

GOYDER INSTITUTE FOR WATER RESEARCH MODEL METADATA TEMPLATE

METADATA REQUIRED	DETAILS
Model Name and version	Phytoplankton Growth Dilution Model
Date of lodgement of Metadata Template. Name of Metadata Provider	June 2015 Anna Rigosi, The University of Adelaide, Water Research Centre, Benham Building, North Terrace Campus, Adelaide SA 5005 anna.rigosi@adelaide.edu.au
Goyder Institute Project Number and Name	GOYDER INSTITUTE FOR WATER RESEARCH Project No. E.2.7 Determining environmental risks to high priority wetlands in the South East
Project Team	Project Leader Justin Brookes, justin.brookes@adelaide.edu.au Project team members Rob Reid, robert.reid@adelaide.edu.au Anna Rigosi, anna.rigosi@adelaide.edu.au Margaret Shanafield, margaret.shanafield@flinders.edu.au Jim Cox, jim.cox@sa.gov.au Luke Mosley, luke.mosley@epa.sa.gov.au Mark de Jong, Mark.deJong@sa.gov.au
Creator/Developer	Above project team
Owner/Contact Person and contact details	Anna Rigosi and Justin Brookes The University of Adelaide, Water Research Centre, Benham Building, North Terrace Campus, Adelaide SA 5005 anna.rigosi@adelaide.edu.au , justin.brookes@adelaide.edu.au
Model Location	<i>Where is the model archived?</i> Details on the model structure and assumptions are presented in the Goyder Institute for Water Research Technical Report Series No. 15/19. The model is stored at the University of Adelaide on the Staff Shared Drive (S) (file path: S:\Science\Faculty_Sciences\WRC\EWENS_Piccaninnie_Ponds\Modelling\) and managed by the limnology group. The leader of this group is Justin Brookes. <i>Is there a version of the model in active further development? Where is this active version located?</i> No, although the model could be updated or applied to other systems

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IP or other permission requirements	<p>***** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT *****</p> <p><i>Are there any IP issues associated with the model and/or the dependencies that future users need to be aware of?</i></p> <p>There are no IP issues for future users, but future users would need to acknowledge the original work (Technical Report)</p>
Licences associated with model and/or dependencies	<p>***** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT *****</p> <p><i>Are there any licenses associated with the model and/or the dependencies that future users need to be aware of? No</i></p>
Confidentiality agreements associated with model and/or dependencies	<p><i>Are there any confidentiality agreements associated with the model and/or the dependencies that future users need to be aware of? Not applicable</i></p>
Brief outline of model	<p>A phytoplankton dynamic modelling approach was used to assess how nutrients, flow and algal growth rate would affect the risk associated to phytoplankton pelagic growth, shading light for the macrophyte development.</p>
Area/region covered	<p>Ewens Ponds, South East Wetlands, SA</p>
Platform and language and version	<p>Not applicable.</p> <p>The model was developed in Microsoft Excel.</p> <p>The model approach and conceptual structure is presented in Goyder Institute Technical Report 15/19.</p>
<p>Dependencies upon:</p> <ul style="list-style-type: none"> i) other models and/or platforms (including version) and location ii) essential data and data sources and location 	<p>Not applicable</p> <p>Data required for the model (e.g. flow, phytoplankton growth rates and nutrient availability) were estimated during field and laboratory experiments within the project. Additionally, some parameters (e.g. duplication rates, carbon cell content) were sourced from the literature.</p>

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How was model used	<p>Modelling the growth of phytoplankton under different nutrient concentrations and flow conditions allowed an estimation of the nutrient thresholds to maintain water clarity at the desired level satisfying the light requirements for macrophyte development.</p> <ul style="list-style-type: none"> ○ <i>Parameterisation/Validation (if applicable; provide a brief summary and include time period of calibration/simulation)</i> Not applicable. ○ <i>Scenarios and outputs from various runs (provide a brief summary and indicate where these are stored)</i> Scenarios adopting different flow rates, phytoplankton growth rates and initial conditions were developed. Refer to the Goyder Institute Technical Report 15/19. ○ <i>Assumptions behind model (provide a brief summary and indicate where these are stored)</i> Algal growth rate and C cell content was assumed constant. Different initial conditions, flushing rates and growth rates were adopted. Refer to the Goyder Institute Technical Report 15/19. ○ <i>Limitations of model (provide a brief summary)</i> The model is very simplified compared to dynamic hydrological deterministic models, as these type of models were not applicable to systems with very low retention time (e.g. <1 day as in Ewens Ponds) ○ <i>Peer review process (if applicable)</i> Reviewed by two external reviewers together with the Technical Report 15/19. ○ <i>Extensibility of model (can it be run for different time periods)</i> The models could be applied to develop further scenarios or incorporate new information on the system <p>Goyder Institute Technical Report 15/19 available at http://goyderinstitute.org/</p>
Specificity of data	<p><i>Was data sourced from local field sites or literature</i></p> <p>Hydrological data, light extinction coefficients and nutrient data were sourced through monitoring at Ewens Ponds. Parameters on phytoplankton growth rate and optimum depth of macrophytes colonization were sourced from the literature.</p> <p>Sources are detailed in Goyder Institute Technical Report 15/19. Available at http://goyderinstitute.org/</p>

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Datasets/data products produced	<p><i>Include details of where datasets/products are located and contact details in the storage location</i></p> <p>No datasets were produced related to the model, but outcomes are summarised in Goyder Institute Technical Report 15/19 Available at http://goyderinstitute.org/</p>
Other Information	
Publications (papers and technical reports)	<p>Goyder Institute for Water Research Technical Reports:</p> <p>Rigosi, A., Liu, Y, Shanafield, M., Brookes, J.D., 2015, <i>Determining environmental risks to Ewens Ponds in the South East</i>, Goyder Institute for Water Research Technical Report Series No. 15/19, Adelaide, South Australia.</p> <p>Shanafield, M. Rigosi, A. Wood, C. White, N. Liu, Y. Brookes, J. and Peter Cook P., 2014, Influences on water quality in a groundwater dependent wetland system, American Geophysical Union (AGU) Conference, Fall Meeting, San Francisco, 15th -19th of December 2014.</p>
Collaborations and acknowledgements	Environment Protection Authority South Australia EPA, SA Government, DEWNR Mount Gambier, Flinders University, South Australian Research and Development Institute (SARDI)
Keywords	Environmental risk, phytoplankton modelling, regime shift, nutrient thresholds, wetlands