

Momentum Weapons: A Strategic Response

CONCEPT PAPER

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Introduction.

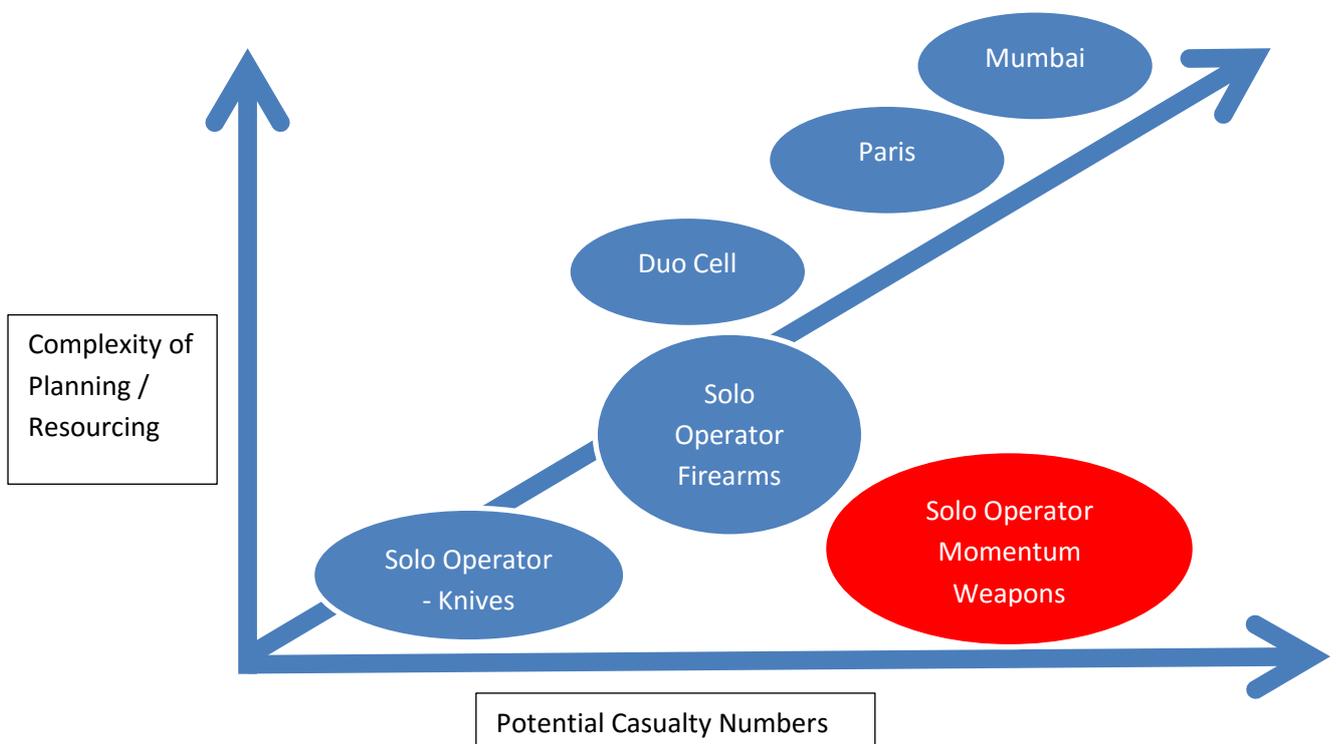
This concept paper involves the application of inter-disciplinary risk analysis models evolved by the University of Hull, where I am a Visiting Fellow, in response to the problem of 'momentum weapon' terrorist attacks. This is not intended to be an academic paper *per se*, rather a discussion of concept.

Concept.

I have taken core elements of the University's risk work and expertise, and combined it with my personal experience of 29 years in policing in Northern Ireland and my postgraduate studies on terrorism with the University of St Andrews. In this concept note I will introduce the key issues involved in the application of the risk analysis, albeit the subject itself is worthy of significant further attention.

