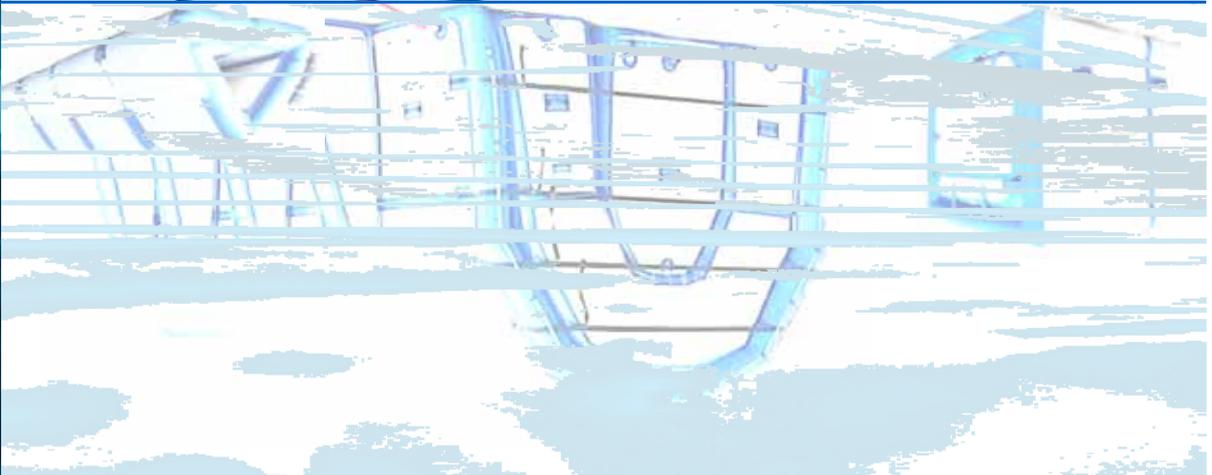


# Waterwall

*Cintec International Limited*

*Suspicious Object Isolators*



Waterwall®

# *If this happens*



*Its too late!*

## *Why Water*

A ground breaking concept developed by Cintec international comprises a range of self inflating, water-filled structures which are capable of providing a high level of protection to people and property against a range of terrorist devices, including those containing chemical, biological and radiological agents.

Manufactured from poly-vinyl-chloride (PVC) coated fabric, Waterwall structures are internally reinforced using a specialist stitching technique to enable them to maintain their shape and stability. Before use, the structures are partially inflated with air to assist with handling and positioning, They are then filled with water, which displaces the air through a pressure relief valve.

The time taken to fill each unit varies depending on its size and the pressure of the water supply but typically takes ten minutes or less. The water can then be emptied out and the unit stored for future use.

Waterwall products of varying shapes and sizes have been designed to contain and isolate devices ranging in size from a shoe to a car bomb.

These include the Mini Hex Bin, Maxi Hex Bin, Blast Bin and Ram Bag. The structural Stability of the Waterwall design has also enabled Cintec International to produce a unit large enough to enclose a vehicle of up to seven tonnes, also a range of blast panels that can be linked together and rapidly deployed to lessen the impact of explosions for checkpoint security and vehicle search purposes.

With prices starting from £1200 the cost effective nature of the Waterwall range puts effective blast mitigation within reach of every government and private organisation.

*The Waterwall system is protected by worldwide patents.*

Waterwall®

# Waterwall Hexagon Isolation Units

## Mini Hex Bin (Hex 950)

PVC coated internally reinforced Waterwall hex bin. Standard internal size to exceed IATA package. Stores flat pack in a valise for immediate use.

Positioned around the suspect device without the need to handle or move the item. Connect to a water supply and inflate until full. Pressure relief valves ensure that the unit is not over pressurised and indicate when the unit is full of water. Tested to mitigate against 2 kg (4.5 lbs) of TNT. Device is effectively isolated until expert help arrives. Has chemical, bacteriological and radiological capabilities with suitable additives added to the water. An inexpensive item with high performance results.



## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
660mm	950mm	831mm	660mm	614mm	531mm
26"	37"	33"	26"	24"	21"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
150mm	215 litres	8 Kgs	223 Kgs	730mm x 500mm x 280mm	
6"	56 US Gal	17 lbs	491 lbs	29" x 19" x 11"	

Waterwall

# Waterwall Hexagon Isolation Units

## Midi Hex Bin (Hex 1400)

PVC coated internally reinforced Water-wall hex bin. Standard internal size to exceed IATA package. Stores flat pack in a valise for immediate use.

