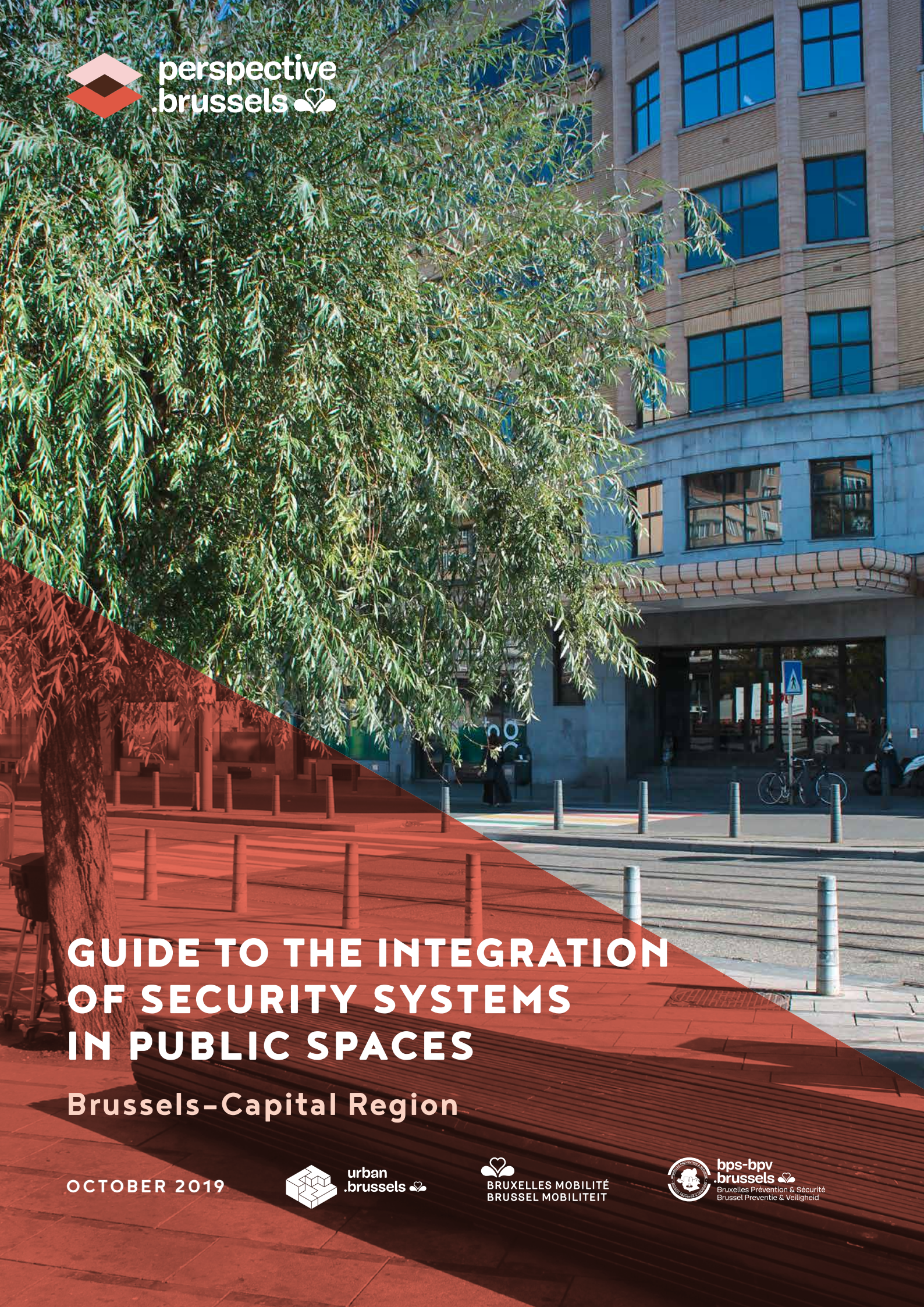

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GUIDE TO THE INTEGRATION OF SECURITY SYSTEMS IN PUBLIC SPACES

Brussels-Capital Region

OCTOBER 2019

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This guide for the integration of security systems in public spaces is intended for designers, operators and managers of public spaces in the Brussels Capital Region (RBC). It is part of the sixth state reform that has given the Brussels-Capital Region a coordinating role in the field of prevention and security.

The purpose of this guide is to familiarise operators, managers and designers of public spaces with the principles governing physical security and the related administrative procedures. In line with the security study carried out in the European Quarter, this first edition of the guide focuses on terrorist and extremist threats and, more specifically, on ram vehicle attacks.

After a brief introduction to the key principles of "Crime Prevention through Environmental Design" (Security by Design), which provide a comprehensive understanding of security issues in public spaces, the guide discusses each of the successive steps necessary for the successful integration of security systems.

The first step is to carry out the two audits: one on security (threats and risks) and the other on the use value of a particular place. Cross-referencing these audits makes it possible to integrate safety requirements as effectively as possible into the layout of a public space and the urban furniture. While these audits may be limited to a particular public space, it is nevertheless recommended to choose a larger scale - a district or municipality - to achieve a coherent overall vision, or even the implementation of perimeters that allow cases to be dealt with in an organised way.

Once the audits have been carried out, the design phase begins. The guide reviews four types of public spaces and the recommended design principles for each: streets, pedestrian areas, squares and parks. Generally speaking, it can be said that the higher the use value of the space, the more important it is to take it into account and to integrate security systems into the layout and urban furniture.

The different types of security systems to be installed can be divided into two categories: on one hand, certified systems that have been subjected to approved physical tests and, on the other hand, custom-made systems for which it is recommended to carry out dynamic calculations to ensure their adequacy in the face of the identified threat. This guide shows several in situ examples of such systems, and provides an explanation of the International Workshop Agreement (IWA) 14-1 standard on which certifications are based.

Given the need in some cases for the implementation of video protection, Chapter 7 discusses the different types of systems offered by the regional video protection platform set up in collaboration with the Centre Informatique pour la Région Bruxelloise/IT Centre for the Brussels Region (CIRB).

The guide then goes on to discuss questions relating to urban planning authorisation procedures and site management. While some worksites may be subject to simplified procedures, in most cases a more overall approach leads to the submission of an application for planning permission and coordination of the worksite with other operators/concession holders. All the issues are covered in Chapter 8 and Appendix 1.

This guide is based on the experience gained during the "*Mission to develop an urban strategy for integrating security requirements into the layout of the European Quarter*" as well as recent exchanges with other European cities and the Joint Research Centre (JRC) of the European Commission (EC).

Given the inherently evolving nature of security threats and risks, the guide will be updated regularly as and when required.

2. BACKGROUND INFORMATION

This guide for securing public spaces is based on the expertise acquired by Brussels Prevention and Security (BPS), Perspective (BBP), Urban (BUP) and Brussels Mobility (BM) in the field of urban security, more specifically in the field of protection against terrorist acts.

It follows on from the "*urban strategy aimed at integrating anti-terrorist security requirements into the layout of the European Quarter*", commissioned from Perspective by the Government of the Brussels-Capital Region. All the public actors concerned (municipalities, local police districts, federal police, Crisis Centre Directorate General, OCAM, SIAMU, FPS Public Health - Federal Hygiene Inspector, STIB, Commissioner for Europe and International Organisations - CEOI, BPS, Brussels Urban Planning and Heritage - BUP, Brussels Mobility - BM) were consulted or involved in this study, which took place from November 2016 to September 2017. Its purpose was to provide a coherent and coordinated response to terrorist threats for the entire European Quarter, its public spaces and the main institutions present. The resulting recommendations are intended to reduce the risk to an acceptable level, given that there is no such thing as zero risk.

BPS and the CIRB were also mandated in May 2018 by the GRBC to develop an overall video protection plan for the Region in line with the idea of technical pooling and networking and in accordance with its Smart City strategy[1].

These recommendations of this guide are therefore underpinned by the above-mentioned studies, as well as recent exchanges with other European cities and the European Commission's JRC on good practices in securing public spaces.

This guide was drawn up by Perspective, BPS, Urban and BM in the course of 2018.

1 4 projets-clés de smartcity.brussels, cahier du cirb 35, Centre d'Informatique pour la Région bruxelloise, 43 p.

3. INTRODUCTION

Although this guide focuses mainly on the physical security of public spaces, it is useful to consider this aspect from a broader perspective, that of Security by Design and, in particular, Crime Prevention Through Environmental Design[2] (CPTED).

The six main concepts of the CPTED are territoriality, surveillance, access control, maintenance, activity support and **target hardening** (the latter being the subject of this guide). The implementation of all these strategies is crucial when trying to prevent criminal acts.

Natural surveillance and access control strategies limit opportunities to commit criminal acts. Strengthening territoriality promotes social control through a variety of measures. Maintaining and supporting activities reassures the community and offers people the opportunity to prevent crime on their own. Target hardening strategies are the final step in these crime prevention techniques.

Natural surveillance

Natural surveillance increases the risk perceived by the potential perpetrator when considering deviant actions by improving the visibility of potential offenders to the general public. Natural surveillance is made possible when the design of public space, its urban furniture, the activities that take place there and its users takes place in such a way as to maximise the visibility of public space and its users. This tends to promote positive social interactions between legitimate users of public and/or private spaces. Potential offenders feel a higher level of social control and therefore perceive increased risk if they commit criminal acts. The perception of increased risk is also related to the perceived lack of a viable and protected escape route.

Below are some examples of practical measures:

- Designing streets to increase pedestrian and bicycle traffic.
- Developing mixed neighbourhoods to increase the presence and diversity of people in the neighbourhood.
- Placing windows overlooking pavements and parking spaces.
- Keeping window blinds open.
- Using passing vehicle traffic as a surveillance asset.
- Creating landscape designs that provide surveillance opportunities, especially in proximity to designated points of entry but also opportunistic points of entry.
- Using a barrier adapted to the situation but obstructing the view as little as possible.
- Using transparent security doors at building entrances.
- When creating urban lighting, avoiding poorly placed lights that create blind-spots for potential observers or fail to illuminate sensitive areas. Ensuring potential problem areas are well lit: pathways, stairs, entrances/exits, ATMs, bus stops, playgrounds, public squares, etc.
- Avoiding too bright public lighting that creates a blinding glare or deep shadows. Eyes adapt to night lighting and have trouble adjusting to severe lighting disparities. Using lower intensity light often requires more fixtures.
- Placing lighting for pedestrian areas at an appropriate height to illuminate people's faces in the space (and to identify potential offenders).
- Using transparent materials.
- Opting for urban furniture (kiosk, billboard, etc.) that does not obstruct the field of vision.

Natural surveillance measures can be complemented by mechanical and organisational measures. For example, closed-circuit cameras (CCTV) can be added in areas where social control is insufficient.

2 Also known as Crime Prevention through the Built Environment. Translation used by the International Centre for Crime Prevention (ICCP), see 5th International Report on Crime Prevention and Community Safety: Cities and the New Urban Agenda, p. XII. Also known as Crime Prevention through Environmental Design (CPTED) in Quebec.

Natural access control

Natural access control limits the opportunity for crime by taking steps to clearly differentiate between private and public space. By selectively placing entrances and exits, fencing, lighting and landscaping to limit access or control flows, natural access control occurs.

Below are some examples of practical measures:

- Using a single, clearly identifiable point of entry.
- Using structures to divert people to reception areas.
- Incorporating maze entrances in public toilets. This prevents the isolation that is produced by an anteroom or double-door entry system.
- Using low, thorny bushes beneath ground floor windows. Using rambling and climbing thorny plants next to fences to discourage intrusion.
- Eliminating design features that provide access to roofs or upper floors.
- In the front gardens, using waist-high fences along property boundaries to control access and promote surveillance.
- Using a locking gate between front and rear gardens.
- Using solid, high fences between a rear garden and a public road rather than a wall that blocks the view in all directions (e.g.: former barracks located on Place du Jeu de Balle, Brussels).

Natural access control is used to complement mechanical and operational access control measures, such as target hardening.

Natural territorial reinforcement

Territorial reinforcement promotes social control through better definition of space and improved concern for property. An environment designed to clearly delineate private space does two things. First, it creates a sense of ownership. Owners have a vested interest and are more likely to challenge intruders or report them to the police. Second, the sense of owned and inhabited space creates an environment where intruders stand out and are more easily identified. When buildings, fences, pavements, signs, lighting and landscaping are used to express private property and define public, semi-public and private space, natural territorial reinforcement occurs. Additionally, these objectives can be achieved by assigning space with unclear status to designated users.

Below are some examples of practical measures:

- Restricting private activities to defined private areas.
- Displaying security system signage at access points.
- Planting trees in residential areas. Recent research results indicate that, contrary to traditional views within the law enforcement community, outdoor residential spaces with more trees are seen as significantly more attractive, safer and more likely to be used than similar spaces without trees.
- Avoid chain link fences and barbed wire as they convey the idea of no physical presence on site and a reduced risk of being detected.
- Placing amenities such as seating or refreshments in common areas help to attract a larger number of users, which results in better social control.
- Scheduling activities in public spaces increases their ownership and attractiveness, attracts more people and increases the perception that these spaces are controlled.

Territorial reinforcement measures make the normal user feel safe and make the potential offender aware of a substantial risk of arrest or scrutiny. When people take pride in what they own and take the right steps to protect their property, crime declines because it is made more difficult. The more difficult it is to commit a crime in a given place, the less crime will occur. The maintenance and activity support aspects of CPTED have been partially addressed above, but they are often treated separately as they are not physical design elements within the built environment.