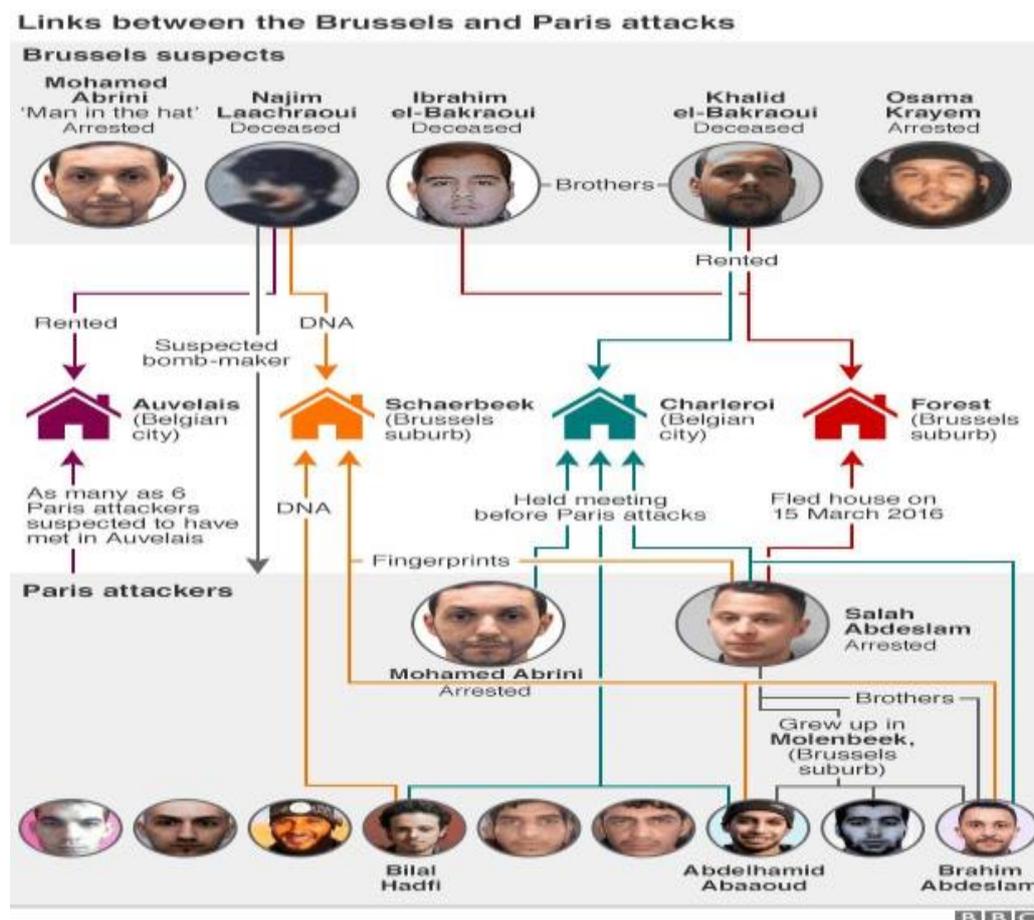
Recent terror attacks have demonstrated the spectrum of attack methodologies employed by ISIS /Al Qaeda. The potential spectrum of attack methodologies is provided in Diagram 1 below.

Diagram 1 The Spectrum of Attack Methodologies.



Terrorist attacks have included the employment of technically sophisticated systems, as well as the usurpation of simple means and they have involved both multiple attackers, as well as solo operators. At the upper end of the ‘technical’ spectrum of ISIS abilities we have, for example, seen the engineering of armoured and remote vehicles including drones to serve as delivery systems for improvised explosive devices. In contrast, the Paris attack of November 2015, which left 130 victims dead, provides an example of a multi-person attack not dissimilar to the Mumbai attacks of 2008 that utilised basic mainstream weapons. An overview of the network involved in this attack is provided in *Figure 1* below.

