



WESTMINSTER
INTERNATIONAL LTD

BORDER SECURITY
& PERIMETER
PROTECTION
SOLUTIONS

24 hour
worldwide
protection

www.westminster-international.com

Border Security and Perimeter Protection

From the physical strength of barrier structures such as the Great Wall of China to modern day electronic detection and surveillance systems, border security and perimeter protection has and always will be a vital element in the protection of, not only the nation state but also of corporate and private property as well as the individual at risk.



Today, as we face international terrorism on a global basis, the need to protect national borders and to provide perimeter protection against sophisticated and determined intrusion is a matter of the highest order.

The risk of intrusion, illegal immigration, smuggling, espionage, military incursion or terrorist action etc. can however be substantially reduced, if not eliminated, by the implementation of appropriate perimeter protection measures.

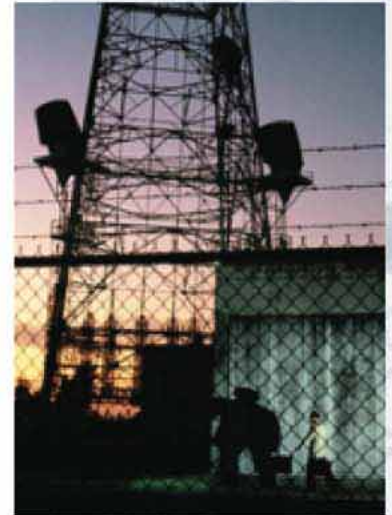
Perimeter Protection is applied to the boundary of the property, be it the external fabric of the building or the boundary fence line in open or border areas and the optimum solution may well involve a number of different detection and surveillance technologies integrated together to form an overall comprehensive solution.

Most situations would benefit from incorporating a Westminster Perimeter Protection System, in addition to any other security measures that may be involved but for high risk and sensitive areas such as airports, military establishments, international borders, power stations, governmental establishments, nuclear power plants, oil and gas refineries, research establishments, embassies, banks, industrial plants and residential establishments of individuals at risk from kidnap or assassination etc, the installation of adequate perimeter security is vital.

In addition Perimeter Security should be applied to areas posing a safety risk to unauthorized persons in dangerous environments such as water treatment plants, building sites, firing ranges, mining areas etc. and in such cases Perimeter Protection can be used to provide an early warning of intrusion or trespass and to instigate an alarm or audible safety message etc.

Westminster offer an extensive and wide range of products and solutions to counter such risks and this brochure is designed to give a small indication of some of the solutions available, further information and product data sheets can be found on the extensive Westminster web site at **www.wg-plc.com**

Westminster specialists would be happy to discuss suitable border security or perimeter protection measures for any given situation or risk.



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Ported or 'Leaky' Coaxial Cable Sensors

Description: Ported coax or 'leaky cable' detection systems generate an invisible electromagnetic field around the cables which are normally buried in the ground to a depth of about 25cm (although some systems can also be fitted to fences).

Systems require 2 cables 1 to transmit and 1 to receive (although some systems can incorporate both sensors in a single cable). Cables are normally laid 1m apart and a pair will provide a 4m wide detection zone.

If an intruder enters the field he creates a disturbance and an alarm is generated. Intelligent signaling processors eliminate many causes of false alarms such as small animals etc.

Classification:

Active – Covert – Terrain Following

Application: Where covert detection is required and where fence mounted protection would be unsuitable.

Advantages: Covert protection and very low vulnerability to defeat, low maintenance requirements and highly resilient to false alarms.

Possible Causes of Nuisance Alarms:

Large animals, fences or other moving structures in the detection field, underground streams, flooding.

Advanced 'Microstrain' Fibre Optic Sensing Systems

Description: The 'microstrain' fibre optic sensor is a new and advanced in-ground or fence mounted detection system utilising a multi core fibre. The system can detect minute vibrations even from sounds, via deflections in the laser beam. By using advanced signal processing and analysis the different causes of vibration can be identified and those attributable to false alarms, eliminated.

