



TOONDAH HARBOUR

APPENDIX 2 - F COASTAL PROCESSES PEER REVIEW SUMMARY



PORT AND COASTAL SOLUTIONS PTY LTD

2/6 Burrabee Street

Burleigh Heads

QLD, 4220

ABN 66 630 775 423

Walker Corporation
80 McLachlan Street
Fortitude Valley QLD 4006

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Dear Kelli,

Re: Peer Review of Toondah Harbour Project EIS: Coastal Processes and Hydrodynamics Technical Report

Port and Coastal Solutions Pty Ltd (PCS) was commissioned by Walker Group Holding Pty Ltd to undertake a peer review of the marine and coastal modelling undertaken as part of the Toondah Harbour Project EPBC Act Environmental Impact Statement (EIS).

This letter represents PCS review of the following documents prepared to inform the Toondah Harbour EIS:

- R.B23724.002.00.Hydrodynamics and Coastal Processes Technical Report_Draft;
- R.B23724.002.00.Hydrodynamics and Coastal Processes Technical Report_Appendices_Draft; and
- Updated versions of the above documents following the initial review process (filenames the same as above except for start to name being updated to R.B23724.002.02).

As part of the peer review process I made in the order of 100 comments on the documents, these were saved in a tracked changes version of the report. A summary of some of the main comments is provided below:

- **Model Setup:** it was recommended that additional details and justification be provided relating to aspects of the model setup, such as the grid configuration and resolution, representation of model forcings and adoption of specific parameters in the model setup;
- **Model Calibration:** numerous comments were provided on the calibration and validation of the hydrodynamic, wave and sediment transport models. The comments included providing additional discussion around the level of calibration achieved, possible reasons for variations in the level of calibration and ensuring that the calibration statistics presented were understandable for the reader;
- **Result Presentation:** it was noted that the presentation of the model results was not always optimal and so numerous suggestions were made to help improve this and therefore make the results easier to understand and interpret. This included recommending changes to what was being presented and the colourbar scales adopted in the plots; and
- **Result Interpretation:** limited interpretation of the model results was provided in the initial draft version of the report which was reviewed and so a number of comments were included suggesting where further discussion and interpretation of the results was required.

The documents were subsequently updated by BMT based on the comments provided. Following review of the updated documents I am comfortable that all of the main comments provided by myself were suitably addressed.

The updated version of the documents following the initial peer review process now provide a thorough and understandable description of the significant body of work undertaken as part of the coastal processes and hydrodynamic components of the Toondah Harbour EPBC Act EIS.

It is important to note that the modelling of coastal processes, sediment transport and dredge plumes is not a precise science and there are therefore uncertainties associated with any coastal or marine modelling results. In this case, the numerical modelling is underpinned by hydrodynamic, wave and sediment transport data which were collected close to the project area and represent a range of different seasonal conditions which helps to add confidence to the results. The various models have all been calibrated and validated using the local measured data and the skill of the models in representing the measured data is presented with a good calibration typically achieved. The study has adopted a thorough and robust approach and provides sufficient evidence to allow a detailed assessment of the potential marine/coastal impacts of the proposed Toondah Harbour development and associated dredging on the environment. The modelling has also been undertaken in accordance with the requirements of the EPBC Act EIS Guidelines for the modelling of indirect impacts of dredge generated sediments, details of this are provided below:

- i. the hydrodynamic and sediment transport modelling was all undertaken using fully three-dimensional models, with a total of 12 layers included (three surface sigma layers and up to nine z-coordinate layers below the sigma layers);
- ii. the sediment transport modelling (both natural and dredging) included sand, silt and clay as separate fractions;
- iii. the modelling included the resuspension of sediment due to currents and waves. The model did not include wave induced mud fluidisation as this process was not considered to be a significant driver of the sediment dynamics in the area due to the relatively low energy wave climate. This justification is considered reasonable especially given the fact that a good calibration was achieved for the natural sediment transport model without the process being included;
- iv. the dredge plume modelling was undertaken during the autumn and winter months. This dredging window was selected to represent the worst case scenario whereby natural turbidity would be low during the dredging campaign and after completion of the dredging there was a resuspension event which had the potential to resuspend sediment released during the dredged. The approach of modelling the worst case scenario is considered suitable especially given the relatively sheltered nature of the site;
- v. the dredge plume modelling represented the dispersion and resuspension from the dredging operations, with a range of hydrodynamic conditions considered over the simulation period. The report notes that the dredging will be carried out using a barge mounted backhoe dredge or similar and as a result a single backhoe dredge is the only dredge equipment scenario which has been modelled. This is considered a reasonable approach as modelling different size backhoe dredgers would not be expected to change the results significantly;
- vi. results from the dredge plume model are presented as spatial map plots with the natural, dredge related and combined 50th and 95th percentile turbidity and deposition rates presented. The plots provide a clear and consistent way of describing and presenting the dredge plume modelling results and putting them into context with the natural environment; and
- vii. I have undertaken an independent peer review of the marine and coastal modelling (including the dredge plume modelling) undertaken for the project.

Please do not hesitate to contact me if you require clarification or wish to discuss further.

Yours sincerely,



Dr Andy Symonds

Director
M +61 (0)458 735 747
E andy@portandcoastalsolutions.com.au