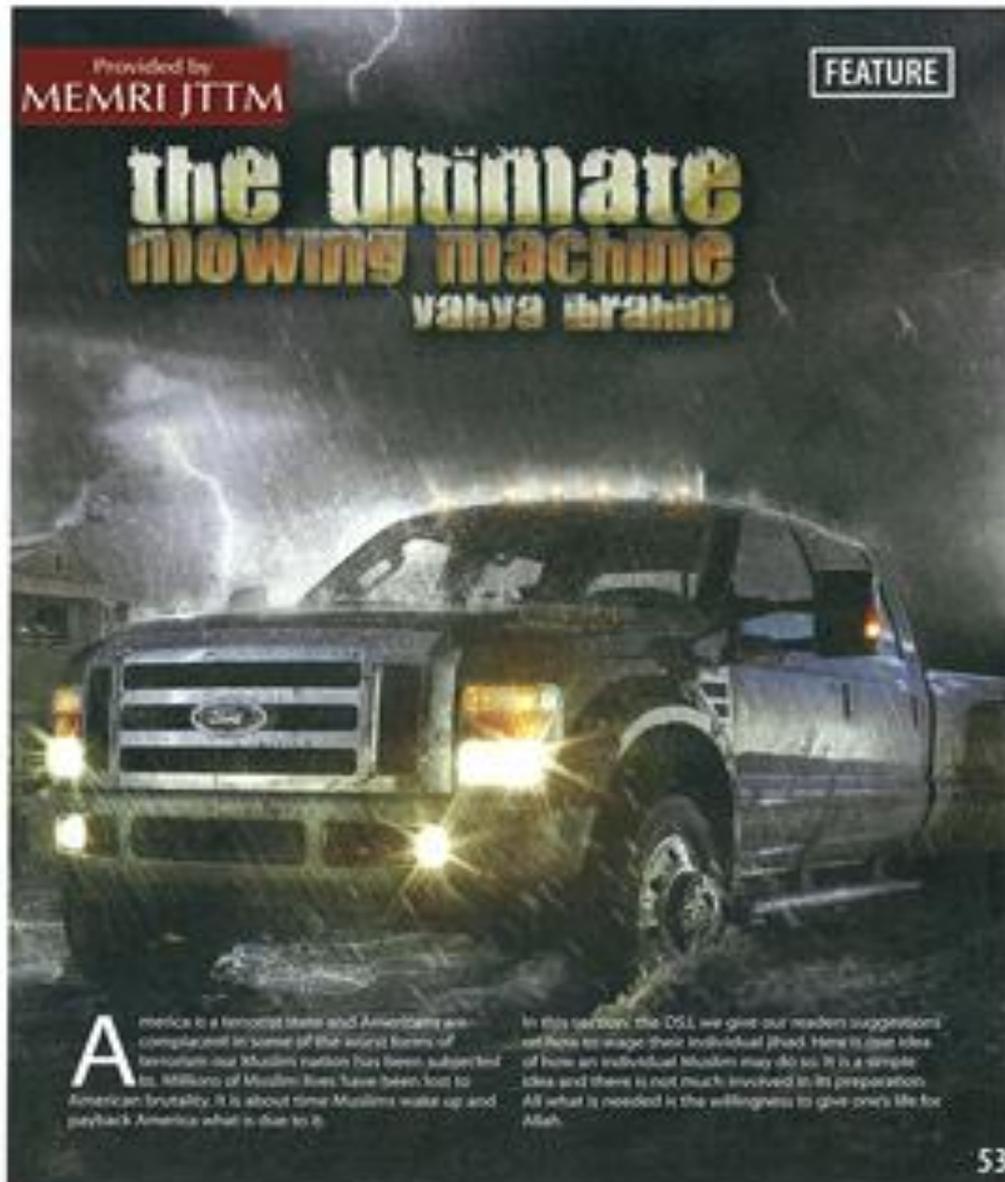
Figure 1 – Network involved in Paris 2015 attacks: source - BBC
<http://www.bbc.co.uk/news/world-europe-35879401> Accessed 8/4/17.



Another ‘type’ of operation orchestrated is the ‘*duo cell*’ attacks; this approach involves a small unit, limited planning or technology, but inherently ‘tight’ security to prevent interception. Examples of duo cell operations include the two brothers acting together to attack the Charlie Hebdo offices, the Lee Rigby attackers, the Boston bombing perpetrators and the San Bernardino perpetrator couple.