Maintenance and Management

Maintenance is an expression of good management and hence of the fact that the property belongs to someone. A deteriorated property indicates that it is less controlled by its users and that a higher level of disorder is tolerated. The "*Broken Windows*" theory is a valuable tool in understanding the importance of maintenance in deterring crime. Proponents of this theory support a zero-tolerance approach to property maintenance, observing that the presence of a broken window will entice vandals to break more windows in the vicinity. The sooner broken windows are repaired, the less likely it is that such vandalism will occur in the future. Vandalism also falls into this category of broken windows. The faster graffiti is removed, the less likely it is that someone will repeat the act. Having a positive image of the local community shows a sense of pride and mutual respect that increases the risk for potential troublemakers.

Activity support

Activity support increases the use of a built environment for safe activities with the intention of increasing the risk of detection of undesirable and criminal activities. Natural surveillance by the intended users is commonplace and does not require any specific plan for monitoring criminal activities. By placing signs such as 'Caution, children playing' or others to indicate activities taking place in a given area, neighbourhood residents will be more involved in what is happening around them. They will be more tuned into who is and who is not supposed to be there and what looks suspicious in everyday life.

CPTED strategies are most successful when they inconvenience the end user the least and when the CPTED design process relies on the combined efforts of public space designers, their managers, neighbourhood associations and law enforcement agencies. The strategies mentioned above cannot be carried out without the involvement of the local community. In addition, they require the entire local community to be involved in making their environment a safer place to live.

Target reinforcement

This sixth point is further developed in the following chapters. A target is defined as a place that is likely to be suitable for large gatherings of people.

4. SECURITY AND URBAN LIFE AUDITS

A strategy to secure public spaces based only on a security audit would be likely to lead to an overabundance of urban furniture in public spaces, some aimed at security and others as public amenities. This is why it is recommended that, in parallel with the security audit, an urban life audit be carried out on the use value of the public spaces in question. This double audit makes it possible to take better account of daily urban life and the need for amenities in public spaces. And it therefore makes it possible to kill two birds with one stone and adapt security systems to the realities of urban life.

Moreover, although it may be tempting to carry out audits on a case-by-case basis, for example, depending on the requirements of a particular institution, it is ultimately preferable to carry out the audit at the level of the municipality or district. This is the only way to achieve a coherent approach that puts into perspective the level of threat to a particular target. However, in order to reconcile the need for an overview with the high degree of urgency that a specific target could represent, it may in some cases be appropriate to use interim measures as described in section *5.1 Short term and emergencies*.

4.1 MULTI-CRITERIA AUDIT OF URBAN LIFE

The inventory of urban life and its importance for a given place may seem obvious to the informed eye of some local politicians. The importance of a municipal square in the life of a municipality is often much greater than other places or streets in the same municipality. However, in some cases it may be useful to objectify this importance in the urban life of the municipality or neighbourhood.

To this end, it is recommended to identify the following criteria: density of inhabitants/users, accessibility by public transport, quantity and characteristics of events, presence of cultural, leisure or educational facilities, tourist numbers, presence of a shopping centre, identification of the network of pedestrian and cyclist paths and, finally, accessibility by car. Most of this information can be obtained by consulting the "Neighbourhood Monitoring" established on the basis of the statistical sectors of the Region or the various barometers regularly published by the various regional bodies.

4.2 MULTIDISCIPLINARY SECURITY AUDIT

Before analysing the level of risk that certain places or buildings may represent, it is useful to recall the general situation of the threat in the Brussels-Capital Region. Generally speaking, the security audit methodology is carried out in three or five steps:

- Step 1: Inventory of key properties, places and events in the neighbourhood, with reference, where appropriate, to police statistics (incidents/conflicts in public spaces, insecurity factors, etc.)
- Step 2: Interviews with key stakeholders, security coordination bodies and law enforcement agencies (police district, municipal security cell, etc.) to identify any recurrent and/or occasional risk coverage set up by the emergency services for a given location, but also to identify any Special Emergency and Intervention Plans that could cover the area in question.
- If the possibility of a terrorist or extremist threat is identified by local authorities they can contact the OCAM (Threat Analysis Coordination Body).
  - Step 3: Request an **overall threat assessment** by the crisis centre.
  - Step 4: Have a **risk study** carried out by a research consultancy. This consists, firstly, of assessing the attractiveness (perceived value) of the properties, places and events identified in stage 1 and, secondly, of assessing their vulnerability on the basis of the scenarios envisaged and the existing measures.
- Step 3/5: General recommendations for properties, places and events.

4.2.1 Global threat assessment

Radicalisation trends, means and models have evolved and expanded. Terrorism in Europe today is inspired by a wider variety of ideologies. The threat has gradually evolved to include smaller groups based in Europe, isolated cells or actors who operate in a more unpredictable way. They plan attacks with little or no leadership from an organisation, making prevention even more difficult.

While Belgium as a whole is concerned by terrorism and extremism, the Brussels-Capital Region is particularly targeted both by the presence of international institutions (including European institutions) on its territory and by the sheer number of events and the presence of VVIP and VIPs linked to them.

Since May 2014 and the attack on the Jewish Museum in Brussels, Belgium has faced a major terrorist threat. The years 2015 and 2016 saw a large number of attacks in Europe. On 22 March 2016, two attacks were carried out in Belgium at Zaventem airport and the other in the heart of the Brussels Capital Region, in an underground train at Maelbeek station.

However, since October 2017, we have seen a decrease in the number of actions committed by terrorist organisations, particularly in Europe. In Belgium, the OCAM has observed for more than a year that this threat is lower than was previously the case. The threat remains, though, and attacks are still being carried out in Europe (wrongly or not claimed by IS), but it is more diffuse than before.

Finally, the attacks in Barcelona and Cambrils in August 2017 and the arrests of several people in the Netherlands in September 2018 demonstrate the vigilance that must be maintained with regard to terrorist cells/networks.

The system for assessing the extremist and terrorist threat in Belgium is structured on four levels[3]. The Threat Analysis Coordination Body (OCAM) founded on the 1 December 2006 is in charge of assessing these threats. It bases its analysis on a table ranging from level 1 (low), level 2 (medium), level 3 (severe) to 4 (very severe).

In the aftermath of the attacks in Paris on Friday, 13 November 2015, the OCAM decided to raise the level of threat throughout the country to its maximum level (4) for Brussels for a few days due to a serious and imminent terrorist threat. This maximum level was restored for three days throughout Belgium following the attacks on Zaventem National Airport and the Brussels Underground[4].

In November 2015, the general threat assessment in Belgium, including the threat to the European institutions, had been raised to 3 (serious). In January 2018, the level of the general threat in Belgium was reduced to level 2 (medium). This assessment was affected by the near geographical disappearance of the proto-State that IS failed to maintain and, among other things, the analysis of propaganda. This level of general threat applies to the European institutions. The highly symbolic nature of these institutions is indisputable.

These assessments are always subject to change at any time due to the information and intelligence that may be collected by the services and then transmitted to the OCAM.

4.2.2 Risk study

A study of the risk incurred by a property, a place or an event is based on a certain number of attack scenarios on the one hand, and on the attractiveness and vulnerability of the target, on the other.

What the security study conducted on the European Quarter has shown from the point of view of attack scenarios is that it is very difficult to protect oneself by permanent physical means against scenarios of lone snipers on foot. In these cases, video surveillance (CCTV) measures or the establishment of temporary security arrangements or the presence of law enforcement officials may be useful.

On the other hand, scenarios involving a ram vehicle or a vehicle loaded with explosives can be hindered by physical security measures. This guide focuses on the latter cases. Although, in general, it is recommended to encourage permanent systems, temporary security arrangements may be relevant in the context of one-off events, in a situation of unstable threat or during the set-up phase of a permanent system. This type of arrangement allows a more flexible approach in both space and time.

As regards the assessment of the attractiveness of a target, it has been observed that IS seems to have a preference for soft targets because they are more effective than attacks

3 The functioning of the OCAM is governed by the Law of 10 July 2006 on threat analysis and the Royal Decree of 28 November 2006 implementing the Law of 10 July 2006. The scope of the OCAM's work is limited to terrorism and extremism. More specifically, the OCAM's mission is to periodically carry out a joint strategic assessment and to carry out joint assessments on an ad hoc basis of potential threats to specific persons, events and/or interests from unidentified potential perpetrators. The priority areas of the OCAM's evaluation mission are the physical integrity of people in Belgium and Belgians abroad, national critical infrastructure, events and Belgian institutions and interests abroad.

4 For more detailed information on the evolution of the threat: https: //centredecrise.be/sites/default/files/levolution_of_the_threat_level.pdf.

against critical infrastructure, the army, the police or other hard targets. IS focuses on random and unsuspected targets and sets out to claim as many victims as possible. However, specific targets and diplomatic buildings are also investigated and are the subject of particular attention by IS.

In order to define the vulnerability of a target, it is necessary to analyse all the security measures present in a given place, whether they are physical measures, human resources or video surveillance measures. It has been observed that when these different means are present cumulatively, particularly in the case of embassies or sensitive institutions, the level of vulnerability decreases. The magnitude of the impact that an attack could have also influences the assessment of its vulnerability: impact on people, property and business continuity. In the case of ram vehicle attacks, the main focus will be on the speed and angle of attack that the configuration of the area allows.

4.2.3 Cross-referencing of audits

The main lesson of the study on the European Quarter is that, contrary to some preconceived ideas, the recent history of terrorist acts shows that it is not so much places that symbolise power (headquarters of international or local institutions) that are targeted but rather soft targets, i.e. places that have an important value in urban life and where many people gather regardless of their symbolic value.

This leads us to distinguish two main categories of public spaces: on one hand, squares, parks and pedestrian areas that are priority targets and, on the other hand, buildings that house a sensitive function that are targets with a lower priority. The importance of the first types of space in urban life calls for the recommendations of the security audit to be adapted to the requirements of the "urban life" audit, while in the second case, because of the lesser importance of the value of "urban life", the security recommendations can be included in the cross-referenced conclusion without any major adaptation.

In addition, depending on whether the threat is identified as stable and stable or fuzzy and evolving, the choice may be between a permanent physical system with reduced human support or a temporary arrangement with broader human and logistical support. The responsibility for this type of choice is a political one, falling to mayors (the competent authorities). The variety of possible situations argues for both types of arrangements (permanent & temporary) to be implemented on a case-by-case basis. Each municipality will therefore be able to decide where to draw the line between permanence and integration on the one hand, and temporary and flexible on the other.

Finally, there are cases where physical and permanent security arrangements are not the best response to a threat, such as an attack on an isolated person or an armed commando. Indeed, while "speedgate"-type physical systems effectively exist, they are very intrusive and undermine the user-friendliness of public spaces. These threats may be the subject of other security systems (temporary, human intervention, surveillance).

5. PHYSICAL SECURITY PRINCIPLES AND SYSTEMS

5.1 SHORT TERM AND EMERGENCIES

Although this memorandum focuses mainly on the establishment of permanent and sustainable systems, certain emergencies and budgetary considerations may encourage temporary measures to be taken to compensate for the lack of protective measures. The example of the city of Barcelona is interesting in this respect, since temporary arrangements were set up in the main public spaces to test the layout of the places and their appropriation by the public before moving on to the implementation of permanent systems.

These systems are generally not anchored in the ground and must therefore rely on other characteristics to provide sufficient strength. There are mainly two other ways of reinforcing the strength of this kind of system: give the devices sufficient weight and arrange them according to the principle of onion layers. These two logics can, of course, be combined and they can also take into account elements of the existing urban environment. Some ground-based devices have an anchoring mechanism that is activated when an impact occurs.

That being said, we should not be under any illusions about the strength devices that are not anchored in the ground against a ram vehicle. Indeed, the Hostile Vehicle Mitigation (HVM) unit of the Centre for the Protection of National Infrastructure (CPNI) in the United Kingdom has been able to demonstrate through full-scale tests not only that non-anchored concrete blocks cannot prevent a ram car attack (the vehicle is not stopped) but also that these blocks quickly turn into projectiles when a vehicle strikes them. This ultimately increases the risk incurred by those present.

Finally, for occasional interventions and when the site allows it, buffer vehicles may be used, which are parked in line with the approach to the site to be protected. In any case, it is recommended to carry out dynamic calculations to assess the strength of the arrangements.

Whatever the chosen option, it is necessary to have the police validate any deviation plan that may be required to set up temporary devices, particularly for temporary events.

5.2 LONG TERM

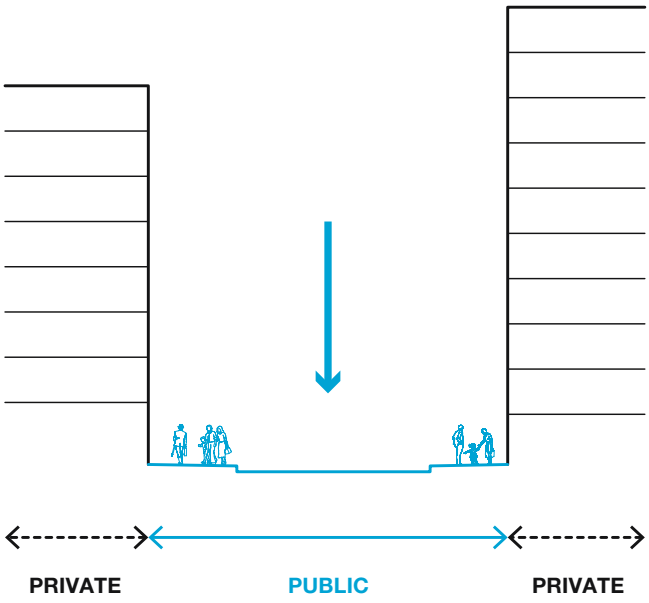
The following pages offer a series of guiding principles that take into account the issues of public security and public amenities. Specifically, they reflect and illustrate a twofold condition that must be met by any system and/or element of street furniture: the combination of a security function and an incentive to intensify use.

Thus, as we illustrate in the following pages, the two imperatives are not contradictory but can in fact give rise to systems that stimulate and intensify urban life.

