



**Aesthetically  
pleasing,  
crash-tested  
street furniture:**  
why functional will  
no longer do





# Introduction

Asking whether architects value aesthetics is rather like asking if a mathematician appreciates numbers.

But if aesthetics in the built environment can be elevated only at the expense of security or safety standards, then architects must grudgingly concede to the demands of functionality.

The involvement of HGVs in two atrocities in Europe in 2016 – in Nice in July and Berlin in December – tragically highlighted why the deployment of robust physical barriers is a growing priority in public spaces. Together killing 98 people and injuring 490, they were brutal reminders that vehicles can be every bit as destructive as bullets and bombs.

**“How easily can urban planners find crash-tested street furniture that is not only visually appealing on its own merit, but also in keeping with the location’s wider architectural style?”**

Crowded places such as shopping centres, plazas and sports stadia perimeters increasingly need barriers that can withstand vehicular attacks as they are prime targets for terror plots.

Then there’s the ever-present threat of cars veering off the road because the driver is reckless, drunk or asleep. Protective design can deter, delay and prevent vehicle collision around accident blackspots.

## Psychological impact

But urban planners are mindful too of the adverse psychological impact on citizens of erecting imposing barriers too liberally. Another consideration is permeability: pedestrians must not be impeded along with rogue truck drivers. It’s no surprise, then, that more design-led forms of security barriers such as crash-tested seating, planters and cycle racks are gaining ground with architects and specifiers.

But how easily can urban planners find crash-tested street furniture that is not only visually appealing on its own merits, but also in keeping with the location’s wider architectural style?

When it comes to street furniture and perimeter protection in public spaces, a leading manufacturer of products in this sector believes that, all too often, architects are forced to compromise their architectural vision.





Marshall's, the UK's leading hard landscaping manufacturer and street furniture specialist, believes that, while security must always be paramount, traditional forms of protective street furniture can often be too imposing and have a detrimental effect on a landscape's visual appeal. Do those who are procuring and specifying protective street furniture in the built environment share the same opinion?

Marshall's has recruited IFSEC Global to test this assumption. We polled hundreds of architects, consultants, security professionals, facilities managers and specifiers on three key areas:

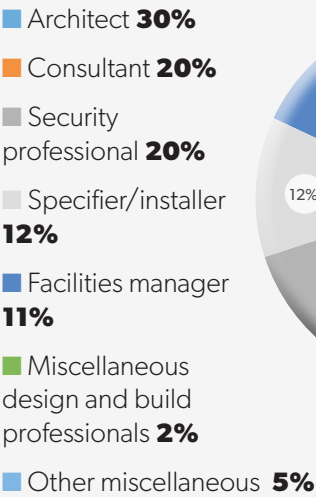
- Their procurement habits
- Their perception of the products on the market and how things are changing
- And what kind of products they would like to see on the market

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Eighty percent of respondents were based in the UK, so this is primarily a study of the UK market. However, we have throughout the document compared the UK responses to non-UK responses to unearth any notable differences.

### Which of these job titles best describes your job/role?



### In which country are you based?



**“Hostile vehicle mitigation must blend in with the environment. Too many crash bollards look just like ‘crash’ bollards!”**

*Qatar-based security professional*



# Security standards for hostile vehicle mitigation: BSi PAS 68 defined (courtesy of Marshall's)

At the heart of the concept of hostile vehicle mitigation is the BSI PAS 68 standard. PAS 68 specifies a performance classification for vehicle security barriers and their foundations when subjected to a horizontal impact.

PAS 68 involves the physical impact testing of perimeter security products at varying speeds with different vehicle types. This ranges from arresting medium-sized saloon cars to large trucks, and measuring the penetration of the load carrying part of the vehicle beyond the barrier.

The existence of PAS 68 enables businesses and organisations to specify assured levels of protection against hostile vehicles, at a level that is in proportion with the risk of attack at their specific site. Whilst it is only through specifying products successfully tested in accordance with PAS 68 that protective security can truly be assured, this does not necessarily mean that the highest specifications of PAS 68 protection are always required.

Depending on site-specific conditions, such as the traversability of the surrounding landscape, it is not always physically possible for larger vehicles to reach the required speeds to carry out a successful attack. In these cases, lower, more cost-effective levels of protection can be employed,

meaning that tested security and peace of mind can be achieved in proportion with all levels of risk, vulnerability and project budget.

