

Water injection dredging provides a hydrodynamic dredging technique that is both cost effective and environmentally sound. The Marine & Property Group Ltd is a leading marine business in the UK. In addition to water injection dredging, we are marina and drystack operators; offer wide-ranging boat refit and repairs services; and have an extensive property portfolio. Our in-depth experience and knowledge of the industry ensures we can provide a competitive service tailored to your requirements.

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## OUR PROCESS

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### THE PROBLEM

Ports, harbours, navigation channels and marinas are continually confronted with siltation, which reduces access. Maintenance dredging is a necessity for companies operating in these waterways to ensure safe navigation depths. Planning this dredging work can be daunting without access to the right expertise.

### THE SOLUTION

As a company, we own and operate several marinas, giving us first-hand experience and an in-depth understanding of the requirements of dredging operations. Our dredgers and team of marine engineers, offer water injection dredging which provides a cost effective, environmentally sound dredging method. Given the varied nature of the locations our fleet of dredgers can work in, we price each project individually for a competitive quote, to meet your individual requirements.

# THE METHOD

Water injection dredging is a hydrodynamic dredging technique, where the basic principle is to remobilise sediment, using the action of natural currents. Water pumps connected to a series of nozzles on a horizontal jet bar, inject large volumes of water at low pressure directly onto the sediment build up. This process fluidises the sediment build up, turning it into a density current which remains close to the water bed.

The sediments are then picked up by this current and able to flow horizontally out of the channel or port. This process eliminates the need for traditional excavation dredging methods and the subsequent transportation of the dredged material. Nature takes care of the sediment transport, making water injection dredging a cost-effective dredging technique with less impact on the environment.

