

# Evans River Sewage Discharge Environmental Assessment

**Client**

Richmond Valley Council

**Date**

2010

**Services & Expertise Provided**

Field data collection including ADCP transects, tide and water quality recordings;

Development of a 2-dimensional hydrodynamic and advection-dispersion model;

CORMIX modelling;

WaterCast hydrologic and pollutant export modelling;

Wetland and forest hydrologic and pollutant export modelling; and

Results interpretation including impact assessment reporting.

The study aimed to identify social and environmental impacts associated with the potential discharge of highly treated effluent from the Evans Head Sewage Treatment Plant (STP) to the Evans River estuary in far northern New South Wales.

The potential for discharge to the estuary is a result of State Government advising Richmond Valley Council (RVC) that the current practice of discharging effluent into a nearby coastal lagoon must ultimately cease. RVC is assessing a number of alternative arrangements, including estuarine discharge.

To investigate potential water quality impacts, a receiving water quality model (RWQM) was developed to investigate the movement of pollutants throughout the estuary arising from discharges. In the development of the RWQM, BMT WBM undertook a variety of targeted field data collection activities including tide height recording, Acoustic Doppler Current Profiling (ADCP) for tidal flows and velocities as well as conductivity, temperature and turbidity logging at a number of sites throughout the estuary. These data were used directly in the calibration and validation of the RWQM (as was other supporting historical data), which in this study was a 2-dimensional hydrodynamic and advection-dispersion (AD) model.

Additional modelling tasks completed to provide input to the RWQM included:

- Detailed near field modelling using CORMIX to accurately represent the effect of outlet diffusers and resultant dilution.
- Catchment modelling using WaterCAST to provide flow and pollutant load estimates from the catchment to the estuary.
- Wetland and carbon sequestration forest modelling to allow estimation of pollutant load and flows from this constructed feature, to the estuary.

Outcomes of the modelling indicate that direct estuarine discharges present potentially greater social and environmental risks in comparison to the indirect wetland / forest discharge option, pending further detailed site assessment and associated economic analyses.

