Groundwater Model Warehouse Project

Numerical groundwater models have become essential tools for supporting national and state-wide groundwater resource management

The Department (DEWNR) has initiated the Groundwater Model Warehouse project under the Groundwater Program

WHY GROUNDWATER MODEL "WAREHOUSE"?

It is important that groundwater models, once developed, be managed effectively to not waste:

- The accumulated information and knowledge used to develop the model
- Dollar values ($K-$M) spent in developing the models
- Time taken to develop models (month-years)

PURPOSE: **to maintain the integrity of the groundwater models**

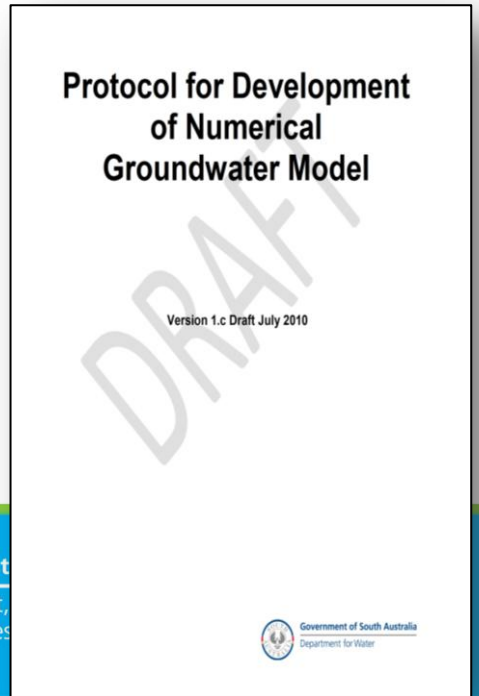
Groundwater Model Warehouse

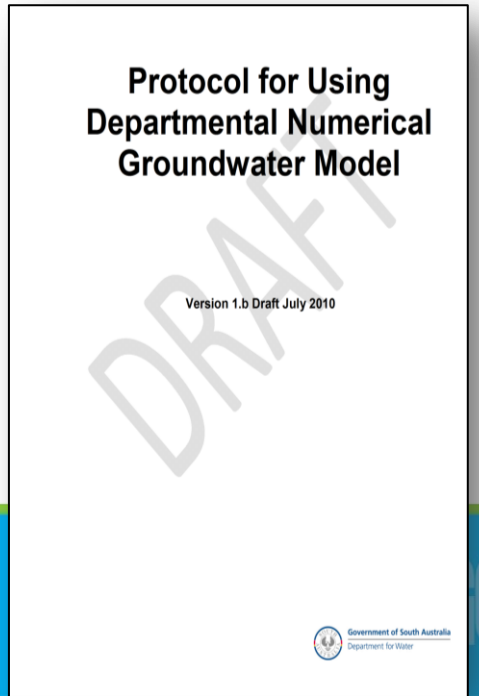
PROJECT INCLUDED:

- development of operational rules, archiving system, protocols and specification documents
- testing and archiving model files (including data)
- providing information (in Water Connect site) about existing models and reports
- promotion of warehouse and provision of technical supports and advices for users across other teams, divisions and agencies

