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the same issues can be experienced
differently by different parties.**



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CAN A PROJECT CHECKLIST LEAD TO SUCCESSFUL DREDGING MANAGEMENT?

As an association, the Central Dredging Association (CEDA) brings together diverse and manifold stakeholders related to dredging. Due to its rich member composition, CEDA can bring topics relevant to the industry into focus and explore their implications. A topic which frequently occurs during the course of a project is that the same issues that arise can be experienced differently by different parties. To better understand this universal situation, the Dredging Management Commission (DMC) was founded. By questioning CEDA's members and recording their past experiences, the DMC can identify the patterns in search of a mutually beneficial solution for future projects. To ensure all of a project's diverse players better understand each other's points of view, the commission published one of its first products: a checklist for successful project management which can be used by all of a dredging project's parties.

Context and goals

At the end of 2016, CEDA's DMC was set up to fulfil the need to initiate and facilitate discussions, questions and innovations within the dredging community regarding the techniques involved and management of dredging works in the broadest sense. As CEDA brings together all stakeholders related to dredging works, it is the DMC's intention to take full advantage of its rich member composition and focus on how the same issues are sometimes experienced differently by different parties. This very enthusiastic commission therefore set forward its main goal as: to highlight these differences, help the various players to better understand each other's points of view and come to a mutually beneficial solution.

The DMC's first product

We oftentimes learn the most from our own mistakes, and in an ideal world, the same

mistake would then not be made twice. With that in mind, the DMC asked CEDA's members a series of questions about past project experiences such as:

- What happened?
- In what stage of the project did it happen?
- Which parties/stakeholders were involved?
- Where did the problem originate?
- In what project stage should it have been tackled in order to prevent it from happening?

From their numerous responses and valuable input, a very interesting checklist of potential project pitfalls was distilled.

All identified issues were grouped together and categorised by topic and corresponding subtopics which were later analysed by a focus team of dredging experts within the DMC. For each subtopic, the experts tried to identify possible issues which might

occur at every project stage as well as the main stakeholders expected to play a role in the process. The result is an invaluable checklist which clearly shows in which project stage a potential problem can be avoided and which parties should be around the table in order to ensure the problem is avoided. The checklist can be useful for all parties involved in a dredging project – or other types of similarly complex projects – desiring to address potential project risks in the earliest possible stage and prevent problems from happening.

The checklist elaborates on many topics, with each topic showing a number of subtopics that could present a risk to the project, the stage in which the risks can occur and the main stakeholders involved in mitigating the risk. In addition, the checklist includes brief and compact explanations

START Thinking and KEEP Thinking

Topics	Subtopics	Stages										Parties involved			Explanation				
		Feasibility	Preliminary Studies	Permitting	Basis of Design	Conceptual Design	Basic Design	Detailed Design	Procurement	Execution	Project Closing	Operations	Maintenance	Owner		Consultant	Contractor	Other Stakeholders	
SCOPE OF WORKS	Definition	X	X	X	X				X	X	X	X	X	X	X	X	X	X	It is essential that the Owner, with assistance as necessary, properly identifies and defines the scope of works. This needs to be sufficiently developed prior to entering into contract (to a level dependent upon procurement method). Special attention needs to be paid to clearly define the boundaries of the scope of works (notably what is and is not included) and other factors such as setting the limits as to acceptable working criteria (e.g. resedimentation/turbidity levels).
REQUIREMENTS	General	X	X	X				X	X	X	X	X	X	X	X	X	X	Must be fixed before start of design phase. Owner must carefully consider what type of specifications are best for the project. Owner must endeavour to ensure requirements are complete (including requirements from other stakeholders who must be consulted at an early stage). Must avoid contradictions/discrepancies (e.g. between norms/standards and custom specifications). Take care requirements are realistic and feasible (e.g. unachievable tolerances, unrealistic time frames).	
	Functional requirements	X	X	X				X	X	X	X	X	X	X	X	X	X	Need to be fit-for-purpose. Find right balance in high/low level detailing of expectations (Owner can benefit from leaving more freedom of choice to Contractors).	
	Lifetime requirements	X		X				X	X	X	X	X	X	X	X	X	X	Often overlooked. Owner needs to consider CAPEX/OPER. division. Sometimes there are requirements regarding after-delivery situations, that need to be considered during execution of the project. Consideration should be given to different lifetime-deprivations: technical, commercial, economical.	
	Technical requirements / specifications	X		X				X	X	X	X	X	X	X	X	X	X	Project faces a risk if technical specifications not detailed enough. Parties must find the right balance between detail and sufficiency of specifications.	
	Location (e.g. site selection, alternative routes)	X			X								X	X	X	X	X	Special consideration should be given to all aspects. Thinking about alternatives can bring efficiencies and considerable savings, in respect of time and money, in later stages of the project.	
ALTERNATIVES STUDY	Size / lay-out	X			X								X	X	X	X	X		
	Time span	X			X								X	X	X	X	X		
	Economics / funding	X			X								X	X	X	X	X		




