



Ord

surface water allocation plan

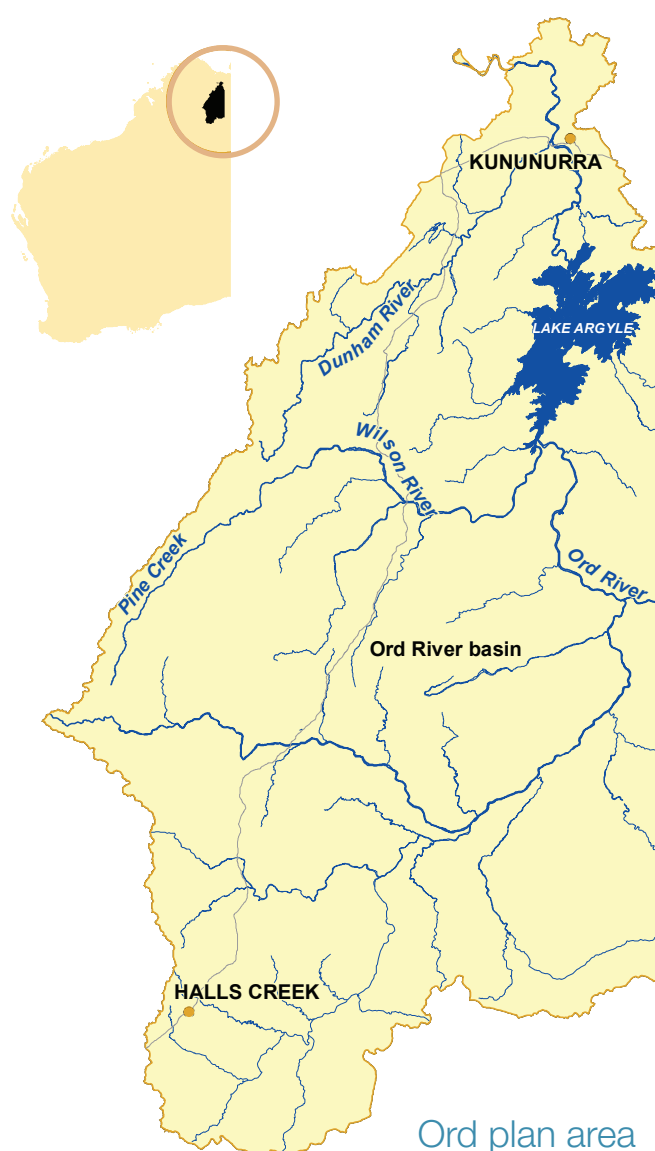
Evaluation statement 2013–2017

The Ord River system supports a growing irrigation area and sustains a unique Kimberley environment. It also provides water for hydroelectricity generation and supports local Indigenous, community, recreational and tourism needs.

This is the first evaluation statement for the Department of Water and Environmental Regulation's (department) *Ord surface water allocation plan 2013* (Ord plan). It summarises how the department has implemented the Ord plan from when it was launched in September 2013 to June 2017.

Each year the department evaluates if the strategies, actions and local licensing policies in the Ord plan have been implemented, and if the outcomes and objectives of the plan are being achieved as a result. The department also hosts the annual Ord River stakeholder meeting in Kununurra to discuss the outcomes of that year's evaluation with the community. In 2014 the department furthered stakeholder engagement through the launch of a brochure on managing water from the Ord River.

This evaluation statement shows there are secure water supplies for a strong and expanding irrigation industry and a healthy lower Ord River environment. It outlines the approach to maximise opportunities for hydroelectricity generation and Indigenous, community, recreational and tourism needs.



Ord plan area

Improving how we manage water

The table below outlines the actions and achievements taken to deliver the outcomes of the Ord plan since its launch.