It should be noted, however, that the security of a place must take into account accessibility for emergency services. Risk coverage must not have a negative impact on the response to recurring and one-off risks covered by the emergency services (police and fire brigade). The proposed system must also be put in perspective with the specific emergency and intervention plan, the PPUI, so that it does not conflict with them and jeopardize the preparation of an adequate response to a major event.

In addition, the security of public spaces must also be designed to allow escape routes for people present on the premises. Ideally, these will be separate from access for emergency services.

By way of introduction, we would also like to recall that these principles apply mainly to the public domain, but this should not prevent real estate projects contributing to a more secure and more urban feel in the private domain (i.e. they should also take on board security aspects in the architecture of new or renovated buildings).

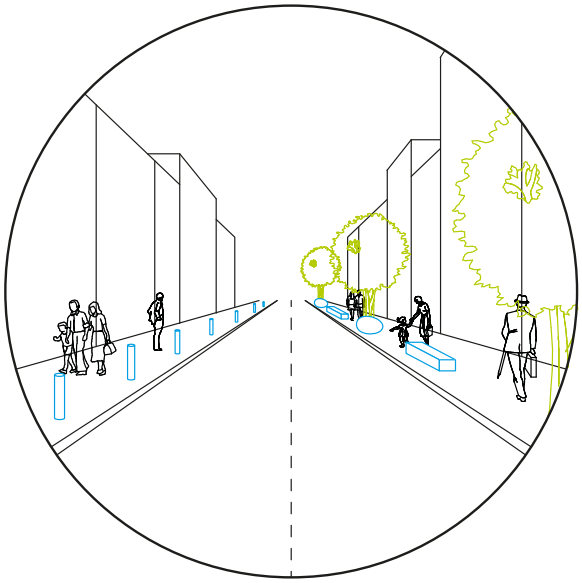


Finally, we would like to remind you that the purpose here is to suggest planning principles and not to study their technical implementation. We assume that any layout will have to comply with the following requirements:

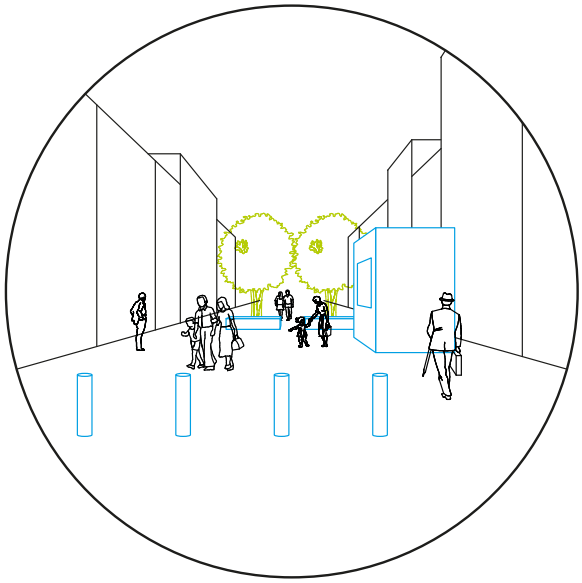
- protection against vehicles up to 7.5 T;
- free distances between obstacles of a maximum of 1.40m.[5]

5 The Regional Town Planning Regulations (RRU) recommend a minimum clear distance between obstacles of 1.50m (see Heading VII of the RRU, Article 4, §1 and 3 and Article 13, §1) while the JRC of the European Commission recommends a minimum distance of 1.40m. A case-by-case assessment will determine the standard to be considered for each project.

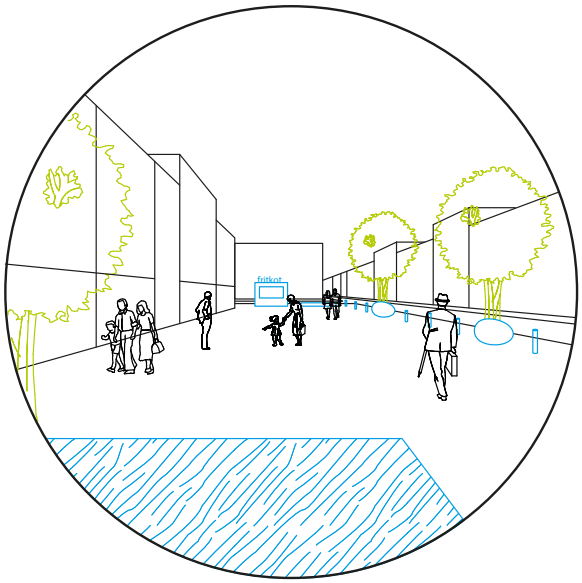
1. Streets



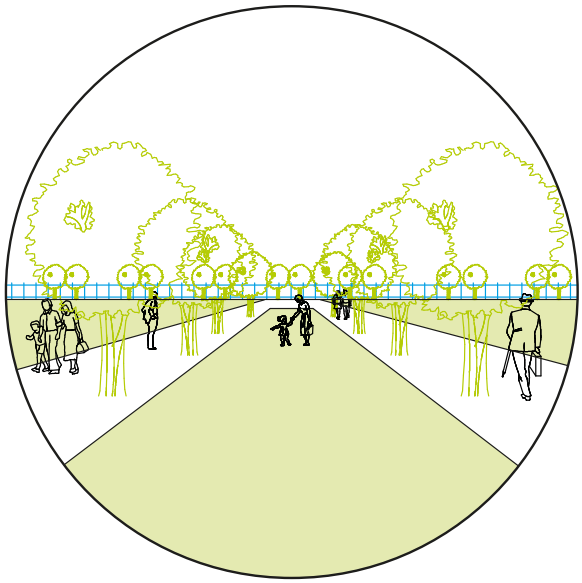
2. Pedestrian area



3. Squares



4. Parks



Our process of reflection focuses on four types of public spaces that can be found in all neighbourhoods. This is the most common street typology, for which the recommendations we make are intended, regardless of the width of the street.

Then there is the typology of pedestrian areas, which are specific spaces now found in some municipalities. The pedestrian area typology is in itself a tool for securing public spaces in the sense that it keeps potential ram vehicles outside the social public space.

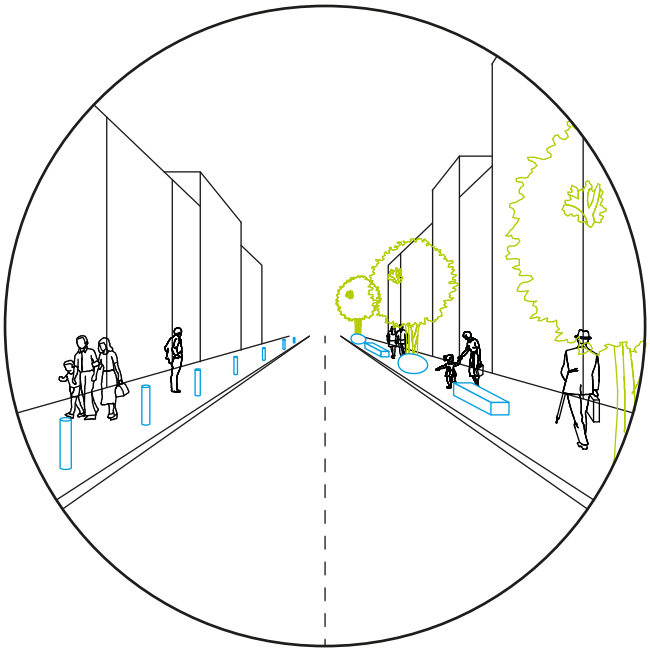
Then you have the square typology, which is a specific typology in which various practices and uses, including mobility but also urban sociability, coexist.

The fourth typology covers urban parks. In their layouts, these spaces have obstacles that are already naturally integrated into the layouts made in the event of a vehicle attack. These can be bodies of water, huge trees, or even accesses featuring steps or stairs.

In the following pages, we describe the layout principles for each of these typologies.

5.2.1 Streets

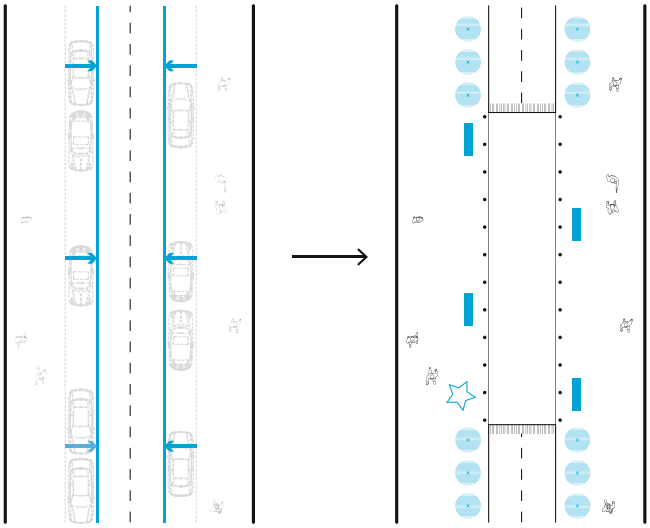
Streets are characterised by wide profiles with pavements along the buildings, parking (or not) along the pavements and a central roadway that can be one-way or two-way. This roadway can be dedicated to specific vehicles, such as bus lanes. In these cases, access control systems must be added. The number of traffic lanes may vary.
In the following pages we propose a series of principles, to be applied according to the specific situation of each street and each environment in which a safe layout is necessary in order to prevent a vehicle attack.



5.2.1.1 Planning principles

Removing parking spaces to protect and promote active modes

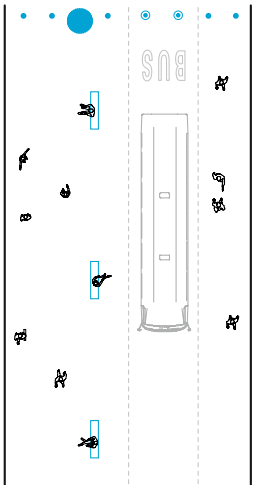
This principle has been implemented, particularly in Boulevard Charlemagne, and seems to be very effective. This involves eliminating parking (on one or both sides of the road), widening pavements and possibly integrating cycle paths and protecting them. Bench-type street furniture can be installed laterally to prevent intrusion into the pavement area.



Creating pedestrian areas + public transport passageways

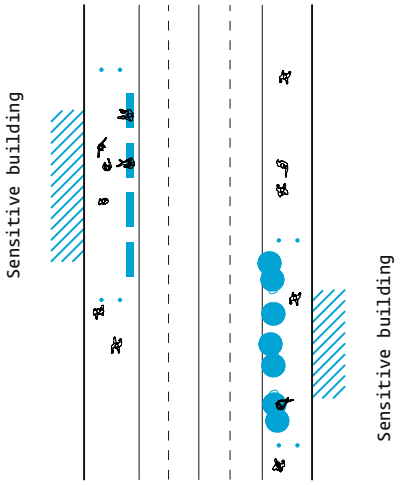
Another way to protect a street is to turn it into a pedestrian area and thus prevent any unwanted/uncontrolled vehicles from passing through it. This pedestrian area could be opened to public transport crossings, for example, subject to the installation of access controls. These will include a manual disengagement system (special key) that allows the emergency forces to open the access even in the event of a power failure.

Access control can be achieved either by ANPR camera detection or with a badge that activates retractable or movable bollards. In the medium term, it might be interesting to study the implementation of a central system to which all cameras are connected. The time it takes for a bollard to retract varies between 2 and 5 seconds.



Principle of secure sections

A third principle consists of installing protection only on sections of pavements to be secured in front of specific places. This takes into account the fact that a street could only be partially protected with regard to a specific target.



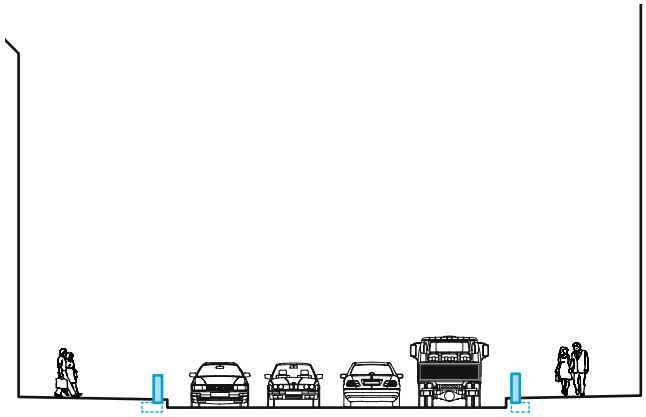
5.2.1.2 Systems to be integrated into the public space

Different systems are possible in order to protect pedestrian areas. They must be designed as part of an overall layout project or can be used on an ad hoc basis. In general, these devices fall under the RRU's term "urban furniture", namely, "*all fixed or removable objects or features placed or anchored in the public space performing a public utility function, such as rest furniture (benches, seats, tables), objects contributing to the cleanliness of the city (waste bins or baskets, public toilets), information and communication materials (street signs, displays of regional, municipal or cultural information, orientation tables), children's games, objects useful for vehicle traffic or for limiting it (bollards, barriers, demarcations, ticket machines, bicycle racks), grids, stakes and tree corsets and shelters for public transport users*". In this respect, it is useful to recall Article 22 §1 of the RRU: "*Furniture may not be placed at crossroads, pedestrian crossings and public transport stops if it affects the visibility of all road users*".

Bollards

These are the classic devices for protecting a pavement. The bollard is akin to what the RRU defines as a "post", namely "an *element of street furniture used to protect pedestrian or bicycle traffic routes*". It is effective if it complies with the following requirements: free distance between two bollards of 1.40m (see note at the bottom of page 16)/bollard height of at least h=0.9m.

This system, while it can be easily applied, is not very inventive, however, and does not really stimulate urban life. However, it is to be used and recommended in combination with other types of systems.