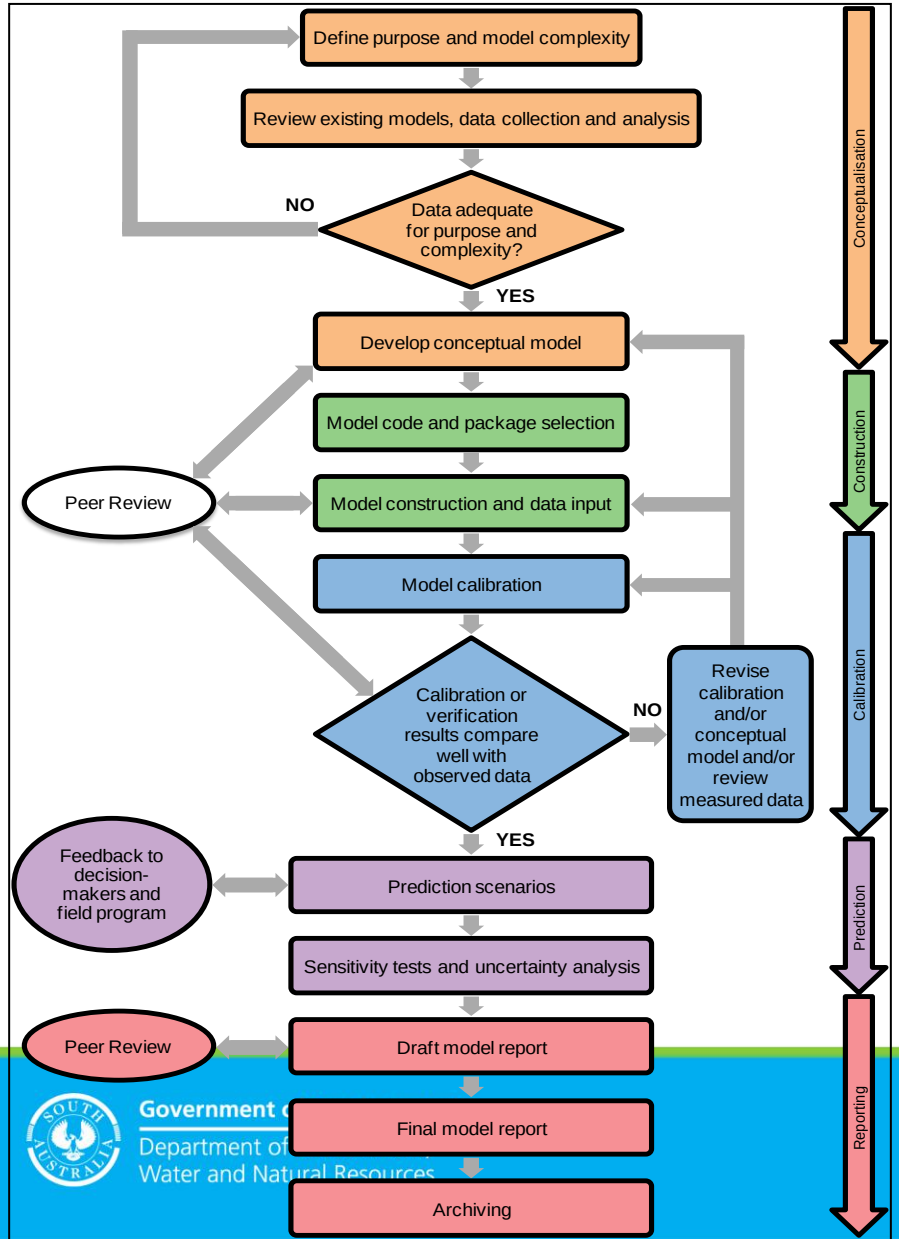
Outcomes - Protocols

- Making sure the consistency and quality of models
- Assisting modeller and project manager for projects
- Using a approval process to manage model files and making sure the most upgraded models are maintained in the Department for future projects





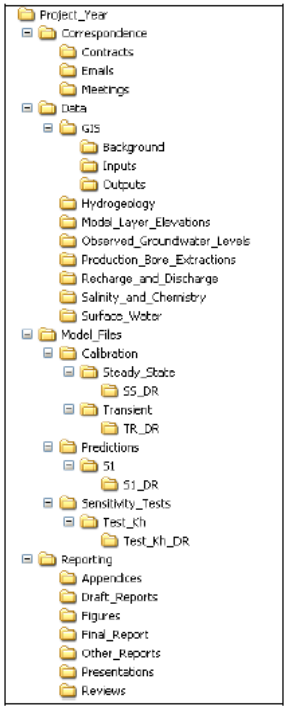
Processes and Archiving System



GROUNDWATER MODEL WAREHOUSE
ARCHIVING AND VERSION CONTROL

Department of Environment, Water and Natural Resources

Proposed Filing Structure:



General Rules for Filing:

- A new project should start with a new main folder.
- Project name should include both region and year and some descriptive texts, such as: Loxton_Bookpurnong_Salinity_Register_2010_2011
- Use underscore (i.e. _) instead of space.
- At the end of the project, empty folder(s) should be deleted.
- Each model (e.g. steady-state, transient and scenarios) should be stored in a separate folder.
- At the end of the project, only the final version of the model files should be archived.
- In each model folder, a DR folder (DR stands for Data and Results) should be created to store:
  - inputs that only apply to that particular model
  - head file for initial heads (if not already incorporated into the model) and a text file to indicate which time step of the head file is to be used for initial heads
  - outputs from that particular model and subsequent analyses.
- Creation of any necessary folders in addition to the proposed folders should be kept to a minimum.

Model Naming Conventions

Calibrated Models:	Region & Completion Year_Type e.g. MW2009_SS and MW2009_TR
Scenario and Prediction Modelling:	Region & Completion Year_Scenario e.g. MW2009_S2
Scenario and Prediction Modelling (using an already-existing model)	Region & Completion Year_Scenario_Run Date e.g. MW2009_S2_Feb2010

Government of South Australia
Department of Environment, Water and Natural Resources

Outcomes - Specifications and Templates

- Make sure the development of the consistency and quality of models
- Assist modellers and project managers managing contract documents for modelling projects
- Provide a simple check list (template) for modeller, reviewer and project manager to work on their part (e.g. develop, review and use modelling report to support MAR and Mining application)

Outcomes – Information Site

WATERCONNECT

Government of South Australia
Department of Environment, Water and Natural Resources

Search this site...

Home | Water Management | NRM Regions | Science & Monitoring | Water Resources | Maps | River Murray

Groundwater Models

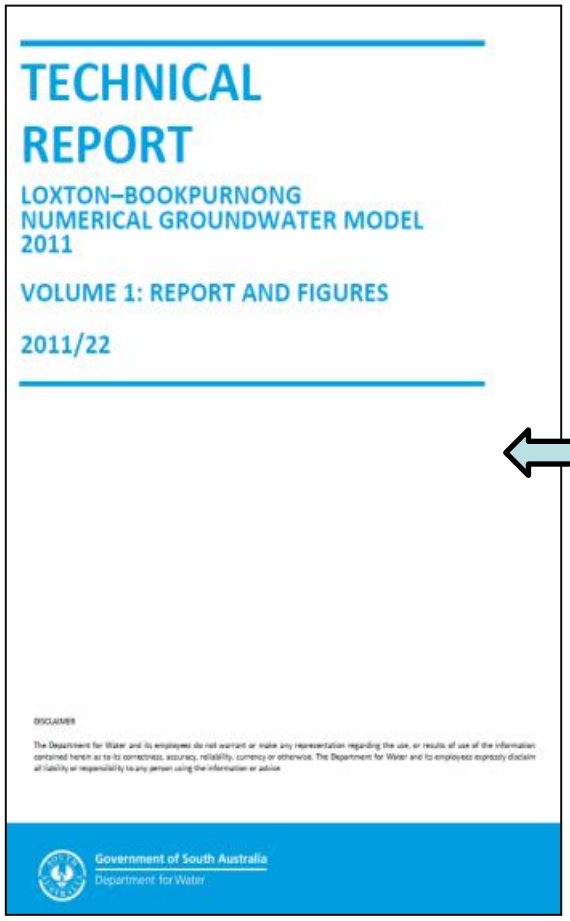
In the recent years, the Department has dramatically increased the number of groundwater model applications used for resources management and environmental assessment. These groundwater models use program codes such as MODFLOW and MT3D, and have been developed as important management tools for two major applications:

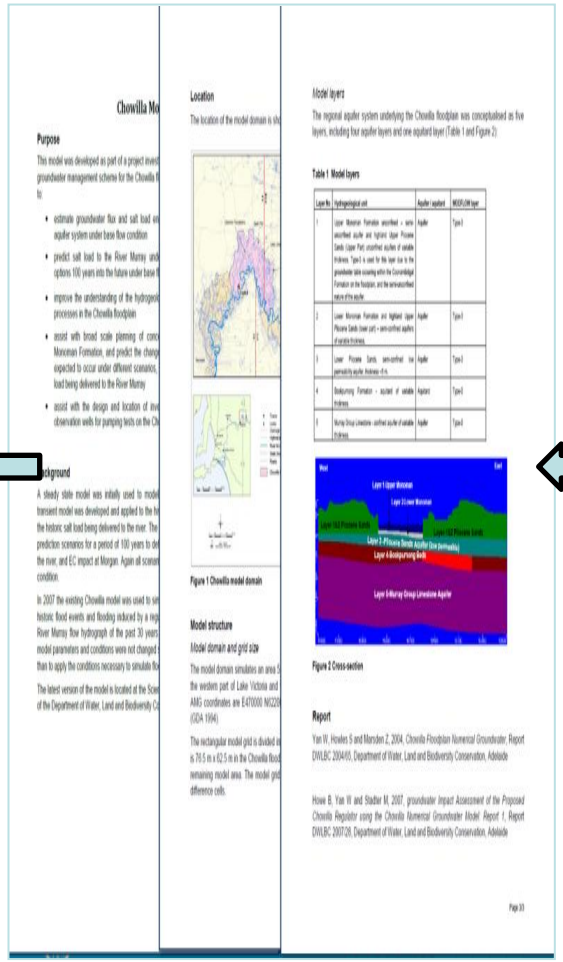
- River Murray Salinity Models - determining the impacts on River Murray salinity from inflows of saline regional groundwater. Development and maintenance of accredited groundwater models that provide estimates for the basis of South Australia's entries on the MDBA Basin Salinity Management Strategy Salinity Registers. This assists in management to maintain in-river salinity within the target level.
- Groundwater Resource Assessment Models - determining the impacts of extraction of good quality groundwater from mostly sedimentary aquifer systems. Assisting in the analysis of the risks to the sustainability of groundwater resources under current and future development scenarios. The models will be used as tool to inform and support decisions on allocation and management options.

- Angas Bremer Model (AB2010)
- Adelaide Plains 2011 Model
- Adelaide_Metropolitan_Model_2008
- Border to Lock3 Model (2005-2011)
- Chowill 2004
- Cox Creek Catchment Model (CCC2010)
- Keith (Tatiara) Model (Keith2010)
- Lock 3 to Morgan Model (2005)
- Morgan to Wellington model (2009)
- South Mt Gambier Model (2000)
- Tertiary Confined Sand Aquifer Model (2000)
- Tintinara model (2004)
- Tintinara-Coonalpyn model (2006)
- Uley Basin Groundwater Model (2007)

