



SOLUTIONS FOR EMERGENCY FLOOD PROTECTION

An aerial photograph showing a long, straight dike separating a green agricultural landscape from a large body of blue water. The dike has a road and some buildings on top. The water is calm with some small waves. The sky is not visible.

DUTCH WATER EXPERTISE AT YOUR FINGERTIPS

Floods have large economic, environmental and social impacts. Emergency flood situations often require immediate and adequate action to prevent the flooding of valuable objects and areas, or to mitigate the consequences of flooding.

Preparing for these situations in advance can avoid the negative impacts of floods and expertise is required on how to prepare and act. This portfolio comprises innovative and proven technologies from the Netherlands. It shows how temporary flood barriers can be used **before** floods; the uses of moveable bridges and high capacity pumps **during** emergency situations; and innovations for secure potable water production and storage **after** a water calamity.

“Innovative and proven technologies from the Netherlands are selected and combined in this portfolio.”

OUR INNOVATIVE SOLUTIONS



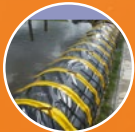
BEFORE



Temporary flood barrier
BoxBarrier



Temporary flood barrier
SLAMdam



Temporary flood barrier
TubebARRIER



Integrated flood barrier
Dutchdam



Temporary integrated flood barrier
Vlotterkering®



Monitoring
Mobile laser scanner



DURING



Temporary bridging solutions
Emergency bridges



Temporary bridging solutions
Easy Launch Bridge



Mobile high capacity pumps
Mobile emergency pumps for flood control



Mobile high capacity pumps
Water control and displacement



Mobile high capacity pumps
Super high flow electric water pump



AFTER



Potable water production
Potable booster pump



Hand powered Water Treatment
Villagepump 500



Potable water buffer bag
Temporary potable water storage

BEFORE



*Temporary
flood barriers
and monitoring*



TEMPORARY FLOOD BARRIER



BoxBarrier

www.boxbarrier.com

The BoxBarrier is a temporary flood defence system that protects people, property and vital infrastructure from water deluge. The BoxBarrier is quick to deploy and exceedingly effective. Comprising robust plastic containers filled with water that are seamlessly joined using a coupling piece, over 100 metres of temporary flood defence can be erected by just three people in under an hour. The rubber underside of the BoxBarrier creates a watertight seal on any surface - from tarmac to

paving to muddy grass - and once in place, the barrier will protect people and property from excess water heights of up to 60 centimetres.

Benefits:

- Comprehensive, temporary flood defence (first and second line).
- Compact storage and fast transportation.
- Swift and easy deployment.
- Robust, durable and vandalism proof.
- Reusable, zero maintenance and low cost.

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BEFORE ● ○ ○

TEMPORARY FLOOD BARRIER



SLAMdam

www.slamdam.nl

SLAMdam is a temporary flood defence. Compact and easy to set up, it could make a huge difference in the event of flooding or disasters. The SLAMdam was developed to be sustainable being based on synthetic EPDM rubber, an ecologically responsible and recyclable material with unique properties and a maintenance-free lifespan in excess of 40 years. Furthermore, the SLAMdam is resistant to UV, ozone, the majority of chemicals, acids and alkalis and is suitable for

use in the most varied of weather conditions. Because the SLAMdam is resistant to chemicals it is also ideal for the petrochemical industry, it can be deployed rapidly at a chemical leak, storage of chemicals or a temporary basin for CBRN. When you fill the dam with air you create a SLAMbridge; a crossover bridge for people and vehicles. The SLAMdam is TÜV-certified in line with the PAS 1188-2:2009 standard.

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BEFORE ● ○ ○



TEMPORARY FLOOD BARRIER



TubebARRIER

www.tubebARRIER.nl

TubebARRIER is a Dutch temporary flood barrier offering a preventive measure against flooding and water.

The TubebARRIER is quick and easy to install because there is no need for electricity, pumps or lots of manpower, as opposed to sandbags. The TubebARRIER can be deployed on almost every surface and the 10 metres long section can be folded together into a packet measuring

just 50 centimetres. The sections are easily connected by a specially designed zipper. Using TubebARRIER once is cheaper than the use of sandbags and it can be reused and stored until it is needed for the next flood.

