Safeguarding the environment during dredging works all over the world

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In the framework of many coastal and offshore construction projects, dredging works are performed. Before the construction of LNG terminals or harbour breakwaters, the seafloor needs to be levelled and approach channels need to be created to allow large cargo and LNG ships to enter the harbours. During the dredging and depositioning, turbidity plumes arise which can harm the often fragile coastal and estuarine environments.

IMDC's expertise allows to assist during the various phases of the construction works: from the design of the LNG terminal and the approach channel to the technical support during the construction and dredging works as such. From IMDC's knowledge on measurements and environment, also the environmental impact of works can be assessed.

In Wheatstone (Australia), for example, IMDC developed the Dredging Environmental Management Plans based on the local regulatory requirements and procedures. In addition, IMDC performed dredging plume numerical model studies to assess the background turbidity and suspended sediment levels due to dredging and dumping activities. The sediment plume behaviour and the impact on the nearby coral reef sites was examined and measurement results were gathered in an in-house developed forecasting tool. This allowed the client to halt or move their dredging works when turbidity thresholds threatened to be exceeded.

In Montevideo (Uruguay), an IMDC environmental team supervised all ecological issues during the construction phases of an LNG terminal. During the works, turbidity measurements were performed by our measuring team and afterwards DenseX and Graviprobe profiles were taken to determine the new sedimentation. In addition, client representatives were on board the dredging vessels ensuring that local legislation was respected.

In Myanmar, the economic growth asks for the creation of bigger harbours and access channels to allow cargo ships into the estuaries. In three estuaries, maintenance dredging will take place. IMDC wrote an Initial Environmental Examination (IEE). The objective of the IEE was to identify the environmental impacts (in particular ecological and socio-economic) and to identify the different stakeholders and to list their concerns with the projects during several site visits. IMDC ensures that the dredging companies are aware of all the requirements by national and international standards. National legislation is often poor or non-existing in newly developing countries, but awareness is growing that the environmental impacts cannot be ignored.

In conclusion, IMDC is internationally involved in identifying the impact of dredging works on the local morphology, hydrodynamics, sediment transport and ecology. It is further important that these assessments are done based on a combination of modelling studies and real-life monitoring of the processes prior to the works, during the works and during the operation and maintenance period. IMDC hereto has gained experience in all of these fields and combines the knowledge to provide an integrated assessment.