PAS68 is the UK BSI test standard, but all UK products tested from now on will achieve an IWA rating, which is an international impact testing standard.

## IWA

IWA 14.1 and 14.2 is an international standard for vehicle impact-testing that incorporates PAS68, PAS69 and the CEN Workshop Agreement. Hence, no matter where you are based or where you want to create a safe and beautiful space, the IWA workshop agreement standardises all vehicle impact-testing agreements and models and combines them into one, making the testing and specification of products easier and clearer for all specifiers.

The agreement provides guidance on selection, installation and use of vehicle security barriers, to ensure that they are selected and placed as effectively as possible. Marshall's takes this a step further, by making functional items beautiful so as not to compromise the aesthetics of the surrounding architectural space.







The testing methods and criteria outlined in the workshop agreement are a combination of those outlined in the BSI PAS 68, 69, CEN and American ASTM standards. As such, any products that have been successfully tested to the requirements of IWA are also approved to the requirements of all previous standards as well (PAS68, PAS69, CEN, International American Standards).

Marshalls is an IWA workshop contributor, involved in the development of the IWA Standard, together with other international bodies such as the Centre for the Protection of National Infrastructure (CPNI), MIRA, the Norwegian Defence Estates Agency, the Royal Military Academy, Transport Research Laboratory (TRL) and Middle East and US defence bodies such as the US Department of State and the Army Corps of Engineers.

**“If people could deliberately or accidentally crash into something, consideration needs to be given to security and safety as well as aesthetics. I have seen people taking bets on how long a bollard would last in practice, a period usually measured in these situations in days rather than weeks or months.”**

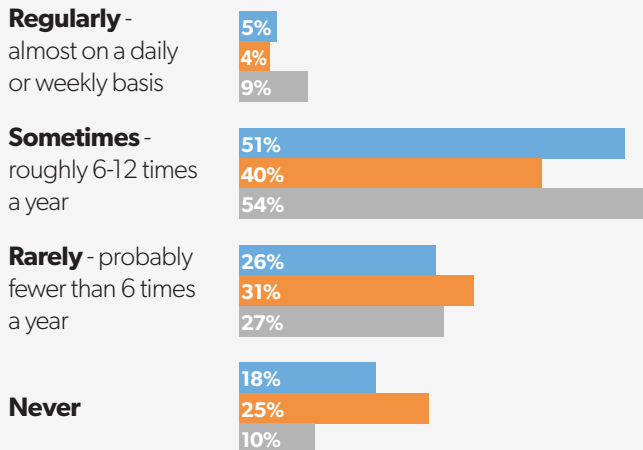
*UK-based consultant*



# Procurement and specification trends

## How frequently do you procure, advise on or specify crash-tested perimeter protection?

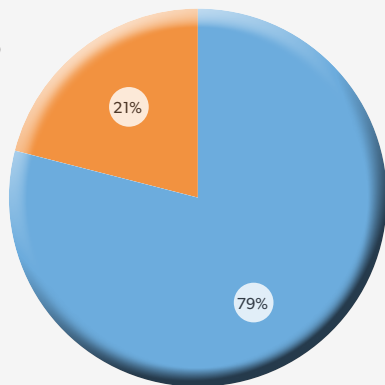
■ All ■ Architects ■ Security professionals



## In the past three years, has the number of projects you have worked on requiring aesthetically-focused perimeter protection increased?

Overall (minus those with no experience to date)

■ Yes **79%**  
■ No **21%**



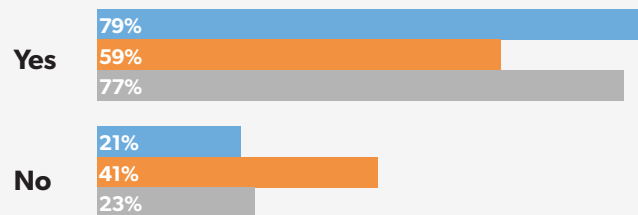
With around four in five (79%) respondents involved in a growing number of projects specifying aesthetically-pleasing, crash-tested perimeter protection over the last three years, there has apparently been a sea change in priorities when it comes to urban planning briefs.

Architects were much less likely to report a rise in such projects – with 59% saying they had seen an increase versus 41% who hadn't – than non-architects, who were split 74%-26%. Nevertheless, it's still a clear majority. City planners are increasingly unwilling to compromise on aesthetics as they bolster security in the urban environment.

