GOYDER INSTITUTE MODEL METADATA TEMPLATE

METADATA REQUIRED	DETAILS
Model Name and version	Source IMS v 3.5.0 –Cox Creek Catchment Model
Date of lodgement of Metadata Template. Name of Metadata Provider	September 2015 Mr Nigel Fleming, nigel.fleming@sa.gov.au
Goyder Institute Project Number and Name	**GOYDER INSTITUTE FOR WATER RESEARCH** Project No. C.1.1 Development of an agreed set of climate change projections for South Australia
Project Team	Project Leader Professor Simon Beecham, simon.beecham@unisa.edu.au Task 4 Leader Dr Graham Green, graham.green@sa.gov.au Project Team Members from SARDI: Prof Jim Cox, jim.cox@sa.gov.au Mr Nigel Fleming, nigel.fleming@sa.gov.au
Creator/Developer	The Source software is a modular modelling framework that has been developed by the eWater CRC http://www.ewater.com.au/
Owner/Contact Person and contact details	Source setups used in this project are detailed in Goyder Institute Technical Report 14/28, or contact Nigel Fleming (nigel.fleming@sa.gov.au), Water Resources, Viticulture & Irrigated Crops, SARDI Sustainable Systems.
Model Location	*Where is the model archived?* *Provide contact details of individual and unit/group within designated organisation* The Source model and output from runs created specifically for this project are currently archived on a shared folder that is backed up by PIRSA. The location is: \\pirsapf2tr\user2\Refdata\Sardi\Water Resources\Nigel F\40 Goyder climate change\Cox Creek Source Project.zip The model files are also stored in eRSA RDA (Research Data Australia) and on the DAP (UniSA Data Access Portal) at the following links: • RDA https://researchdata.ands.org.au/development-an-agreed-south-australia/625590 • Uni SA DAP http://researchoutputs.unisa.edu.au/11541.1/e744d1fdcae8434c8cae7d05878a8c4b *Is there a version of the model in active further development? Where is this active version.* There is no version in current development. If there is further development, then then future versions will be kept at the same location.

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IP or other permission requirements	**REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT **** *Are there any IP issues associated with the model and/or the dependencies that future users need to be aware of?* NO
Licences associated with model or dependencies	****REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT ***** eWater access is through approved licensing agreements with the eWater Ltd. The model has been constructed in IMS Source v 3.5.0, which is a public release of the Source program, and is available at: source@ewater.com.au
Confidentiality agreements associated with model or dependencies	*Are there any confidentiality agreements associated with the model and/or the dependencies that future users need to be aware of?* NO
Brief outline of model	Source contains a range of rainfall-runoff models which enable the simulation of the quantity and quality of catchment runoff. It also contains mechanisms for water management, allocation and accounting which were not used in this project.
Area/region covered	The Cox Creek catchment, Mount Lofty Ranges, South Australia.
Platform and language and version	Source IMS v 3.5.0 available through eWater http://www.ewater.com.au/ The . C#.NET language is used to write models for Source. Most project setup is done through the Geographical User Interface.
Dependencies upon: i) other models and/or platforms (including version) and location ii) essential data and data sources and location	Data sources are contained within the Source project file \\pirsapf2tr\user2\Refdata\Sardi\Water Resources\Nigel F\40 Goyder climate change\Cox Creek Source Project.zip)

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How was model used	o *Parameterisation/Validation (if applicable; provide a brief summary and include time period of calibration/simulation)* The flow gauge A5030526 was used to calibrate the study area as it had the largest catchment area and the most complete data record. The calibration period was from 1976-1989 and the simulation period was from 1994-2004. Further details of the calibration and validation are described in Goyder Institute Technical Report 14/28 o *Scenarios and outputs from various runs (provide a brief summary and indicate where these are stored)* Source used a subset of the climate data produced through the statistical downscaling model from Task 3 of this project and detailed in Goyder Institute Technical Report 15/1 to estimate the amount of exchange between surface water and groundwater. The GR4J rainfall/runoff model within Source was used to calibrate rainfall and evaporation to streamflow. This generated an estimate of water exchange between surface water and groundwater. The estimate was compared to those from another surface water model (LEACHM) and a groundwater model (MODFLOW). Further details are in Goyder Institute Technical Report 14/28 o *Assumptions behind model (provide a brief summary and indicate where these are stored)* Simulated components of the water balance using the GR4J runoff model. These were compared to other surface and groundwater models. Summarised in Goyder Institute Technical Report 14/28. Output is stored with the Source project file at \\pirsapf2tr\user2\Refdata\Sardi\Water Resources\Nigel F\40 Goyder climate change\Cox Creek Source Project.zip. o *Limitations of model(provide a brief summary)* The GR4J rainfall/runoff model is a simple empirical model. This limits the ability to define or specify many of the system parameters which can be addressed by the other two models. This is summarised in the Goyder Institute Technical Report 14/28 o *Peer review process (if applicable)* Reviewed by two reviewers o *Extensibility of model (can it be run for different time periods)* Yes – Source IMS can be run with historical climate data, or with projection data as done for this project. All Goyder Institute Technical Reports are available at http://goyderinstitute.org/

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Specificity of data	*Was data sourced from local field sites or literature* Climate projections sourced from Task 3 downscaling, and historical climate data sourced from the online SILO Patched Point Dataset https://www.longpaddock.qld.gov.au/silo/
Datasets/data products produced	*Include details of where datasets/products are located and contact details in the storage location* Datasets are summarised in Goyder Institute Technical Report 14/28 available at http://goyderinstitute.org/ The model files are stored at SARDI, in eRSA RDA (Research Data Australia) and on the DAP (UniSA Data Access Portal) at the following links: • SARDI \\pirsapf2tr\user2\Refdata\Sardi\Water Resources\Nigel F\40 Goyder climate change\Cox Creek Source Project.zip • RDA https://researchdata.ands.org.au/development-an-agreed-south-australia/625590 • Uni SA DAP http://researchoutputs.unisa.edu.au/11541.1/e744d1fdcae8434c8cae7d05878a8c4b
Other Information	
Publications (papers and technical reports)	Werner, A.D., Jakovovic, D., Ordens, C.M., Green, G., Woods, J., Fleming, N., and Alcoe, D. 2014, Developing an Application Test Bed for Hydrological Modelling of Climate Change Impacts: Cox Creek Catchment, Mount Lofty Ranges, Goyder Institute for Water Research Technical Report Series No. 14/28, Adelaide, South Australia. Available at http://goyderinstitute.org/
Collaborations and acknowledgements	Acknowledgements to Adrian Werner, Juliette Woods and Danica Jakovovic of Flinders University; and Graham Green and Darren Alcoe of DEWNR for providing the framework into which this piece of work fitted.
Keywords	Source, climate change, groundwater, Cox Creek Catchment