

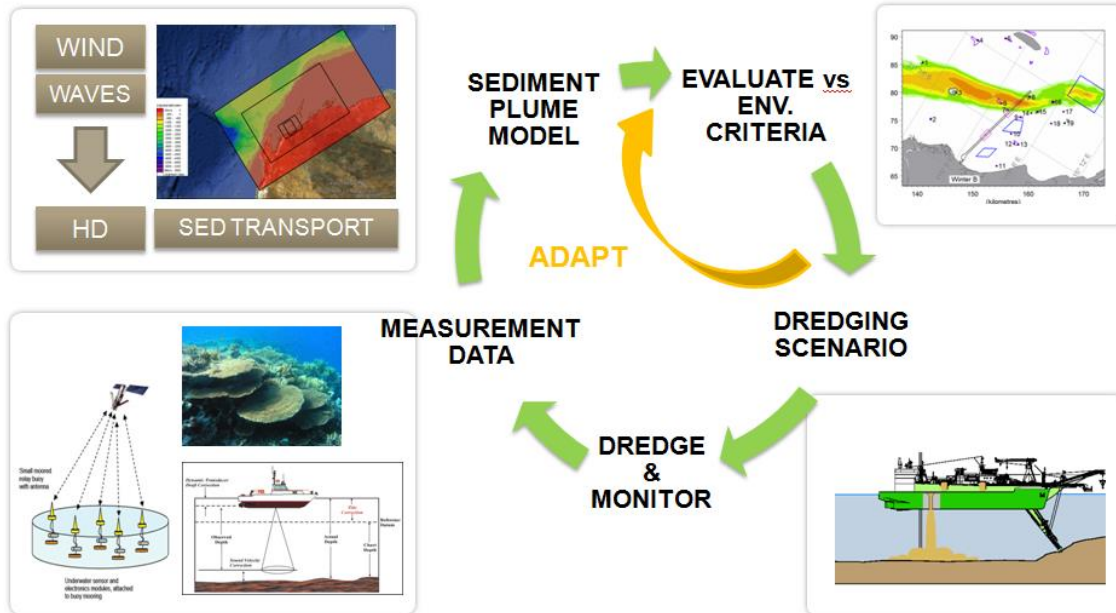
Ref no 3	Project title		LNG Wheatstone (18056)					
Name of legal entity	Country	Overall contract value (EUR)	Proportion carried out by legal entity (%)	No of staff provided	Name of client	Origin of funding	Dates (start/end)	Name of consortium members, if any
IMDC NV	Australia	1.600.000	100	3	Dredging International	Dredging International	2012-2015 90% completed	n/a

### Detailed description of project

Chevron Australia Pty Limited (Chevron Australia) proposes to construct and operate a multi-train Liquefied Natural Gas (LNG) and domestic gas (Domgas) plant near Onslow on the Pilbara Coast, Western Australia. The Wheatstone Project requires installation of gas gathering, export and processing facilities. The associated downstream dredging works, executed by our client Dredging International, comprise the construction of an approach channel to the product loading facilities (PLF), PLF manoeuvring area, berth pocket and wave pocket, approach channel to material offloading facilities (MOF) and a tug harbour area.

Multiple valuable coral reef sites and sea grass sites surround the dredge area and necessitate strict environmental regulations. Extensive monitoring of the turbidity, salinity, light attenuation and temperature at the coral reef impact sites and around the dredge activities is necessary. Automatic assessment of the turbidity vs a trigger level system was performed daily. ROV monitoring of benthic communities was also performed and followed up. Moreover an operational sediment plume forecasting system was being set up to assess the effects of forecasted dredging works on the impact sites as part of a pro-active adaptive environmental management system. For the Wheatstone project an online predictive model toolbox, consisting of a hydrodynamic model and a sediment transport model, was developed using the Mike21 software. This model toolbox has also been used during the mobilisation phase of the project to assess the impact of dredging operations in an off-line situation, i.e. using predefined hydrodynamic scenarios and predetermined dredging operations.

The results of the analysis shaped the dredge work scenarios and execution methods and planning. Consultancy services also included the detailed design of propeller wash scour protection at the port basin.



### Type and scope of services provided

Environmental monitoring of the water ecosystem, and supervision of dredging works:

Follow-up of environmental quality (responsive and verification monitoring):

- ROV monitoring of reef, sea grass, benthic habitats and image analysis (scoring statistics)
- Real time stationary measurements (10' and 30'), data acquisition through an open earth platform (webservice): turbidity, pressure, light attenuation temperature and salinity, access through open earth and automated trigger level checks and reporting

Adjusting the dredging works (adaptive mgmt.) in function of the results of the environmental monitoring:

- Trigger levels, automated reporting, adjusting of dredging works
- Forecasting of turbidity using hydrometeorological forecasts and measurements, and a hydrodynamic model and a sediment transport model

Main staff members:

- Mark Bollen, Project leader, 22 MM
- Ludovic Gouverneur, Project engineer, 12 MM
- Joris Santermans; Engineer-Advisor, 10 MM
- Tim Franken 12 MM
- Jan Walravens 15 MM
- Damian Villaverde Vega 8 MM
- Bart Verheyen 5 MM

All team members belong to permanent staff.