## Security professionals versus architects

In the past three years, has the number of projects you have worked on requiring aesthetically-focused perimeter protection increased?

■ Overall (minus those with no experience to date) ■ Architects ■ Security professionals



Security professionals were more likely to report a rise (77% versus 23%) than those who worked elsewhere in the supply chain (68%-32%). The same was true for UK versus non-UK-based respondents, with the respective splits being 72%-28% and 59%-41%.

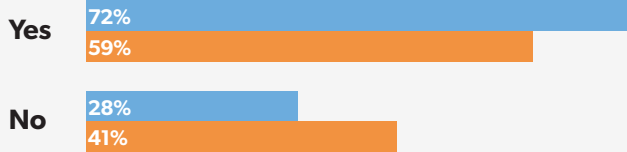
**"The aim is to provide a secure environment which does not look at all obtrusive, but prevents/discourages antisocial activity – eg theft from pharmacy by driving into the window. GPs are public servants and do not like the 'security' look, but street furniture can greatly improve security – especially relevant in inner-city practices."**

*UK-based consultant*



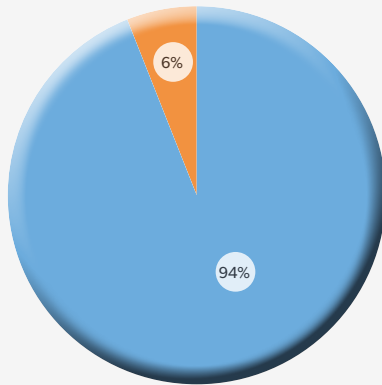
### Do you think the market needs more aesthetically pleasing crash-tested perimeter protection?

■ UK ■ Non-UK



All

■ Yes  
■ No



There's obviously a clear and growing appetite for aesthetically-pleasing, crash-tested perimeter protection – but have manufacturers kept up with a trend observed even within a short, three-year timespan?

Apparently not, our survey findings indicate.

Demand for a wider range of aesthetically-pleasing, crash-tested perimeter protection than is currently available is enormous – equally so regardless of who we asked

in the design and procurement chain, or where they were based in the world. Asked if they thought there was demand in the market for more of these products, a resounding 94% agreed.

Security professionals were equally as emphatic in their desire for more visually-appealing security products, with 95% wanting more choice in the market.

Steve Reddington, street furniture commercial director at Marshall's, says the findings back up the company's own, anecdotal experience. "The research confirms the conversations we are having with our customers in the security industry," he says. "We work closely with many landscape architects, and from the conversations we are having, it is clear the market is changing."

Mindful of this reservoir of untapped demand, Marshall's has pioneered a paradigm shift in how street furniture and crash-tested perimeter protection can coexist more harmoniously: by combining the two in the same product. Traditionally, efforts to minimise the visual price paid for security measures have centred on making bollards and barriers as unobtrusive and congruous with the landscape as possible (for instance, sleeves can be placed over bollards). Marshall's, however, thought outside the box – or rather, outside the 'ring of steel'.

"Traditionally, the way to secure an area was to install a 'ring of steel': a line of heavy bollards which offer little to no value aesthetically," says Reddington. "We have turned this slightly on its head by taking existing street furniture products such as seats, litter bins and lighting columns and engineering them to incorporate the same technology from our most popular crash-tested bollards."





"Effectively, this allows the architect more freedom when designing a public space to ensure the aesthetics are not compromised with the introduction of essential security products."

By consolidating protective barriers with street furniture, Marshall's hopes that architects never have to compromise on aesthetic or utilitarian goals when designing public spaces. Where once they might have to specify a seat and a bollard – or reluctantly jettison the seat – now they can just specify a protective seat.

Applied to public spaces, governments, architects and the general public have come to recognise the truth of the expression 'less is more'. Decluttering is in vogue.

With the UK population growing by half a million annually (ONS) and the number of people living in urban areas globally expected to grow by 2.5 billion by 2050 (UN), the challenge of keeping pedestrian traffic flowing underpins the growing importance of decluttering.

But not everyone in the industry has embraced the concept of protective street furniture. Many involved in the built environment fear that it fosters homogeneity and blandness in urban landscapes.