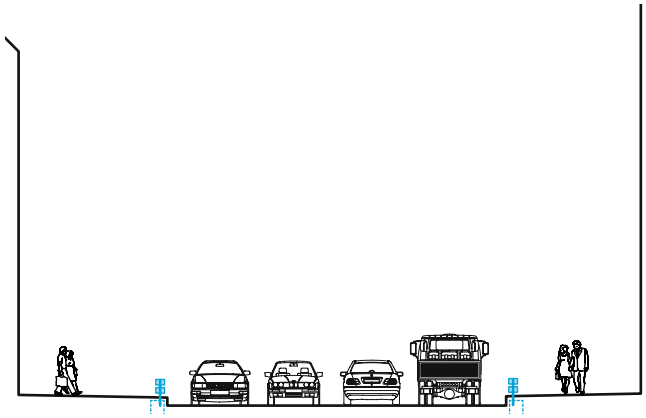


↑ Ground Zero, New York

Rail, guardrails

The aim is to build a continuous barrier that protects pedestrian areas and clearly separates them from traffic areas.

This type of system can be used in areas where there are significant distances between two pedestrian crossings. The rail could accommodate different functionalities: bench seats, urban lighting integration, greening, etc.

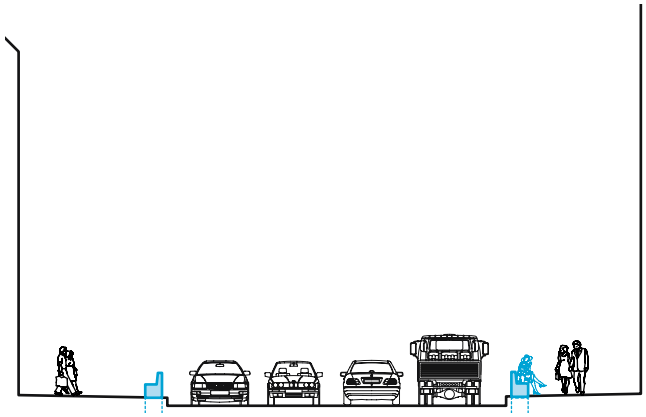


↑ Westminster Bridge, London

Benches

Solid benches (made of stone or concrete) are valuable obstacles and protective elements.

They must be firmly anchored in the ground and have more abstract geometries or shapes.



↑ Benches in front of Norges Bank, Oslo

Specific furniture

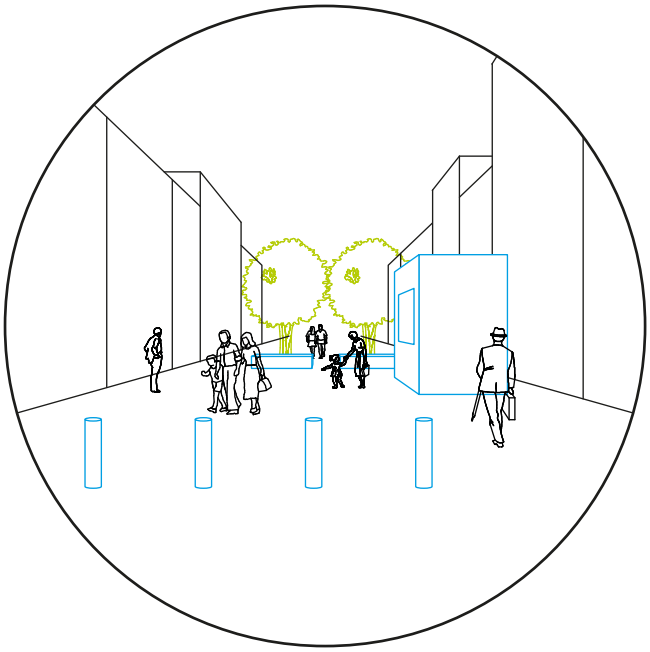
This type of layout consists of combining specific urban furniture elements (benches, bus shelters, flower boxes, etc.) for protection but also to perform the functions of urban life (waiting for a bus, sitting in the sun, resting, etc.). It best corresponds to the principle of dual-functionality set out in point 4.2 Long-term.

It should be noted that some of these items of furniture have adopted new forms in response to the terrorist threat, such as, for example, bins with a holder and transparent bags.

↑ King's Cross Square, London

5.2.2 Pedestrian area

Some Brussels municipalities have pedestrian streets. However, the situation could evolve towards more streets that are partially or totally devoted to pedestrians and active modes of transport. The pedestrian area is also a planning tool that means the car can be taken out of certain specific areas. In itself, it is therefore also a tool for street planning and security.



5.2.2.1 Planning principles

Controlling and limiting vehicle access to pedestrian areas

A first level of security for a pedestrian area is to clearly define its boundaries and control access to it. Often, in an urban area, the boundaries are defined by the buildings standing in their alignments.

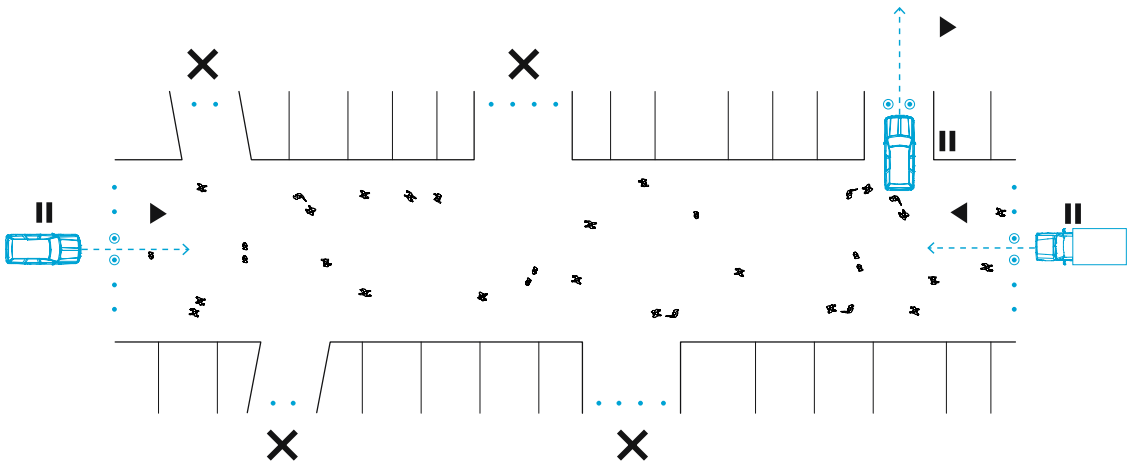
If this type of physical boundary does not exist, it can be defined by applying a principle specific to pavement protection layout.

Pedestrian access must be controlled and secured. This may involve the installation of access bollards, ANPR cameras (see Chapter 7), road signs or concession-holders' huts. As far as possible, these features will themselves be integrated into urban furniture or kiosks. They can also be placed underground.

Where appropriate, it is possible to prioritise access and use certain access points for local services, logistics and the passage of emergency vehicles.

For side roads blocked by fixed or movable bollards, the fire department's recommendations are:

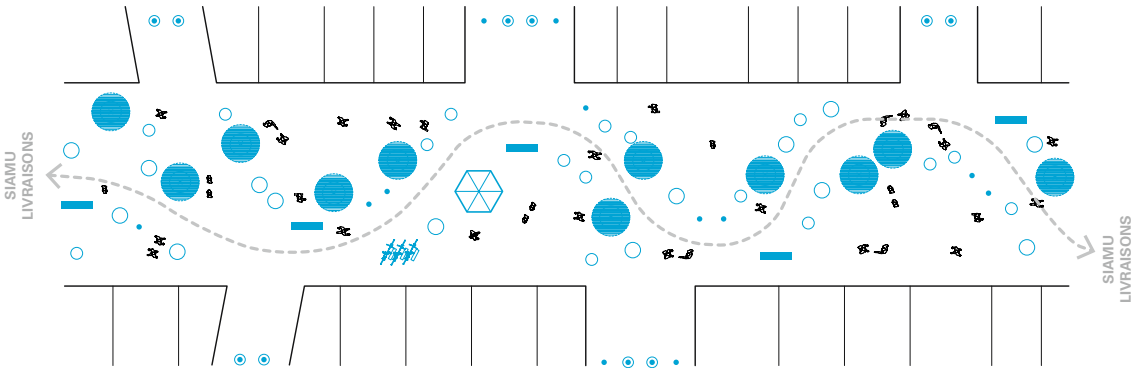
1. Restrict the creation of dead ends as much as possible (involving the placement of retractable bollards);
2. If only fixed bollards are present: Do not cut a street down its middle. All street numbers should be accessible via the same location;
3. If the street is cut down the middle, the fire department strongly recommends accessibility is provided by retractable devices.



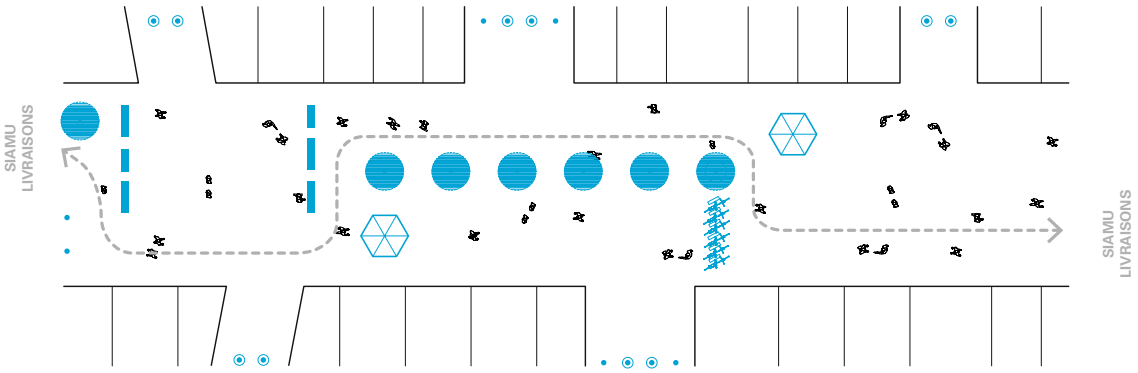
Planning the pedestrian area in such a way as to avoid the threat of a ram car

Within a pedestrian area, obstacles can be installed to prevent a vehicle from accelerating. These obstacles can be densely arranged (case 1) or sequentially arranged (case 2).

In all cases, the layout will take into account the distances from the facades depending on their size and the turning circles of the emergency vehicles.



case 1: dense planning and winding vehicle access



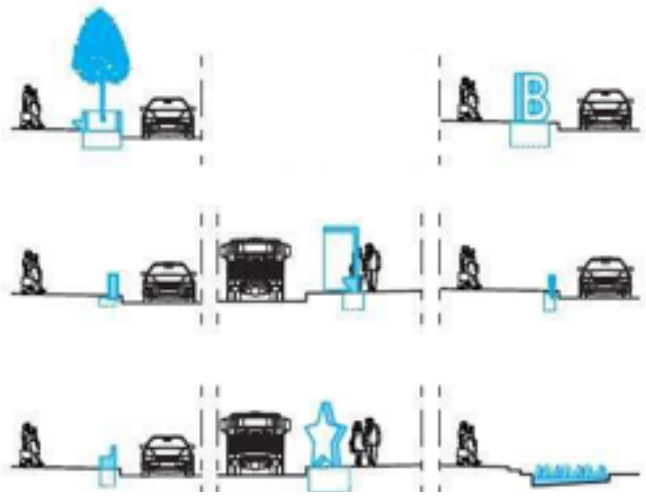
case 2: sequenced planning and chicane

↑ Seoul Skygarden, Seoul

5.2.2.2 Systems to be integrated into the public space

The different road protection systems (see 5.2.1.2.2)

The various listed systems of street protection are relevant references for protecting access to pedestrian areas or defining obstacles within those areas. In general, these systems fall under the RRU's term "urban furniture", namely, "*all fixed or removable objects or systems, placed or anchored in a public space and performing a public utility function, such as rest furniture (benches, seats, tables), objects contributing to the cleanliness of the city (waste bins or baskets, public toilets), information and communication materials (street signs, displays of regional, municipal or cultural information, orientation tables), children's games, objects useful for vehicle traffic or for limiting it (bollards, barriers, posts, ticket machines, bicycle racks), grids, stakes and tree corsets and shelters for public transport users*". In this respect, it is useful to recall Article 22 §1 of the RRU: "*Furniture may not be placed at crossroads, pedestrian crossings and public transport stops, if it affects the visibility of all road users.*"

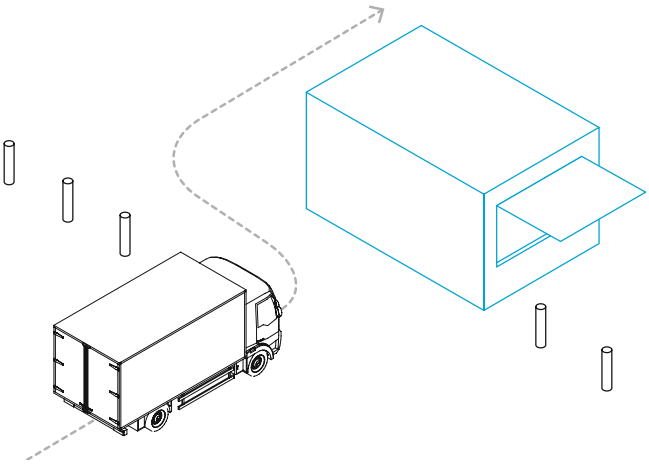


↑ Bollards, New York Stock Exchange (NYSE)

Construction of a building

The intelligent installation of a small building in public space in general, or in a pedestrian area in particular, can be a form of protection for the latter.

Buildings are also considered to be obstacles that should be planned wisely.