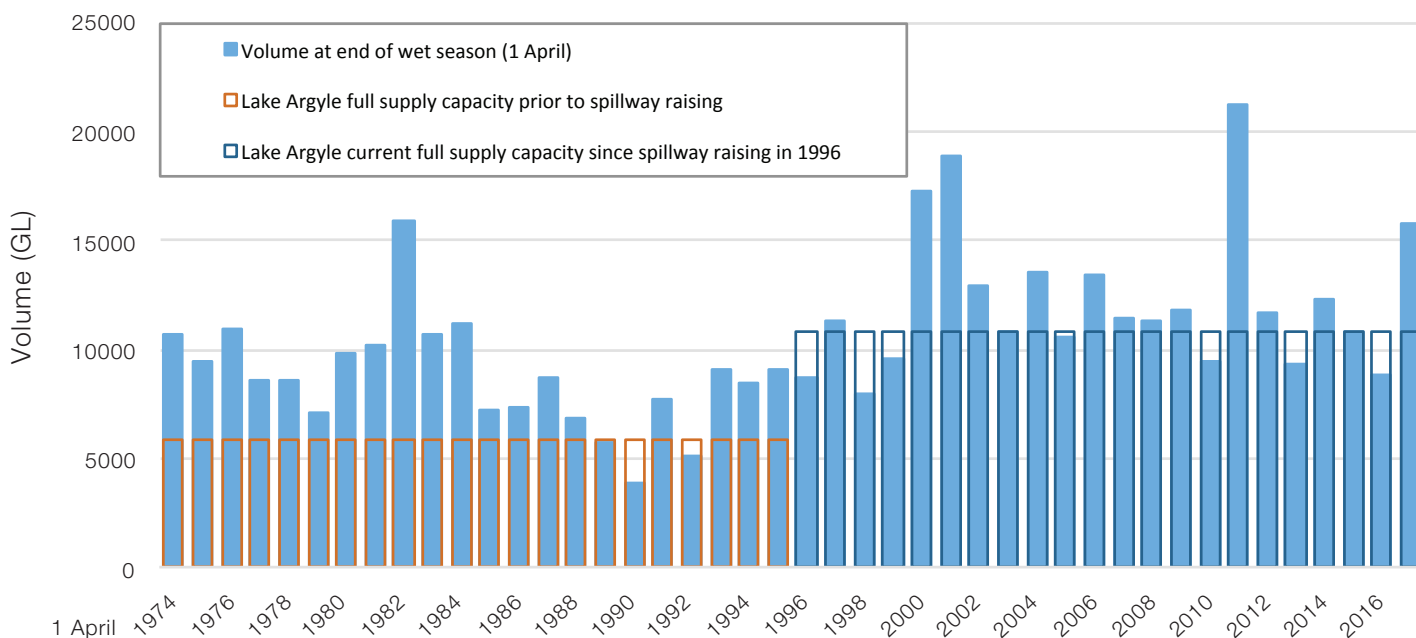
Outcomes	Actions and achievements for 2013–2017
Secure and reliable water supplies for a strong and expanding irrigation industry	<ul style="list-style-type: none"> Managed water releases at the Ord River and Kununurra Diversion dams through the Ord plan's water releases rules. Issued water licences to match water needs and efficient water use within the allocation limits for each subarea. Conducted on-ground licence compliance inspections and encouraged efficient use of water. Assessed water available for irrigation expansion in the Ord-East Kimberley and water supply solutions using updated inflow information and reservoir modelling. Continued to work with the Northern Territory to review its water requirements and consider the water sharing arrangements needed to transfer irrigation water across the border.
A healthy lower Ord River environment	<ul style="list-style-type: none"> Monitored the flows at Tarrara Bar to ensure that there is enough water to meet the environmental water provisions. The Water Corporation, as part of its surface water licence, annually monitored fish, and triennially monitored macro-invertebrates and vegetation of the lower Ord River and other unregulated 'control sites' since 2015. The department will use monitoring information to assess if the flows in the lower Ord River are maintaining its ecological condition.
As much hydroelectricity production as possible, within the limits of the water needed by irrigators and the downstream environment	<ul style="list-style-type: none"> Triggered Class 1 hydropower restrictions twice since the plan was launched in September 2013. Adjusted the Class 1 hydropower restriction triggers, as part of Water Corporation's surface water licence, to reflect that the current demand for hydroelectricity is less than what it was at the time of plan development. The new water releases rules continue to maintain the security of supply to irrigators. Continuing to work with Water Corporation on optimising hydropower water release rules to maintain the security for irrigation as demand grows.
Traditional Indigenous access, water-based tourism and recreational opportunities that complement the irrigation, environmental and power outcomes	<ul style="list-style-type: none"> Continued to work, in conjunction with the Water Corporation, with the Miriuwung Gajerrong Corporation, to maximise opportunities for Indigenous access to the Ord River. Met with local tour boat operators to understand and look for ways to meet recreational water requirements. Hosted the annual Ord River stakeholder meeting in Kununurra to engage with the community on water management issues and announce restrictions for the coming year where required.