FIGURE 1

An excerpt from CEDA's Checklist for Successful Dredging Management. At this moment, the checklist is a collection of 27 topics with 100 subtopics. Columns are marked for the project stage affected by the topic or subtopic at hand – Feasibility, Preliminary studies, Permitting, Design, Procurement, Execution, Closing, Operations and Maintenance – as well as the parties involved.

TABLE 1

Examples of the topics and subtopics explored in CEDA's Checklist for Successful Dredging Management.

Topic	Scope of works
Subtopic	Definition
Stages	Feasibility Preliminary Studies Permitting Basis of Design Procurement Execution Project Closing Operations Maintenance
Parties involved	Owner Consultant Contractor Other Stakeholders

It is essential that the Owner, with assistance as necessary, properly identifies and defines the scope of works. This needs to be sufficiently developed prior to entering into contract (to a level dependent upon procurement method).

Special attention needs to be paid to clearly define the boundaries of the scope of works (notably what is and is not included) and other factors such as setting the limits as to acceptable working criteria (e.g. resedimentation/turbidity levels).

of why the subtopics can become an issue, what possible solutions could be applied and what would be the advantages and disadvantages of these options for the different parties.

Oftentimes, there is not a single solution for a problem and compromises need to be made. Highlighting the different points of views that

can exist around a certain topic can certainly contribute to a better understanding of the various players' perspectives and thus prevent conflicts. Therefore, the checklist can be considered an indirect plea for early and frequent concertation between all stakeholders which will ultimately lead to mutually beneficial solutions and successful projects.

The checklist does not provide solutions but rather lines of investigation that can be pursued as well as ideas that deserve further thought. Therefore, the motto which accompanies this checklist is 'start thinking and keep thinking'. The document should be perceived as a series of reminders and can be used as an instrument to aid during the essential consultation moments between stakeholders and main parties involved. After all, the best solution to a problem might simply be the solution all parties have agreed upon.

An important note: this checklist is not exhaustive and should be considered as an organic document. Its current content is based on the experiences of a limited number of CEDA members and the associated focus group intends to update it regularly with further input given by other professionals involved in the dredging industry. Everyone's input is appreciated and readers of *Terra et Aqua* are encouraged to contribute wherever possible. As the list grows, the checklist becomes an even more valuable document.

To suggest further topics and/or subtopics to be included in the checklist, describe what went wrong and well during projects, and share these professional

TABLE 2

Tables 2, 3 and 4 show examples of the topics and subtopics explored in *CEDA's Checklist for Successful Dredging Management*.

Topic	Requirements	Must be fixed before the start of design phase.
Subtopic	General Functional Requirements Lifetime Requirements Technical Requirements/ Specifications	Owner must consider carefully what type of specification is best for his project. Owner must endeavour to ensure requirements are complete (including requirements from other stakeholders > must be consulted in an early stage) Must avoid contradictions/discrepancies (E.g. between norms/standards and custom specifications) Take care requirements are realistic and feasible (e.g. unachievable tolerances, unrealistic time frames)
Stages	Feasibility Permitting Basis of Design Procurement Execution Project Closing Operations Maintenance	Need to be fit-for-purpose. Find right balance in high/low level detailing of expectations (Owner can benefit from leaving more freedom of choice to Contractors)
Parties involved	Owner Consultant Other Stakeholders	Often overlooked. Owner needs to consider CAPEX/OPEX division. Sometimes there are requirements regarding after-delivery situation that however already need to be considered during execution of the project. Consideration should be given to different lifetime-deprivations: technical, commercial, economical. Project faces a risk if technical specifications not detailed enough. Parties must find the right balance between detail and sufficiency of specifications.