Positioned around the suspect device without the need to handle or move the item. Connect to a water supply and inflate until full. Pressure relief valves ensure that the unit is not over pressurised and indicate when the unit is full of water. Tested to mitigate against 3 kg (6.6 lbs) of TNT. Device is effectively isolated until expert help arrives. Has chemical, bacteriological and radiological capabilities with suitable additives added to the water. An inexpensive item with high performance results.



## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
960mm	1400mm	1212mm	960mm	938mm	812mm
37"	55"	47"	37"	36"	31"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
200mm	629 litres	15 Kgs	644 Kgs	800mm x 600mm x 350mm	
7"	166.US Gal	33 lbs	1419 lbs	31" x 23." x 14"	

Waterwall

# Waterwall Hexagon Isolation Units

## Maxi Hex Bin (Hex 1628)

PVC coated internally reinforced Water-wall hex bin. Standard internal size to exceed IATA package. Stores flat pack in a valise for immediate use.

Positioned around the suspect device without the need to handle or move the item. Connect to a water supply and inflate until full. Pressure relief valves ensure that the unit is not over pressurised and indicate when the unit is full of water. Tested to mitigate against 5 kg ( 11 lbs ) of TNT. Device is effectively isolated until expert help arrives. Has chemical, bacteriological and radiological capabilities with suitable additives added to the water. An inexpensive item with high performance results.



### Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
1160mm	1628mm	1410mm	1160mm	854mm	740mm
45"	64"	55"	45"	33"	29"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	1447 litres	18.50 Kgs	1465.50Kgs	800mm x 700mm x 350mm	
13"	382 US Gal	40 lbs	3230 lbs	33" x 27" x 13"	

Waterwall®

# Waterwall Hexagon Isolation Units

## Mini Hex Bin (Split)

PVC coated internally reinforced Waterwall hex bin. Standard internal size to exceed IATA package. Stores flat pack in a valise for immediate use.

Positioned around the suspect device without the need to handle or move the item. Connect to a water supply and inflate until full. Pressure relief valves ensure that the unit is not over pressurised and indicate when the unit is full of water. Tested to mitigate against 2kg (4.5 lbs) of TNT. Device is effectively isolated until expert help arrives. Has chemical, bacteriological and radiological capabilities with suitable additives added to the water. This unit can be used when the suspect object is against a wall or obstacle. An inexpensive item with high performance results.



## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
660mm	950mm	831mm	660mm	614mm	531mm
26"	37"	33"	26"	24"	21"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
150mm	215 litres	8 Kgs	223 Kgs	730mm x 500mm x 280mm	
6"	56 US Gal	17 lbs	491 lbs	29" x 19" x 11"	

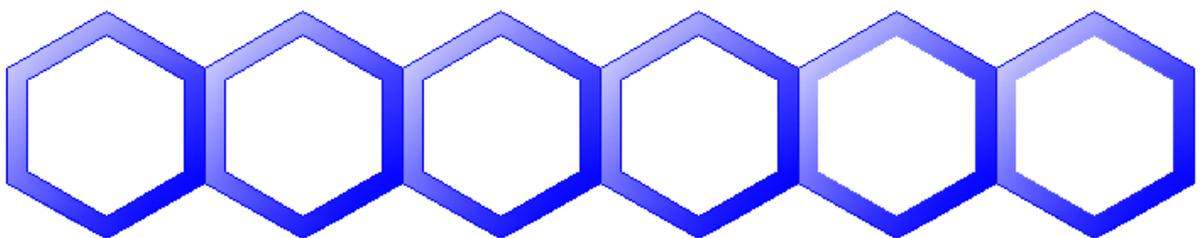
Waterwall

# Waterwall Hexagon Isolation Units

## Hexagon Wall

Waterwall Hexagon Isolation units are made from PVC coated 335mm internally reinforced material. Formed in the shape of a hexagon but with a seamless bottom thus making a container within a container. These units are designed to maximise the amount of water that can be used against used and deployed against large munitions up to 500kg ( 1,102 lbs ).

