Remove



Site Setup – Station Map – Draw Zone Boundaries

Platforms 1-4



To get started, click on a zone or zone feature to add it to your map



Site Setup – Add Station Map – Insert Features

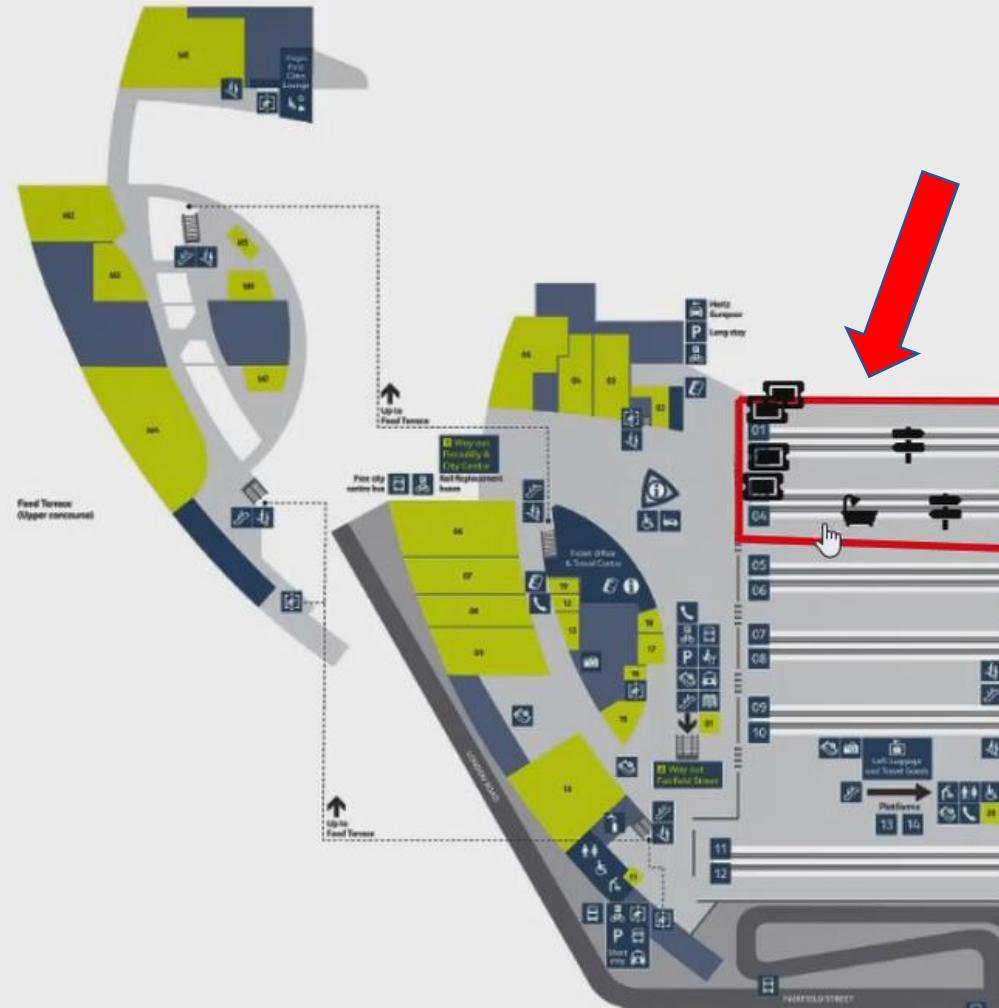
Zone Features

Hardware/utilities	•
Toilets/Restrooms	•
Movable content - e.g. vehicles, rubbish skips, planters	•
Signage to support passenger navigation	•
Luggage storage/lockers	•
Help points	•
Bicycle parking/storage racks	•
Lost property/left luggage office	•
First class lounge	•
Timetable display board	•
Cash Point / ATM	•
Ticket barrier	•
Shop (add local name)	•
Seating	•
Payphone	•
Waiting room	•
Elevator/Lift	•
Stairs/Elevator	•

Setup Your Site Map

Main Site Upper Foyer Piccadilly Ground Floor

Placing: Toilets/Restrooms Press 'Escape' to cancel



?

