Draft Western Davenport Water Allocation Plan - Update

9 June 2017

Purpose of update

The draft Western Davenport Water Allocation Plan ('the draft Plan') was released for public comment on 2 May 2017, with comments sought by 16 June 2017. The period of public comment has now been extended to **Friday 7 July 2017**.

During the consultation period, the Department of Environment and Natural Resources ('the Department') has held a number of consultation and communication meetings with stakeholders in order to clarify aspects of the draft Plan, including the policies which underpin the Plan. Additional technical investigations have also been completed during this period.

This update document provides a response to the main issues raised so far during the consultation period. The Department is seeking feedback on the sustainable yield/consumptive pool options (presented below) that have been updated due to completion of additional technical investigations.

Northern Territory Water Allocation Planning Framework

Stakeholders were advised at the commencement of the mid-term review of the Western Davenport Water Allocation Plan that one of the intentions of the review is to align the Plan with the Northern Territory Water Allocation Planning Framework. Feedback from some stakeholders indicated that there is a need to further explain the Framework and how it applies in the draft Plan.

The Northern Territory Water Allocation Planning Framework ('the Framework') applies to all water allocation plans in the NT. It requires "all available scientific research directly related to environmental and other public benefit requirements for the water resource [to] be applied in setting water allocations for non-consumptive use as the first priority, with allocations for consumptive use made subsequently within the remaining available water resource".

This means that the water needs of the environment and public drinking supplies need to be guaranteed prior to any allocations being made for other uses, such as agriculture.

For the arid zone of the Northern Territory, which includes the Western Davenport Water Control District, the Framework further states that "there will be no deleterious change in groundwater discharges to dependent ecosystems (GDEs), and total extraction over a period of at least 100 years will not exceed 80 per cent of the total aquifer storage at start of extraction. In the event that current and/ or projected consumptive use exceeds the threshold levels of 80 per cent of the consumptive pool

for aquifers, or groundwater discharges to GDEs are impacted, new groundwater licences will not be granted unless supported by directly related scientific research into groundwater dependent ecosystem/cultural requirements".

This means that the Plan must ensure that GDEs and other culturally important sites are protected from the effects of any groundwater extraction in the region.

Alice Springs' approach
The Framework has previously been applied in the development of the Alice Springs Water Allocation Plan.

The public water supply for Alice Springs comes from aquifers that have very little groundwater recharge and necessitates 'mining' of the water resource to support the existence of the town. A process of community engagement led to an agreement that the Alice Springs Water Allocation Plan should limit water use from those aquifers to no more that 25% of estimated groundwater storage over the next 100 years.

The Alice Springs Water Allocation Plan acknowledges that this level of extraction is not compatible with the commonly accepted meaning of the term 'sustainable'. Instead, the Alice Springs Water Allocation Plan bases the consumptive pool on the concept of 'maximum allowable yield' - that is, the limit agreed to through the process of community engagement.

Sustainable Yield

The volume of water available for allocation has been the subject of a significant number of informal stakeholder comments. Stakeholders have sought further information about how recharge has been accounted for in the calculation of the sustainable yield.

The Department has now released the final report on the development of the groundwater model that supports the development of this draft Plan[1]. The groundwater report quantifies the volume of groundwater recharge that is predicted to enter the aquifer on a renewable basis. This enables us to consider the magnitude of sustainable yield when determining the consumptive pool.

Sustainable yield is defined as 'the level of water extraction from a particular system which, if exceeded would compromise key environmental assets, or ecosystem functions and the productive base of the resource'.

The groundwater report provides robust data on the level of recharge (see Table 1). The period of climate data used to calculate this recharge was discussed at the stakeholder meeting held in Alice Springs on 31 May 2017. While the groundwater report uses the last 30 years data only (a period that was relatively very wet) the Department intends to recommend that the recharge figures are based on the last 100 years of data to accommodate the possibility of drier climatic conditions occurring in future.

[1] Knapton A (2016) *Development of a Groundwater Model for the Western Davenport Plains* Edwardstown, Australia.

For the Western Davenport Water Allocation Plan, the volume of recharge could be used as a logical proxy for 'sustainable yield'. Table 1 provides figures based on both 30 and 100 years of climate data.