The outer walls of the 3000mm high Hexagon unit is first inflated with air to provide the shape. Water is pumped into the walls until the pressure relief value is triggered to indicate full inflation. Free surface water is then pumped into the central area to fill the unit up to 2.5mt high. The outer walls will require stabilisation with ropes. The units are designed to be interconnected together to form hexagonal walls. This provides a mass of water that can shape and direct large explosions.



## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
2940mm	3333mm	3749mm	2940mm	2663mm	3075mm
116"	131"	151"	116"	105"	121"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Internal void water volume	
335mm	10237 litres	24Kgs	10261 Kgs	18067 litres	
13"	2704 US Gal	53 lbs	22622 lbs	4773 US Gal	

# Waterwall Isolation Units

## Cargo Isolator

The Cargo isolator is designed to accept a piece of airfreight passing through a one-and-a-half square metre (1.5m<sup>2</sup>) X-ray machine. In the event that a suspicious object is detected during routine pre-flight screening, the freight can be completely isolated on all six sides and moved if necessary to a remote location to await the arrival of the bomb squad.

This product pushes the boundaries of Waterwall technology and considerable attention and effort has been taken to ensure that the product remains completely stable at all stages of the operation.

Unlike the other products in the Waterwall range, an air-filled stability layer has been included in the design to increase the stiffness of the roof section enabling larger volumes to be accommodated. Alternatively the air stability layer could be filled with nitrogen to increase the effectiveness of the blast pressure mitigation.

## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
2170mm	2840mm	2170mm	1500mm	1500mm	1500mm
85"	111"	85"	59"	59"	59"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	9361 litres	134 Kgs	9495 Kgs		
13"	2472 US Gal	295 lbs	20932 lbs		

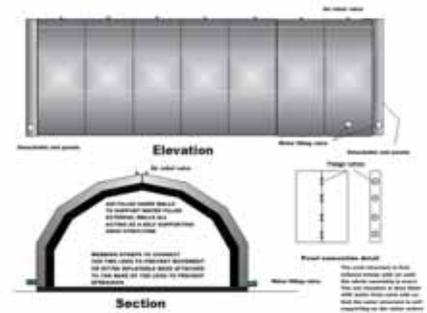


# Waterwall Isolation Units

## HARRI—Vehicle Isolator

Cintec have under development a new system known as HARRI ( High Arch Rapid Reaction Isolator). This Waterwall is the largest in the Waterwall range of products. PVC coated and internally reinforced walls are designed to totally enclose a suspicious car or small van that has a suspected device. The product is totally supported on a pneumatic arch made from 335 mm thick material that is designed to carry the weight of an outer 335mm water filled chamber. Additional buttresses inflated with air are added to the outer walls to increase stability. End doors are fitted with standard 335 mm PVC material and are independently inflated with both air and water and allow for access to be maintained to the device. Pressure relief vales ensure that the unit is not over inflated .

The product totally encloses the suspect vehicle but still allows access for robotic inspection activities. The current prototype is 3.5 metres high, 6 metres wide and 8 metres long. When fully erected the product is able to totally surround a suspicious vehicle with 12,000 litres of water. In the event of an explosion the Waterwall will give total all round protection of a high order detonation and will interfere with the broadcasting of the toxic elements and facilitate clean up.



### Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
3500mm	6000mm	8000mm			
138"	236"	315"			
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	12000 litres	300 Kgs	12300 Kgs		
13"	3170 US Gal	661 lbs	27117 lbs		

Waterwall

# Waterwall Impact Barriers

## Ram Bag 'A' Frame PAS 68-2007. 1500-48

PAS 68:2007. Dynamic impact test.

The impact conditions of the test were met with a total test mass of 1500 kg at a speed of 48km/h and at an angle of 90° to the line of the impact face.

The test was conducted with 4 Ram Bags. The bags were interconnected using 12 No: bolts threaded through webbing loops made from straps surrounding the bags. Each bag was of a triangular cross section with walls 335mm thick and filled with water. The vehicle hit the centre of the 4-unit Ram Bag as designed and on impact the centre two bags ruptured spraying the vehicle with water. The structure then gave way allowing the vehicle to come to a halt without major damage.

The vehicle could not be removed from the Ram Bags until the water had been mostly drained from the remaining two bags over a period of about 5-10 minutes. Penetration was zero and no debris was ejected. A following vehicle could not have passed through.