Session example – Start

[Security Toolkit](#)[Home](#)[Translations](#) ▾[Tutorial](#)[Add/Edit](#) ▾[Site](#) ▾[Alert](#)  ▾[Andy Newton](#) ▾

Welcome to the Security Toolkit

What would you like to do today?

[Go to admin screen](#)

Start a new session

[Start !\[\]\(eb4b4fe1f21b0a633a66c75741033185_img.jpg\)](#)

Revisit an incomplete session

[Go !\[\]\(26f624d41b72dd4936de498dd15f27e5_img.jpg\)](#)

View completed sessions

[View !\[\]\(23854d53283fabe32ccedb3c36cfc4c2_img.jpg\)](#)

Recover deleted sessions

[Recover !\[\]\(353b4b81c757811a0850e5590681510b_img.jpg\)](#)

Review Site Setup

[Add Zones](#)[Add Maps](#)[Add Zones to Maps](#)

[Change Language](#)

Choose Terrorism or Crime (Repeat cycle for extra Offence Types)

Offence Type

Toolkit Progress

Step Progress

Step 1 of 10

Which Offence Type do you want to focus on?

Terrorism	<input type="radio"/>
Crime	<input type="radio"/>

[Previous](#) [Save and Continue](#)



[Change Language](#)

Choose Attack Method – Hostile Vehicle (Repeat cycle for extra Methods)

Offence Type / Attack Method



Which Attack Method do you want to focus on?

Armed attack	<input type="radio"/>
Assassination	<input type="radio"/>
Chemical/Radiological/Biological/Nuclear/Electronic (CBRNE)	<input type="radio"/>
Communication threat	<input type="radio"/>
Explosive Device	<input type="radio"/>
Hijacking	<input type="radio"/>
Hostage	<input type="radio"/>
Hostile vehicle	<input checked="" type="radio"/>
Kidnap	<input type="radio"/>
Sabotage	<input type="radio"/>

[Previous](#) [Save and Continue](#)

Choose Zone/s to Focus on (Repeat cycle for extra zones)