Figure 2: Al Qaeda publicity showcases “The Ultimate Mowing Machine”.

<http://edition.cnn.com/2010/WORLD/meast/10/12/mideast.jihadi.magazine/index.html>



At the bottom end of the spectrum of attack methodologies is the radicalised individual (Solo Operator) with access to rudimentary (potential) weapons, including ‘momentum’ weapons – specifically the use of vehicles. The use of vehicles was advocated by Al Qaeda as far back as 2010 and remain a much- advocated weapon by the group (see Figure 2 above). In the Inspire magazine issue 2 they stated:

How to create "the Ultimate Mowing Machine"

In a section on "Tips for our brothers in the U.S.," Inspire offers a guide to creating "the ultimate mowing machine" — "not to mow grass but mow down the enemies of Allah." Would-be jihadis are instructed to modify a four-wheel-drive pickup truck ("the stronger the

better") by mounting steel blades on the grill, then driving on a crowded sidewalk. "To achieve maximum carnage, you need to pick up as much speed as you can while still retaining good control." The magazine notes: "This method has not been used before."

Of course, we should remember that the carnage of 9/11 was also perpetrated by 'momentum' weapon attacks, albeit of a much more sophisticated nature.

However, this approach is not unique to Al Qaeda and ISIS. The Israeli security services, for example, have long been training dealing with the use by individuals of momentum weapons ranging from cars to buses to bulldozers. These attacks require minimal planning, a limited operator skill set, and, moreover, the preparation for the attack offers little chance of detection in advance and the perpetrator can inflict mass casualties. Figure 3 provides an overview of the most recent examples.

Figure 3 Recent momentum weapon attacks: source Tennessee Fusion Center.

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(U) Tactics, Techniques, and Procedures Reference Aid: Vehicle Ramming Attacks

(U//FOUO) The Tennessee Fusion Center's, Tactics, Techniques And Practices Reference Aid is designed to provide Tennessee law enforcement with current information on developing, asymmetrical methods used by the terrorist and criminal element. Items included in these reference aids are UNCLASSIFIED and FOR OFFICIAL USE ONLY. These reference aids may not be disseminated in whole or in part to the media or general public. Information for this bulletin was obtained from partner intelligence products and reporting, and have been linked in the titles below.

(U//FOUO) The TFC assesses that ISIL-inspired and other lone-offender violent extremists probably will increase their use of vehicle-ramming attacks in the West because such operations require minimal training, expertise, resources, and preoperational planning. Violent extremist propaganda has advocated vehicle ramming attacks since AQAP's Inspire magazine encouraged the tactic in 2010, and we assess that ISIL and other terrorist groups will continue to publicly call for vehicular attacks in the wake of recent attacks. TFC has no credible or specific intelligence reporting indicating any imminent plots.