The challenge for manufacturers of street furniture, therefore, is to prove such fears unfounded through an innovative, design-led approach. They must equip architects and specifiers with the means to complement, rather than jar with an urban landscape's prevailing style – and this must apply to a wide range of colours and styles, both traditional and modern.

The aesthetic value of a product even trumps price when respondents were asked to rank their priorities when procuring crash-tested perimeter protection. Given the nature of the product, it is understandable that performance was accorded a higher priority than cost too.

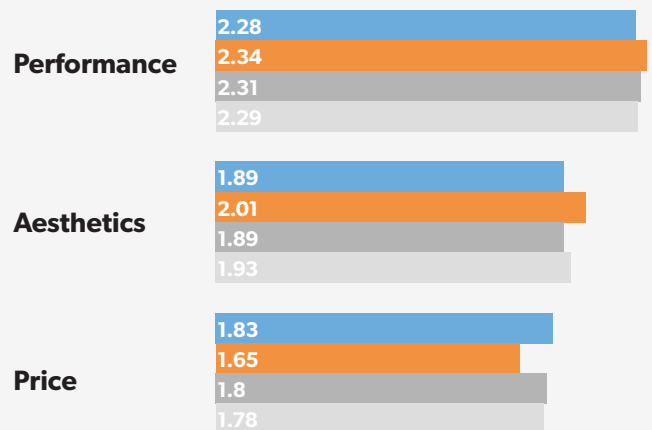


Nevertheless, it is reasonable to surmise that only a lucky few in the architect profession can honestly claim that money is truly no object in their latest project.

**Please rank in order of importance the value you place on the following considerations when procuring, advising on or specifying crash-tested perimeter protection**

(Numbers are weighted averages: the higher the number, the higher it was ranked on average.)

■ Overall (minus those with no experience to date)  
■ Architects ■ Security professionals  
■ Non security



The nature of a decluttered public space is such that architects can budget for fewer items of street furniture overall. So the question, then, is whether it is more cost-effective to specify, say, 10 crash-tested seats and planters than the same number of non-protective equivalents, plus conventional barriers or bollards?

It all depends on the cost of manufacture and the complexity of installation.

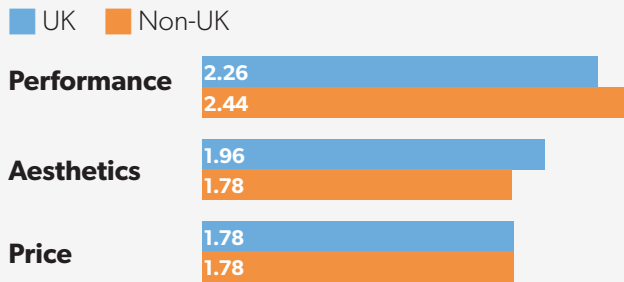
The choice of materials has a huge bearing on both the cost and performance of protective street furniture, often in inverse proportion to one another. Whether composed of precious stones, polyurethane, concrete or stainless steel, the key is giving the architect a wide choice of options that meet their particular needs – in terms of budget, security requirements and architectural style. 'Bespoke' is the watchword for modern architects who often have a recognisable signature style.

The overwhelming demand for a wider choice of products noted in the previous question suggests specifiers' needs aren't being fully met.



A project's total cost can also be reduced by making installation and maintenance as simple and quick as possible. One way of doing this, for instance, is through modular seating designs (an innovation Marshalls is an exponent of).

**In which of the following product categories would you be interested in seeing a crash-tested, security alternative? (Tick all that apply)**



Architects were even less likely to prioritise price than non-architects. Security professionals prioritised performance and price over aesthetics in greater numbers than others working in the built environment, albeit the difference was marginal. There was a bigger difference between the UK and non-UK responses, with those based outside the UK more likely to prioritise performance over aesthetics.

**'Broken windows' theory**

Local and central governments have long recognised the role architecture and urban landscapes play in attracting skilled workers and inward investment. Furthermore, the 'broken windows' theory, which has informed public policy since the 1980s, suggests that urban spaces that are pleasant, well-maintained and visually appealing are less vulnerable to vandalism and antisocial behaviour.

In this context it is easy to see how not just architects, but also security professionals and others involved in urban planning, would be mindful that – as far as is feasible – these factors should go hand in hand when planning a public realm environment.

There's also the issue of pedestrian permeability. Street furniture that impedes the flow of pedestrians as well as forming a barrier against vehicular encroachment is less likely to win favour with urban planners.