All zones

Platforms 6-10

Platforms 11-14

Long Stay 1



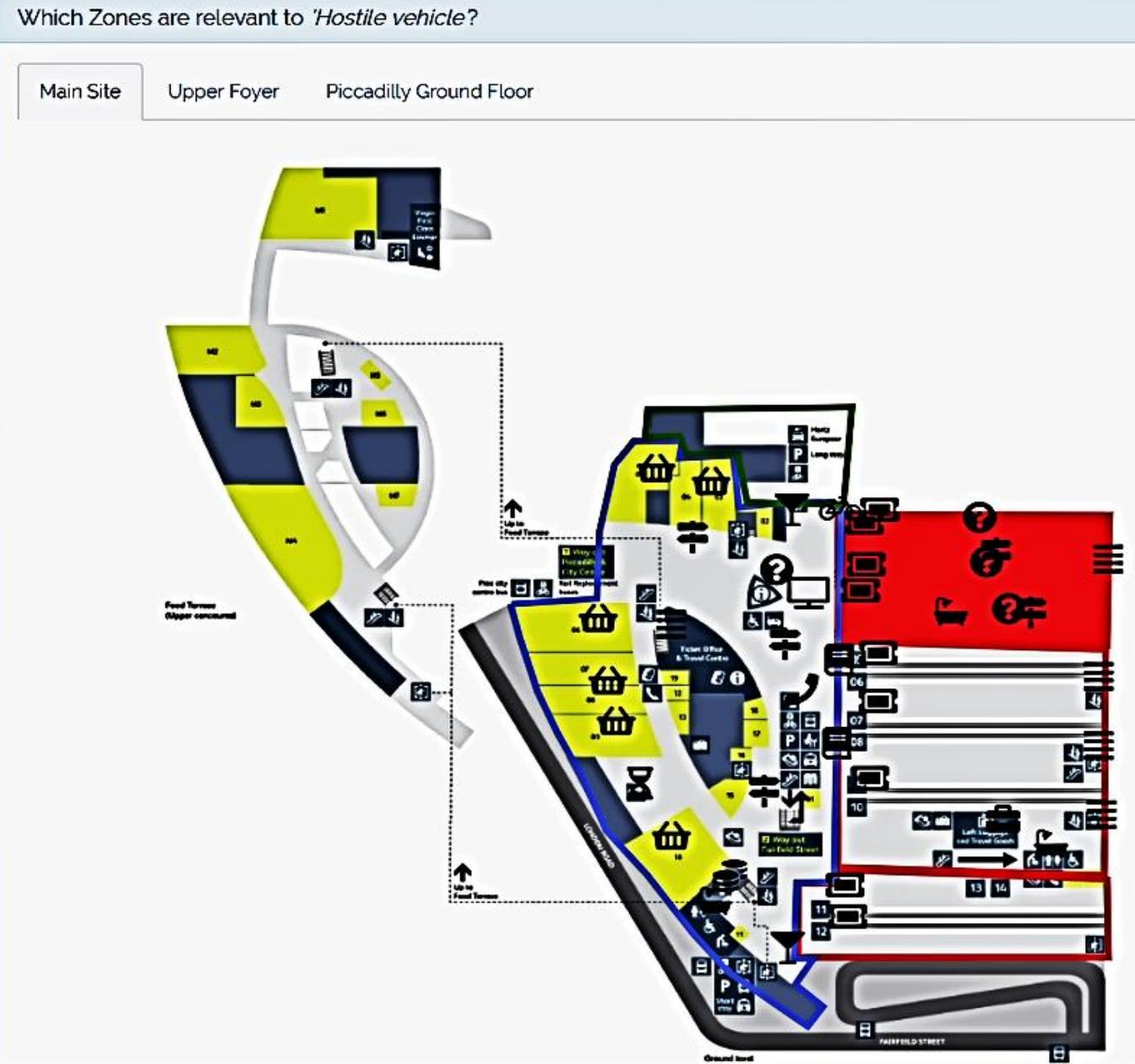
Drag and Drop
relevant zones
below

Main Foyer

Platforms 1-4

Which Zones are relevant to 'Hostile vehicle?'

Main Site Upper Foyer Piccadilly Ground Floor

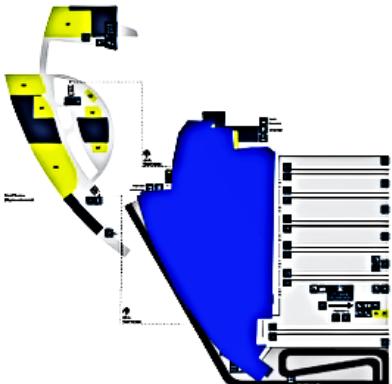


Identify Likely Targets in Zone – Features

Toolkit Progress

Step Progress

Step 4 of 10



Main Site → Main Foyer

Who or what are the potential people or features that could be targeted in 'Main Foyer'?