(U) This report addresses DHS HSEC SIN: 8

(U) This report addresses TFC SINs: 1.1, 3.0, 4.2, 4.2.2, 4.10, 4.10.2, 4.10.3

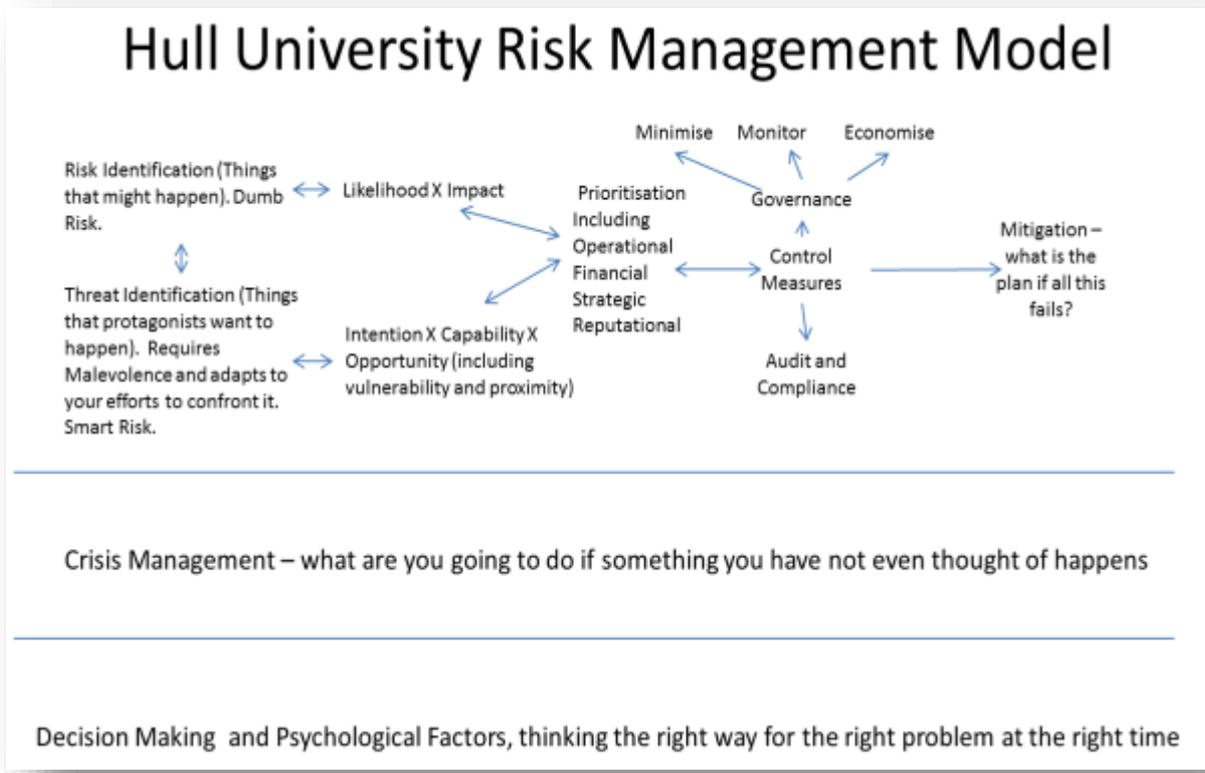
	Nica, France 14 July 2016	Columbus, Ohio 28 November 2016	Berlin, Germany 19 December 2016	London, England 22 March 2016
INCIDENT	Lahouaiej-Bouhlel drove a transport truck into pedestrians during Bastille Day celebrations, then fired a pistol at the crowd and responding law enforcement officers.	Artan drove up on a sidewalk on the Ohio State University campus and struck pedestrians before exiting the vehicle wielding a knife before being killed by a responding officer.	Amri hijacked a 25-ton commercial truck transporting steel beams before driving into crowds at a Christmas market in Berlin; Amri fled the scene and was killed days later in a shootout with Italian police.	Masood drove an SUV into pedestrians on Westminster Bridge before crashing into Parliament's perimeter fence; he exited the vehicle and fatally stabbed an officer before being killed on the scene.
ATTACKER (Age)	Mohamed Lahouaiej-Bouhlel (31) (Tunisian-born)	Abdul Ali Artan (18) (Somali-born)	Anis Amri (24) (Tunisian-born)	Khalid Masood (52) (Saudi-born)
WEAPONS	Pistol	Butcher Knife	Pistol, Knife	2 Kitchen Knives
TARGET	Promenade Des Anglais	Ohio State University	Kaiser Wilhelm Memorial Church	British Parliament
KILLED / INJURED	87/434	0/13	12/56	5/50
TERRORIST AFFILIATION	ISIS Claimed	ISIS Claimed	ISIS Claimed	ISIS Claimed

(U//FOUO) **Potential Mitigation Measures:** Prevention requires a layered approach, including outreach/education/training efforts, suspicious activity reporting, public-private sector information sharing, and hardening of potential physical targets. Encourage public reporting through community training. Maintain ongoing, open dialog between the private sector, public safety agencies, fusion centers, and Joint Terrorism Task Forces to encourage suspicious activity reporting and ensure information is shared in a timely manner. Ensure personnel receive training and briefings on active shooter preparedness.