1  
Silt: Sea / Riverbed

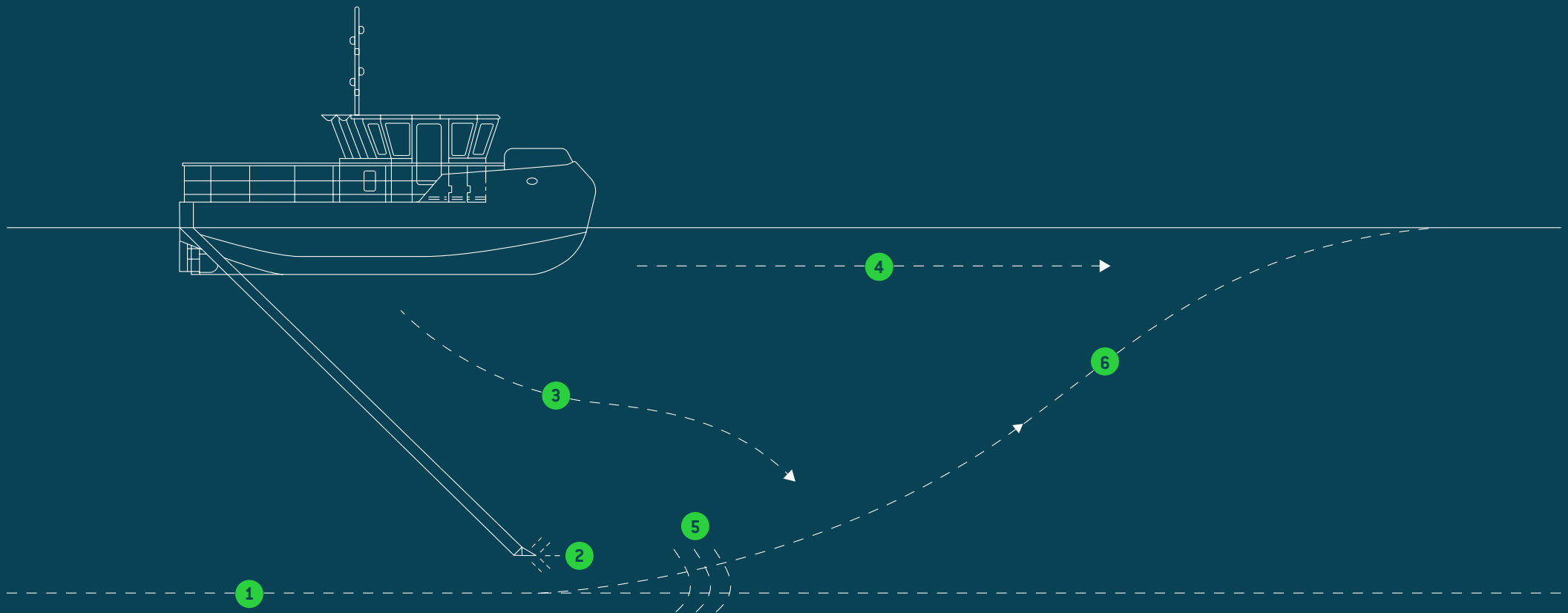
2  
Water Injection  
Nozzles

3  
Dynamic Plume

4  
Surface Flow

5  
Density Current

6  
Silt Suspension Flow



## THE BENEFITS

Water injection dredging is often combined with other dredging technologies which can then operate with increased efficiency. The process can therefore provide either a stand-alone dredging solution or complement traditional dredging methods.

- Cost effective method of dredging
- No disposal licence required
- Vessel is fully road transportable
- Quick mobilisation/demobilisation times
- No need to move pontoons or infrastructure
- Shorter timeframes for carrying out work
- Vessel has great manoeuvrability
- Able to reach hard to reach areas close to embankments and quay walls
- Environmentally sound solution

## APPLICATIONS

Water injection dredging is a popular and effective method for maintenance dredging as it involves variable quantities of material, from thin to thicker layers. The sediments to be dredged are the most recent layers which have formed. This process is a regular activity, within a dynamic environment, where sedimentation and erosion are on-going occurrences even as dredging is taking place. As the process does not dig into or excavate as traditional dredgers do, water injection dredgers can operate in places where other types of equipment cannot reach including:

- Marinas
- Underneath jetties and moored vessels
- Alongside quay walls
- In locks
- Inland waterways/canals
- Culverts
- Access channels
- Flood prevention
- Increasing depths for ship berthing
- Wind farm installations
- Levelling the water bed for pipelines and tunnel sections
- Increasing the depth of pipelines and cables

## ENVIRONMENTAL CONSIDERATIONS

For water injection dredging to be effective, it is essential that the environmental and ground conditions on-site are clearly understood. Site specific bathymetry and geometry plays an important part in the effectiveness of water injection dredging. When required, we can assist with carrying out the necessary surveys and trials prior to dredging commencing with our survey equipment by Hypack.

Factors influencing the dredging production rates include:

- The water depth
- The bathymetric features
- The characteristics of the transport path of the density current

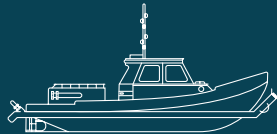
## ENVIRONMENTAL IMPACT

The process of transporting dredged material horizontally along the water bed, compared to traditional dredging techniques, results in the following specific circumstances which reduces the impact of the process on the environment:

- An increased quantity of sediment goes into the lower layers of the water column
- The rate of sediment input in the natural systems at the dredged area is increased
- The sediment is transported by natural phenomena through the density current
- The rate of sedimentation in the deposition areas may vary if the natural conditions vary
- Dredged sediments remain within the ecosystem

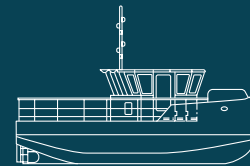
Special attention should always be given to areas nearby the dredging location to determine if there are sensitive habitats such as shellfish beds or spawning habitats. We can offer advice in organising environmental studies and the types of permissions that are likely to be required prior to dredging.

## OUR FLEET OF DREDGERS



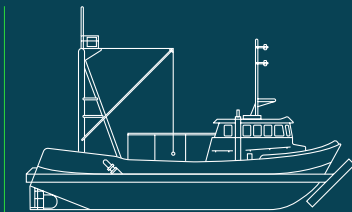
### CMS INNOVATION

Our Water Injection Dredger 'CMS Innovation' weighs 11.5 tonnes and is therefore fully road transportable as a unit, needing only a crane or boat lift to launch or recover allowing for quick turnaround times.



### CMS INNOVATION II

The hull design of our new dredger offers good stability and excellent manoeuvrability in confined spaces such as ports, harbours and marinas.



### SILTBUSTER

With the ability to dredge to a maximum depth of 22m, this vessel works well in commercial ports and around major infrastructure.

# CONTACT US

For a competitive water injection dredging quote to meet your individual requirements

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Read about our latest dredging projects on our website visit:

[www.themarinegroup.co.uk](http://www.themarinegroup.co.uk)