Link

Products - Information of Existing Models





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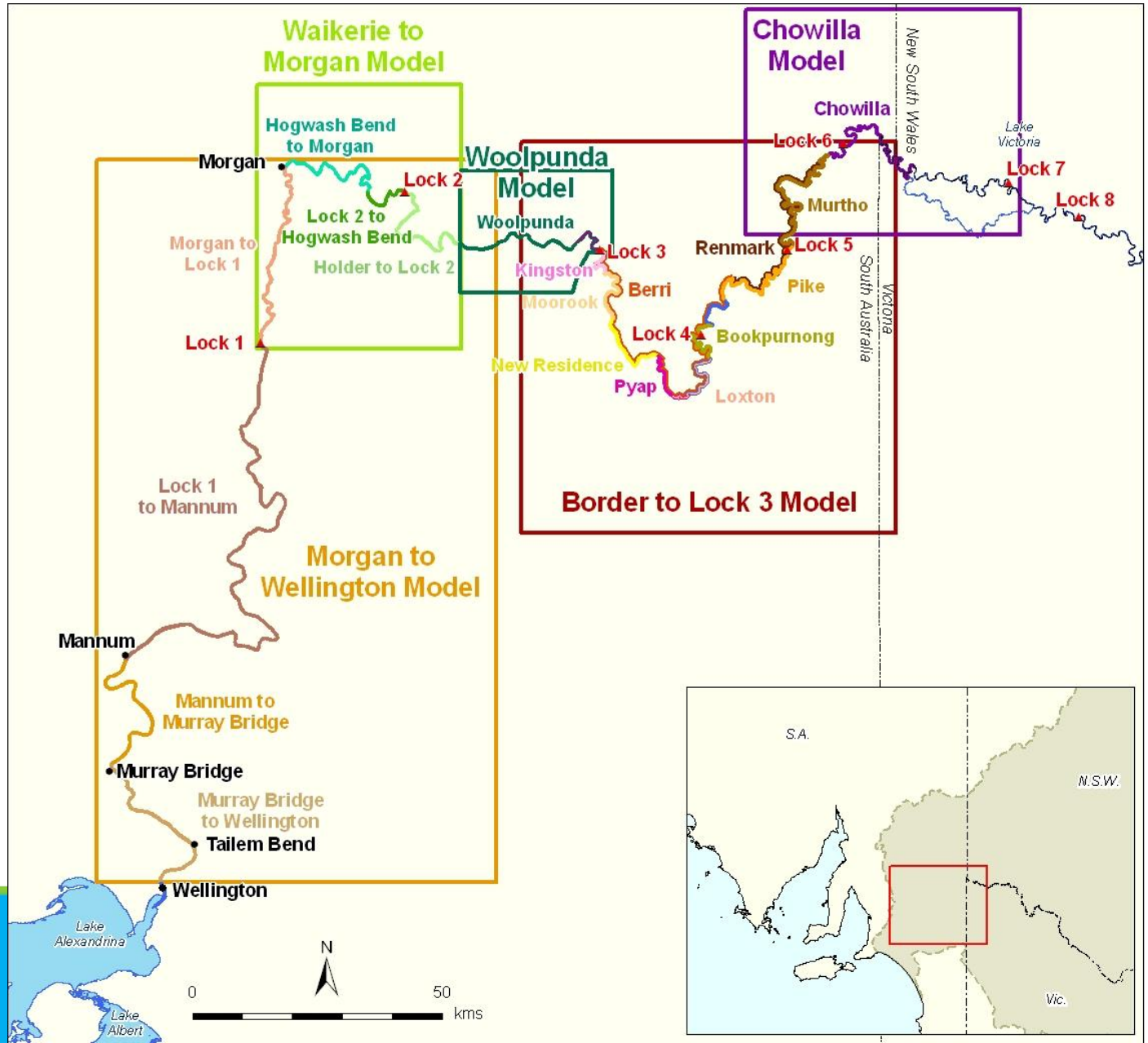
River Murray Salinity Models

Development and maintenance of accredited groundwater models to:

- Provide estimated salt load changes of accountable actions (e.g. irrigation practices and SIS) for the basis of South Australia's entries on the MDBA Basin Salinity Management Strategy Salinity Registers.
- Assists in management to maintain in-river salinity within the target level(South Australia Water For Good Strategy (Action 56).

MODELS FOR SALINITY REGISTER



South Australia's Numerical Groundwater Models (MODFLOW)

- Locks
- Towns
- State Border
- River and Lakes

- Chowilla Model
  - Chowilla
- Border to Lock 3 Model
  - Berri
  - Renmark
  - Murtho
  - Pike
  - Bookpurnong
  - Loxton
  - Pyap
  - New Residence
  - Moorook
  - Kingston
- Waikerie to Morgan Model
  - Holder to Lock 2
  - Lock 2 to Hogwash Bend
  - Hogwash Bend to Morgan
- Woolpunda Model
  - Woolpunda
- Morgan to Wellington Model
  - Morgan to Lock 1
  - Lock 1 to Mannum
  - Mannum to Murray Bridge
  - Murray Bridge to Wellington

Groundwater Resource Assessment Models

The models will be used as a tool to inform and support decisions on Water Allocation and management options.

Development and maintenance of groundwater models to:

- determine the impacts of extraction/injection of good quality water from mostly sedimentary aquifer systems.
- Assist in the analysis of the risks to the sustainability of groundwater resources under current and future development scenarios.