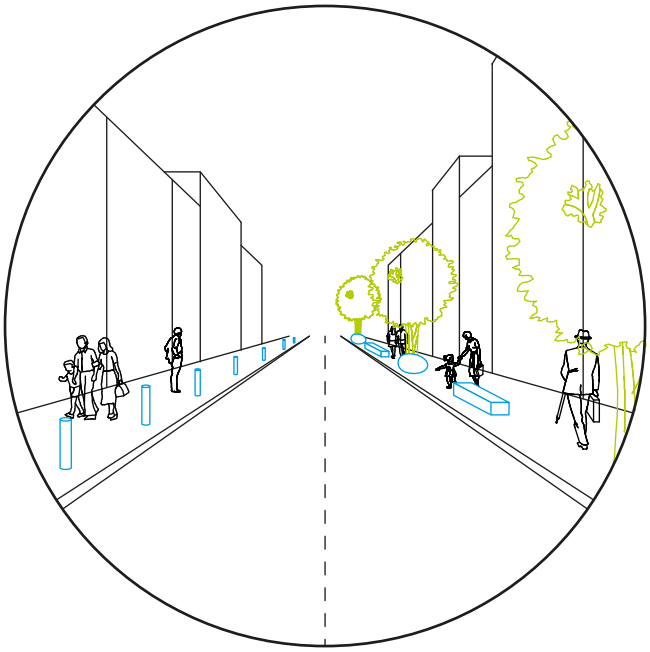


↑ Rubens Museum Pavilion, Antwerp

5.2.3 Squares

Squares are specific public spaces, which, as well as being meeting places, also take on symbolic and commercial functions in the network of public spaces. By definition, a large number of pedestrians are concentrated in this type of public space and it is therefore necessary to protect them more specifically.

The arrangements made for the security of each square must be designed from an overall development perspective. It is necessary to come up with a project that integrates the imagined features as discreetly as possible rather than thinking about the layout of these spaces strictly in terms of security requirements. Security must be present, but without undermining the urban character of these places.

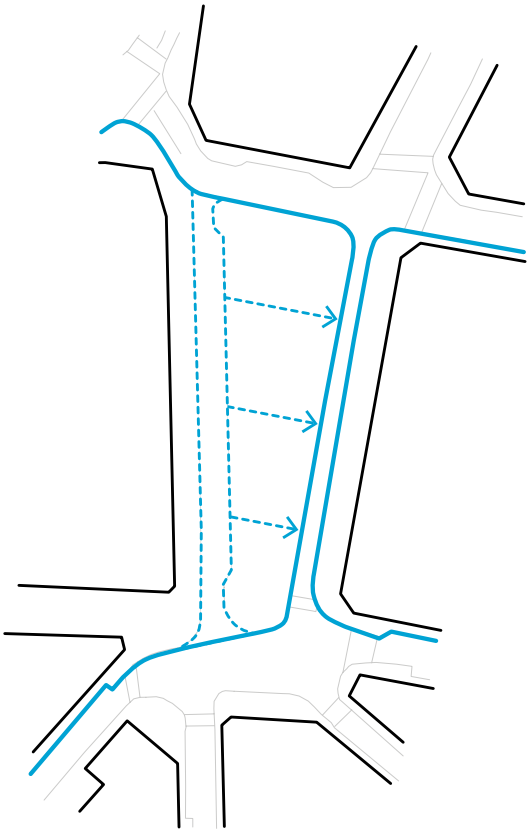


5.2.3.1 Planning principles

Concentrating vehicle flows by defining protected areas

Turning a square into a pedestrian area is certainly one way of protecting it. However, in cities in general, squares are nodes that articulate and redistribute mobility flows. It is therefore difficult to prevent traffic crossing them.

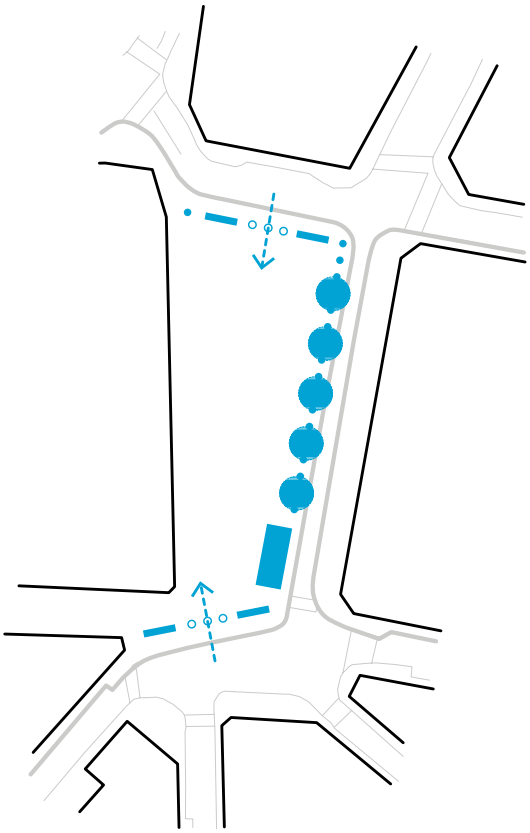
Concentrating car traffic on one side of a square is therefore a minimum protective measure. In any case, the concentration makes it possible to create a protected area that must be secured within its boundaries.



↑ Place de la République, Before/After, Paris

Concentrating access to protected areas

The measures to protect the boundaries of the square are similar to those described above, in order to protect the pavements. Within these physical boundaries, it will be necessary to provide secure access controls for deliveries, removals and emergency vehicles.

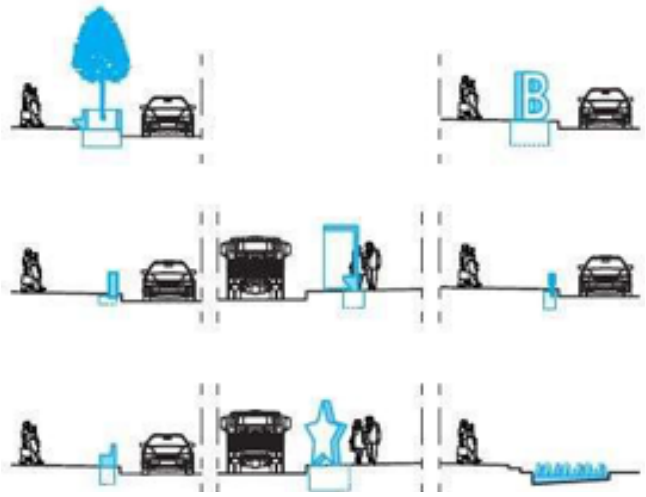


↑ King's Cross Square, London

5.2.3.2 Systems to be integrated into the public space

The different road protection systems (see 5.2.1.2.2)

The various systems listed for street protection are relevant references for protecting access to the square. In general, these devices fall under the RRU's term "urban furniture", namely, "*all fixed or removable objects or features placed or anchored in the public space performing a public utility function, such as rest furniture (benches, seats, tables), objects contributing to the cleanliness of the city (waste bins or baskets, public toilets), information and communication materials (street signs, displays of regional, municipal or cultural information, orientation tables), children's games, objects useful for vehicle traffic or for limiting it (bollards, barriers, demarcations, ticket machines, bicycle racks), grids, stakes and tree corsets and shelters for public transport users*". In this respect, it is useful to recall Article 22 §1 of the RRU: "*Furniture may not be placed at crossroads, pedestrian crossings and public transport stops if it affects the visibility of all road users*".

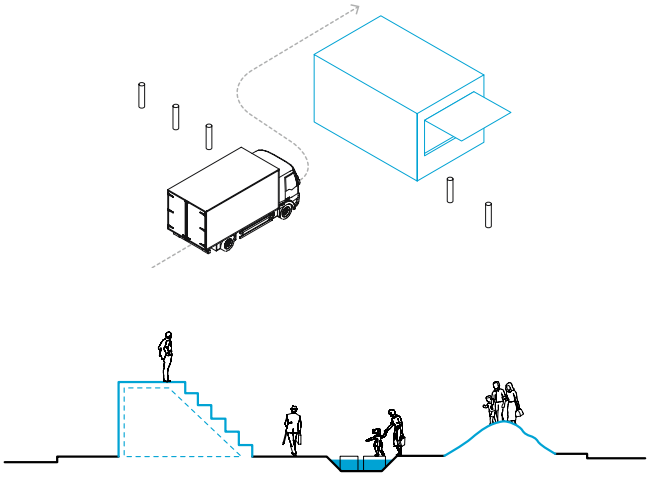


↑ Landscaped ditches, Tasinge Plads, Copenhagen

Construction of a building and/or topography

As in a pedestrian area, the intelligent installation of a small building (a chip stall or gazebo, for example) within the square can be an effective way of protecting it.

In a square, the availability of open spaces makes it possible to consider other ways of protecting it by, for example, playing on three-dimensionality and topography.



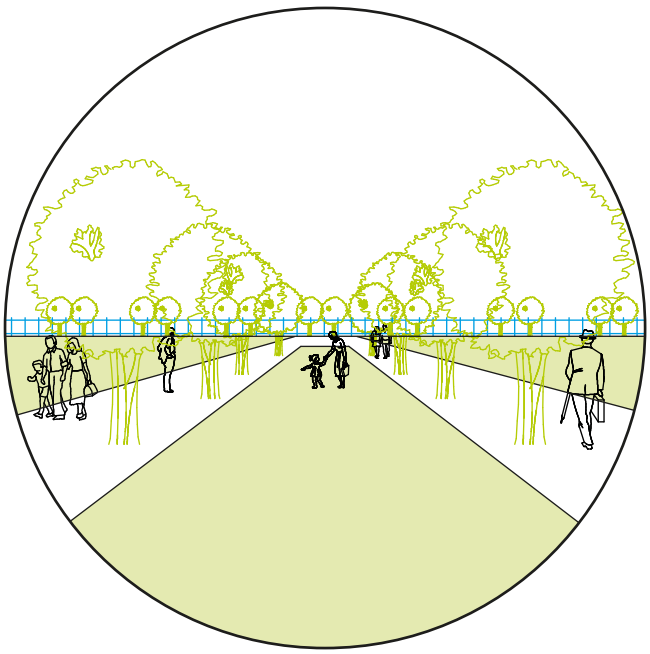
↑ Terraces and water games, Israels Plads, Copenhagen

5.2.4 Parks

Parks are unique places, which must be secured but whose friendliness, recreational character, landscape diversity, biological heritage and urban nature must also be preserved.

Within some neighbourhoods, parks also have strong historical and heritage dimensions that must be respected and enhanced. If you look closely, this type of public spaces often has characteristics that already constitute tools for protection: within parks there are water features, natural slopes, steps, impressive trees (in terms of their size), etc.

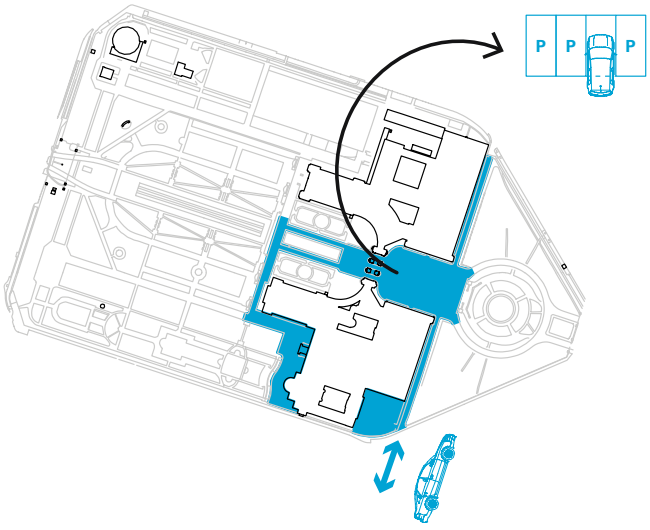
These areas must therefore be protected by measures that are intelligently integrated into the existing landscape context.



5.2.4.1 Planning principles

Banning parking inside the parks

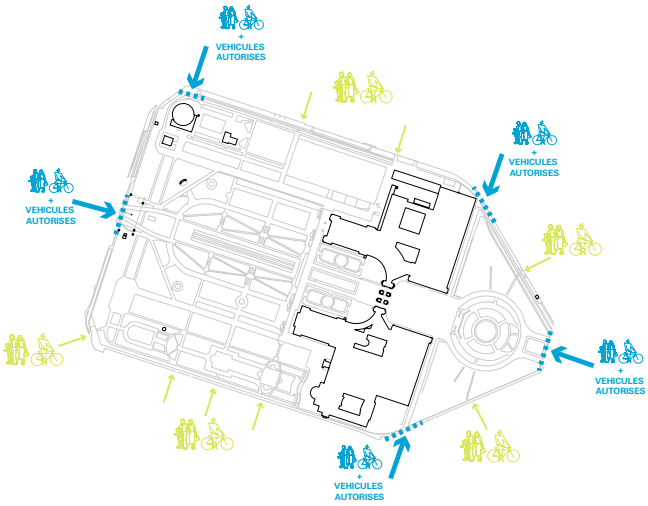
This measure seems essential to us in order to control and prevent attacks within the parks. Strange (and anachronistic) as it may seem, a number of parks in the Brussels region still have parking spaces within them. Removing these sites, or at least ensuring their coordinated and non-anarchic management, is an essential protection measure for these sites.



↑ Car park inside the Cinquantenaire Park

Controlling and prioritising the types of access to parks

Parks are necessarily accessible places, open to their surroundings. In order to protect them, it is necessary to control and prioritise the types of access to parks in terms of access for active modes of transport only (pedestrians, bicycles) or access for all modes. Access bollard systems (movable or not) should be installed accordingly.



