

# Procurement of

## Dredging Works

### Simon Burgmans, David Kinlan and Greg Miller



A quick and unique overview on the Procurement of Dredging Works

Problem Definition
Conceptual Dredging Design
Risk and Opportunity Analysis
Site Investigation
Contract Type Selection
Project Execution



#### **Problem Definition**



Port management irregularly procure capital dredging works
Unique works complicate procurement
Terms and conditions to deal with any uncertainties
Disputes arise due to uncertainties and unknowns



#### **Conceptual Dredging Design in a Nutshell**



- Dimensions of e.g. channels, slopes and tolerances
- Borrow and/or disposal area(s)
- Soil or rock type
- Dredgeability
- Social or environmental constraints



#### **Risk and Opportunity Analyses**



A project's lifecycle should analyse risks and opportunities from the very start

- Uncertainty regarding the dredging works is relatively high mainly due to soil and environmental conditions
- Visual inspection is typically impossible as dredging is undertaken underwater. Specialist equipment required to measure and monitor dredging operations

Academic dredging knowledge and extensive field experience allow proactive identification of realistic hazards and development of effective risk mitigation measures

#### Site Investigation



Geotechnical

- Bathymetric
  - Environmental
  - Social

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Productivity and even utilisation depend on geotechnical data

Dredging involves physical processes such as cutting, jetting or blasting of soil or rock, which are captured in models such as the Subsea Soil Jetting (SSJ) and the Subsea Rock Cutting (SRC)

Specific geotechnical parameters are required to describe these destructive soil mechanical processes to properly inform production estimates

Dredging engineers are familiar with these destructive soil mechanics



Jet Configuration of Drag Head



#### Contract Type Selection Using a Multi-Criteria Analysis Tool



Quality of site investigation and scope of work determine level of definition

- Lump Sum is by far the favourite contract type, but over the project's life cycle does, it deliver the best outcome?
- Safety first, right?
- Same tool can be used for objective tender evaluations, typically using sub criteria

Main Contract Typ

Main	Criteria

	HSE	Budget	Schedule	Definition	Rating	Weighted Rating
Weighting	5	1	5	3		
Charter (\$/hr)	2	-1	-2	0	-1	-1
Unit Rates (\$/m <sup>3</sup> )	0	0	-1	-1	-2	-8
Lump Sum (\$)	0	2	2	-2	2	6
Design and Construct (\$)	0	-1	2	2	3	15

#### **Dredging Project Execution**



Carefully consider execution phase during the procurement phase Contractor should provide sufficient data to allow the review of permit compliancy, as well as to monitor progress and administer the contract

All dredges have onboard data acquisition systems that allow daily performance monitoring with software tools like Equipment Performance Review (EPR)



#### **Typical Performance Monitoring Graphs**





#### Further Reading Suggestions







**Second Edition** 

Construction Claims & Responses Effective Writing & Presentation

ANDY HEWITT

WILEY Blackwell



A CEDA Guidance Paper

EFFECTIVE CONTRACT-TYPE SELECTION IN THE DREDGING INDUSTRY





#### in2Dredging Pty Ltd



International Independent Dredging Consultancy

in2Dredging Pty Ltd ABN 92 607 788 689

Australia | Europe

Simon Burgmans Dredging Enquiries

Simon.Burgmans@in2Dredging.com +61 (0)408 134 534 Sandra Gyles General Enquiries & Administration

Sandra.Gyles@in2Dredging.com +61 (0)406 862 741 +32 (0)484 101 447