Release Date: 29 March 2017

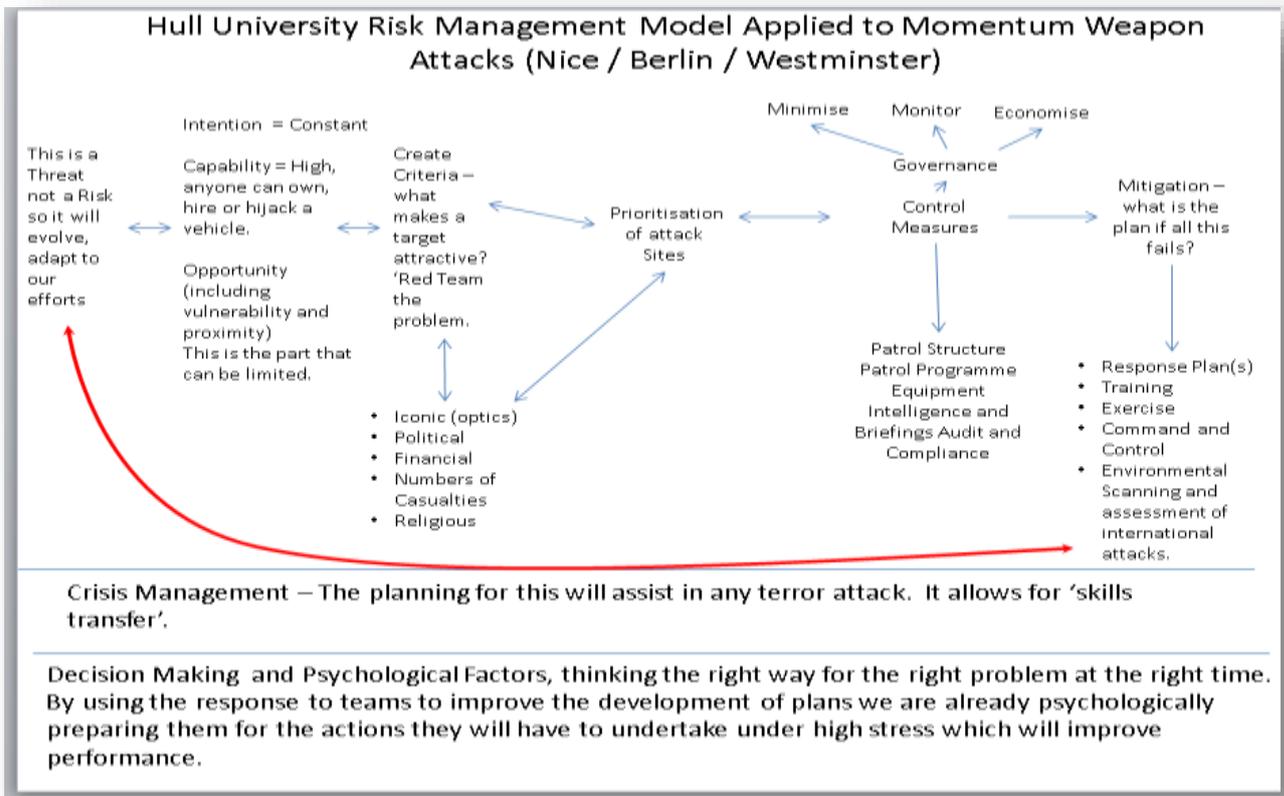
So given the opportunities that this type of attack offers to terror groups and individuals, and the difficulties inherent in countering such actions - what can be done to reduce the threat? As pointed out in Figure 4 there are 'outreach' approaches that can serve to funnel community intelligence towards the relevant security services and, of course, law

enforcement can 'fish' on the web to identify any individuals who might be radicalised. However, these are time-consuming and generalised approaches and are not covered by this paper. The purpose of this paper is to apply the Hull Risk Management model shown in *Figure 4* with a view to reducing the impact of 'no warning/no intelligence' attacks in metropolitan areas where motor vehicles are used as weapons.



We have taken this model and applied it to momentum weapon attack risk – *Figure 5*.