**"A Sheffield-type cycle stand that incorporated HVM performance would be a very desirable option, as would TfL cycle hire scheme docking stations and electric vehicle charge points."**

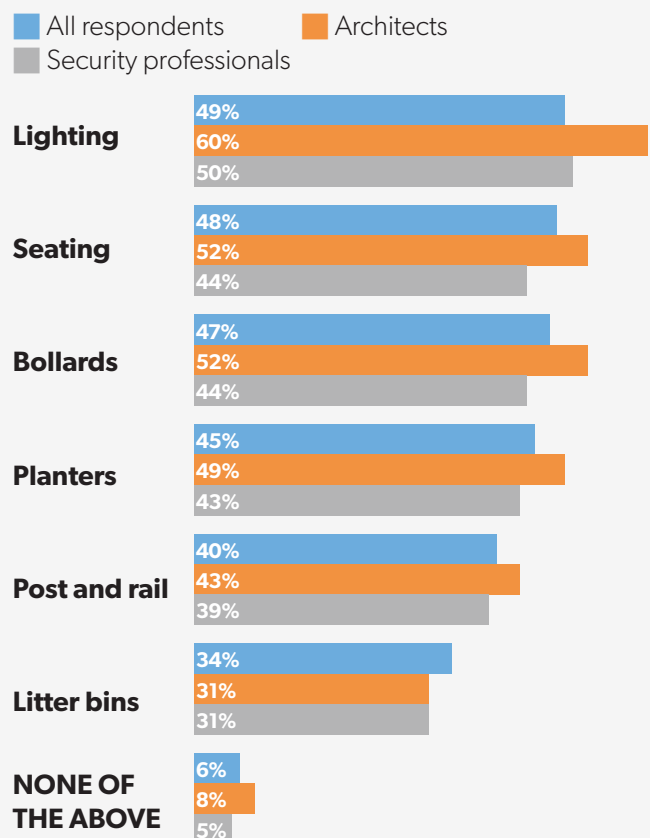
*UK-based security professional*

Thankfully, street furniture can play a key role in preserving the architect's grand vision, even as 21st century spaces are fortified against vehicular or explosive attack. But is there enough crash-tested street furniture on the market to meet the eclectic demands of urban planners?

Street furniture has certainly been integral to the elegant plazas, canalside developments and gleaming business parks that have driven the regeneration of Birmingham, Glasgow and other UK cities once disparaged as architectural backwaters.

It is surely no surprise, then, that architects and other specifiers should be overwhelmingly interested in at least 2-3 crash-tested versions of lighting, seating, bollards, planters, litter bins and post and rail products. Only 6% professed to not be interested in any.

**In which of the following product categories would you be interested in seeing a crash-tested, security alternative? (Tick all that apply)**



Also unsurprisingly, these percentages rise higher still among those who regularly specify or procure crash-tested perimeter protection, with lighting being an interest to 67%, bollards to 53% and seating and planters both to 50%.

Among those yet to be involved in such procurements, demand was still strong (lighting on 56%; seating, 53%; planters, 53%; and bollards, 45%).

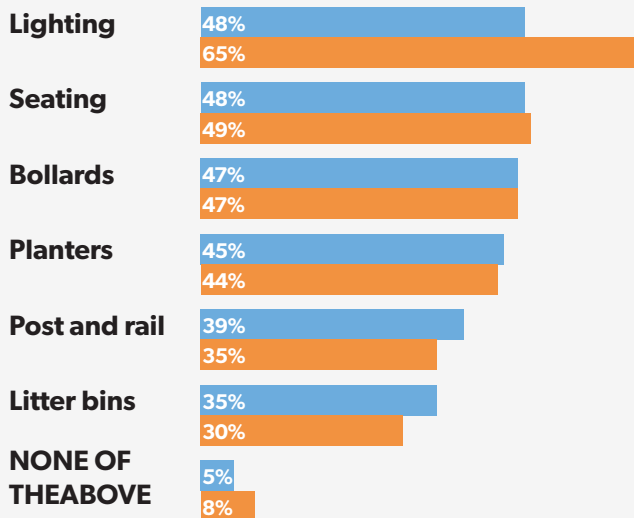
Ranked third out of six options given, demand for the tried-and-trusted bollard remains strong even as imaginative alternatives emerge. Nevertheless, comparable levels of demand for crash-tested lighting, seating, planters and litter bins suggests that bollards are no longer the default choice of protective street barrier – at least when specifiers are aware of the existence of alternatives that fit their architectural blueprint. As crash-tested furniture becomes more diverse and well-known, bollards may well slip down the table.