PAS 68:2007 Performance classification—vehicle impact test  
V Temporary barrier 1500 48/0/0

### Specifications: per 'A' frame unit

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
1490mm	1590mm	1532mm			
59"	63"	60"			
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	1939 litres	25Kgs	1965 Kgs		
13"	512 US Gal	55 lbs	4329 lbs		

# Waterwall Impact Barriers

## Ram Bag Unit PAS 68-2007. 3500-48

PAS 68:2007. Dynamic impact test:

The impact conditions of the test were met with a total test mass of 3500 kg at a speed of 48km/h and at an angle of 90° to the line of the impact face.

The test was conducted with 4 sets of panels comprising of 5 water filled panels in each set and secured with reinforced fabric webbing.

### Impact Results

The vehicle impacted the ram panels as designed and was rapidly brought to a standstill as the centre two groups of panels burst, releasing all the water.

While the vehicle was slowing, all the bags vented water through the top pressure relief valves. There was zero penetration by the vehicle, although the panels had moved a maximum of three metres from the datum line with zero dispersal of debris.



PAS 68:2007 Performance classification—vehicle impact test  
V Temporary barrier 3500 48/0/0

### Specifications: per set of five

External Height	External Width	External Depth	Overall Height	Overall Width	Overall Depth
1190mm	1720mm	1050mm	1190mm	6880mm	1050mm
47"	67"	41"	47"	271"	41"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	2136 litres	35Kgs	2161 Kgs		
13"	564 US Gal	77 lbs	4764 lbs		

Waterwall

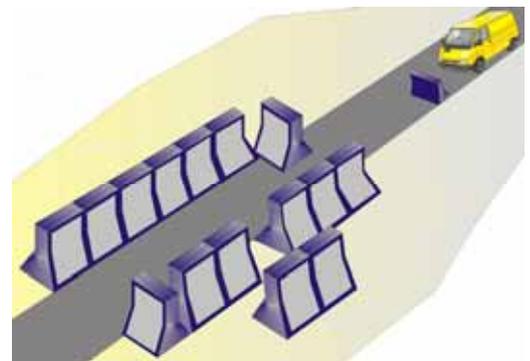
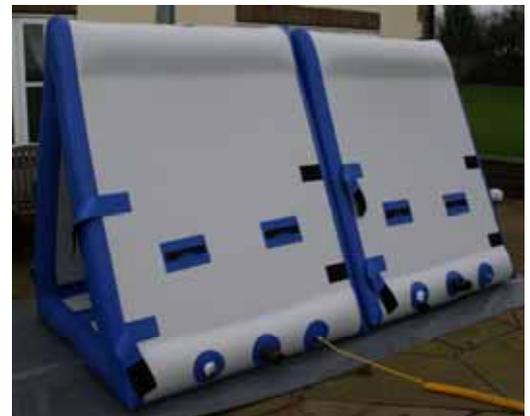
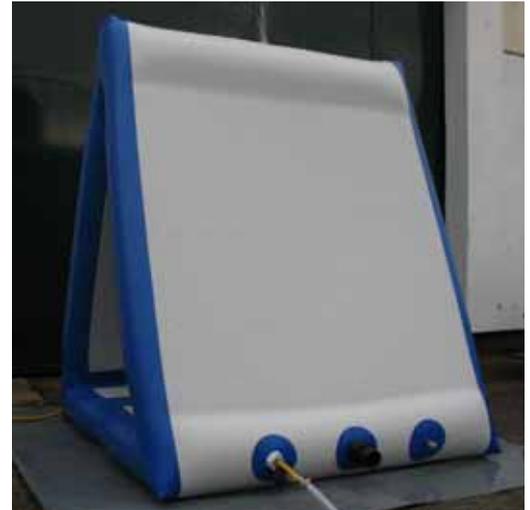
# Waterwall 'A' frame Blast Isolators

## 'A' Frame System

The Waterwall 'A' Frame range of products are coated and internally reinforced with pressure relief valves ensure that the units are not over inflated and to indicate when the walls are full of water. The 'A' frame Waterwall was designed to change the natural characteristics of water wanting to flow horizontally. The ground breaking technology allows water to be shaped and controlled and make it free standing up to 3 metres high. Its form was developed and tested to absorb and redirect the blast over pressure and fragmentation of large improvised devices such as vehicle bombs. Together with other security measures the object of the 'A' frame is designed and tested to provide both protect and increased stand-off for valuable assets. The 'A' frame can be positioned with relatively small footprints at point of entry or at a check point to provide a 3 metre high blast absorbing wall that has been tested to defeat a TNT equivalent of 250Kg (550 lbs) of high explosive.

