



Memorandum

To: Ministry for the Environment Date: 11 June 2014
From: Graham Rickard Our Ref: MFE13305
Copy:

Subject: **Review of the UPDATED report "Dispersal of Pollutants: Numerical modelling of the dispersal of pollutants discharged to the sea from the wreck of the Rena"**

Executive summary

An updated report on the dispersal of pollutants associated with the wreck of the Rena at Astrolabe Reef prepared by MetOcean Solutions Limited (MSL) has been reviewed by NIWA. Differences, and comments on the differences with respect to the originally reviewed report are presented here.

The report is almost wholly unchanged except for the Summary on page 41, where paragraph 1 has been split at the sentence "For each of the contaminants..." and replaced by:

Qualitative comparisons between the model predicted and observed spreading and beaching of oil, debris and other contaminants immediately following the grounding of the Rena suggest that, in conjunction with the 3D ROMS hydrodynamic flow-fields and atmospheric forcing (from an implementation of the Weather Research and Forecasting model –WRF) the Lagrangian particle tracking faithfully captures the timing and spreading of released contaminants within the Bay of Plenty environs.

For each of the contaminants, concentration spatial distributions are based on estimated release rates held constant in time throughout the simulation.

In this context the new paragraph is presumably referring to some extra analysis included in the companion report, "Astrolabe Reef MetOcean Conditions: Wave, ocean current, and wind statistics" (with an Updated review accompanying this review). While that extra analysis in the latter report is consistent with our earlier reviews on the model-data comparison, there does not appear to be evidence presented to support the "faithfully captures" assertion, especially in terms of quantifying the dispersal itself (unless there is other evidence in other reports).

Rather, we would stick by our initial review in stating that the methods are wholly appropriate, but that in geophysical systems of this scale the (difficult) assessment of the uncertainty remains; the extra statistics presented lend weight to that level of uncertainty, but that extra evidence would be needed (as in observed patterns of dispersal) in order to make the “faithfully captures” assertion.

A handwritten signature in black ink, appearing to read 'G. Rickard', with a long horizontal flourish extending to the right.

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