Figure 5: Hull University Risk Management Model applied to Momentum Weapons.



So let’s consider the various stages of managing this risk as described by the Hull model.

Stage One: This is a threat not a risk.

As early as 2010 the United States Quadrennial Defense Review noted that : *“We have become more adept at disrupting terrorist networks; nevertheless, our terrorist adversaries continue to learn and adapt, posing an enduring threat to the security of America and its allies and partners”*.

Put simply, we can reduce this threat, but not eliminate it as the perpetrators will adapt to counteract our efforts. Indeed, the death throes of ISIS as a ground-occupying force may see an upsurge in this type of simple attack as they lose ground in conventional theatres of war in the Middle East and North Africa. Consequently, the management of this threat has to be iterative, constantly learning from attacks, and through ‘red teaming’ - anticipating the *modus operandi* of the next attack.

Stage Two: Capability remains a constant ‘high’ and intention remains a possibility, therefore only opportunity can be affected.

Capability is a constant high. Vehicles can be owned, hired or hijacked. What might affect capability is the size of the vehicle utilized and /or its contents. We have within recent days seen the use of a fuel tanker with explosives attached in Iraq. In Europe, momentum weapons have to date been used to target pedestrians – it is not unreasonable to consider the potential innovation around the use of such weapons: used against infrastructure, a fuel tanker driven through a level crossing in front of a high speed train, or through an airport fence and into an aircraft. However, let’s focus on using the Hull model to reduce the risk of vehicles being used against civilians.

Stage Three: What are the criteria for target selection? How do we prioritise? What makes a target attractive for these types of attack?

- Availability of pedestrians and uncontrolled vehicular access – preferable sites for the terrorist will allow access to a pedestrian area without any physical barrier;
- Iconic location – close your eyes and think of the London sky line (or whichever city we are discussing) and those buildings that come to mind are iconic. Terrorists do consider the ‘optics’ of their attacks;
- Significant ‘time’ – Nice was on Bastille Day, Berlin on the approach to Christmas, Westminster was on a day the PM would be in attendance. Attacking on day that has National and/or religious significance adds to the terrorist’s impact.

Stage Four: What are the control measures?

Survey your town or city.

Employ the local knowledge of officers – draw up a list of locations that are iconic with easy vehicular access. This is not just a practical approach, it also gets the workforce thinking about possible attacks which means they will perform better in responding to an actual attack.

Employ partner agencies, including first responders, to grade the risks on the basis of the potential number of casualties and iconic nature of the locations. Once this is done tier the sites and implement a patrol programme to reduce the risk / improve public confidence. The priority list should also be used as the communications plan. It is imperative that the staff and other agencies on site at the identified locations are alert to ‘hostile reconnaissance’ and report anything suspicious.

In terms of ‘significant times’ these can be planned for and policed accordingly although there are engineering and other practical solutions. In Australia the coaches delivering persons to events are parked in such a way as to provide a physical barrier during festivities. Researchers at the University of Hull recently began focusing on fillable water bladders (1

cubic metre of water = 1 tonne) that can be transported and filled on site. Furthermore, they are researching the use of 'non-Newtonian' fluids which, in summary, means chemically raising the viscosity of water to enhance its resistance to stress.

Stage Five: How do we prepare for the next attack?

The patrol programme listed above is an interim measure. It may be that we can 'engineer' out the major targets or times, but this is not a comprehensive nor reliable policy. I would advocate the following.

- Having identified the main sites, draw up patrol programmes /staffing based upon the assessed risk;
- Where possible engineer out the risk;
- Brief partners agencies and the organisations proximate to the identified sites;
- Exercise for this type of attack (this should include moving casualty stations into buildings rather than public areas and when this is not possible, utilising vehicles to provide a physical barrier),
- Monitor attack types internationally and anticipate future attack methodologies;
- Include 'momentum weapons' in the planning process for protecting people in the vicinity of main sites and at events;
- Research, develop and strategically deploy momentum weapon counter measures on a permanent, semi-permanent or temporary basis in line with risk assessments and the nature of potential targets (permanently *in situ* or temporary).

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