

## 2012-13 Announced Allocations Report

### *Water Allocation for the Tindall Limestone Aquifer, Katherine*

#### Introduction

Integrated ground and surface water modelling of the Daly Basin, estimates the Tindall Limestone Aquifer (Katherine), has an average recharge of 74000 ML\* each year. This water comes from rainfall that seeps down into the aquifer through the soil profile and directly through sinkholes. Further water enters the aquifer from the sandstone plateau East of Katherine.

The total amount of water available for consumptive uses in the relevant water accounting year will be announced on 1 May each year by this Department. To determine this, a computer model is used to predict late dry season flows from the Katherine River, using the amount of rainfall received over the previous wet season.

\*This figure may be adjusted as data becomes increasingly reliable and / or as climate change occurs.

#### Announcement

Modelling of the Tindall Aquifer within the Daly basin has been finalised for the 2012-13 water accounting year. Based on the amount of rainfall and recharge over the 2010-11 and 2011-12 wet seasons this Department is announcing that allocations under the Water Allocation Plan for the Tindall Limestone Aquifer, Katherine will be **100%** across all licence securities. A table describing this announcement can be referenced below.

Licence Security	2012-13 Allocation (%)
Total	100
High	100
Medium	100
Low	100

#### Determination

The extraction limit is determined by predicting the late dry season flow in the Katherine River at the Katherine Railway Bridge on 1 November. At this time, almost all flow in the Katherine River is sourced from Tindall Aquifer discharge. The prediction is made by inputting the previous wet season rainfall into the Daly Basin model, and using it to calculate recharge into the aquifer and subsequent discharge to the Katherine River. Based on the predicted flow level, a certain proportion of the Tindall Aquifer discharge to the Katherine River must be protected for environmental purposes, with the remainder available to be shared between licence holders.

If the extraction limit is calculated to be greater than the total annual licence limit and total security demand, then the announced allocation will be 100% of the maximum annual licence volume for all licences for that year.

The Plan stipulates that announced allocation is to be made on 1 May. Under the Plan the maximum extraction limit for the Tindall Aquifer is 35 631 ML or >2.1 Cumecs at the Katherine Railway Bridge on 1 November. After modelling the predicted flow at the Katherine Railway Bridge for the 2012 -13 water accounting year, the forecast is that the

flow will be 2.38 Cumecs. The licensed extraction for the 2012-13 water accounting year from all licensed use is only 29 756 ML, with approximately 50% of this expected to be actually used. Therefore the volume of water required under licenses for the 2012 -13 water accounting year may be issued in full whilst not compromising late dry season flows in the Katherine River.

The below graphs show the predicted flow and observed flow at two points along the Katherine River within the Plan area. The graphs demonstrate that the observed gaugings are in sequence with the predicted gaugings; therefore, the modelling of the system can be used as an effective tool for announced allocations. The variation between the gauged flow and predicted flow in late 2011 can be attributed to early localised rainfall events around that time.