Zone Features

Toilets/Restrooms	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
Signage to support passenger navigation	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
Signage to support passenger navigation	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
Help points	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
Signage to support passenger navigation	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
Bicycle parking/storage racks	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
First class lounge	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
First class lounge	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>
Timetable display board	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. <input type="checkbox"/>

Hostile Vehicle – Likely Targets in Zone – Users

Stairs/Elevator	Congregation at XXX	<input checked="" type="checkbox"/>
Vending Machines	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>

Zone Users

External staff e.g. Couriers	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. 	<input checked="" type="checkbox"/>
Contractors	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Security guards	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Passengers	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Visitors	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>

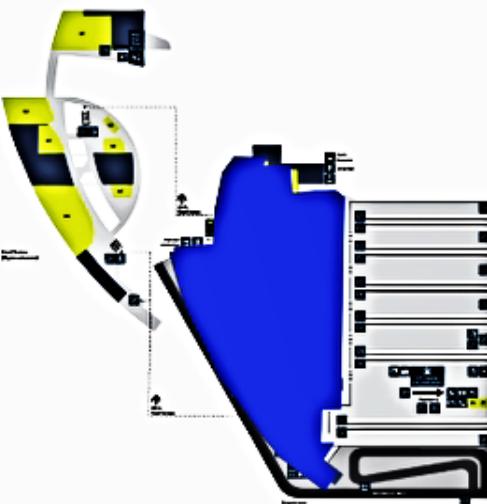
Offender Actions in Zone to Enact Hostile Vehicle Attack Method

Toolkit Progress

Step Progress

Step 5 of 10

Main Site → Main Foyer



What specific actions might the offender try to do in 'Main Foyer'?

'When approaching the zone'

Name	Local Detail	Select
Orientate towards entrance	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Disguise self (e.g. cover face with hooded top)	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'. *	<input type="checkbox"/>
Accelerate towards entrance	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Attack target on boundary zone	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Identify obstacles to entrance	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>

'When attempting to enter the zone'

'When inside the zone'

'When exiting the zone'

Weapon for use in Zone

Is it likely the offender will carry a weapon that they will use in this zone?

Yes

Please select those weapons from the list below.

Name	Local Detail	Select
Knife	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Firearms	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Vehicle itself used as weapon	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	
Sharp Instrument/Blade	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>

Offender Mode of Travel in Zone

How will the offender travel through this zone?

Name	Local Detail	Select
On foot/no vehicle	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Bicycle	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Electric/Motorcycle	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Car (standard size)	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Sports Utility Vehicle/Multi Person Vehicle	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Large van or Truck/HGV	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Autonomous vehicle	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Drone/Remote attack	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>

Previous

Save and Continue

Add new Offender Actions

Add new Weapons

Add new Methods of Travel

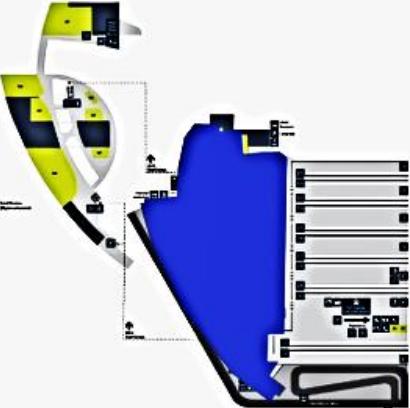
Opportunity Factors for Hostile Vehicle Actions in Zone

Offence Type / Attack Method / Zone / Targets / Offender actions / Opportunity



Toolkit Progress

Step Progress Step 6 of 10



Main Site → Main Foyer

Offender Actions in the zone

Weapon used in the Zone

Offenders method of travel within the zone

What factors make 'Hostile vehicle' more likely in the 'Main Foyer'?

