

SEABED LEVELING

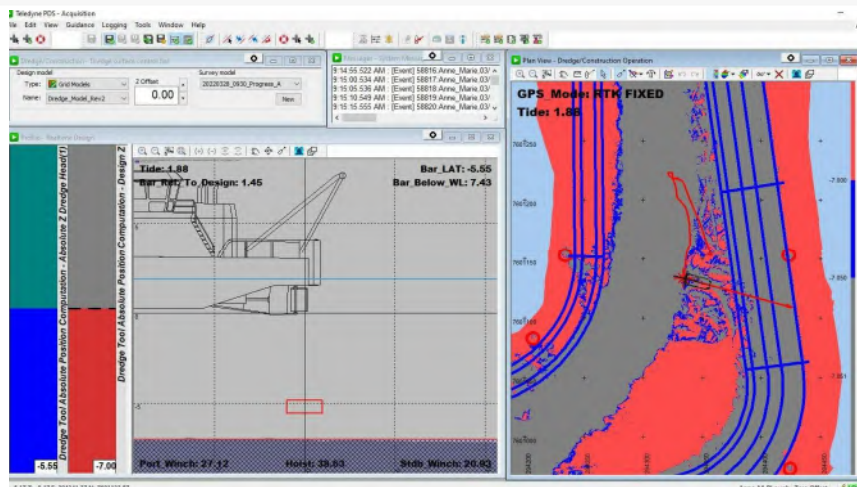


EQUIPMENT SPECIFICATION



Operation

The Leveler which is either the Box Plough or Sweep Bar (refer below) is suspended beneath the vessel / barge and remotely controlled by three independent winches. In this arrangement the depth and alignment of the Leveler is able to be manipulated to give the most effect outcome. Utilising rotary encoders on the winches and specialised Dredging software the vessel is provided with a real-time display of where the Leveler is working. The PDS software can provide Leveler depth accuracy of up to +/- 10cm vertically and horizontally. The encoders produce 4000 pulses per drum revolution and are counted by a Programmable Logical Controller which transforms the pulses into wire length via software program. The wire length in combination with the vessel position (x,y,z) and heading from an RTK system are live inputs into the PDS Dredging software. The program calculates the three-dimensional Leveler position in chosen Coordinate system (x,y) and Datum (z). Progress surveys are uploaded into the PDS Dredge Software on the vessel to provide an up to date picture of the progress. This is the most critical aspect of the whole operation, as we can calculate volumes removed / remaining, fine tune Leveler performance and provide for real time progressive planning of operations.



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Box Plough

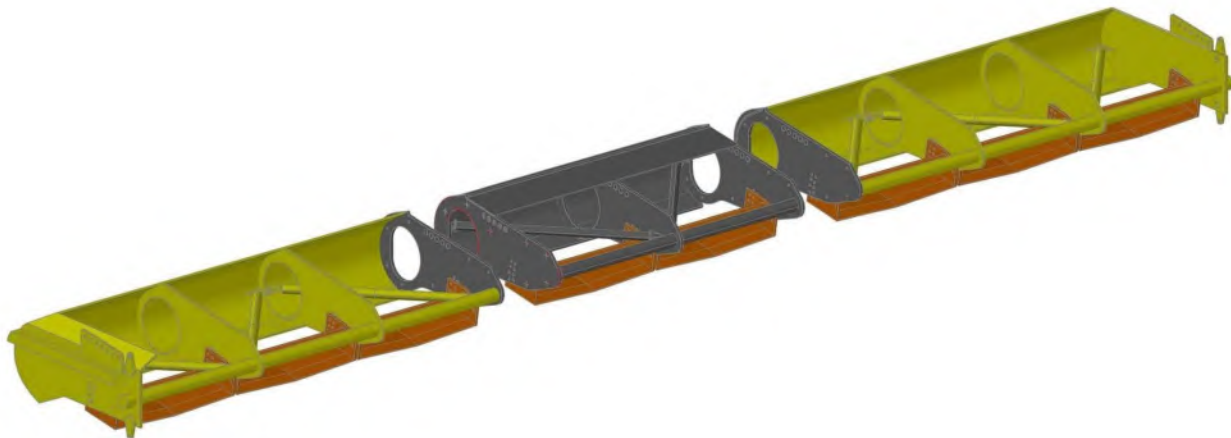


Box Plough

Width	9.6m or 13m (adjustable)
Weight	8.5 T - 10 T
Cutting Edge	Bisalloy

Summary

The Plough is suspended directly behind / below support vessel or barge. Designed for leveling / relocating high points of seabed silts and sand deposits. Ideal for use in shipping channels, berthing pockets and post dredging