TABLE 3

Topic	Execution Methods	Methods and technology are permanently evolving. Stakeholders (Owners, permitting authorities, consultants, etc.) may or may not be aware of these latest developments in the industry. Ideally, all stakeholders are at least aware of their specific (lack of) knowledge and do not hesitate to consult other parties in time, if necessary, in order to benefit to the maximum extent from their knowledge and expertise in the domain.
Subtopic	State-of-the-art equipment Allowed/Imposed/Prohibited methods	
Stages	Permitting Design Procurement Execution Operations Maintenance	The application for permits is frequently decisive as to which dredging methods and equipment are allowed to be used, imposed or prohibited. This may result in undesirable limitations being applied at a later stage. It is important, therefore, to find a good balance in the level of detail that methods, techniques and equipment are described. This is needed at every stage of a project. The tender and subsequent contract must clearly set out any constraints to the Contractor's working methods. Alternatively, the Contractor may propose a method that will be incorporated into the contract. In such an arrangement, any change to the contractually defined method due not to a Contractor's risk, will entitle the Contractor to a variation.
Parties involved	Owner Consultant Contractor Other Stakeholders	

experiences with fellow colleagues in the dredging industry, please email the CEDA Secretariat at ceda@dredging.org.

CEDA's DMC is hoping to receive a lot of additional input from *Terra et Aqua's* readers and to continuously update the current checklist.

TABLE 4

Topic	Tender information	Where does liability for correctness of the data lay? Is the Owner able to remove any liability for incorrectness? Does he need to give a 'status' to the provided data to indicate clearly the quality of it, e.g. 'for indicative purposes only'?
Subtopic	Correctness & Completeness of provided data Interpretation of available information	Lots of data might need to be provided for use in the project, and will form part of the dataset. Consultants/Contractors need to review this data carefully to assess their quality and completeness, and identify if and where there are any gaps. If further information required, the available data can eventually be supplemented by further project-specific investigation/surveys/studies.
Stages	Preliminary Studies Basis of Design Design Procurement Execution Operations Maintenance	For this process of data verification, sufficient time should be allowed to Consultants/Contractors. Often projects are planned for many years while Contractors are confronted with tendering periods of a few weeks only. Short procurement periods will inevitably lead to higher prices which include provisions for unknown risks or to disputes later on because of unclear data.
Parties involved	Owner Consultant Contractor	Does Owner supply just raw data or does information include analysis and interpretation? Who owns the liability for such analysis and interpretation? Who owns the liability for such interpretative reports and analyses? Often Contractor judges he needs more quality data in order to carry out an effective interpretation, but tender periods do not allow for the organisation of additional soil investigation.



Ir. Kathleen De Wit

In 1996, Kathleen graduated as a civil mining engineer from the University of Leuven in Belgium and successfully completed a Master in Marine Sciences at the University of Cantabria in Spain in 2001. In 1998, she joined IMDC, a water and dredging consultant in Belgium, and in 2001 began working abroad as a superintendent for Jan De Nul Group. She returned to IMDC in 2004 and became involved in dredging projects as project manager and later operational head of the offshore, dredging and environment department, and is currently a principal engineer and dredging expert on projects worldwide. Since 2005, Kathleen has been actively involved in Young CEDA (YC), CEDA Communications Commission (CCC) and Dredging Management Commission (DMC), and has been a member of CEDA International's board since 2011.

REFERENCES

CEDA (2017): CEDA's Checklist for Successful Dredging Management. Information Paper. ISBN: 978-90-809883-6-1

CEDA's Checklist for Successful Dredging Management

A group of experts with various backgrounds and perspectives as well as a broad range of expertise and experience with dredging projects were involved in producing *CEDA's Checklist for Successful Dredging Management*. A digital checklist can be freely downloaded by all CEDA members from the organisation's website. To receive a printed copy of the checklist (available for EUR 70), contact the CEDA Secretariat at ceda@dredging.org.

www.dredging.org