Classification:

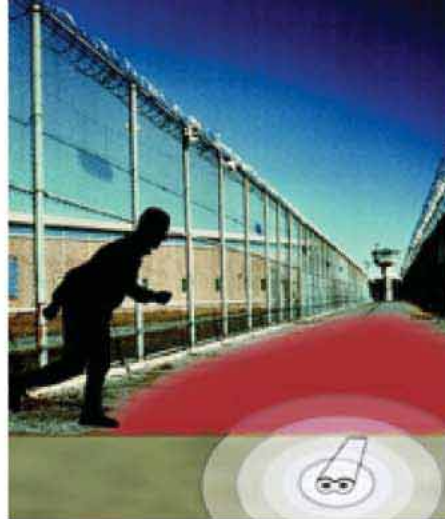
Passive – Covert – Terrain Following

Application: Several individual detection cables are normally laid approximately 1m apart (depending on the width of protection required) which when sited at approx 10cm below the surface of the ground the system provides for relatively quick installation with very high probability of detection and extremely low incidents of false alarms. Where soft ground exists the fibre should be laid in gravel.

Advantages: High detection characteristics, very low false alarm issues if correctly set up, exceptionally long distances between transmitters 65Km, pinpoint detection (to less than 50m), spare cores in fibre can carry additional data signals from other equipment and also video signals from CCTV cameras, relatively easy to install.

Possible Causes of Nuisance Alarms:

Virtually nil if correctly set up other than land slip or heavy snow.



Ported or "leaky" coaxial cable sensors

Microphonic Cable Fence Disturbance Sensors

Description: Microphonic fence disturbance sensors utilise signals generated by the minute flexing of triboelectric coaxial sensor cable, which are analysed by powerful signal processors to detect the sounds associated with cutting, lifting or climbing the fence fabric.

The systems can also incorporate a special audio channel which enables guards to 'listen in' to activity along each zone of the fence.

Classification:

Passive – Overt – Terrain Following

Application: For protection of existing fences & structures against climbing, lifting or cutting. The cable is attached by means of special cable ties at 30cm intervals. They can also be fitted to coiled razor wire fences.

Advantages: Quick and simple to install, relatively inexpensive, zone lengths up to 350m, immune to EMI & RFI, high probability of detection, adaptive algorithms virtually eliminate environmental nuisance alarms, audio 'listen in' capability.

Possible Causes of Nuisance Alarms:

Extreme weather, contact by large animals, badly maintained fences, overgrown vegetation.



Microphonic Cable Fence Disturbance Sensors

Point Vibration Sensors

Description: Vibration detection sensors mounted on a fence will detect frequency disturbances associated with sawing, cutting, climbing or lifting of the fence.

Classification: Passive – Overt – Terrain Following

Application: Fitted to existing fence structures normally in pairs 30-40cm apart with approx 3meters between each pair and which are sited at approx 120-170cm above the ground.

Advantages: Inexpensive, easy to install, quickly fitted to existing structures.

Possible Causes of Nuisance Alarms: Poor quality fence, adverse weather conditions, animals, blown debris, overgrown vegetation.

MicroPoint™ Vibration Cable, Fence Disturbance Sensors

Description: The MicroPoint™ vibration cable, fence disturbance sensor consists of a specialised cable which, when mounted on a fence, will detect frequency disturbances associated with sawing, cutting, climbing or lifting of the fence. The advanced signal processing systems enable the system to pinpoint the location of any activation to within 3 meters anywhere along the cable's length.

Impact discrimination circuitry automatically compensates for fence variations with each meter of fence equally sensitive to intruders even if the fence is variable in condition, ensuring the complete perimeter fence remains sensitive to intrusion whilst ignoring distributed noise from wind, rain or heavy vehicles etc.

Zones are software driven and are independent of processor location and may be changed at will.

Classification:

Passive – Overt – Terrain Following

Application: The MicroPoint™ cable is tie wrapped to existing chain link fence structures at approx 120-170cm above the ground. On higher fences two separate cables can be installed. The cable can be run up to 200m between fence mounted link or processor modules.

Advantages: Pinpoint location of intrusion, high noise discrimination circuitry, calibration automatically compensates for fence variations, easy to install, quickly fitted to existing structures.

Possible Causes of Nuisance Alarms:

Virtually nil if correctly set up – those that do exist are extremely poor quality fence, extreme weather conditions, large animals, blown debris, overgrown vegetation.