The product is easily and quickly deployed during periods of heightened security and stored away flat pack when not in use.

Increased mechanical protection can be added using ballistic nylons to the outer walls which can be decorated with any logos or security messages that the client may desire.



## Specifications:

External Height	External Width	External Depth		
1835mm	1540mm	1500mm		
72"	60"	59"		
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise
200mm	1400 litres	29 Kgs	1429 Kgs	
8"	370 US Gal	64 lbs	3150 lbs	

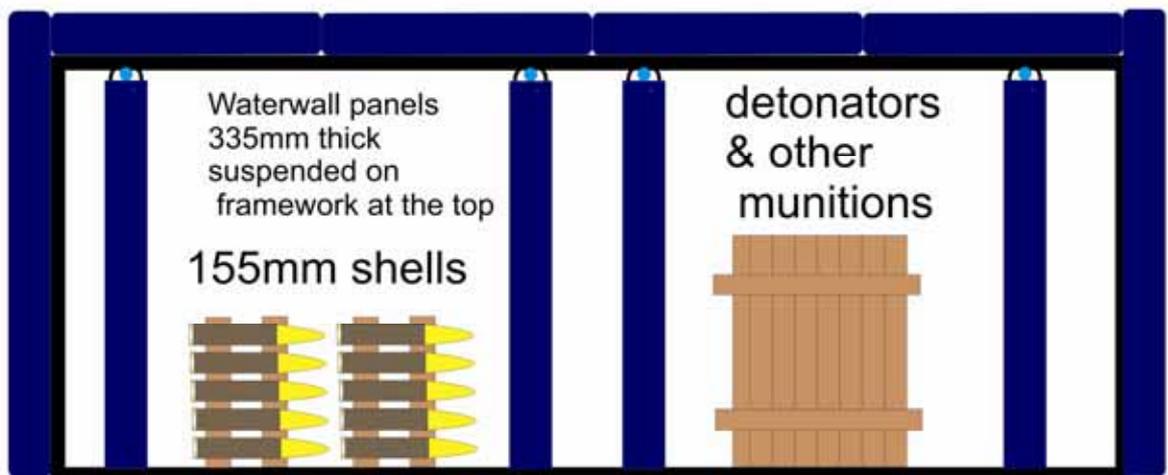
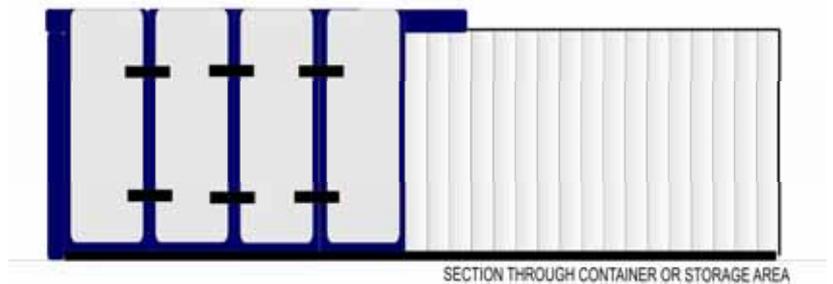
Waterwall

# Waterwall Isolator Panels

## Ammunition & Container Isolation Panels

The Waterwall system can be used as single panels. Each comprising of a single or double panel supported at the top on a frame designed above the panel. Each panel comprises of a PVC coated internally reinforced fabric 335mm thick. The panels are individually pre-inflated with air and then water to form the desired thickness. Over inflation is controlled with pressure relief valves.

The use of water has been known for many years. Waterwall technology provides quick and responsive control for separation of incompatible munitions. The system is readily deployed both internally or externally or a combination of both. When not in use they can be emptied and stored flat pack for future use.



External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
Custom	Custom	Custom			
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	

Waterwall

# Waterwall Blast Bins

## Blast Bin

The ordnance disposal blast bin works in a similar way to the Isolation Bin except that the design has been optimised for use by specialist Explosive Ordnance Disposal Crews working on live ordnance disposal on military training areas or in post conflict scenarios.

