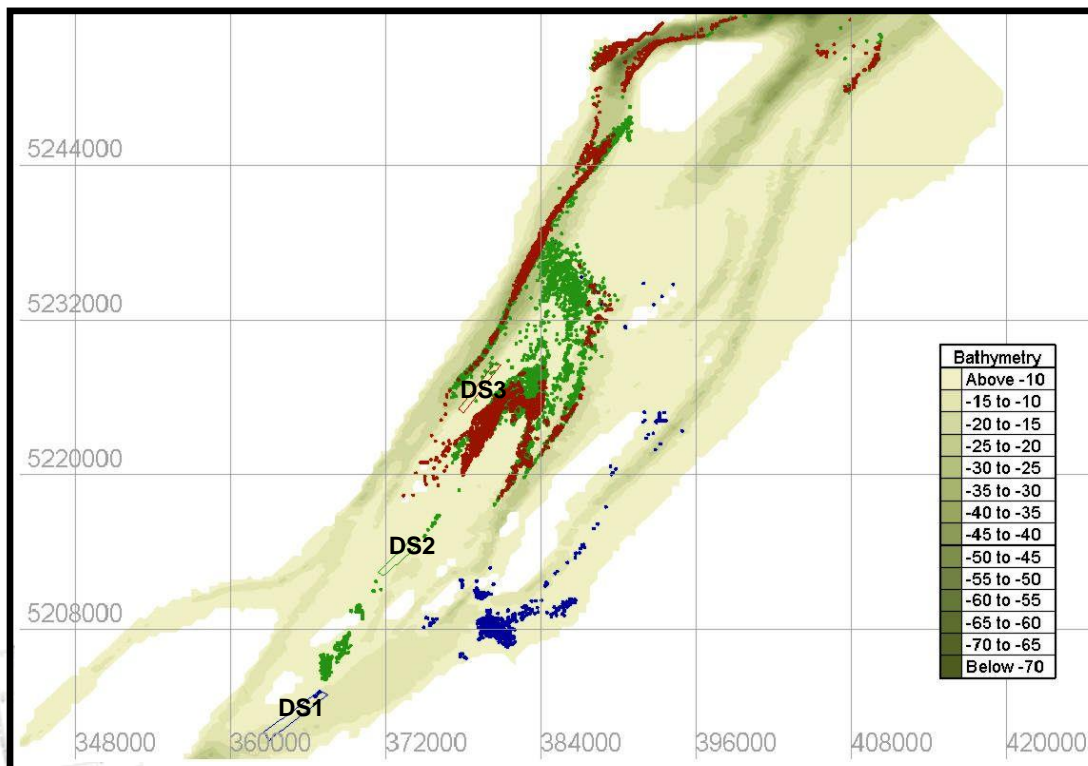


## Dredge Disposal Site Sediment Modelling

Hydro Environmental Ltd use a suite of numerical modelling software to examine the suitability of dredge disposal sites within the marine environment and the fate of the deposited material.

To this aim the hydrodynamics of the disposal site are determined using the **TELEMAC** hydraulic modelling system and the sediment fate is determined using the **PSed** model developed by the Canadian Hydraulics Research Centre. This is a Lagrangian particle tracking model which simulates the transport (suspended and bed load) of a variety of sediment types from fine silts and sands to coarser sands and gravels. The model computes the mobility, entrainment, advection, dispersion and settling of sediments under steady or unsteady flows. The model allows for the re-suspension of the sediments once critical shear stress is exceeded. The model is capable of including waves as a driving force for sediment mobility. The computed hydrodynamics (velocity and depth) are imported separately from the **TELEMAC** hydraulic model as a compressed binary file.

Output from **PSed** include a temporal map of sediment locations over time, line plots of sediment pathways, maps of sediment concentration, bed shear stresses and mobility rates. **PSed** also provides temporal-spatial analysis tools that can be used to examine sediment mobility potential and bed erosion rates within the model domain.



**Fig 1 PSed Simulation Results After 9 days** modelling a fine sand - Sediment colour indicates dump site source (Blue dump site DS1, Green dump site DS2 and Red dump site DS3)