Increasing reward to Offender

Decreasing risk of failure or harm to Offender

Decreasing effort, time and resources required by Offender

Previous Save and Continue

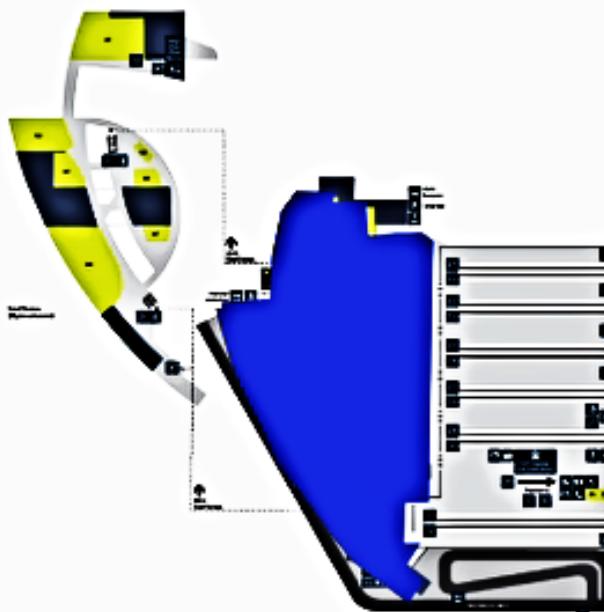
Opportunity Factors for Hostile Vehicle Actions in Zone

Offence Type / Attack Method / Zone / Targets / Offender actions / Opportunity

Toolkit Progress

Step Progress

Step 6 of 10



What factors make '*Hostile vehicle*' more likely in the '*Main Foyer*'?

Increasing reward to Offender



Decreasing risk of failure or harm to Offender



Decreasing effort, time and resources required by Offender



Previous

Save and Continue

Opportunity Factors for Hostile Vehicle Actions in Zone

Decreasing effort, time and resources required by Offender		
Name	Local Detail	Select
Zone has insufficient/ inadequate places of shelter, invacuation	Enter any specific local detail relevant to zone 'Main Foyer' in	<input checked="" type="checkbox"/>
Zone has insufficient/inadequate evacuation/ escape routes	Enter any specific local detail relevant to zone 'Main Foyer' in	<input checked="" type="checkbox"/>
Zone allows easy vehicle movement to/from it	Enter any specific local detail relevant to zone 'Main Foyer' in	<input checked="" type="checkbox"/>
Zone allows easy vehicle movement within it	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/> 
Zone has inadequate entry/exit checks/screening procedures for persons and/or weapons	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Zone boundaries/barriers easily breached in vehicle	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/>

Prompts & Provocations for Offenders in Zone

What might provoke the offender in the 'Main Foyer'?

Prompts and Provocations - items that 'prompt' certain choices or actions

Name	Local Detail	Select
Offender provocation to site features (for example signage, iconic objects, station equipment)	Enter any specific local detail relevant to zone 'Main Foyer' in <input type="text"/>	<input type="checkbox"/>

Previous

Save and Continue

Hostile Vehicle – Harm Factors in Zone

What are the potential negative consequences of the attack type, 'Hostile vehicle' in the 'Main Foyer'?

Harm to target

Name	Local Detail	Select
Multiple injuries to persons	XXX	<input checked="" type="checkbox"/>

Harm from target

Name	Local Detail	Select
Crowds (surges/panic/crush)	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input checked="" type="checkbox"/>
Weaponisation - e.g. shrapnel, starting a fire, toxic gas release	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>

Harm From Exploitable Hazards

Harm from other Hazards

Harm Factors in Zone – Exploitable Hazards

Harm From Exploitable Hazards		
Name	Local Detail	Select
Structural building collapse	Enter any specific local detail relevant to zone 'Main Foyer' in	<input checked="" type="checkbox"/>
Moving vehicles (rail/road)	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/>
Electrical hazards	XX	<input checked="" type="checkbox"/>
Toxic materials	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/>
Glass fragments	XX	<input checked="" type="checkbox"/>
Shrapnelisation from explosion	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/>
Explosive materials	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/>
Flammable/Combustible materials - heat, smoke, toxic fumes, structural damage, panic	Enter any specific local detail relevant to zone 'Main Foyer' in	<input type="checkbox"/>

Harm Factors in Zone – Other Hazards

Harm from other Hazards		
Name	Local Detail	Select
Inadequacy/lack of resilience/ penetrability of communications	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Lack of shielding against gunfire	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Entrapment/lack of escape or evacuation	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Inadequate emergency lighting	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Susceptibility to general damage	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Penetrability by bullets, shrapnel etc	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>
Inadequate emergency signage/communications	Enter any specific local detail relevant to zone 'Main Foyer' in 'Manchester Picadilly'.	<input type="checkbox"/>