The Ord River system

Water from the upper Ord River catchment (of which approximately one-fifth is located in the Northern Territory) is stored in Lake Argyle and released through the Ord River Dam to Lake Kununurra.

The Ord River Dam was built in the early 1970s with an initial full supply capacity of 5 800 GL. In 1996 the main spillway was raised six metres to maximise the electricity generated from hydropower. This had the effect of almost doubling Lake Argyle's full supply capacity to its current 10 760 GL. The dam wall is high enough to capture the large volumes of flood waters of the very wet seasons, and temporarily store them above the full supply capacity.

Inflows to Lake Argyle are highly variable ranging from 280 to 26 000 GL/year. The lake's large full supply capacity, which is equivalent to about 2.5 times the mean annual flow of 4 500 GL/year, provides a buffer against year to year variability. The graph below shows the recorded volume of water in Lake Argyle at the end of each wet season for the life of the Ord River Dam. The larger volumes of water since the spillway was raised in 1996 are the result of larger inflows during this period.



Recorded volume of water in Lake Argyle at the end of each wet season (1 April)

Water for irrigation

The department applies annual allocation limits for each of the five subareas in the Ord plan area totalling 905 GL/year. This provides irrigators with a high level of certainty about water supplies given the significant year to year variations in inflows to the system.

Allocation limits represent the annual volume of water that can be taken for consumptive use (such as irrigation) from each subarea. The allocation limits are based on the current dam infrastructure with its existing commitments to irrigation, hydropower and the environment. Future climate is assumed to be similar to that experienced in the past as global climate models do not indicate a clear wetting or drying trend for the Kimberley.

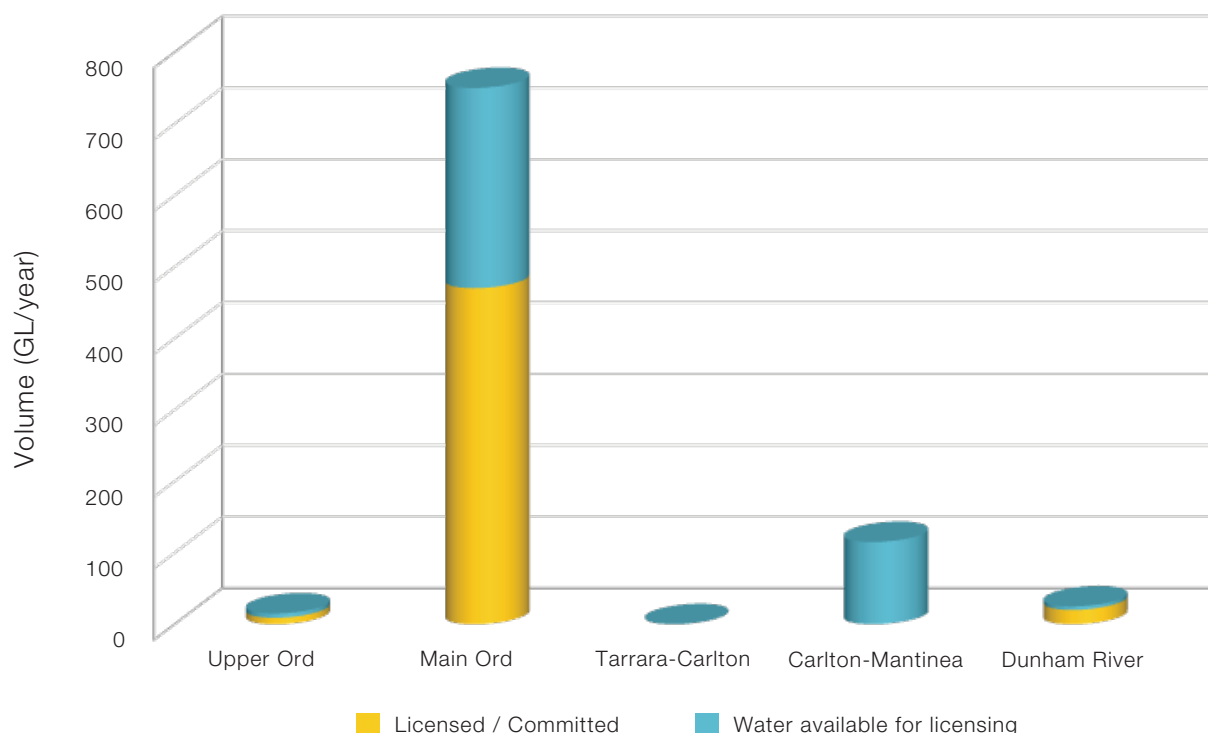
Of particular importance to the irrigation industry, the Main Ord subarea (using water from Lake Argyle and Lake Kununurra) has an allocation limit of 750 GL/year. Water releases rules maintain the security of irrigation licences in the Main Ord subarea.

