



Attachment A

The Commissions conclusions and recommendations are heavily reliant on the *Technical Review of the Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012* undertaken by Professor Fran Sheldon from the Australian Rivers Institute, Griffith University, Brisbane.

In the short period of time the report has been available, the Northern Valleys Irrigators group has identified numerous issues, namely:

- a) In response to the Commissions Terms of Reference (14) (pg. 43), the author (Prof. Fran Sheldon) clearly states that

“there is limited scenario modelling of this data, so it is difficult to determine impacts from flow changes due to water resource development. This is a severe knowledge gap when trying to determine any impact of water resource development and make ongoing recommendations.”

At no stage does the Commission recognise the limitations of the data, modelling and subsequent conclusions. Rather the Commission presents so-called *expert opinion* without qualification.

- b) Page 35 of the Sheldon report says:

“Using multiple lines of evidence that includes the rainfall deficiencies in the three years to 2019, the volumes of water extracted within the A class band from 2015 and the knowledge regarding the onset of hydrological drought conditions, the likely scenario regarding the changed extraction rules post 2012, is that these extractions from the baseflow band could have essentially pushed the Barwon-Darling system below Bourke into very low flow conditions three years earlier than the river upstream”

Considering the acknowledged gap in modelling, the above statement is unsupported. The author fails to demonstrate any *lines of evidence*.

The following analysis is designed to explore the Reports suppositions, namely:

- a) A-Class extractions (under 2012 WSP conditions) expediated low flow conditions.
 b) Without A-Class extractions, base-flow conditions would have persisted for three (3) years

Given the Sheldon and the Commissions Draft report fail to provide clear criteria of “hydrological drought”, the following analysis assumes hydrological drought to be the site-specific upper limit of cease-to-flow (30 ML/d) as specified in the OEH Long Term Water Plan.

The following figures plot the receding limb of hydrographs for all events exceeding the site-specific lower limit of a large fresh (4,000 ML/d) as per the OEH Long Term Water Plan. Data-



series terminate if they reach the cease-to-flow limit OR increase by 50 ML per day (to avoid the influence of secondary events).

Figure 1 represents 50 receding hydrographs from 1982 to 2019 from the Wilcannia hydrographic site (425008). By highlighting the 2016-17 event, it is clear that the time period from large fresh to cease-to-flow conditions is within historical bounds. It is also clear that without follow-up inflows, time to cease-to-flow conditions rarely exceed 150 days.

Figure 2 plots selected events since 1982 including the 2016-17 event. The time to cease-to-flow conditions in 2016-17 was 107 days, greater than similar events 1994 (75 days), 2008 (54 days) and 2009 (72 days). All these events pre-date the 2012 WSP A-class conditions.

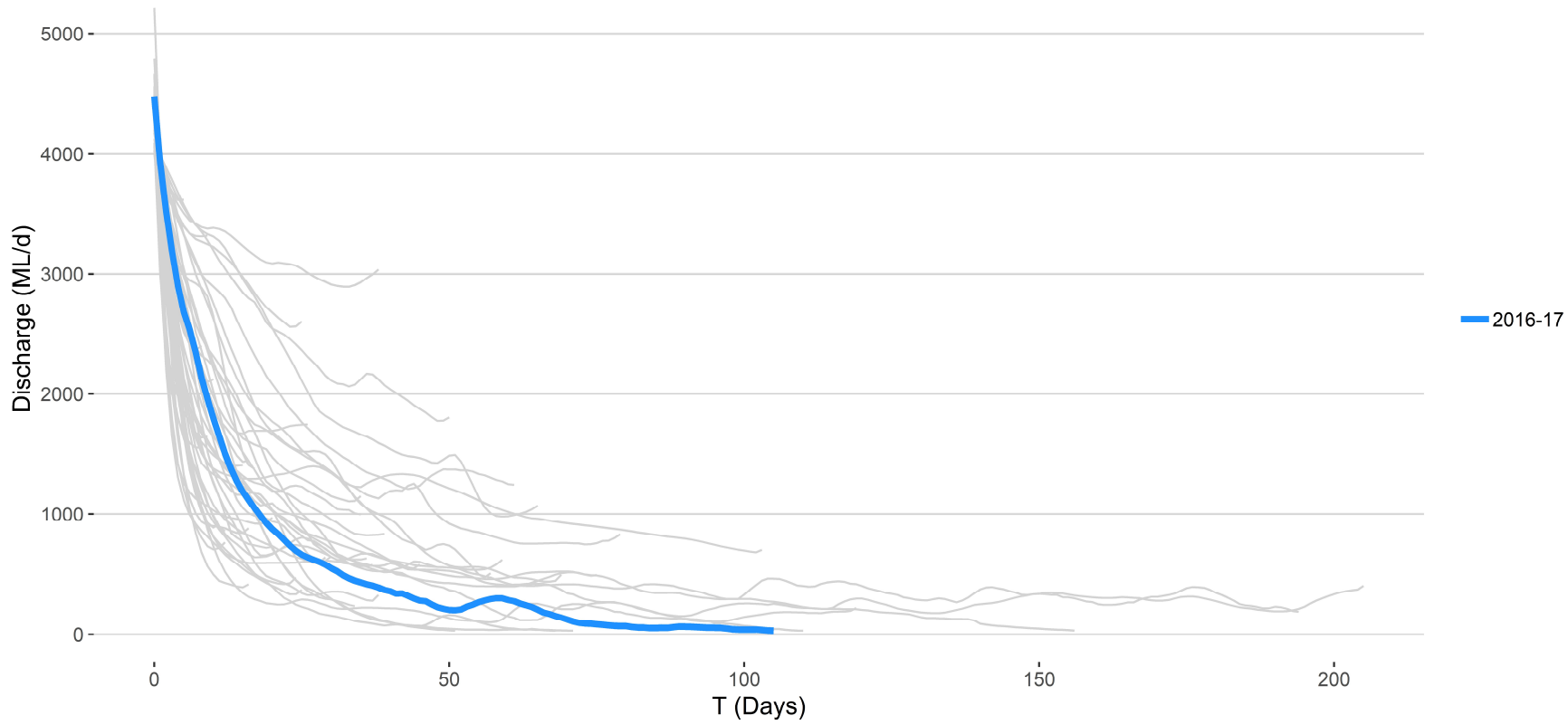
The figures below challenge the suppositions, namely:

- Without follow-up inflows, time from large fresh to cease-to-flow can range from 50 days to 150 days.
- Events prior to the 2012 WSP, were quicker to reach cease-to-flow conditions from large freshes than the 2016-17 event. The 2016-17 event was typical of a Barwon-Darling Large Fresh.

In summary, the Northern Valleys Irrigators Group strongly contends the Commission's notion that A-Class extractions after 2016-17 "*pushed the river below Bourke into hydrological drought three (3) years earlier than the upstream sections of the river*". The Northern Valleys Irrigators Group hopes the provided analysis can help inform the Commission's Final Review and would welcome the opportunity to build on the provided analysis.



Wilcannia (425008) 1982-2019
 Large Fresh (4,000ML) to Cease to Flow (30 ML)*



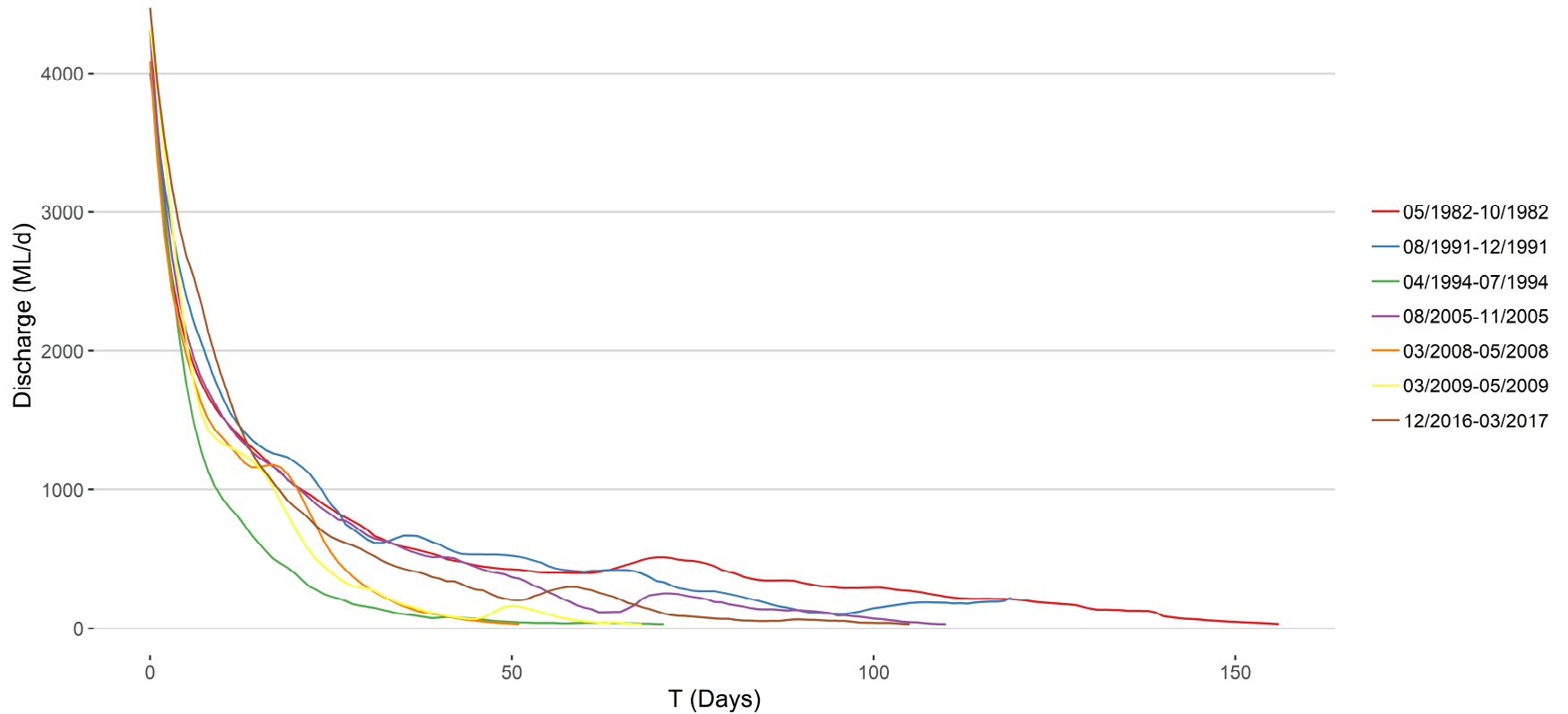
*Series terminates when discharge increases > 50ML/d

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Wilcannia (425008) 1982-2019 Large Fresh (4,000ML) to Cease to Flow (30 ML)*



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