MicroPoint™ Vibration Cable, Fence Disturbance Sensors

Electrostatic Field Disturbance Sensors

Description: Electrostatic field disturbance sensors generate an electrostatic field between/around an array of wire conductors. Sensors in the system detect changes or distortion in this field. This can be caused by anyone approaching or touching the fence.

Classification:

Active – Overt – Terrain Following

Application: Electrostatic field disturbance sensors are mounted on freestanding posts or chain link fences. All the wires are mounted parallel to each other and to the ground, thereby achieving uniform sensitivity along the fence length. Special springs are used at the connectors to ensure excessive wind vibrations do not cause false alarms.

Advantages: Highly resilient to wind and ambient noise, low maintenance, can be mounted on fences, walls & roofs, high probability of detection.

Possible Causes of Nuisance Alarms:

Anything causing excessive fence vibration such as extreme weather, birds, and animals, overgrown vegetation.

Taut Wire Systems

Description: Taut wire sensors utilize either plain or barbed wire strands attached to electro-mechanical sensors in order to detect changes in tension on the fence fabric, rather than the vibration or stress associated with fence disturbance sensors.

They are one of the most expensive fence sensor systems, because of the laborious installation and maintenance time required. However the exertion needed on the wire for an activation is substantial and for this reason they offer very high detection rates and very low false alarms.

Classification:

Passive – Overt – Terrain Following

Application: Can be installed as a stand-alone fence creating a dual-purpose physical barrier as well as a detection system or to existing fence systems (subject to suitability) or even to roofs and buildings etc. where such buildings may present a weak spot.

Advantages: No terrain or environmental limitations, no limit on length, extremely low false alarm rate, high probability of detection.

Possible Causes of Nuisance Alarms:

Poor maintenance of the fence or incorrect tensioning of the sensor wires will lead to unreliable operation, medium to large animals.



Microwave Movement Detectors

Electrified Barriers

Description: An electric barrier fence offers not only an enhanced physical barrier but also an alarm detection system providing, deterrence, detection & delay to would be intruders.

The system can be fitted as a stand alone system or integrated into existing fences and provides a sharp, non-lethal but painful shock to anyone who comes into contact with the sensors as well as triggering an alarm condition.

Classification:

Active – Overt – Terrain Following

Application: Used where additional

deterrence effect is required and where it will cause additional delay to would be intruders. Ideal in conjunction with below ground sensors in causing added activity in the detection area.

Advantages: Primarily deterrence and delay, can also include an audio sensor so that guards can 'listen in' to activity along the fence.

Possible Causes of Nuisance Alarms:

Anything coming in contact with the fence such as birds and animals, blown debris, adverse weather, overgrown vegetation.

Microwave Movement Detectors

Description: Microwave sensors are motion detection devices that flood an area with an electronic field. Any movement in the zone disturbs the field and sets off an alarm.

There are two basic types of microwave sensors: Monostatic sensors, which have the transmitter and receiver, encased within a single housing unit and Bistatic sensors, in which the transmitter and receiver are two separate units.

Classification:

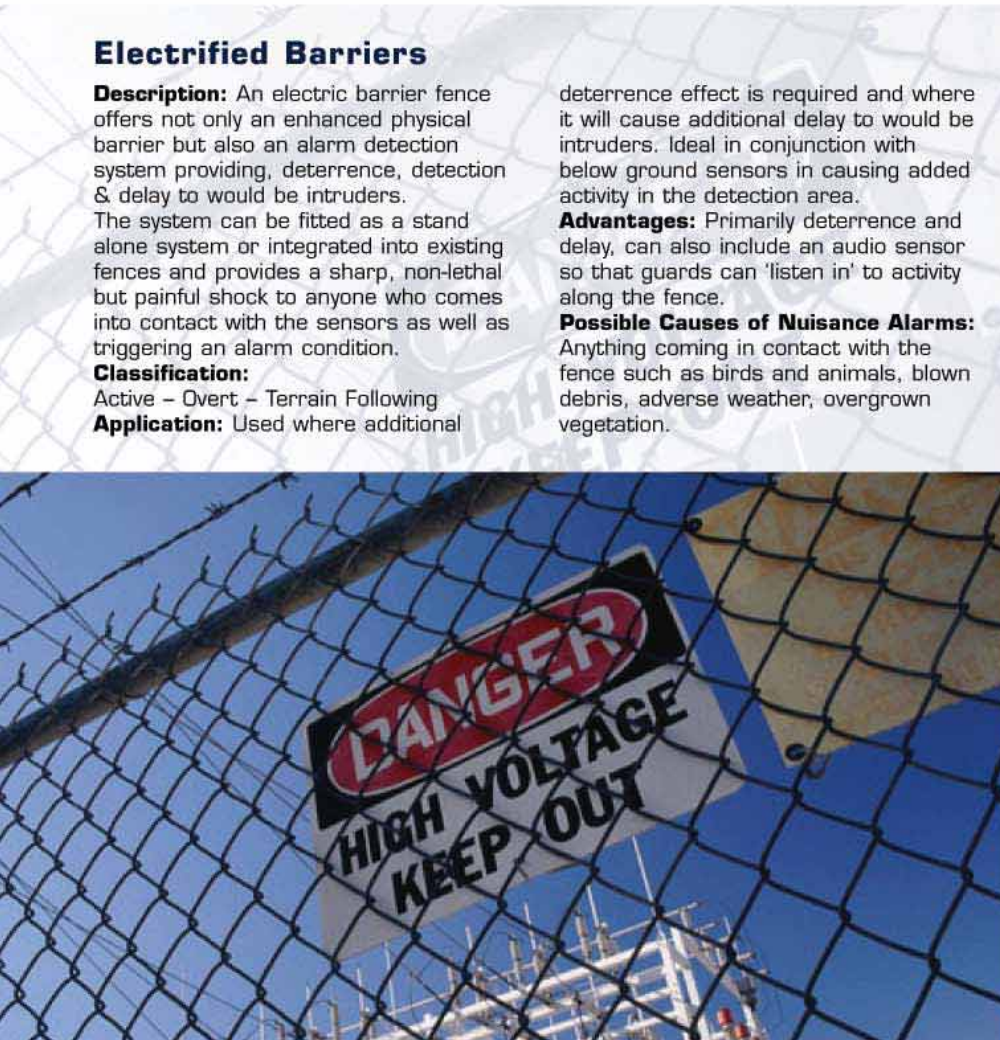
Active – Overt – Line of Sight

Application: Bistatic units provide high security, long range volumetric protection to flat areas – Monostatic units provide isolated, rapid deployment protection & can be used to guard against overhead intrusion.

Advantages: Large area (up to 500m), volumetric protection, difficult to determine area of protection, quick to deploy.

Possible Causes of Nuisance Alarms:

External electrical fields (radio transmitters etc.) or magnetic fields (large electric motors or generators etc.), moving objects and debris, movement of mounting posts.





Active & Passive Infrared Detection Units

Description: Passive infrared sensors detect electromagnetic radiated energy generated by external sources, particularly the thermal energy emitted by people in the Far infrared range. Active infrared sensors generate a multiple beam pattern of modulated infrared energy and react to a change in the modulation of the frequency, or an interruption in the received energy.

Classification:

Active / Passive – Overt – Line of Sight

Application: Can be used to provide secondary levels of protection or to cover gateways & openings etc., isolated local alarm cover to vulnerable areas, triggers for CCTV Cameras etc. Often wired in multi beam configuration for more reliable operation.

Advantages: Low cost, easy to deploy & maintain.

Possible Causes of Nuisance Alarms:

Overgrown vegetation, fog, heavy rain, snow, sand storms, moving objects, animals, birds and debris, movement of mounting posts, severe temperature changes.

Video Motion Detection (VMD) Sensors

Description: Video Motion Detection (VMD) sensors operate through almost any good quality CCTV camera providing both a detection of activity & observation of the events progress. The VMD sensor system monitors changes in the camera's field of view and if a change occurs through an intruder entering the scene an alarm condition is generated. Better systems also include an image tracking feature which can monitor a number of separate intruders simultaneously by drawing a different colored line around each of them and leaving a trail line of where they have been.

Classification:

Passive – Overt or Covert – Line of Sight

Application: Excellent addition to other detection systems and for covering large or difficult areas. Ideally used with both overt & covert cameras.