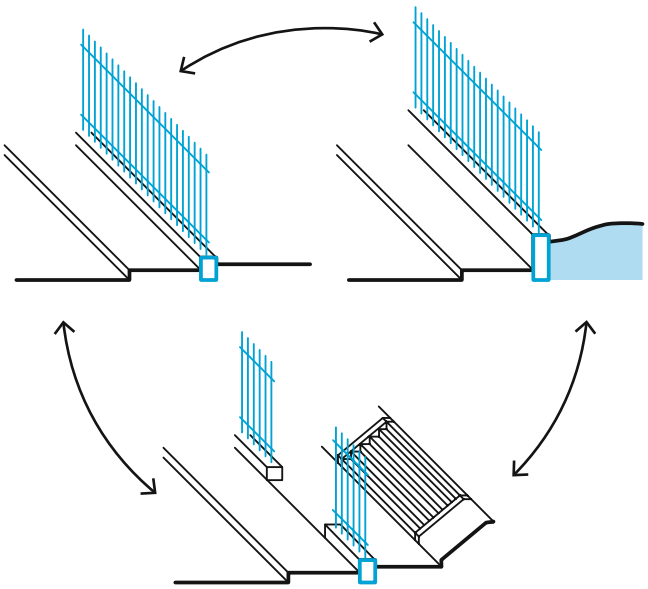
↑ Pedestrian access bollards at the Canadian Parliament, Ottawa

5.2.4.2 Approach to park security

External boundaries: Check the configuration of fences

The same type of analysis should be carried out for railings: consider the existing situation and see precisely where protection measures must be reinforced.

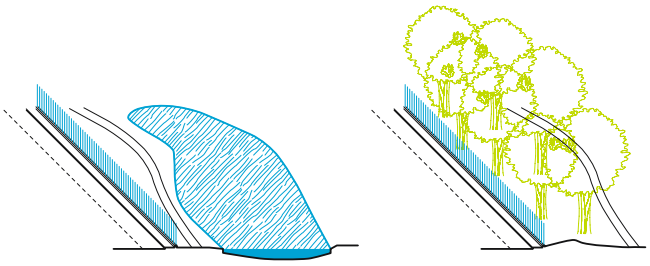
These protective measures may, for example, be located at pavement level. In these cases, they may come under the principle of the "Secure Sections" described above.

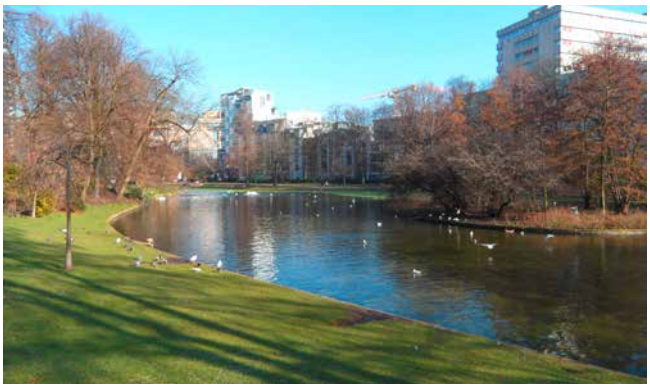


↑ Different configurations of Brussels park railings

Internal boundaries: Consider natural barriers

The protective measures described in the previous point must be modulated and implemented depending on the current configuration of the site. In fact, an examination of park boundaries generally shows that these spaces already have protection mechanisms in place in the landscape design. Some accesses are protected by steps, significant differences in level, the presence of bodies of water, etc.

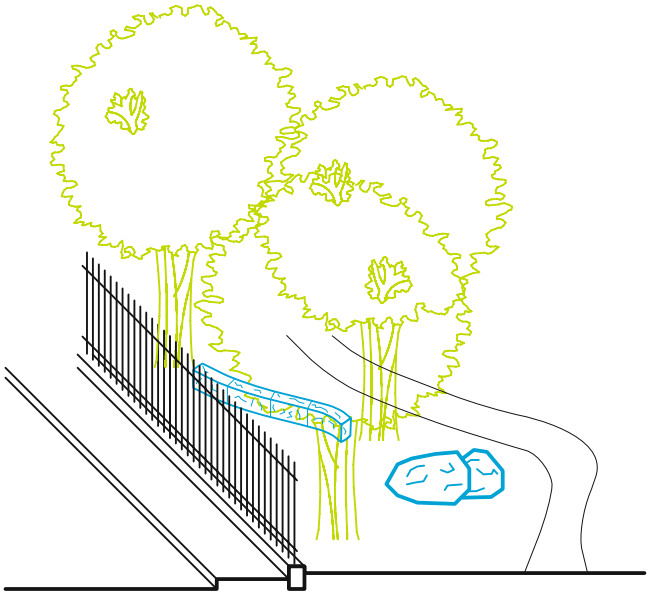




↑ Leopold Park – the pond as an internal boundary of the park

Contextual approach: Strengthening protection through integration into the park's features

Finally, park protection measures can also be implemented in the parks in the form of landscaping that is complementary to existing layouts.



↑ President Park South project, The Ellipse, Washington

6. CHARACTERISTICS OF PHYSICAL SECURITY SYSTEMS

As indicated in point *5.1. Short-term and emergency*, temporary physical systems are not the main focus of this guide. These systems are usually not certified or anchored in the ground. If a municipality decides to use this type of security feature, it is strongly recommended to at least carry out dynamic calculations or computer simulations to understand the behaviour of these systems in the event of a ram vehicle attack. This type of security is based on the weight of the device on the one hand and, on the other hand, on the accumulation of devices so that together they resist an attack (the onion layer principle).

Specific systems that can be used during an event, such as a buffer vehicle, temporary barricades, Jersey barriers, etc., are not included here. Although the usefulness of such systems for specific events is recognised, they do not fit into a long-term planning vision. Very few such systems are certified.

↑ Illustrations of temporary (non-anchored) physical security systems

Permanent physical systems can be broadly divided into two categories: certified and non-certified systems. While certified systems offer the advantage of being tested in real life, the range of products on the market is relatively small. On the other hand, non-certified but tailor-made systems allow a potentially unlimited range of systems whose lack of certification can be compensated by dynamic computer simulations. In any case, it is strongly recommended to anchor these systems in the ground with well-designed foundations.

Given the absence of references on non-certified devices and the confidentiality of studies that define their impact characteristics, this guide will focus on certified and widely known systems. Among these, three types are identified: fixed, retractable and removable. All three types are available with a deep anchor (1 m) but also with shallow anchors (30 cm) for public spaces where the ground is congested. The latter have raft or mat foundations, which allow the bollards to be joined to each other.

The mobile bollards or gates can be activated by ANPR camera, badge or manually with a special key. This involves a gate management centre that could ideally be managed on a regional basis. These gates must be accompanied by an electrical cabinet and appropriate road signs.

In the retractable bollard family, there are also models for shallow anchorage depths (either folding or moving). Instead of sinking into the ground, these bollards slide sideways to open a passage. The fact that such bollards only take 2 to 5 seconds to retract justifies their use even when the authorised traffic is moderate.

↑ Examples of retractable and telescopic bollards

↑ Example of relocatable or folding bollards

To date, there is no official European or Belgian certification that provides a binding framework for the characteristics security systems against ram car attacks. However, the international standard IWA 14-1 developed by ISO (International Organization for Standardization) is the latest (2013) and also the most widely used worldwide. It is based on the referenced conditions of the ASTM F 2656, CWA 16221, PAS 68 and PAS 69 standards.

The **IWA 14-1** standard has developed the following formula to define the characteristics of security systems:
V / 7200[N3C] / 80 / 90: 4.2

Where
V: expresses the type of test on the security system (in this case, a vehicle)
7200: expresses the weight in kg of the vehicle (including load)
[N3C]: the type of vehicle (here, an unloaded truck)
80: the speed reached by the vehicle during the impact (here, 80 km/h)
90: expresses the angle of impact
4.2: expresses the vehicle's penetration distance into the protected site in metres.

The security audit will therefore have to identify the threat to the public space in question on the basis of these characteristics for the municipal contracting authority in order to assess the adequacy of the systems proposed by the contractor using the recommendations of the security audit.

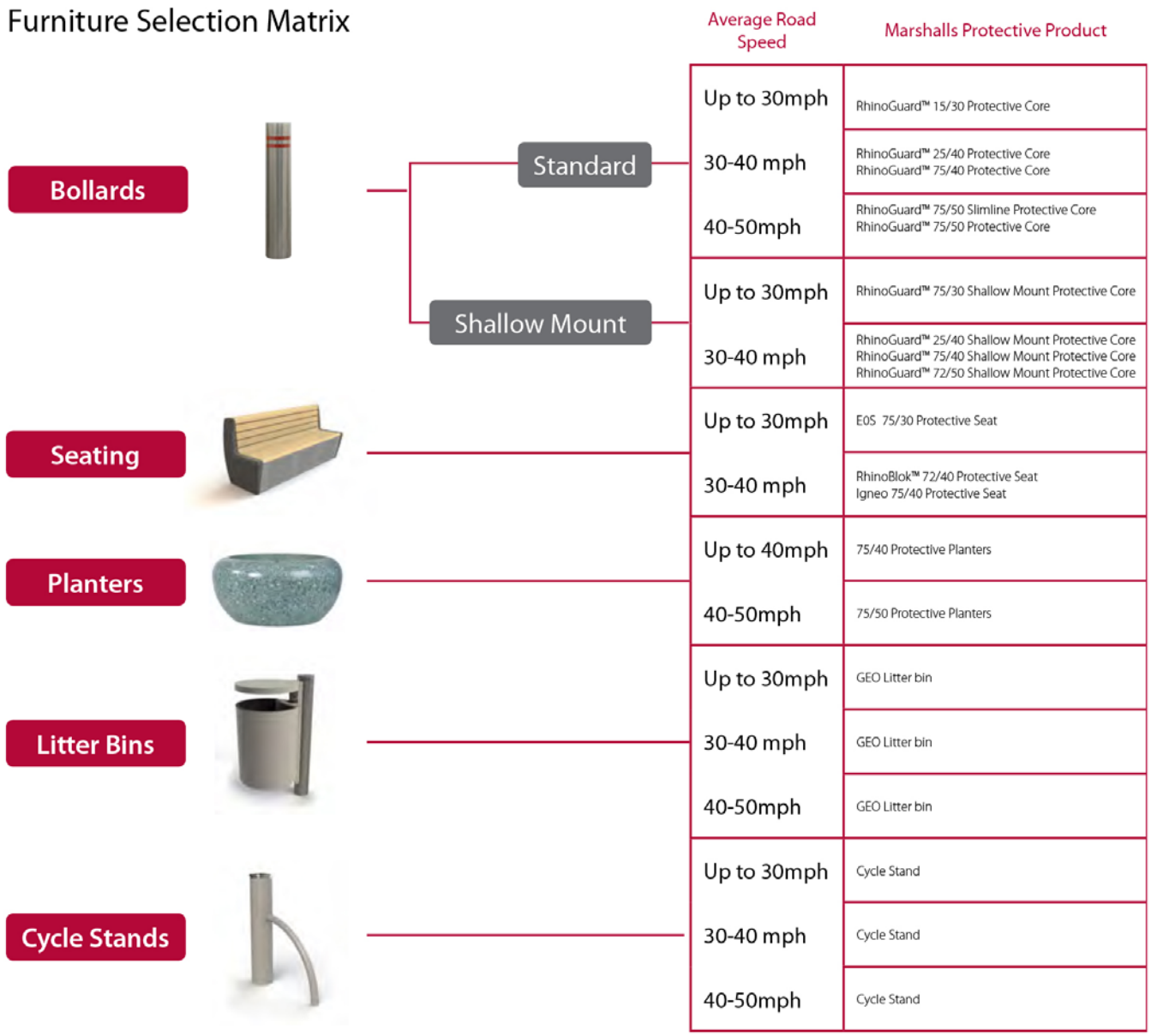
The table below provides a partial comparison between the CPNI tests and the American DoS (Department of State) standard.