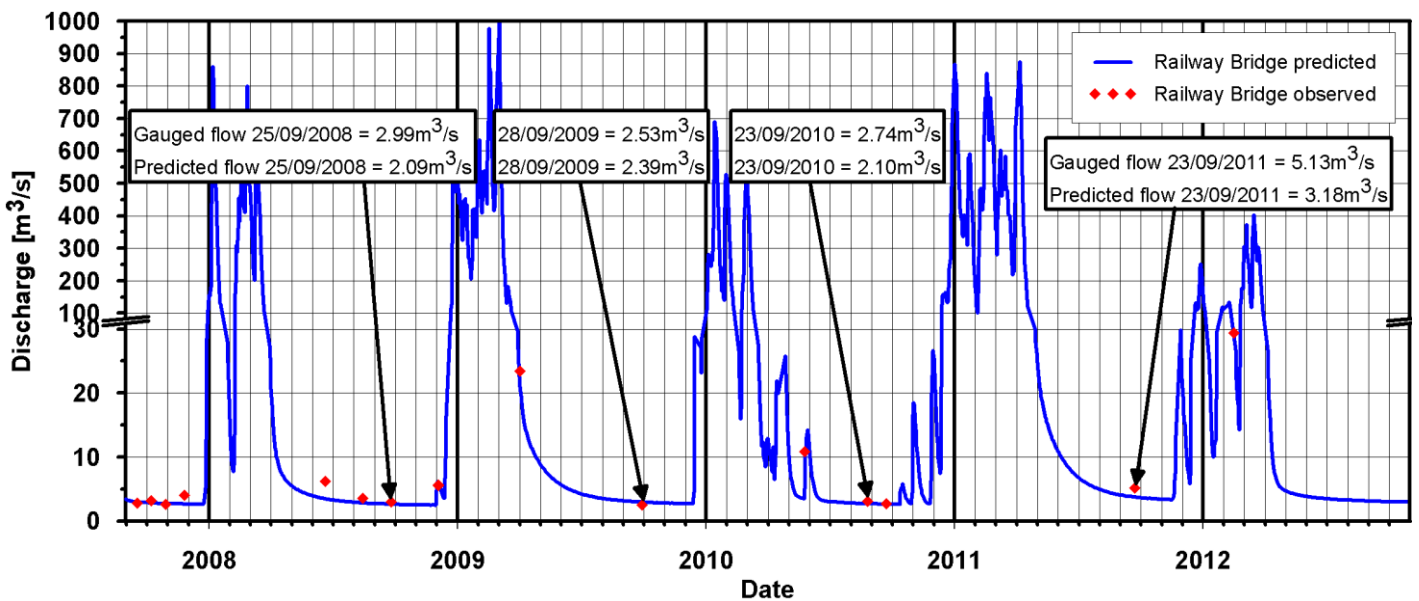


Figure 1: Observed and predicted discharge of the Katherine River at the Railway Bridge from mid 2007 to mid 2012.