The system is currently deployed by the British Army and being evaluated by the United States Corps of Engineers and the Hong Kong Police and elsewhere. The Blast Bins can be deployed and inflated in under 5 minutes and are capable of suppressing fragmentation arising from most battlefield munitions removing the need to build time consuming sandbag or sand-filled enclosures.

In a test undertaken on behalf of the UK MoD, an 81mm mortar was placed and detonated under a Blast Bin. Another mortar was detonated in the open in order to compare the fragment patterns on the witness screens. Pressure readings were also taken. Following the tests, the unprotected witness screen suffered a considerable number of fragment strikes, whereas the witness screen protected using the Blast Bin had very few strikes at all.

## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
1000mm	1270mm	1535mm	665mm	600mm	865mm
59"	62"	60"	26"	23"	34"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	1644 litres	23 kgs	1667 kgs		
13"	434 US Gal	51 lbs	3675 lbs		



# Waterwall Isolation Units

## Acetylene Isolator

The Acetylene Isolator was designed and tested to be deployed and inflated around an acetylene cylinder that has been accidentally heated and is considered unstable.

The 335 mm PVC coated and internally reinforced Waterwall comprises of three walls and a roof section with a separate door section that is added once the main structure is in position. All the panels are fitted with pressure relief valves to avoid over filling and indicating when full of water.

The product has been tested by the Royal College of Science test range in Wiltshire United Kingdom in 2008 when acetylene bottles were heated to destruction inside a standard Waterwall unit.

The Waterwall units can be configured to cover acetylene cylinders that are standing prone, laying horizontally or against a wall.

It is recommended that the Waterwall is positioned after the heat source has been removed using the Cintec robot that has been especially designed for the task.



## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
2035mm	1670mm	1470mm	1700mm	1000mm	800mm
80"	66"	58"	67"	39"	31"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	
335mm	3900 litres	44 kgs	3944 kgs		
13"	1030 US Gal	97 lbs	8695 lbs		

# ***Waterwall Robotic Deployment***

## **Remote Deployment Vehicle**

This is the first inexpensive robot dedicated to positioning and placing of Waterwall products over suspicious objects located in public areas. The robot is able to carry an un-inflated Waterwall on a portable jig through a standard door opening guided by video cameras that have day and night capability. The robot is able to turn on its tracks and climb a 40 degree pitch or stair way and lift. Connected to the Waterwall is a standard un-inflated water hose or standard garden hose, depending on local source, that is towed behind from a hose reel under the control of an operator.

The robot also has a fire fighting movable spray nozzle. Once the robot is close to the object in question, the Waterwall is inflated with air and positioned over the object. As soon as it is in position water is pumped into the Waterwall under local water pressure until the pressure relief valves are activated indicating that the Waterwall is full.

Sensors can be fitted to the internal sides of the Waterwall to monitor the anticipated threat and relay any information back to the operator.

In most cases the suspicious object will not be an improvised explosive or dirty device and the object may be removed safely. However, should the object present a problem the situation will continued to be monitored until expert help arrives?



# Waterwall Water Storage Units

## Hexagon Water Dams

The hexagon water storage dams are designed To provide rapid storage capabilities for fire fighting appliances.

Due to the limited water storage of a fire appliance it is necessary to provide additional water to the appliance if a mains supply is not available. This storage unit allows a bowser or tanker to fill the unit and leave to refill ,while the fire appliance can draw the water from the storage unit.

The Waterwall dam is able to be used even on uneven ground and gentle slopes.

Waterwall dams are bespoke designs that can be made to suit the clients requirements and can vary in size and capacity.

The Waterwall dam comes flat packed in its own valise. It is then inflated using an air pump or a compressed air supply. As soon as the dam is inflated it is ready to receive water.

Packed size: 1200mm x 700mm x 400mm



## Specifications: 10,000 Litre Unit

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
1000mm	4346mm	3764mm	1000mm	4000mm	3464mm
39"	171"	148"	39"	157"	136"
Wall Thickness	Water Volume	Weight Empty	Weight Full	Available Sizes	
150mm	10,000 litres	58kg		3000, 5000, 7000, 10,000 lt & Custom	
6"	2641 US Gallons	127 lbs		792, 1320, 1849, 2641 USGal, Custom	