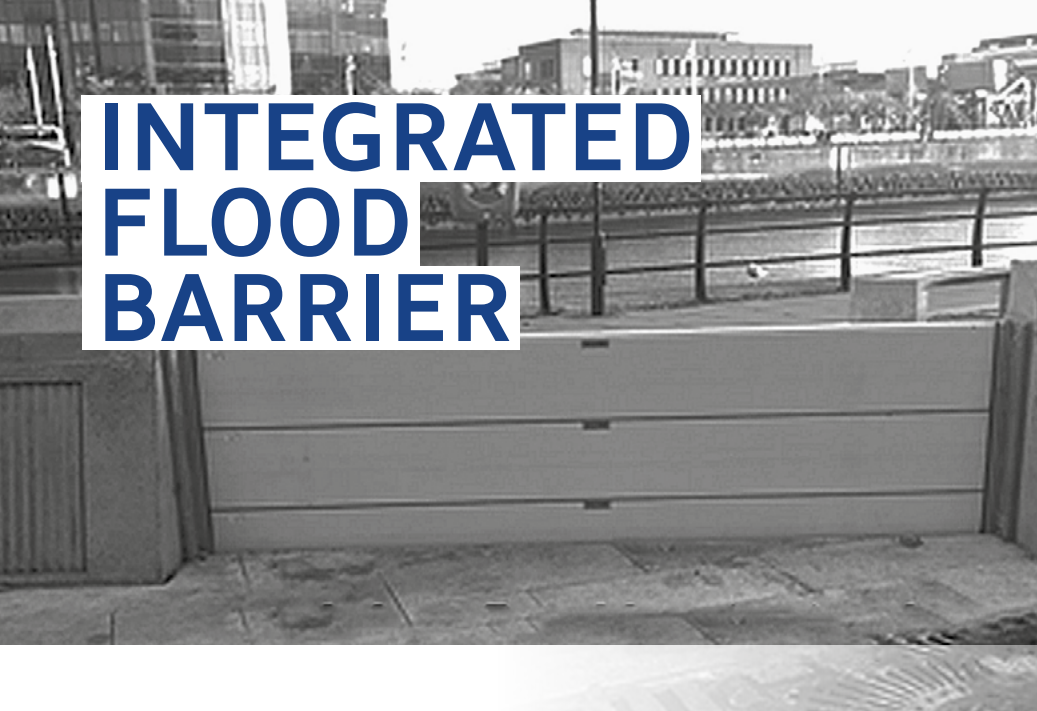
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BEFORE ● ○ ○

INTEGRATED FLOOD BARRIER



Dutchdam

www.dutchdam.com

The Dutchdam flood barrier system is an infrastructure integrated technology which can rapidly be put in place on site. A range of modules with varying heights enables specific necessary adjustments and allows the creation of zones for selective flood management. The barriers can be placed below ground level in a gutter box including covers with adjustable load capacities.

Some can be placed at street level to create temporary flood walls in the open areas, along riversides, harbors and for temporary elevation of city quays and boulevards. The Dutchdam flood defence is designed for a rough environment, has a robust exterior and a durable structure.

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BEFORE ● ○ ○



TEMPORARY INTEGRATED FLOOD BARRIER



Vlotterkering®

www.vlotterkering.com/en/

Vlotterkering® is a temporary water barrier integrated into a dike or embankment that protects the land and its inhabitants from extreme water surges. The greatest advantage of the Vlotterkering® is that it provides a water-barrier solution for areas with complex spatial zoning.

Benefits:

- No need to interrupt the view or change the existing situation.
- Deployment possible in all conditions and weather.
- Flexible barrier that closes automatically.
- A fixed feature ready for operation and/or testing at any time.
- No manpower or materials needed, not even for resetting.

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BEFORE ● ○ ○

MONITORING



Mobile laser scanner

[www.shoremonitoring.nl/
UAVLiDAR.html](http://www.shoremonitoring.nl/UAVLiDAR.html)

Calamity situations are often accompanied by uncertainty and require a fast response from decision makers. The mobile laser scanner is a fast solution to replace uncertainty by high resolution, centimetre accurate data of the area/object of interest. Quantification of the situation results in reliable information that is valuable in the decision-making process. Due to its compact size, the mobile laser scanner can be mobilized within 2-3 hours after the first call.