Advantages: Can be used with existing cameras without additional field wiring, can cover a wide field of view, helps guards track an intruder even in low light conditions and removes the intruder's ability to hide, relatively low cost, easy to maintain.

Possible Causes of Nuisance Alarms:

Severe adverse weather, large animals, flocks of birds, blown debris, movement of camera.

Seismic Sensors

Description: Buried seismic sensors detect the low frequency seismic energy created in the ground by someone or something crossing through the detection zone around the sensors. Specialist analysers interpret the signals and filter out much of the unwanted causes of false alarms.

Classification:

Passive – Covert – Terrain Following

Application: Seismic systems are ideal for protecting utilities, military sites, prisons, industrial sites and other specialist applications where particular security issues are required (around a border post for example) or where deep tunnelling may be expected. With a detection range of 5m the sensors are normally sited at 3m spacing. Portable seismic sensors are available to monitor sites under construction or other areas requiring temporary protection.

Advantages: Can be used where heavy landscaping, hilly terrain & inconsistent perimeter shapes make other systems impractical. Can detect very low levels of seismic energy and so can be used where a very high detection probability is required, also can incorporate a microphone facility to enable guards to 'listen in' to underground activity.

Possible Causes of Nuisance Alarms:

Anything which may cause seismic activity, animals, moving fences, large trees, telephone poles, adverse weather, moving soil etc.

Intrusion Detection Grid

Description: Intrusion Detection Grids are an effective, electro-optical intrusion detection grid for such openings as water pipes, windows, canals, etc. It is fully operative in a wide range of temperatures, even when completely submerged under water for many years. Intrusion Detection Grids replace conventional physical barriers, while enhancing protective capability. Any attempt to cut or remove a part of the grid, or the grid itself, is immediately detected by MAGBAR's opto-mechanical mechanism embedded and sealed in a galvanized profile (stainless steel optional).

A unique, outstanding Detection Grid feature is that any attempt to even bend one of the grid bars is immediately detected.

Classification: Physical Barrier

Application: Water pipes, Air Ducts, Windows, Canals etc.

Advantages: Can be operated as a Totally Submerged System, Requires no maintenance.

Possible Causes of Nuisance Alarms:

Large Flotsum in Waterways hitting the Detection Grid.



Pipeline Protection

Pipeline Protection

Description: The protection of Pipelines against sabotage, illegal tapping and terrorist action etc. is of course a high priority in all countries but until now has been notoriously difficult to achieve. The patented Foptic™ pipeline protection system is designed to protect Gas, Oil and Liquid Pipelines and other utility pipeline distribution networks by providing early warning of an attack so that loss and damage can be minimised if not eliminated.

When a pipeline is damaged significant revenues will be lost, damage is caused to the local environment and the leakage is a potential danger to the local population. More importantly a terrorist attack on an unprotected utility pipeline could have catastrophic consequences. Often the damage may not become apparent to the pipeline operators for days or even weeks and even then it may take days to accurately pinpoint the location of the damage. A great advantage of this system is the inherent ability to provide early warning of the above and hence provide an opportunity for the operator to take preventative actions. The entire length of each pipeline is monitored in real-time 24 hours per day 7 days per week, year after year, with complete safety. Up to 65 km of pipeline can be monitored from a single control desk and by siting the control desk in the middle of two stretches of 65 km pipeline a total of 130 km can be monitored from a single location, without any additional equipment needing to be installed other than the fibre optic cable.

Classification: Passive – Overt or Covert

Application: Gas, Oil and Liquid Pipelines and other utility pipeline distribution networks etc.

It works equally well in soil, sand, clay, gravel and grass, as well being as submerged in liquids, it is not subject to performance fluctuations as a result of normal temperature or weather changes.

Advantages: High detection characteristics, very low false alarm issues if correctly set up, exceptionally long distances between transmitters 65Km, pinpoint detection (to less than 50m), spare cores in fibre can carry additional data signals from other equipment and also video signals from CCTV cameras, relatively easy to install. It is intrinsically safe and not affected by electrical and EMI issues; it works on non-destructive principles and does not require the cable to be damaged before an event is detected.

Possible Causes of Nuisance Alarms:

Virtually nil if correctly set up other than land slip or heavy snow.