Security Action v HV – Interventions v Risks, Provocations, Harms Identified in Zone

Offence Type / Attack Method / Zone / Targets / Offender actions / Opportunity / Provocation / Harm / Security Action



Toolkit Progress

Step Progress

Step 9 of 10

Which security interventions might address the risks, provocation and harm you have identified for 'Hostile vehicle'?

Main Foyer

Features in the Zone

Help points

Timetable display board

Stairs/Elevator

People in the Zone

External staff e.g. Couriers

Contractors

Security guards

Passengers

Visitors

Risk factors in the Zone

Zone contains many attractive/vulnerable targets

The zone has a high flow rate of targets over time (e.g. vehicle flow or pedestrian footfall)

Potential targets are concentrated in space (crowds, queues, departure boards)

Security Action v HV – Interventions v Risks, Provocations, Harms Identified in Zone

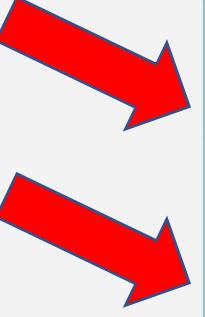
Existing security in this zone

Do you feel that the security measures currently in place in this zone adequately protect the Zone, and if applicable the whole Site, against all the risks and harms you identified?

 **No**

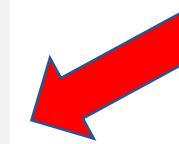
Security Actions

New Security Interventions	Who is responsible for the planning and implementation of this?	?
Modify queueing procedures	example@example.com <input type="checkbox"/>	
Enter any specific local detail relevant to Manchester Picadilly.	 Recognised good practice - Research evidence unavailable	
Relocate hazards to less harmful location	example@example.com <input type="checkbox"/>	
Enter any specific local detail relevant to Manchester Picadilly.	 Recognised good practice - Research evidence unavailable	
Disperse targets in time/ space	example@example.com <input type="checkbox"/>	



Security Action v HV – Interventions v Risks, Provocations, Harms Identified in Zone

Security Actions		
New Security Interventions	Who is responsible for the planning and implementation of this?	?
Modify queueing procedures	stationmanager@picadilly	<input checked="" type="checkbox"/>
XXX	★★★★ Recognised good practice - Research evidence unavailable	
Relocate hazards to less harmful location	example@example.com	<input type="checkbox"/>
Enter any specific local detail relevant to Manchester Picadilly.	★★★★ Recognised good practice - Research evidence unavailable	
Disperse targets in time/ space	example@example.com	<input type="checkbox"/>
Enter any specific local detail relevant to Manchester Picadilly.	★★★★ Recognised good practice - Research evidence unavailable	
Modify traffic flows and crowding pinch-points through design of layout and procedures	example@example.com	<input type="checkbox"/>
Enter any specific local detail relevant to Manchester Picadilly.	★★★★ Recognised good practice - Research evidence unavailable	



Security Action v HV – Interventions v Risks, Provocations, Harms Identified in Zone – Practice and Evidence Ratings

Improve evacuation facilities/ procedures	example@example.com	<input checked="" type="checkbox"/>
Enter any specific local detail relevant to Manchester Picadilly.		Good practice - Moderate research evidence
Change nature of service/ asset to reduce hazard, e.g. using less flammable fuel, lift instead of stairs		<ul style="list-style-type: none">• Research evidence supports effectiveness of implementation and impact but not based on comparison with alternatives.• Recognised as good practice in the sector.
Enter any specific local detail relevant to Manchester Picadilly.		Good practice - Moderate research evidence
Regular drills of evacuation and response procedures		
Enter any specific local detail relevant to Manchester Picadilly.		Good practice - Moderate research evidence

Session Summary – Hostile Vehicle Terrorism Attack Method in ‘Main Foyer’ Zone of Station... Repeat for Other Zones, then Integrate

Toolkit Progress

Step Progress

Step 10 of 10

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Remind me on...