Design

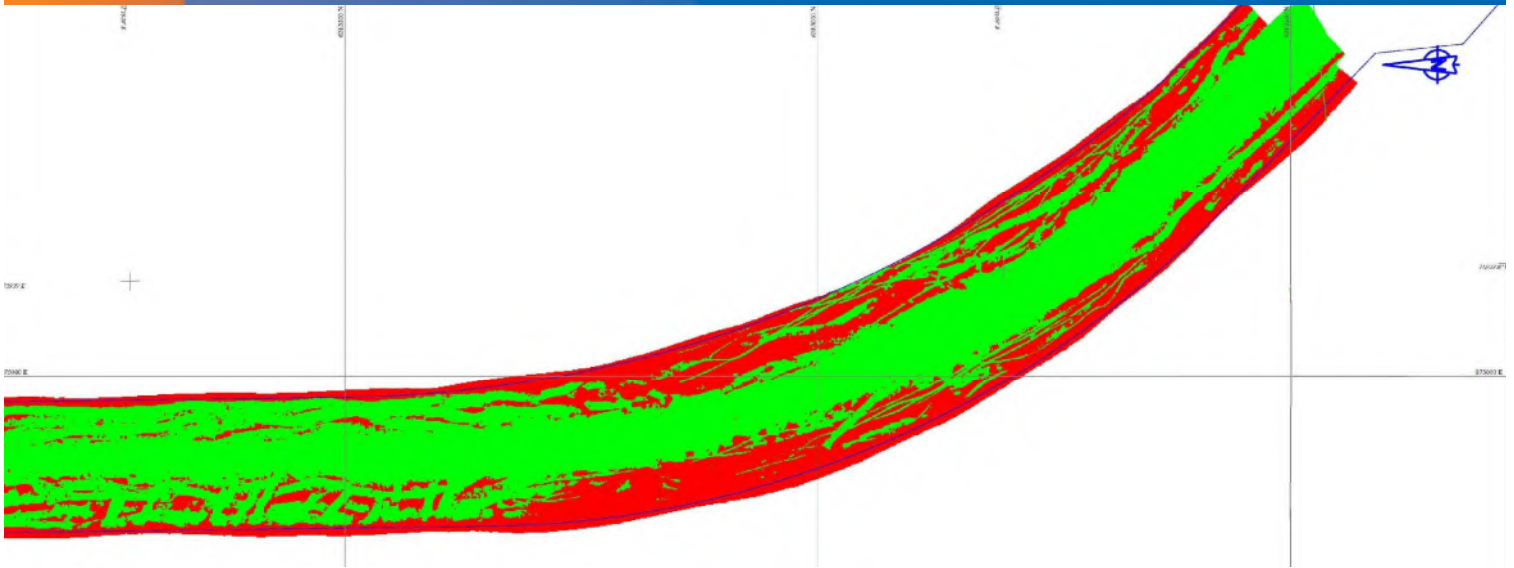
The Box plough is designed to move material by pushing it straight ahead. Sidewalls at either end of the plough keep the material contained preventing it from spilling out and creating ridges which lead to inefficiency with time wasted in clean up. The Bisaloy cutting edge is fully adjustable enabling fine tuning of performance to maximise operational gains. For final trimming or operation in particularly fluid material the plough is reversed and a skirt fitted to ensure objectives are achieved