TABLE 1

Nominal impact speed [km/h] *[mph]*	Permissible impact speed [km/h] *[mph]*	Kinetic energy [J] *[ft-lb]*	Level of resistance
80 km/h *50 mph*	45 ≥ 75.0 km/h *47.0-56.9 mph*	1695000 J *1250000 ft-lb*	K12
64 km/h *40 mph*	60.1-75.0 km/h *38.0-46.9 mph*	1085000 J *800000 ft-lb*	K8
48 km/h *30 mph*	45.0-60.0 km/h *28.0-37.9 mph*	610000 J *450000 ft-lb*	K4

Below is an example of a classification of certified safety systems:

Furniture Selection Matrix

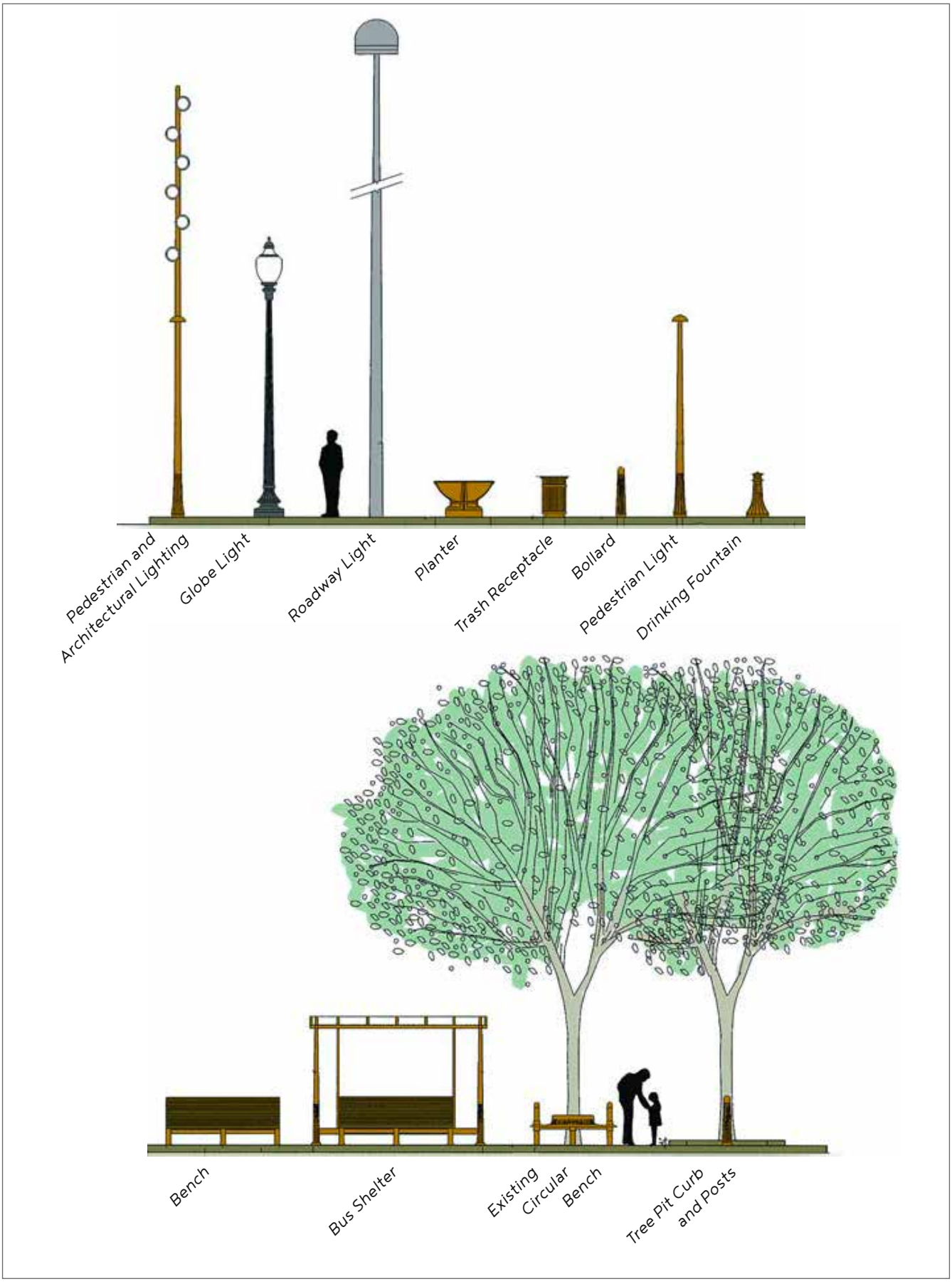


	Average Road Speed	Marshalls Protective Product
Bollards – Standard	Up to 30mph	RhinoGuard™ 15/30 Protective Core
	30-40 mph	RhinoGuard™ 25/40 Protective Core RhinoGuard™ 75/40 Protective Core
	40-50mph	RhinoGuard™ 75/50 Slimline Protective Core RhinoGuard™ 75/50 Protective Core
Bollards – Shallow Mount	Up to 30mph	RhinoGuard™ 75/30 Shallow Mount Protective Core
	30-40 mph	RhinoGuard™ 25/40 Shallow Mount Protective Core RhinoGuard™ 75/40 Shallow Mount Protective Core RhinoGuard™ 72/50 Shallow Mount Protective Core
Seating	Up to 30mph	EOS 75/30 Protective Seat
	30-40 mph	RhinoBlok™ 72/40 Protective Seat Igneo 75/40 Protective Seat
Planters	Up to 40mph	75/40 Protective Planters
	40-50mph	75/50 Protective Planters
Litter Bins	Up to 30mph	GEO Litter bin
	30-40 mph	GEO Litter bin
	40-50mph	GEO Litter bin
Cycle Stands	Up to 30mph	Cycle Stand
	30-40 mph	Cycle Stand
	40-50mph	Cycle Stand

↑ PAS 68 resistance of different urban systems (source: JRC Guide, 2019)

The prices of the systems naturally vary from one manufacturer to another. For example, the price of a fixed bollard varies from €12,000 to €15,000 incl. VAT (including installation).

Below is a sample of different security measures implemented in public spaces.



↑ Types of street furniture that, when properly dimensioned, can play a role in securing public spaces (source: NCPC).



↑ Protection curb
Charlemagne boulevard, Brussels



↑ Square protected by various devices
King's Cross Square, London



↑ Impassable limit between park and street
Billancourt park, Boulogne-Billancourt



↑ Bollards as elements of the overall design scheme
Vieux-Port, Marseille



↑ Massive furniture
Benches on quais de la Sambre in Charleroi – municipal square in Molenlbeek – Green square in Charleroi



↑ Curbs + benches protecting a public space
Atomium, Brussels

7. VIDEO SECURITY PRINCIPLES AND FEATURES

The installation of cameras is a mechanical surveillance measure that reinforces the principle of natural surveillance (see point 3.1.).

The effect of cameras depends strongly on the local context, the category of crime, the complexity of the problem and whether or not other measures are deployed. As such, the effects of crime moving out of the cameras' field of vision or the impact of the choice of street furniture, the type of lighting and vegetation on their effectiveness should not be neglected.

A video protection system consists of three elements:

Source: Wikipedia https://fr.wikipedia.org/wiki/Vid%C3%A9osurveillance

7.1 RECEPTION EQUIPMENT (CAMERAS)

When opting for camera surveillance, the first step is to correctly define what you want to monitor and for what purpose. This will allow the best choice of camera type and location.

The camera model to be installed depends in particular on whether the aim is to have an overall view of an environment, a wide view of a roadway, or the detail of a high-risk area, etc.

This makes it possible to define the type of camera to be deployed.

- Fixed camera (with limited view of an area)
- PTZ camera (Pan, Tilt, Zoom) allowing the camera to rotate 360°
- 360° camera (so-called fish-eye)
- Multi-lens camera

In some cases, it may be useful to combine several cameras to achieve the desired objectives.

Source: Prefecture of Paris – several types of cameras integrated into an urban system

Resolution:
Once the camera type has been defined, the intended use must be determined to define the degree of resolution to be selected. Four options are available:

- Detection
- Recognition
- Identification
- Identification of a number plate (see also the $ below on Automatic Number Plate Recognition)

Source: CIRB

These criteria will make it possible to define the minimum resolution to be given to the Video Protection camera. The resolution defines the number of pixels that will make up the image taken by the camera. The most common resolutions currently in use are:

- HD or 1.3 Megapixels
- Full HD or 2 Megapixels
- 4K or 8 Megapixels
- Large Megapixels > 20 Megapixels

The choice of resolution is mainly related to the subsequent display of the images. In fact, most cameras have a zoom function that allows you to zoom into the image in real time to see details. However, once the image is recorded, the zoom in the image is digital and is only possible depending on the number of pixels available.

The ideal location of the camera will be determined depending on the above criteria but also taking into account the need for night vision (existing street lighting or need to add an infrared illuminator) and the distance to the lens depending on the visibility criteria of the camera (zoom, type of lens).

Once all this has been determined, the technical study in the field will make it possible to propose technologically applicable solutions taking into account the three constraints related to any camera installation, namely:

- Possibility of fixing the camera (existing pole or to be added, façade, bridge, etc.) while ensuring the accessibility of both the camera and its technical cabinet against vandalism;
- Availability of a power supply source;
- Access to the video image transport network from the camera to the management system (buried fibre, facade fibre, radio link, etc.)

Source: AC Molenbeek – fixed camera + PTZ camera + radio link + technical box + climbing protection system

Given the complexity and diversity of the solutions, it is strongly recommended to call on specialists in the field or even a specialised design office. The CIRB can also provide its expertise in this type of project.

The Brussels Capital Region is also conducting a strategic study to determine the best possible coverage in terms of video protection, together with its partners, in order to obtain a coherent overall view with due consideration for effective integration into the public space through the search for an appropriate design.

During installation, it will be necessary to check that the installation complies with the legislation. To do this:

- A declaration of the installation must be submitted to the Federal Public Service Interior;
- A legal pictogram must be affixed (visible but without negative landscape impact);
- Private areas must be blurred to ensure the protection of privacy.

7.2 MANAGEMENT EQUIPMENT

Since 2015, the Brussels Capital Region has been equipped with a regional video protection platform that will eventually pool all video protection images taken by public cameras (located, under the terms of the law, in an open or closed space accessible to the public).

This platform is hosted at regional data centres and offers many technological advantages:

- Totally redundant and secure;
- Storage capacity of all images during the legal 30-day period, with the possibility of extending this period in line with changes in the law;
- Secure and duplicated fibre network between data centres to each partner of the regional project;
- Equipped with cutting-edge image management software (VMS: Video Management Software);
- Scalable to meet the growing needs of Urban Video Protection;
- Operator management based on a dedicated Active Directory allowing a precise definition of user profiles and monitoring of their activities in order to guarantee compliance with the rules for using video data.

The design, implementation and maintenance of the video protection platform are in full compliance with the GDPR regulations in force.

7.3 VIEWING EQUIPMENT

The viewing of video images must comply with applicable laws and regulations. A distinction must be made between real-time viewing (Live) and delayed viewing (recorded images). In all cases, only authorised personnel will be able to access the images.

The CIRB has set up the regional platform as a technological tool for the project partners. Responsibility for processing the images (data), as well as the access to them, remains with each partner. That is why each partner has viewing (live) and search (delayed) stations allowing its staff to process the data in accordance with legal requirements.

Real-time (live) viewing is nowadays mainly reactive and is therefore used to monitor a scheduled or occasional event. This situation should evolve in the near future towards more proactive use in the context of searches for particular behaviours, followed by alarms generated by the image analysis software discussed below, etc.

Source: Image wall at the DPZ of the Brussels West Police District

Delayed viewing is strictly limited by the legislation. However, here too, image analysis software should allow users to better manage events and, above all, save considerable searching time.

7.4 SMART CAMERA AND IMAGE ANALYSIS SOLUTIONS

ANPR : Automatic Number Plate Recognition

Automatic Number Plate Recognition (ANPR) uses so-called smart cameras which, unlike Video Protection cameras, do not film a continuous scene but detect in the image the presence of a number plate and provide an output of the read plate and two photos (black/white photo of the plate and colour photo of the context).

Source: ANPR cameras mounted on the pole of a traffic light in Koekelberg

The Brussels Capital Region has implemented a global ANPR deployment plan in the context of the low emission zone (LEZ) and for police purposes (vehicle searches).

Other applications using this technology can be considered, such as route control (speed control on a defined section, single speed and more than 500 metres) or restricted access zones (ZAL). The implementation of this technology broadly follows the installation requirements mentioned above. The main difference is the placement of the camera in order to obtain enough pixels for plate recognition.

Image analysis

Image analysis software is already available on the regional platform and others will be added in the future in line with technological advances and user needs.

The use of image analysis should allow a more proactive analysis of images on the basis of events automatically detected and proposed to operators such as: driving the wrong way down a one-way street, illegal parking, illegal dumping, etc.

Good image analysis requires stable, constant scene shooting and it therefore ideally requires fixed cameras placed at a reasonable distance from the target. This must therefore also be taken into account when initially expressing needs.

8. URBAN PLANNING PROCEDURES

8.1 PLANNING PERMISSION

As a general rule, all construction, demolition, renovation, transformation and change of use work on a building requires prior planning permission. The general rule is therefore an obligation to obtain urban planning permission. Exemptions are exceptional.

Modifying the layout of a public space is one of the projects subjects to urban planning permission.

However, for temporary measures and some minor works, exemption may be granted provided that the measures or works comply with the RRU.

Before the submitting the planning permission application:

It is strongly recommended to contact the regional administration responsible for urban planning (BUP-DU-cell "Public space") before submitting the planning application.
Technical meetings may then be organised with Brussels Mobility, the highways department and BPS, which coordinates law enforcement actors (police, fire brigades, etc.) in order to integrate a whole series of aspects into the project that would in any case be identified during the planning application procedure. This method makes it possible, during the planning application procedure, to facilitate procedures with authorities that are already familiar with the project.

Planning permission procedure:

Depending on the importance and impact of the project, the procedures differ (Regional Land Use Plan (PRAS) and minor work).

If the application does not come under so-called minor acts and works (the minor works by-law currently being amended will apply with the new Brussels Town Planning Code (CoBAT)), the procedure contains the following investigative measures:

- Acknowledgement of receipt of the file declared to be complete (30 days from receipt of the file)
- Request for opinion from the authorities (BM, PMR association, STIB, Vivaqua, etc.) and organisation of the 30-day public inquiry by the municipality;
- At the end of the public inquiry, the members of the consultation committee (the municipal council, BUP, BM, BE, DMS and CityDev) meet to issue an opinion. The municipal council has 30 days from the date of the public inquiry to issue an opinion. At the end of these 30 days, the delegated official may issue planning permission if they are in possession of the opinions of the authorities and the opinion of the consultation committee.

This procedure can take up to 175 days from the date of the planning application.

These time limits may be shortened by approximately 30 to 60 days depending on the complexity of the application and the evidence. Indeed, if the application concerns a protected property or if the applicant decides to modify their plans or if the delegated official requests modified plans, the procedure can take longer.

If the application comes under so-called minor acts and works, the procedure and its duration are reduced. The delegated urban planning official may exempt the application from the permit requirement provided that the opinion of Brussels Mobility is favourable (duration of the procedure 15 days). The application may be exempted from certain investigative duties, such as special publicity measures (public inquiry and consultation committee), CRMS opinions, etc., which may reduce the duration of the procedure to 45 days.

Receiving planning permission or being exempt from it does not also grant exemption from obtaining other authorisations, in particular the opinion of the SIAMU or works authorisation from the highways department.