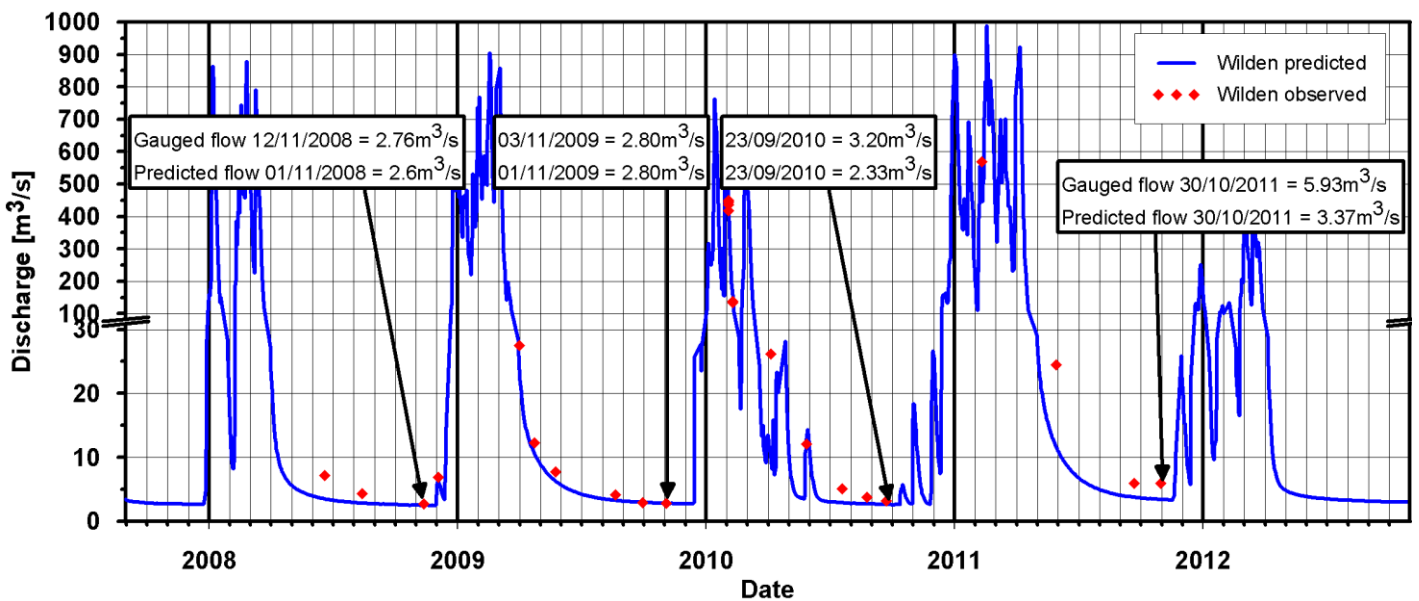


Figure 2: Observed and predicted discharge of the Katherine River at Wilden Gauging Station from mid 2007 to mid 2012.

## Water Licensing & Compliance

For the 2011 / 12 water accounting year, the following table details the volume of water extraction, current level of compliance and the type and nature of trades.

Reported water use*:	10 908 ML
Rural stock & domestic use**:	1 568 ML
Number of new S&D bores drilled:	5
Compliance inspections undertaken:	33% of licences
Licences not currently compliant:	21% of licences
Number of permanent trades:	1
Number of temporary trades:	0

\*Reported water use represents actual water use as supplied to this Department by 89% of licensees, plus estimated water use based upon previous usage or in line with original property development plan for those licensees that failed to supply all or part of their annual water use records.

\*\*Rural stock and domestic use has been estimated based on the number of domestic and stock bores extracting from the Tindall Limestone Aquifer within the Plan area at that time.

## Monitoring & Evaluation

Within the 2011/12 water accounting year, this Department has undertaken the following assessments and monitoring observations;

### *Groundwater Level Monitoring:*

The current network of 40 monitoring bores were manually gauged once during the year, in February/March 2012. In addition to these manual gaugings, 17 of these bores were equipped with loggers, which recorded standing water levels every 2 hours.

### *Groundwater (spring) discharge:*

Manual gaugings of groundwater discharge into the Katherine River were undertaken at the Katherine Hot Springs four times during the year; in June, September, December 2011 and April 2012.

### *Surface Water Flows:*

In addition to the current network of 3 telemetered gauging stations along the Katherine River within the Plan area, the following manual gaugings were undertaken:

<i>Station</i>	<i>Number of gaugings</i>	<i>Low flow component</i>	<i>Time of low flow gaugings</i>
G8140535 (Ironwood)	9	4	July, Sept, Nov & Feb
G8140001 (Katherine Railway Bridge)	8	5	July, Sept & Feb
G8140222 (Low Level)	4	4	Sept & Feb
G8140536 (Wilden)	6	4	May, Sept, Oct & Feb

#### *Groundwater Quality & River Health:*

During the 2011/12 water accounting year, a report was compiled by this Department with regards to river health within the Daly Catchment, including the Katherine River. This report constitutes an initial step in establishing and implementing river health monitoring programs for the Katherine River and other sub-catchments within the Daly. This report can be found at [www.nretas.nt.gov.au/kwap/announce](http://www.nretas.nt.gov.au/kwap/announce) or by clicking on the link below;

[Schult, J. and Townsend, S. \(2012\). River health in the Daly catchment. A Report to the Daly River Management Advisory Committee. Report 03/2012D. Department of Natural Resources, Environment, the Arts and Sport, Darwin.](#)

Furthermore, trial monitoring for pesticides and polycyclic aromatic hydrocarbons (PAHs) was undertaken in the Katherine River using passive samplers. The results from this trial monitoring however, are currently not published, but will be published within 2012.

Basic physical and chemical water quality parameters were also measured at selected sites in conjunction with groundwater level, spring discharge monitoring and manual river flow gaugings. The results from this sampling will be reviewed during development of a river health monitoring program and to assess trends, if any, over time.