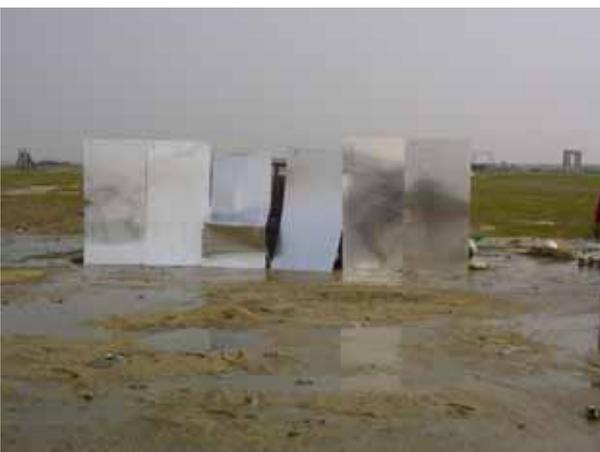
Waterwall

# Waterwall Blast Bin Trial

## 81mm Mortar (with and without blast bin)

Cintec Blast Bins were tested against mortars. Data was collected in terms of overpressure and fragment strikes recorded on a witness screen. The data resulting from the tests is summarised below:

System	Peak pressure reading (kPa)		
	Gauge 1 (at ~5m)	Gauge 2 (at ~10m)	Gauge 3 (at ~15m)
Free field	37.3	12.3	7.8
Cintec system – open-end towards gauge	44.2	14.63	8.36
Cintec system - closed-end towards gauge	6.34	2.95	1.58



Waterwall®

# Waterwall Accessories

## Valves and Accessories



Electric IDU air pump complete with hose fittings



Openings can be inserted in the Waterwall material to allow cables etc. to be passed through



Adaptors are available to convert the standard 2½" instantaneous to any fitting worldwide



Optional valves to allow unit to be emptied via a hose after use



Extension hose to allow stand off connection of water supply



Hozelock fittings can be fitted to enable filling from a domestic hose

Various size compressors to suit the Waterwall type



Waterwall®

# Waterwall Isolation Units

## Trailer Transport Unit



### Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
Custom	Custom	Custom			
Wall Thickness	Water Volume	Weight Empty	Weight Full	Packed size in valise	

Waterwall®

Under Development

# Waterwall Rescue Units

## Pathway

This enhanced pathway with increased stability, can be used in unstable conditions such as waterways, mud and ice. The two runners below the unit are simultaneously inflated with the main unit. This increases the stiffness and stability in the pathway. The external netting provides grab points along the pathway and reduces the slip hazard. The unit can be fitted with a built in air cartridge for inflation if required. The standard unit uses a quick release fitting to enable filling from an air bottle.

The unit comes rolled up in its own carry valise and can be secured at one end, if required, then inflated over the hazard. The next unit is then attached to the first unit using the built in clips and then inflated. Additional units can be attached and inflated in this manner to bridge most hazards. The units can also be joined side ways as a stable platform.

An optional add on will allow a small outboard motor to be attached.



## Specifications:

External Height	External Width	External Depth	Internal Height	Internal Width	Internal Depth
300mm	1200mm	3000mm	NA	NA	NA
Wall Thickness	Air Volume	Weight Empty	Weight Full	Packed size in valise	
150mm	810 Litres	22kgs	NA		

Waterwall

# Waterwall Blast Isolators

## Deployed



Waterwall

# *Cintec International Limited*

## United Kingdom

Cintec House  
11 Gold Tops  
Newport  
South Wales  
NP20 4PH  
United Kingdom

Tel: +44 1633 246614

Fax: +44 1633 246110

## United States

International Trade Centre  
510 McCormick Drive  
Suite Q  
Glen Burnie  
Maryland  
21061

USA

Tel: +1 800 363 6066

Fax: +1 800 461 1862

## Australia

40 Tyrrell Street  
PO Box 141  
Newcastle  
New South Wales  
2300  
Australia

Tel: +61 2 4929 4841

Fax: +61 2 4929 7933

## Canada

38 Auriga Drive  
Suite 200  
Nepean  
Ontario  
K2E 8AS  
Canada

Tel: +1 613 225 3381

Fax: +1 613 224 9042

E-Mail: [hqcintec@cintec.co.uk](mailto:hqcintec@cintec.co.uk).

E-Mail: [solutions@cintec.com](mailto:solutions@cintec.com)

[www.waterwallblastprotection.com](http://www.waterwallblastprotection.com)

Waterwall®