Boskalis
Dredging & Marine Experts

PROJECT SHEET

CLEANING UP KETELMEER
KETELMEER, THE NETHERLANDS

Ketelmeer, a lake in the Netherlands with a length of some 10 kilometers and a width varying from two to three kilometers, separates the North Eastern and Southern Polders constructed during the late 1960s and early 1970s. It is a major example of the problem of "historic pollution". Lake Ketelmeer receives the waters of the Rijn and IJssel and over a period of three or more decades, tens of millions of cubic meters of highly contaminated sediments entered Ketelmeer from hundreds of upstream locations. The bottom was covered by polluted sediments to an average depth of 50 cm. A significant proportion of this material had to be removed, or capped by the cleaner sediments of recent years, if a normal aquatic environment was to be restored.

The strategy for Ketelmeer was based on selective removal, in areas such as the main shipping channels, together with the construction of a permanent and fully isolated repository for contaminated dredged material. This facility, the IJsseloog, will serve both Ketelmeer and the entire northern region of The Netherlands and has a capacity of 23 million m^3. When the facility is full, it is likely to be capped and developed as a recreational area within a rejuvenated Ketelmeer. This new island, with its adjacent wetland habitats, has the potential to become a significant nature reserve in its own right.

FEATURES

Client	Ministry of Transport, Public Works and Water Management
Location	Ketelmeer, The Netherlands
Period	April 2000 – June 2002

A Location map
B The environmental disc cutter Vecht used for cleaning up the Ketelmeer

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Boskalis was a major participant in the Ketelmeer program. It took part in the extensive trials of environmental dredging technologies organized in the 1995/1996 period.
A critical success factor, in this context, is the ability to strip ultra-thin layers of contaminants from the bed of the Ketelmeer, combining high rates of production with low turbidity. Following convincing demonstrations of its "surgical dredging" capability, Boskalis, together with two other dredging companies, were awarded a major environmental dredging contract by the Ministry of Transport, Public Works and Water Management in April 2000.
Boskalis' engineering teams built on the experience gained during the Ketelmeer trials, to devise an optimized dredging system for the main dredging works. High performance is governed by various criteria, such as accuracy, high capacity/low water content and low turbidity.

The Boskalis system deployed at Ketelmeer has a capacity of 500 cu m/hr and has the ability to strip very thin layers (0.05 m to 0.60 m). The system features on an environmental disc cutter (a horizontal rotating disc) with a visor on the dredge side.

This configuration allows the dredge head to be located with great precision ±0.02 m. Ultra-low turbidity is combined with minimal process water. The result is an unusually dense dredged material (up to 60% concentration). This was stored in the temporary repository at Ketelmeer - completed in 1996 and with a capacity of 100,000 cu m, in readiness for the environmental dredging trials. The availability of this facility permitted an early start on the main dredging works and the construction of the permanent repository.

The contract was completed in June 2002. Boskalis had contributed to two key objectives. The first was to achieve a significant reduction in the re-suspension of sediments, due to vessel traffic in the main channels and movements in the many small harbors around Ketelmeer. The second was to deepen the shipping channel from the IJssel to Lake IJsselmeer.

The production rates achieved by the Boskalis project team at Ketelmeer were impressive. Production- averaged 40,000 m^3 per week, working to a macro tolerance (average, control area) of between +35 mm and -15 mm.


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C Aerial view of the specially constructed depot "IJsseloog" in the middle of the Ketelmeer lake
D In 2003, Boskalis was at work in the Ketelmeer lake to complete the construction of a nature development

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