2014 / 2015 Announced Allocations Report
Water Allocation for the Tindall Limestone Aquifer, Katherine

Introduction
Integrated ground and surface water modelling of the Daly Basin, estimates that the average annual recharge to the Tindall Limestone Aquifer (Katherine) is 74,000ML. 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.

Every year on May 1st, the total amount of water available for consumptive uses in the relevant water accounting year will be announced by the Controller of Water Resources. 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.

Announcement
Modelling of the Tindall Aquifer within the Daly basin using rainfall and recharge over the preceding wet seasons has been finalised for the 2014/15 water accounting year. In accordance with clause 32 of the Water Allocation Plan – Tindall Limestone Aquifer, Katherine, the Controller of Water Resources is announcing that allocations for total, high, medium and low licence security categories, excluding the low security licence for public water supply, are **100%**. The allocation for low security public water supply will be **26%**. A table describing this announcement can be referenced below.

Licence Security	2014/15 Allocation (%)
Total	100
High	100
Medium	100
Low - Public Water Supply	26
Low - Other	100

Determination
The Plan stipulates that announced allocation is to made on or by May 1. Under the Plan the maximum extraction limit for the Tindall Aquifer is 35,631ML or when Katherine River flow exceeds 2.1 Cumecs at the Katherine Railway Bridge on 1 November.

After modelling the predicted flow at the Katherine Railway Bridge for the 2014/15 water accounting year, the forecast is that the natural flow will be 2.01 Cumecs. Under the Plan the maximum extraction limit for the Tindall Aquifer is 35,052ML when flow is predicted to be between >2.0 and ≤2.1 Cumecs at the Katherine Railway Bridge on 1 November. This extraction limit is less than the sum of all low, medium and high annual licensed volumes and total security demand for the 2014/15 water accounting year (35,198ML), but greater than the sum of the annual licensed volume for low, medium, high security licences and total security demand, excluding

the volume allocated for public water supply in low security (33,481ML). Therefore the volume of water required under licenses for the 2014/15 water accounting year may be issued in accordance with this announcement whilst not compromising late dry season flows in the Katherine River.

The following graph shows the predicted flow after domestic, stock and licenced extraction is accounted for, and observed flow at the Katherine Railway Bridge. The graph demonstrates 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.
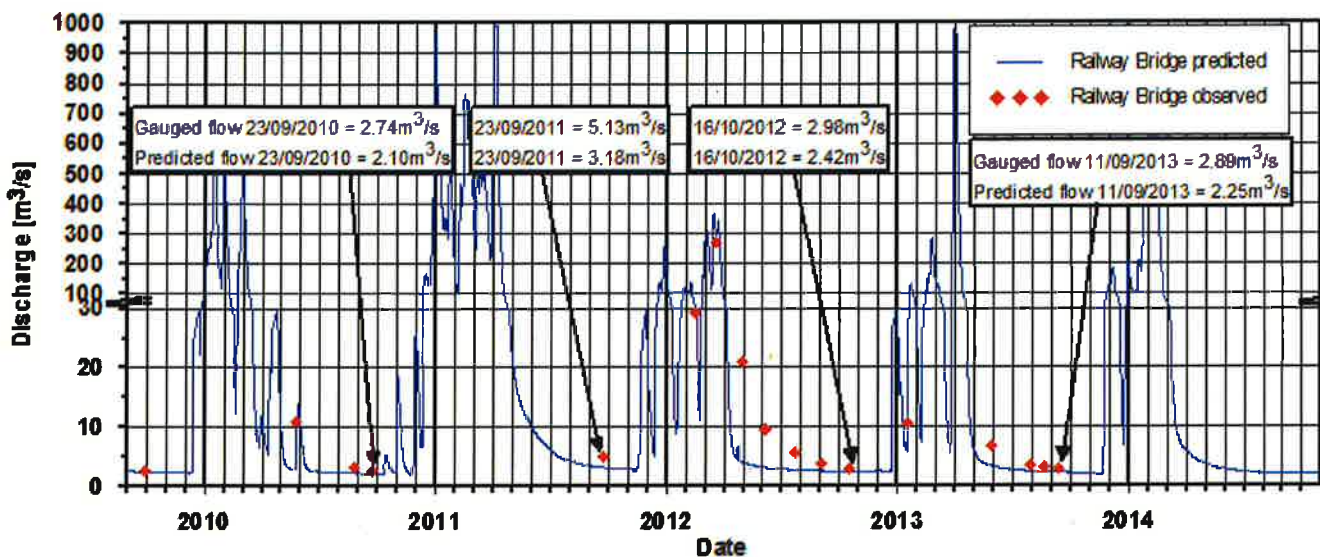

Gauged flow 23/09/2010 = 2.74m^3/s
Predicted flow 23/09/2010 = 2.10m^3/s
23/09/2011 = 5.13m^3/s
23/09/2011 = 3.18m^3/s
16/10/2012 = 2.98m^3/s
16/10/2012 = 2.42m^3/s
Gauged flow 11/09/2013 = 2.89m^3/s
Predicted flow 11/09/2013 = 2.25m^3/s

Railway Bridge predicted
Railway Bridge observed

Figure 1: Observed and predicted discharge of the Katherine River at the Railway Bridge from mid-2009 to mid-2014.

Water Licensing

For the 2013/14 water accounting year, the following table details the volume of water extraction, and the type and nature of trades.

Reported water use*:	8,730ML
Rural stock & domestic use**:	1,586ML
Number of new S&D bores drilled:	6
Number of permanent trades:	0
Number of temporary trades:	1

*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 2013/14 water accounting year (1st May 2013 to 30th April 2014), this Department has undertaken the following assessments and monitoring observations;

Groundwater Level Monitoring:

The groundwater monitoring program for the Water Allocation Plan, Tindall Limestone Aquifer, Katherine consists of 43 monitoring bores, 21 of which are equipped with data-loggers recording water level every 2 hours. This data is validated by standing water level measurements which are manually measured using a dip tape. A total of 107 manual readings were undertaken throughout the water accounting year. Each site was dipped in October and March, while those sites that do not have a logger had up to 10 manual readings performed during the period.

Groundwater (spring) discharge:

A manual gauging of groundwater discharge into the Katherine River was undertaken at the Katherine Hot Springs in October 2013. The flow was measured at 340 l/s. This measurement is consistent with three previous gaugings undertaken between August and December 2012, of 360l/s.

Surface Water Flows:

Continuous water level data was collected at the 4 primary gauging stations within the Plan area. To verify the modelled flows, a number of spot gaugings were also performed at the gauging stations during the water year:

Station	Number of gaugings	Low flow component	Time of low flow gaugings
G8140535 (Ironwood)	7	6	May, July, Sept & Oct
G8140001 (Katherine Railway Bridge)	5	4	May, Aug, Sept & Oct
G8140222 (Low Level)	5	4	May, July, Aug & Sept,
G8140536 (Wilden)	5	4	May, Aug, Sept & Oct

Groundwater Quality & River Health:

Basic physical and chemical water quality parameters were measured at selected sites in conjunction with groundwater level, spring discharge monitoring and manual river flow gaugings. The results of the water quality survey will be used to assess long term trends.