

Gunns Strategy in Relation to Future Hydrodynamic Modelling

Introduction

The Department of Environment and Water Resources commissioned technical reviews of the hydrodynamic modelling for the Bell Bay Pulp Mill Project. The reviews recommended additional work to confirm predictions made by the model. The hydrodynamic modelling is related to other impact assessments for the Project and a representation of the relationships between the impact assessments is at page 73 of the Preliminary Documentation.

The hydrodynamic modelling is related to the following key impact assessments:

- Marine Impact Assessment – Bell Bay Pulp Mill Effluent (Toxikos, 2007)
- Residual Impacts of the Bell Bay Pulp Mill Project on the Aquatic Environment (EnviroGulf Consulting, 2007)
- Water Quality Assessment Report for Bell Bay Pulp Mill Draft IIS (GHD, 2007)

In addition, hydrodynamic modelling has been utilised to help select sampling locations for the Environmental Monitoring Plan (EMP).

Gunns and its consultants, GHD, believe the modelling process conducted to date has shown a realistic representation of the fate of effluent in the receiving environment.

The marine impact assessments for the project conclude that minimal dilution is required to ensure insignificant impacts of effluent on the receiving environment. The diffuser is designed to reach 1-100 dilution (that is, 1% effluent concentration) within 70-100 metres of the diffuser location. The marine impact assessments have shown that a 1% effluent concentration will have no significant impacts on the marine ecosystem.

Therefore, the key marine impact assessments are not reliant on the mass dilution rates predicted by the far-field hydrodynamic modelling. However, Gunns acknowledges that the calibration of the hydrodynamic model is desirable during the pre-operational (ie construction) phase of the project to further confirm mass dilution rate predictions. Indeed, further work is also desirable to further develop other components of the project, such as the EMP.

The construction impact assessment prepared by Mr David Balloch of EnviroGulf Consulting concluded that the impact of construction activities on the marine environment are transient and not significant. As a result, data collection and model validation can occur concurrently with construction activities.

Relationship between impact assessment and hydrodynamic modelling

The key assessment of the impact of Gunns' proposed mill on the marine and related environments is the body of work undertaken by Toxikos over the last two years. The approach used by Toxikos of examining the "DV100" concept in detail, and finding no significant impacts at that dilution is substantially independent of the hydrodynamic modelling results. Section 6.3 of Toxikos' Marine Impact Assessment (2007) states;

"A consequence of the DV100 conceptual model is that it uncouples the marine impact assessment from being absolutely dependent upon the results of the near field hydrodynamic modelling. By using the DV100 as a benchmark effluent concentration this assessment addresses the question – what are the impacts on the marine environment if the effluent was only diluted 100 times? The absolute size and position of the DV100 is immaterial to the impact assessment, however the hydrodynamic modelling can shed light on these aspects."

Mr Balloch's assessment of the residual impacts of effluent both within the interim mixing zone, and in Commonwealth waters, has also utilised hydrodynamic modelling, relating projected dilutions to the likely impact on the environment of Commonwealth waters. The assessment concludes that on the basis of massive dilution of effluent at the edge of Commonwealth waters, no significant impact is anticipated. GHD, in its letter dated 19 July 2007 (which has been provided to the Department), has stated that the inherent conservatism and rigour of the process means that the calibration of data is unlikely to identify new areas of impact.

The Water Quality Assessment Report conducted by GHD's Dr Veronique Levy provided the interim parameters and trigger values for the hydrodynamic modelling. By its nature, the definition of a mixing zone is an iterative process. In accordance with the State Policy on Water Quality Management 1997 and the ANZECC Guidelines, a dataset of 2 years will be obtained to define the mixing zone during the pre-operational monitoring program. However, the precise definition of the mixing zone is not a prerequisite for assessing the project impact on the marine environment.

The EMP will benefit from model validation to confirm the suitability of selected monitoring locations. However, modelling is not the sole arbiter for site selection. Site selection for the ecological monitoring component of the program is better informed by the results of pilot phase monitoring, locating sites of similar microhabitat for comparative purposes. Local, water and sediment quality monitoring will utilise hydrodynamic modelling to a greater extent.

The Department's reviewers have reported that the basis of the model is sound. In addition, conservative assumptions were adopted so that the model can be sequentially refined to represent real world observations and better defined predictions. In this manner, complex modelling is expected to be an iterative process, improving when more information is included. Model enhancements can be better achieved by allowing an extended period of data gathering and model development during the time window allowed by construction activities.

Strategy

Gunns will progress refinements to the hydrodynamic model by undertaking further intensive field monitoring. The results of this field monitoring will be technically reviewed and used in validation processes for the hydrodynamic model.

The basis of these further activities is presented in the attached "Gunns Pulp Mill IIS Additional Monitoring of the Receiving Environment". Gunns understanding is that the strategy is consistent with the recommendations made by Patterson Britton and BMT WBM.

If the project is approved, Gunns proposes to submit a final plan to the Department of Environment and Water Resources for approval. This plan will also need to be approved by Tasmanian Department of Tourism, Arts and the Environment. The final plan will include any additions or modifications arising from the State assessment of the project.

The model refinements originating from this process are anticipated to be completed within 12 months from approval of the plan, and would therefore be carried out during the construction phase of the project.