Table 1: Average Annual Recharge determined using different climate records

Management Zone	GL/YR: 1916-2016	GL/YR: 1970-2016 *	% increase (wetter period)
Davenport Ranges	12	16	27
Central Plains	88	95	8
Southern Ranges	40	55	28
TOTAL RECHARGE	138	166	17

*Source: Knapton 2017: Tables 28-30.

Consumptive pool

The consumptive pool is the volume of water made available for all consumptive beneficial uses, after considering the water requirements of the environment. The Framework allows for a consumptive pool to be based on a regime that decreases total aquifer storage (i.e. that mines the resource as in the Alice Springs example), so long as GDEs and cultural assets are not negatively impacted.

In other words, under the Framework, it is permissible for the consumptive pool to exceed the sustainable yield if justified by a strong rationale for social or economic needs.

The draft Plan provides two 'sustainable yield' options on which to base the consumptive pool (section 6 of the draft Plan): Option A is based on a compromise scenario that attempts to predict the scale and location of potential developments (this option has been superseded by the work undertaken to base the 'sustainable yield' on recharge); and Option B, which is based on the depletion of aquifer storage, i.e. a 'mining' model. It is important to note that the figures presented in Option B do not take into account the fact that much of the water stored in the aquifer would not be economically feasible to extract because it is too deep.

Feedback on the original Options A & B will be useful in the finalisation of the Plan. However, stakeholders who have not yet provided feedback are encouraged to focus on the updated figures (see below).

The Department has, based on the groundwater report, undertaken further work that contributes to the determination of consumptive pool options. This is presented in Table 2 as an updated version of Option B, providing a broader range of 'extraction' regimes, and with a clearer comparison to a more realistic sustainable yield (based on recharge). The 'mining' included in this table includes groundwater in storage to within 150m below ground level, as a generally accepted economically accessible depth.

Table 2: Updated Consumptive Pool options (revised Option B)

Management Zone	Recharge 1916-2016 (GL/YR)	Recharge + Mining: 1% over 300yrs (GL/YR)	Recharge + Mining: 5% over 300yrs (GL/YR)	Recharge + Mining: 10% over 300yrs (GL/YR)	Recharge + Mining: 50% over 300yrs (GL/YR)	Recharge + Mining: 80% over 300yrs (GL/YR)
Davenport Ranges	12	12.00	12.02	12.04	12.22	12.35
Central Plains	88	89.20	94.00	100.00	148.00	184.00
Southern Ranges	40	40.01	40.03	40.06	40.30	40.49

Protection of GDEs

The evaluation of environmental requirements for water has been raised as a point of concern by stakeholders. The Department has undertaken some preliminary investigations to map Groundwater Dependent Ecosystems (GDEs) and to identify groundwater dependencies based upon available monitoring data. The findings of this work have resulted in the identification of a number of potential GDEs.

As stated above, the Framework requires that any allocation regime should not cause deleterious effects on ground water discharges to GDEs. As such, it is important to reiterate that, when evaluating the effects of pumping on potential GDEs, the groundwater modelling shows that localised and site-specific draw-down within the aquifer may be associated with individual bores/borefields, even if the sustainable yield or consumptive pool for the aquifer as a whole has not been exceeded.

While the volume of water extracted is a factor contributing to impact on potential GDEs, the location of the bore/borefield is critical. Pumping rates at the borefields are also critical, in order not to induce draw-down at rates that exceed the ecologically important rooting depths.

This means that even if there is water in the consumptive pool available for allocation to a particular beneficial use (e.g. agriculture), a groundwater extraction licence may be refused if there is evidence that the proposed extraction regime will affect GDEs or other cultural assets.

As part of the Plan implementation strategy, the GDEs in the basin will be verified through independent scientific review.

The draft Western Davenport Water Allocation Plan has been prepared for public comment and the Department of Environment and Natural Resources welcomes feedback during the public comment period, which now closes on **Friday 7 July 2017**.

For a response to questions during the consultation period, please telephone 8999 4455.

Submissions on the draft Plan can be lodged by:
Email: waterresources@nt.gov.au
Post: PO Box 1120, ALICE SPRINGS NT 0871

A consultation report will be prepared to inform stakeholders and interested parties of the issues raised during consultation on the draft Plan, and how these issues were considered in finalising the Plan.