The laser scanner can be deployed in combination with a 4x4 vehicle, but the limited weight also makes it possible to deploy the scanner under a drone. The latter enables data acquisition of areas and objects that cannot or are not safe to be entered by people. From severe dune erosion and dike deformations to input for damage reports; the mobile laser scanner is a versatile solution to move from uncertainty to quantitative information.

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BEFORE ● ○ ○



DURING



*Temporary bridging
and high capacity pumps*



TEMPORARY BRIDGING SOLUTIONS



Emergency bridges

www.jansonbridging.com

Janson's broad portfolio includes several types of modular bridging systems in every load class and span desired, from pedestrian to heavy traffic bridges, from steel to polymer bridges, from coupled pontoons to harbour facilities, from pontoon bridges to ferries. All of these systems are always deployed in the framework of Janson's comprehensive service concept which ranges from design, engineering and manufacturing to installation, training, supervision, maintenance and re-use.

In the market of temporary, semi-permanent and permanent bridging solutions, Janson Bridging is one of the larger companies in the world. With branches and stocks all over Europe, Janson is also the European market leader for renting out bridging systems.

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DURING ○ ● ○



TEMPORARY BRIDGING SOLUTIONS



Easy Launch Bridge

www.themastermindcompany.nl

The ELB based on CNEC-t is developed for manual bridging without the need for special or heavy equipment like cranes. Transportation of individual parts can be done with minor transport devices like pick-ups or even on the back of a donkey. These features of the ELB make it easier to deploy in areas that are difficult to access. Deployment by helicopter is not an issue anymore.

On site all portable parts can be lifted by one or two people, according to the labor laws, with a maximum of 24-48 kilograms. Only two-four people are needed to perform the assembling. The ELB is suitable for multiple spans and load capacities.

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DURING ○ ● ○



MOBILE HIGH CAPACITY PUMPS



Mobile emergency pumps for flood control

www.bbapumps.com

The BA700G D810 High Capacity Flood Control Pump Unit is the largest mobile BBA pump, with a pumping capacity of 130m³/min. The canopy and drives are created with an optimal balance between the output, fuel consumption and the size of the complete unit. Despite its impressive capacity, this giant is still a genuinely mobile pump.

Benefits:

- Exterior dimensions of the canopy make it suitable for transport in a 20 foot container.
- Available with different engine options to comply with emission standards worldwide.
- Minimal noise emissions for trouble-free use in densely populated areas.

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DURING ○ ● ○



MOBILE HIGH CAPACITY PUMPS



Water control and displacement

www.vanheckgroup.com

Van Heck operates internationally in the field of water control and displacement. The company has a proven history of flood relief assistance and has played a key role in large scale European flood water removal operations. Their equipment is mobile and is either built to 20 feet sea container dimensions, or will fit into a 20 foot sea container. The largest diesel driven unit available at the moment for immediate mobilisation is a silenced

DPPG820 – HK800 pump unit, which is capable of pumping up to 10.000m³/h. Other diesel driven units, capable of up to 7000m³/h (HK700), 4900m³/h (HK500) or 3500m³/h (HK400) are also available for immediate dispatch. Electrically driven VP800 pumps, capable of up to 8250m³/h, can also be deployed.

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MOVING WATER
any way you want it

DURING ○ ● ○



MOBILE HIGH CAPACITY PUMPS



Super high flow electric water pump

www.grpumps.com

Gorman-Rupp introduces the PATTERSON F24C-315KW, a high flow centrifugal water pump. This 24" electric driven pump can handle flows up to 7000m³/h. It is coupled to a 315kW 3 x 400V / 50Hz electric motor, fully controlled by a VFD. Available for permanent installation or through rental. Besides supplying the pump, Gorman-Rupp can also carry out installation work including piping and control, as well as diesel engine driven pump sets.