8.2 OTHER ADMINISTRATIVE PROCEDURES

The Order of 19 May 2011 on road infrastructure security management and its implementing decrees provide for a road safety audit to be carried out for any work on the roads in the primary network.

The snow removal equipment of the Brussels Mobility Roads Authority requires an obstacle-free width of 1.50 m for access to cycle paths, pavements and bus stops. Consultation of the Regional Cleaning Agency is strongly recommended when developing a project for a public space.

It is also recommended that police services be consulted so that they can issue an opinion during the development of the security project.

APPENDIX 1

SITE MANAGEMENT AND COORDINATION

Within Brussels Mobility, the Roadworks Coordination Department manages the coordination of roadworks in the Brussels-Capital Region. It also serves as the secretariat of the Roadwork Coordination Committee.

The coordination of roadworks has two major objectives, namely, to enable roadworks to be carried out via an authorisation procedure and to preserve the viability of the road system while the work is going on.

The coordination of roadworks is currently governed by the Order of 3 July 2008 concerning roadworks and its implementing decrees of 11 July 2013 and 30 January 2014.

To meet legal requirements, since April 2014, Osiris, as a database, has become the compulsory gateway for all administrative procedures relating to the organisation of roadworks in the Brussels-Capital Region.

Developed with the aim of helping to limit the nuisances associated with roadworks, this database takes the form of a collaborative platform that allows the electronic encoding, processing, exchange and monitoring of information and documents relating to current and future projects, completed projects and certain events located on municipal and regional roads.

The system makes it possible to structure the roadworks from planning of the works to the repair of the road.

All roadworks must be subject to an authorisation issued by the Highways Department via Osiris, unless there is a properly justified emergency (the Highways Department assesses the validity of the authorisation) or when the nature of the site exempts it from authorisation (e.g. an isolated intervention). Indeed, in the latter two cases, the roadworks can be subject to a site agreement.

Institutional contractors (those who must make themselves known to the Roadworks Coordination Committee) are required to use Osiris to encode the data necessary to complete the formalities imposed on them by regional roadworks regulations, except as regards appeals to the government.

Non-institutional contractors may choose to use Osiris for the same purpose. In this case, they can either enter the data themselves or via a temporary platform, the one-stop shop, currently operated by the Confederation of Construction and subsidised by the Region. They may also choose not to use Osiris. In this case, they must send the documents in their authorisation request file to the Highways Department.

Whatever the site, all general information related to the site must be entered in Osiris. That is to say:

- The address of the site
- The type and extent of the work planned
- The surface of the site right-of-way
- Deadlines (start and end dates, duration)

On the basis of this data, Osiris determines the type of procedure.

There are several types of procedures:

- **Type P1**: site agreement to work in an emergency. This type of procedure applies only in the event of immediate danger. In this case, the contractor must notify the Highways Department of the notice of commencement of the work no later than the first day following the start of the work;
- **Type E**: site agreement to start work within 5 days. This type of roadworks does not require authorisation because of its minimal importance (e.g. opening a cabinet);
- **Type P2**: works declared to be urgent but subject to authorisation (the time limits for examining the application and issuing the authorisation are reduced by half);
- **Type A**: site subject to authorisation but not requiring coordination;
- **Type PCA**: site subject to prior coordination and authorisation (work involving several contractors).

Requests for authorisation or site agreements, via Osiris, are made to the Highways Department. This may be:

- The Brussels-Capital Region, when the road concerned is a regional road,
- A Brussels municipality when the road concerned by the worksite is located on a municipal road.
- Several Highways Departments in cases where the roads concerned by the site are located in several municipalities and/or in the case of simultaneous regional and municipal roads.

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According to the 2008 Order, when the site is located, in whole or in part, on a regional roadway or on a municipal roadway of obvious interest for traffic in the territory of the Brussels-Capital Region, it is subject to the opinion of the Roadwork Coordination Committee.

Thus, municipal roadworks are subject to the Committee's opinion when they concern regional and/or municipal roads of obvious interest for traffic in the Brussels area.

The mission of the Roadwork Coordination Committee is to coordinate, in time and space, the work that the contractors propose to carry out on, under or above the public road, specifically by establishing their location, duration, start date and any accompanying measures ensuring the mobility of all users.

The Committee forwards opinions in response to an application for a site authorisation within 20 working days of receipt of the file or 25 working days if there is a hearing, additional information or external opinions.

The Committee forwards opinions in response to an application or proposal for an amending opinion within 15 working days of the transmission of the application or proposal.

The procedure for requesting authorisation to carry out work:

- Submission of the file requesting site authorisation
- Within 20 working days of receipt of the application file, the Highways Department will issue an acknowledgement of receipt to the site manager.
- If the file is incomplete, the Highways Department invites the contractor to send the missing information or documents within 20 working days.
- In the case of a site located on a regional roadway or on a municipal roadway of regional interest, the Highways Departments will forward the file to the Roadworks Coordination Committee within 20 working days of the acknowledgement of receipt.
- The Committee will forward its opinion to the Highways Department within 20 working days of the file being forwarded to the Roadworks Coordination Committee or 25 working days in the case of hearings, additional information or external opinions.
- The Highways Department forwards its decision to the site manager:
  - Procedure involving a Committee examination stage: within 20 working days of the transmission of the opinion of the Roadworks Coordination Committee;
  - Procedure without a Committee examination phase: within 30 working days of the transmission of the acknowledgement of receipt.

Some conditions may change between the receipt of the worksite permit and the completion of the work. The worksite permit may then be subject to a correction notice.

Before beginning any works likely to affect or be affected by cables, pipes or ducts, the contractor must submit a request for information on the cables, pipes and ducts in the right-of-way area of his site, at least 40 days before the start of work. The KLIM-CICC is the management system for cables, pipes and ducts in Belgium.

Programming sessions take place twice a year. The contractors prepare and announce all the construction projects they intend to carry out at least in the coming year. This makes it possible to estimate future projects and their possible incompatibility.

Institutional contractors must also coordinate their projects. They must call all other institutional contractors when they wish to carry out a project in the same section of road. The aim of coordination is to limit the number of successive worksites in the same section of the road.

Any contractor who wishes to carry out a project sends a certificate of coordination to the other institutional contractors. Those who do not wish to coordinate must then wait until the next cycle to carry out their work.

The contractor coordination procedure includes 15/20 days for the call for coordination, to which 15/20 days are added for the transmission of the simplified file for the site permit application.

Within 2-3 weeks of receipt of the complete application, the file is submitted to the examination committee.

Once the Work Permit and/or the Notice of Commencement has/have been issued, the contractor may carry out its work in accordance with the procedures prescribed by the competent authorities.

In managing the site the contractor must do everything possible from start to finish to preserve the integrity and viability of the road system. He designs and organises the site in such a way as to allow the circulation of road users.

At the end of the roadworks, the Order provides for a three-

year guarantee period during which the contractors are required to carry out all repair work related to the site in the right-of-way to the site and its immediate surroundings.

At the end of coordinated roadworks, the portion of the roadway on which coordinated work has been carried out becomes a frozen zone for three years. This means that no coordinated roadworks can be carried out on the same portion of the roadway for three years from the date of completion of the roadworks.

The secretariat of the Roadwork Coordination Committee offers free and comprehensive training on the coordination of roadworks for all stakeholders. More information and registration: bmtraining.be

Conditions for registration for training courses:

- Free training offer (at the expense of the Region) for stakeholders involved in site coordination
- Registration is limited to eight people per session (excluding module 1)
- In some cases, special organisational arrangements may be considered
- Users will be taken into account according to the order of registration
- A confirmation email is sent to participants registered in a module with the date and location of the training;
- A minimum of five people is required for the training to be organised. Applicants will be informed in good time if this is not the case.
- An email is sent to users who could not be registered. They will be kept informed of upcoming training sessions

The training materials are made available to the public on the Brussels Mobility website.

Other accompanying measures

The management, maintenance, responsibilities and ownership of systems installed on public property must be agreed with the Highways Departments (Brussels Mobility and the municipalities concerned).

The presence of contractors and underground infrastructures can drastically limit the possibility of installing safety systems. A more detailed analysis of underground infrastructure is required on a case-by-case basis. Brussels Mobility can provide information on road or underground/tram infrastructure on request.

APPENDIX 2

TABLE OF ABBREVIATIONS

ANPR	Automatic Number Plate Recognition
ASTM	American Society for Testing Material
BBP	Brussels Planning Office (Perspective)
BE	Brussels Environment
BM	Brussels Mobility
BPS	Brussels Prevention and Safety
BUP	Brussels Urban Planning and Heritage (Urban)
CICC	Federal Information Centre on Cables and Pipelines
CCTV	Closed-Circuit Television
CEOI	Committee for Europe and International Organisations
CIRB	Centre d'Informatique pour la Région Bruxelloise/IT Centre for the Brussels Region
CoBAT	Brussels Regional Planning Code
CPNI	Centre for the Protection of National Infrastructure
CPTED	Crime Prevention Through Environmental Design
CRMS	Royal Commission on Monuments and Sites
CWA	CEN (European Centre for Standardisation) Workshop Agreement
DMS	Direction des Monuments et Sites/Monuments and Sites Department
DPZ	Zonal Dispatching
GDPR	General Data Protection Regulation
GRBC	Government of the Brussels-Capital Region
HVM	Hostile Vehicle Mitigation
IWA	International Workshop Agreement
JRC	Joint Research Centre (European Commission)
LAPI	Lecteur Automatique de Plaques d'Immatriculation (Automatic Registration Plate Reader)
LEZ	Low Emission Zone
OCAM	Threat Analysis Coordination Body
PAS	Publicly Available Specification (for vehicle security barriers)
CPTED	Crime Prevention through Environmental Planning
PRM	Persons with Reduced Mobility.
PPUI	Special Emergency and Intervention Plan
RBC	Brussels Capital Region
RRU	Regional Urban Planning Regulations
SBD	Security by Design
SIAMU	Fire and Emergency Medical Assistance Service
STIB	Société de Transports Intercommunaux de Bruxelles/Brussels Public Transport Company
ZAL	Limited Access Zone

APPENDIX 3

REFERENCES

Cozens, P., and T. Love. (2015). *"A Review and Current Status of Crime Prevention through Environmental Design (CPTED)."* Journal of Planning Literature 30 (4), pp. 393-412

United Nations (2015) Programme UN-Habitat - Safer cities - For a better urban future, I make my city safer, I'm a city changer, Toolkit, 46 p.

Union des Municipalités du Québec (2009). *Ma ville en toute confiance, Guide des meilleures pratiques pour un aménagement sécuritaire destiné aux municipalités et à leurs partenaires*, Union des Municipalités du Québec, 25 p.

Safer places: the planning system and crime prevention, Office of the Deputy Prime Minister - Creating sustainable communities, Home office, February 2004, 107 p.

Brussels Prevention and Security (2017). *Plan Global de Prévention et Sécurité 2017 -2020*, Bruxelles Prévention et Sécurité, Région Bruxelles-Capitale, Belgique, *63 p.*

Ministerie van Binnenlandse Zaken (2016). *Kadernota Integrale Veiligheid 2016-2019*, Brussels, Belgium, 08/06/2016.

Global Counter Terrorism Forum (2017). *Antalya Memorandum on the Protection of Soft Targets in a Counterterrorism Context*, GCTF, 14 p.

European Forum for Urban Security (2012). *Sécurité, démocratie et villes: Manifeste d Aubervilliers et Saint-Denis,* EFUS, 51 p.

European Forum for Urban Security (2017). *Sécurité, démocratie et villes: Coproduire les politiques de sécurité urbaine,* EFUS, 43 p.

Les questions à se poser et les indicateurs pertinents à construire pour un environnement urbain égalitaire, Guide référentiel, Mairie de Paris, Paris-October 2016, 79 p.

CPTED, MANUAL FOR CPTED POLICE OFFICERS, PROJECT No. HOME/2012/ISEC/AG/4000004321

"Development of existing urban design, planning and crime prevention methods and introduction of new ones to improve living environment safety (CPTED)", 76 p.

Public space, gender and sense of insecurity with the support of the Brussels-Capital Region, Laura

Chaumont and Irene Zeilinger, ASBL Garance, 2012, 21 p.

Centre for the Protection of National Infrastructure (2010). *Hostile Vehicle Mitigation Guide*, CPNI, United Kingdom.

Centre for the Protection of National Infrastructure (2011). *Integrated Security: a public realm design guide for hostile vehicle mitigation, version 1.0*, CPNI, United Kingdom

Karlos, V., Larcher M., Solomos G. (2017). *Review on vehicle barrier protection guidance*, European Commission - JRC, Ispra, Italy

Karlos, V., Larcher M. and Solomos G. (2018). *Review on soft target/public space protection guidance*, European Commission - JRC, Ispra, Italy

European Commission COM (2017). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Action Plan to support the protection of public spaces,* Brussels, Belgium, 18.10.2017

NACTSO (2017). *Crowded Places Guidance*, United Kingdom

Centre for the Protection of National Infrastructure (2012). *Protecting Crowded Places: Design and Technical Issues*, United Kingdom

Terrorisme bestendig plannen, ontwerpen en beheren Design Against Terrorism: Veilig Ontwerp en Beheer tegen ram-raiders, Stichting Veilig Ontwerp & Beheer (15 mei 2018 definitief concept PvS), 8 p.

Urban design and management of spaces to prevent malicious acts - Manual - Politecnico di milano, DiAP, Laboratorio Qualità Urbana e Sicurezza & IAU Ile-de-France, Institut d'aménagement et d'urbanisme de la région Île-de-France, Mission Etudes Sécurité & Regione Emilia Romagna - SAFEPOLIS action financed by the European Commission - Directorate-General Justice, Freedom and Security, 2007, 53 p.

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