Above the Kununurra Diversion Dam, water is diverted to Stage 1 and Stage 2 of the Ord River Irrigation Area (ORIA). Self-supply water licensees (riverside pumpers) in Stage 1 of the ORIA take water directly from the Ord River above and below the Kununurra Diversion Dam.

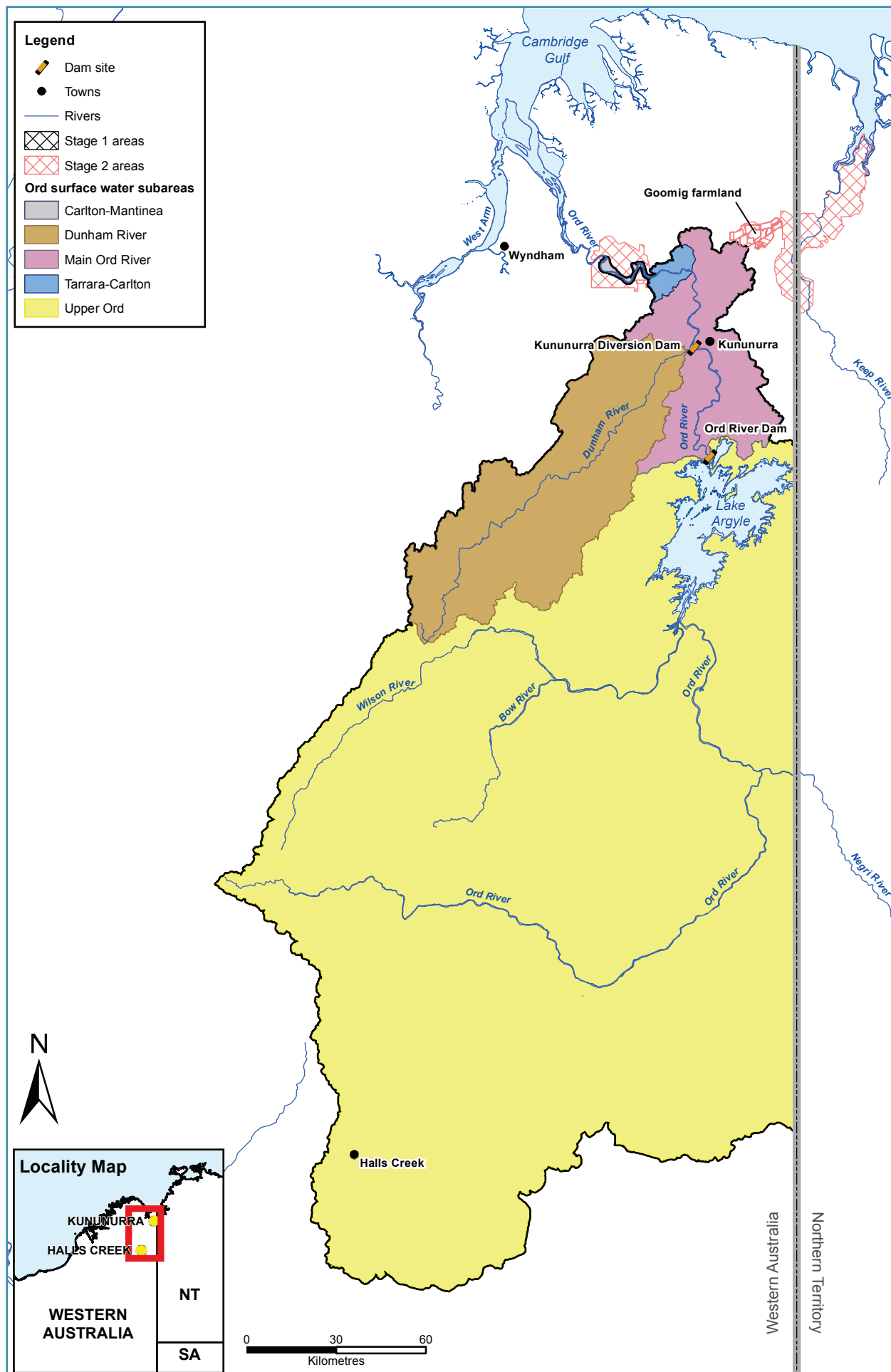
As at 30 June 2017, 280 GL/year in the Main Ord subarea is available for new or increased licences to support irrigation expansion in Western Australia (Stages 1 and 2 of the ORIA) and potentially in the Northern Territory (Stages 3 of the ORIA), subject to irrigation water requirements and intergovernmental arrangements.