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EUROPE

DURING ○ ● ○



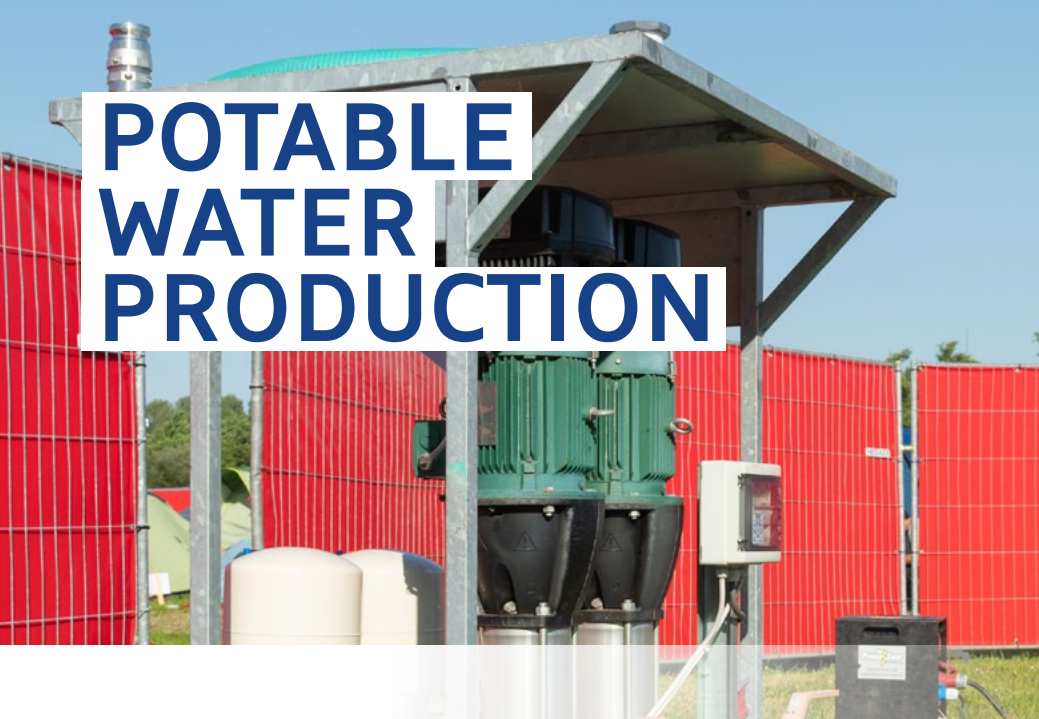
AFTER



*Water production,
treatment and storage*



POTABLE WATER PRODUCTION



Potable booster pump

www.mtd.net

MTD Nederland offers a potable water booster pump which is frequency-controlled 50/60Hz and available in capacities 3m³/h, 10m³/h, and 50m³/h. The pumps are framed and can easily be connected to increase total capacity. They are used to pump and distribute potable water. The frequency-controlled pump will automatically switch on when the pressure in the pipeline decreases and will switch off when the set pressure is obtained.

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AFTER ○ ○ ●



HAND POWERED WATER TREATMENT



Villagepump 500

www.villagepump.org

In the aftermath of a disaster clean water is one of the most urgent commodities needed. The Villagepump 500 is a hand powered water treatment device that produces up to 2500 litres of clean drinking water daily. According to WHO standard, that matches the daily need for 1000 people. Plug-and-play and ready within 10 minutes after arrival. A long lasting and sustainable solution with no left-over empty bottles that end up in the environment.

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AFTER ○ ○ ●



TEMPORARY POTABLE WATER STORAGE



Potable water buffer bag

www.mtd.net

MTD Nederland offers a flexible potable water buffer bag for water storage available in the capacities 20m³, 50m³, and 100m³. It is a modular system which makes it easy to connect several bags to increase total capacity. 20m³ and 50m³ bags fit on a pallet, a 100m³ bag is stored in a steel case. It can be used in remote or disaster areas to store (potable drinking) water. The bags need to be installed on a horizontal and equalized surface.

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AFTER ○ ○ ●



“Spectacular achievement is preceded by unspectacular preparation.”

Colophon

More information?

For more information on this portfolio or on Dutch water expertise, contact the Netherlands Water Partnership: info@nwp.nl / +31 703 043 700

Acknowledgements

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Photo credits

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**PARTNERS
FOR WATER**