Architects were more likely to prefer seating and bollards to planters and lighting compared to non-architects.

Lighting was much more in demand outside the UK than within the UK, while planters were more sought after by UK respondents.

**In which of the following product categories would you be interested in seeing a crash-tested, security alternative? (Tick all that apply)**

UK Non-UK



**I would like to see “elements for use in areas with utilities where shallow foundations would otherwise require bespoke HVM.”**

*UK-based landscape architect*

Offered the chance to suggest other street furniture that could benefit from compliance with crash-testing security ratings, respondents mentioned fencing, balustrading and bicycle storage. Other types of street furniture on the market include illuminated bollards, fingerposts (ie, signposts with multiple signs), and ‘monoliths’ (a signage structure with maps and other information for pedestrians).

Strong demand for crash-tested planters is understandable in the context of growing evidence of a link between how ‘green’ an urban environment is and the health and wellbeing of its citizens. One 2015 study of London boroughs, for example, found that doctors prescribe fewer antidepressants in areas with a higher concentration of trees.

Greenery also makes areas more desirable to live in, of course. A 2008 study of low-income Philadelphia neighbourhoods, for instance, found that newly planted trees boosted the sale prices of nearby houses by 2%.

Once a wry, oxymoronic description of urban environments, the term ‘urban jungle’ could yet be rehabilitated as an ironic description of inner-city regeneration.

One survey respondent suggested that green walls, which have begun appearing at airports, business parks and city centres in recent years, can provide a verdant disguise for otherwise imposing barriers in public spaces. Of 61 large-scale outdoor green walls indexed by greenroof.com, 80% were constructed after 2008.

It’s clear that there are now more sympathetic security solutions available on the market other than imposing lines of steel bollards. Not only can security products enhance a landscape visually, but with the introduction of urban greening, a space can be safe while also improving overall wellbeing.





# Conclusion

In commissioning this report Marshalls sought to gauge the importance of aesthetics when it comes to the specification of products where security must always be chief priority. We also looked to find out if professionals working in the built environment are aware of the growing number and variety of products – from Marshalls and others – that could satisfy growing demand for crash-tested, yet elegant, street furniture.

The five key findings from the report listed below suggest the answer to the first question is a resounding 'very important', while the consensus around the latter is almost as decisively 'no'.

## Crash-tested street furniture: 5 key findings from our survey of built-environment professionals

- **79%** said the number of projects requiring aesthetically-focused perimeter protection has increased in the last three years
- **72%** believe the market needs more aesthetically-pleasing perimeter protection products
- **Aesthetics** ranked even higher on average than price when respondents were asked to rank performance, price and aesthetics in order of priority
- **Lighting, seating, bollards, planters, litter bins, post and rail:** Between 31-60% of architects were interested in crash-tested versions
- **Just 6%** of respondents professed to having no interest in any crash-tested alternatives to common street furniture

## With urban populations mushrooming, protective street furniture must be impermeable to hostile vehicles but permeable to pedestrians

Fashions change in landscape architecture just as they do in other visual fields. Nevertheless, architectural historians of the future might, we could reasonably speculate, look back at the past 25 years as a big step forward for urban planning in terms of quality-of-life benefits to citizens. From cycle lanes to pedestrianisation, countless cities have become easier and more pleasant to navigate thanks to a variety of imaginative solutions.

But the dramatic elevation in the terror threat over recent years has thrown down a new challenge to architects: making public spaces as secure as possible without undermining the aforementioned gains. Citizens shouldn't feel like they're living under martial law.

Since the early 1980s, improving city-centre security has above all meant more CCTV cameras. However, the mutation of the terror threat to embrace vehicular attack has necessitated a more physical approach.

With urban populations mushrooming, it's also important that these barriers are impermeable to hostile vehicles but permeable to pedestrians as they move around the city.

The manufacturers that best meet these needs will surely thrive and dominate the market.

The findings from our survey, along with the trends explored above, suggest that the future of protective street furniture will be defined by its discrete incorporation within designed products like seating, lighting and planters.

**[Find out more about protective street furniture from Marshalls](#)**