Solutions

The various solutions shown in this brochure are not exhaustive but merely an example of available systems. Westminster can also provide numerous specialised detection systems such as rapid deployment radar, microwave or laser detection systems for asset protection such as parked aircraft or specialised detection systems for the detection of damage or illegal taps on wide area networks or other fibre based communication systems between sensitive sites such as banks, government establishments and military bases etc.



Any one or more such technologies may be employed in order to create the required level of protection for example:

A sensitive site may be protected by a microphonic fence disturbance system fitted to the perimeter fence which will detect attempted intrusion by lifting, cutting or climbing the fence. Inside the fence a microwave or infra-red barrier is installed to detect any deeper intrusion together with a concealed 'buried cable' disturbance detection system providing a 3rd level of protection which is both invisible and very difficult to evade.

An inner second fence could also be installed which again could be electronically protected or even electrified (subject to local laws).

All of the above would be integrated in to a master alarm control so that the progress of any intrusion could be monitored and a CCTV system designed so as to automatically 'home in' on areas of intrusion and track the intruders accordingly.

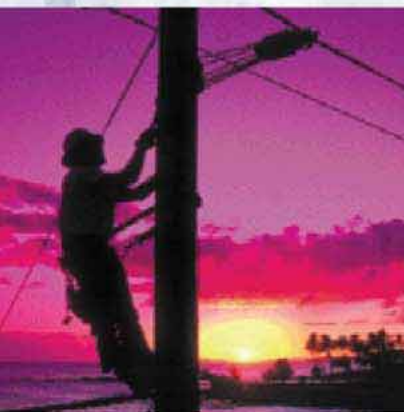
Westminster are able to provide guidance on any aspect of perimeter or border security from the simple to the most complex of requirements and work within the most hostile of environments.

Other Services

Westminster have a wide range of complimentary products and services with extensive experience in the provision of effective integrated Fire, Safety & Security solutions to counter fire, arson, criminal damage, sabotage, terrorist strike, espionage, intrusion, vandalism, theft, fraud, accident, flood at industrial complexes, government establishments, utilities, shopping complexes, banks, airports, seaports, embassies, power generation plants, commercial premises, borders, estates and military establishments etc.

Other services include:

- Intruder detection
- Fire detection
- Access control
- Closed circuit TV surveillance systems
- Anti terrorist & threat reduction solutions



WESTMINSTER INTERNATIONAL LTD

Westminster International Ltd. is a member of the highly successful Westminster Group Plc., which is an International Business Services Group with specialist divisions encompassing Fire, Safety & Security Services, Bespoke Product Development & Manufacturing, Contract Electronic Manufacturing, International Investigations & Risk Assessments, Translation Services, Corporate Events & Entertainment, Consultancy Services and Extensive Product Supply.

The Westminster Group Plc., through various divisions, offers a complementary range of services to the Domestic, Commercial, Industrial, Banking, Government, Military, Telecommunications, Automotive, Aviation and Marine sectors.

Westminster International Ltd is itself a broadly based, Fire, Security & Safety Systems organisation with a wealth of experience in protecting all sizes and complexities of premises, providing design, supply, installation and maintenance of a wide range of systems and equipment internationally to countless domestic, retail, commercial and industrial premises, government establishments, banks, airports, seaports and embassies, etc.

Worldwide – World Class Protection

Westminster operates worldwide through strategically located international offices and agents providing world class solutions to almost any Fire, Security or Safety problem or requirement.

The company has a firm belief in developing long-term relationships based on mutual trust and understanding. This partnership approach means that every effort is made to fulfil expectations on time and budgets with the minimum of inconvenience.

Westminster's commitment to quality is total and applies to all areas of business; ensuring clients receive the highest standards of service and aftercare 24 hours a day, 365 days a year.

Customer Care

Westminster is proud of its reputation in providing comprehensive customer care, training, after sale service and maintenance.

Westminster is able to provide comprehensive training services on all systems and equipment either 'in house' or externally as required.

Westminster's desire to build long-term relationships with clients has led to a large client base, many of which have been receiving comprehensive maintenance programs for years.

Maintenance and service are vital elements in ensuring any fire or security system remains effective and trouble free in operation in order that the integrity of the system is preserved at all times.