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Sweep Bar

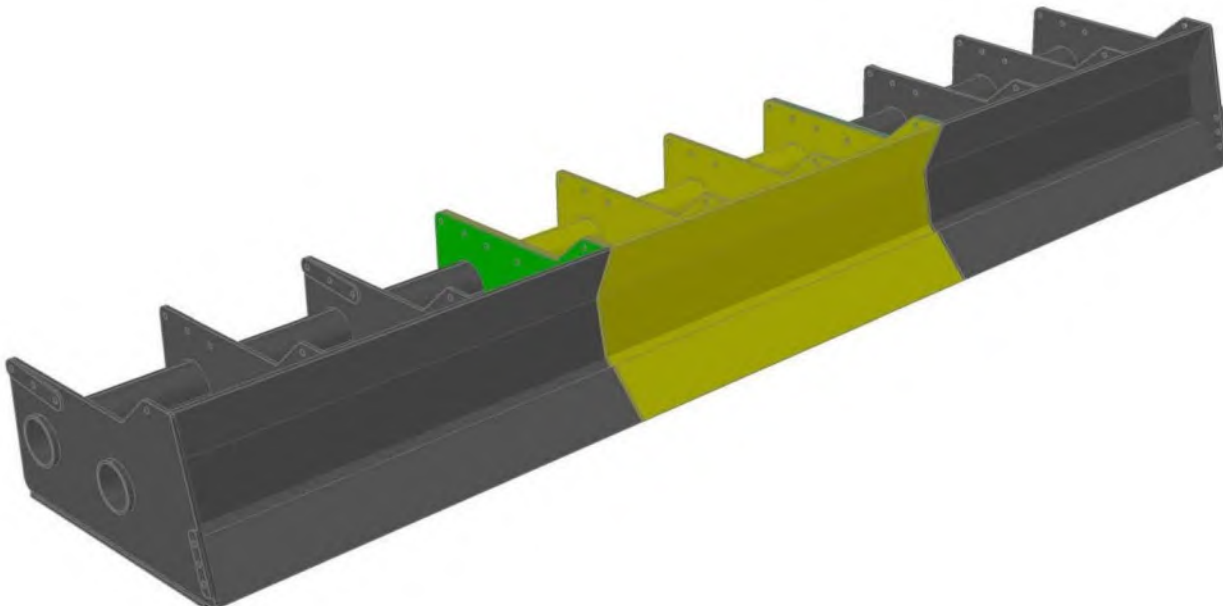


Sweep Bar

Width	8m or 12.2m (adjustable)
Weight	16T - 20 T
Cutting Edge	Bulldozer Blade

Summary

The Sweep bar is suspended directly behind / below support vessel or barge. Designed for leveling / reducing high points of seabed gravel, loose rocks and consolidated materials. Ideal for use in shipping channels and berthing pockets.



Design

The Sweep Bar is designed to grade and level terrain by churning through the surface of the material forcing the finer particles down while bringing the larger chunks to the top where they are held in the curvature of the mouldboard for redistribution. The reinforced mouldboards' involuted design enables efficient and continuous cutting, mixing and rolling of material whilst the cutting edge is reversible to extend its lifespan..

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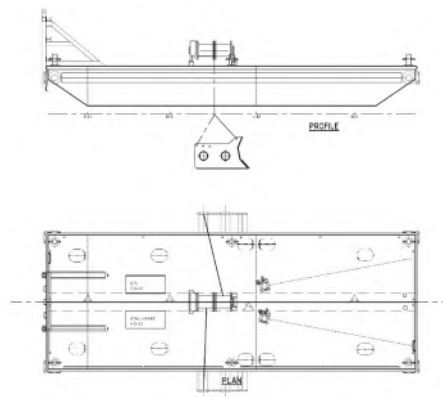
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Optionality and Case Study

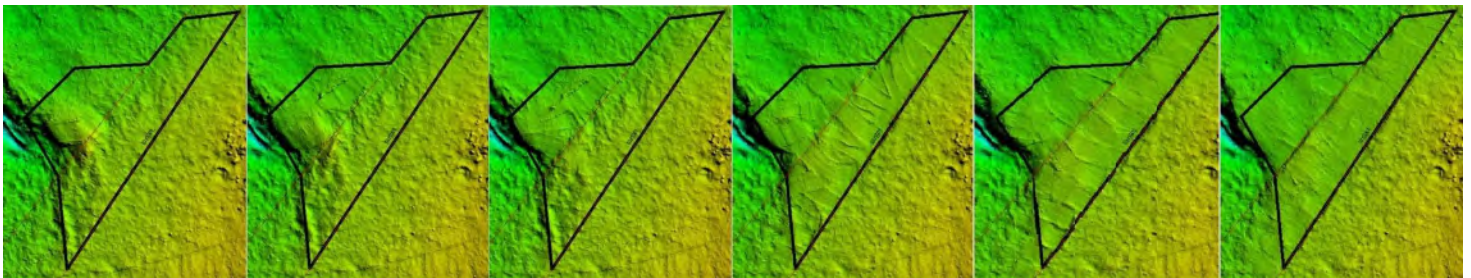
Optionality

Either Tool can be deployed directly from a support vessel or Multicat. The TAMS vessel / barge / Tool combination, as illustrated above, provides flexibility, allowing the vessel to quickly detach to perform other duties, leaving the barge / Tool setup for a quick re-start when required.



Case Study

A Port operator had material on the leads into their berthing pocket which was preventing a new declaration of depth and holding up Port expansion. As seen in the progression left to right in below picture string we were able to capitalise on the precision in our ploughing capability to redistribute materials from two different levels into a small target area away from the leads. The accuracy afforded by our system increases efficiency in operations leading to reduction in overall cost and fuel consumption.



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