	Su	Mo	Tu	We	Th	Fr	Sa
14	31	1	2	3	4	5	6
15	7	8	9	10	11	12	13
16	14	15	16	17	18	19	20
17	21	22	23	24	25	26	27
18	28	29	30	1	2	3	4
19	5	6	7	8	9	10	11

Today

Clear

Session Summary

This paper presents a summary of all the information entered into this session of the toolkit.

When planning and implementing the recommended security actions please consider the following:

- Local and national policies, laws and regulations
- The needs of local users such as passengers and staff
- Business requirements of local operators and on site retail
- Potential conflict with existing security measures

This assessment has been completed for 'Terrorism' and for 'Hostile vehicle'.

The identified risks for zone 'Main Foyer' are:

- Zone contains many attractive/vulnerable targets - XXX
- The zone has a high flow rate of targets over time (e.g. vehicle flow or pedestrian footfall) - 8.00-10am
- Potential targets are concentrated in space (crowds, queues, departure boards) - XXX
- Zone has insufficient/ inadequate places of shelter, evacuation
- Zone has insufficient/inadequate evacuation/ escape routes
- Zone allows easy vehicle movement to/from it
- Zone allows easy vehicle movement within it
- Zone boundaries/barriers easily breached in vehicle
- Multiple injuries to persons - XXX
- Crowds (surges/panic/crush)
- Weaponisation - e.g. shrapnel, starting a fire, toxic gas release
- Structural building collapse
- Electrical hazards - XX
- Glass fragments - XX
- Flammable/Combustible materials - heat, smoke, toxic fumes, structural damage, panic - XXX
- Entrapment/lack of escape or evacuation
- Inadequate emergency lighting
- Susceptibility to general damage
- Inadequate emergency signage/ communications

Session Summary – Hostile Vehicle Terrorism Attack Method in ‘Main Foyer’ Zone of Station... Repeat for Other Zones, then Integrate

These risks apply to the following users and features in the zone:

Users

- External staff e.g. Couriers
- Contractors
- Security guards
- Passengers
- Visitors

Features

- Help points - *Congregation at XXX*
- Timetable display board - *Congregation at XXX*
- Stairs/Elevator - *Congregation at XXX*

These risks are caused by the following Offender Actions:

- Orientate towards entrance - *XXX*
- Accelerate towards entrance
- Enter Zone via Force - breaking through enclosure/barriers - *XXX*
- Align/ aim vehicle
- Accelerate vehicle towards tactical target (or adjacent zone) - *X*
- Negotiate bends/barriers inside Zone - *X*
- Locate Target - *XXX*
- Attack final target - *Entrance to Platforms 1-4*

I

Weapons

Using the weapons listed below:

- Firearms
- Vehicle itself used as weapon

Travel

The offenders may travel using:

- Sports Utility Vehicle/Multi Person Vehicle
- Large van or Truck/HGV

Session Summary – Hostile Vehicle Terrorism Attack Method in ‘Main Foyer’ Zone of Station... Repeat for Other Zones, then Integrate

You have chosen to say that the security actions at your site are not adequate, so the toolkit has recommended the following security interventions:

- Modify queueing procedures - *XXX stationmanager@picadilly.com*
- Disperse targets in time/ space - *XXX*
- Modify traffic flows and crowding pinch-points through design of layout and procedures - *XXX groundfloormanager@picadilly.com*
- Improve hostile vehicle mitigation measures - (eg barriers/ bollards, physical markers) - *Install barriers at entrance 2 and between shops X and X*
- Improve evacuation facilities/ procedures
- Regular drills of evacuation and response procedures

THANK YOU!

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