Westminster believe in providing the same level of customer care and service to all clients, big or small, whilst recognising that individual customers have diverse and wide ranging requirements which need to be addressed.

Westminster will design and implement a service and maintenance package in accordance with your requirements and relevant regulations and are happy to discuss arranging maintenance of existing installations.

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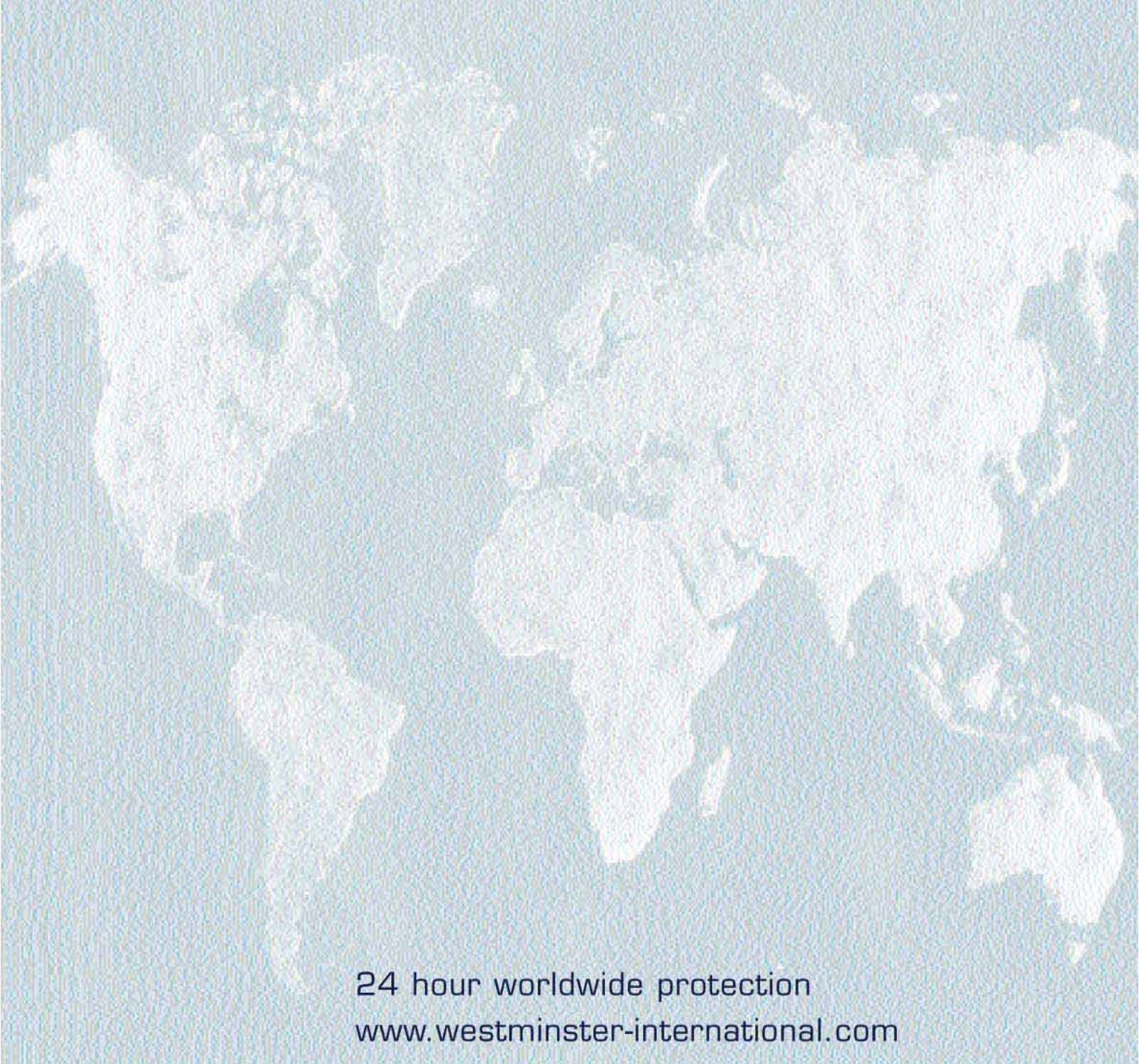
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