Further downstream, past House Roof Hill in the Carlton-Mantinea subarea, up to 115 GL/year may be directly pumped from the river in the future to support irrigation expansion.

The latest water allocation and availability information can be viewed on our online water register at www.water.wa.gov.au/maps-and-data/maps/water-register.



Water available for licensing in the Ord plan area at 30 June 2017



Ord surface water subareas

Water for irrigation expansion

The Ord-East Kimberley Expansion Project aims to increase the ORIA to about 60 000 ha of agricultural land. Land releases will be staged to increase the existing 15 000 ha (Stage 1), and open up new agricultural land in Western Australia (Stage 2) and potentially in the Northern Territory (Stage 3).

Successive federal and state governments have supported irrigation expansion in the Ord. Governments have negotiated Native Title with the Ord Final Agreement, and invested over \$500 million in the Ord-East Kimberley Expansion Project to deliver key community and irrigation infrastructure.

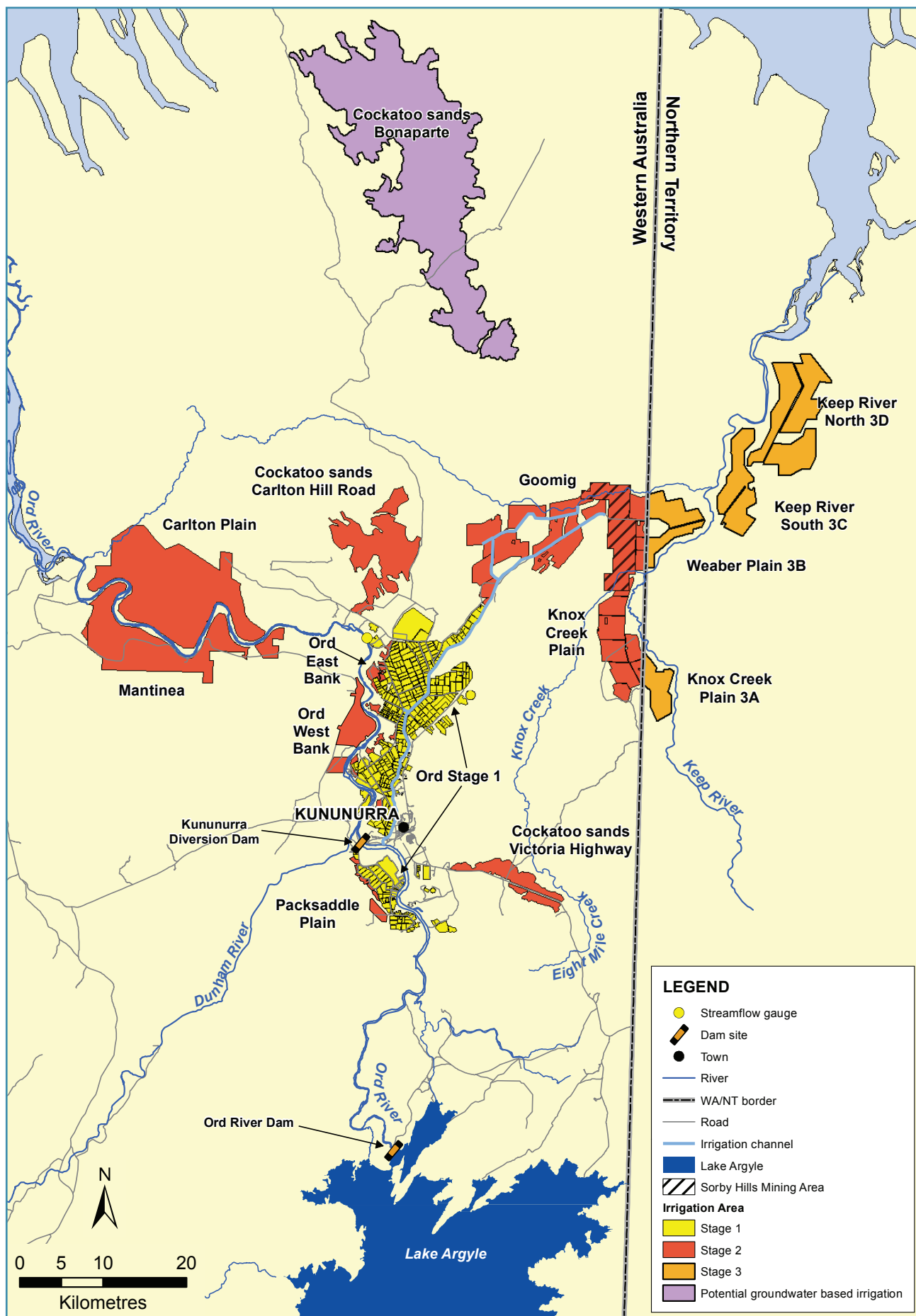
The land releases associated with the expansion project are managed by the Western Australian Department of Primary Industries and Regional Development. To date Western Australia has released new land at Goomig, Knox, Ord East Bank, Ord West Bank, Mantinea and Packsaddle. Cockatoo sands Victoria Highway, Carlton Plain and Cockatoo sands Carlton Hill Road also be developed for irrigation. The Northern Territory has also requested proposals from developers to progress Stage 3 of the ORIA.

The Department of Water and Environmental Regulation is leading the water supply planning component of the expansion project. The demand for irrigation licences will depend on the extent of land developed and types of crops planted.

The department is currently considering a number of additional water supply solutions that may increase water available for irrigation. Solutions include increasing the full supply capacity of Lake Argyle, changing how hydropower releases are managed and altering the way in which we plan for dry years. The department may need to amend the Ord plan to take into account new water supply solutions depending on how it affects the current water management.



M1 channel of the Ord River Irrigation Area



Land development areas associated with the Ord-East Kimberley Expansion Project

Water for hydropower

Pacific Hydro Limited owns and operates a 30 megawatt hydroelectric power station at the Ord River Dam that supplies the electricity demands of Rio Tinto's Argyle Diamond Mine and the towns of Kununurra and Wyndham.

The department licenses Water Corporation as the owner and operator of the Ord River Dam, rather than Pacific Hydro Limited, to release water from Lake Argyle. The department has set hydropower water release rules based on the 1994 Water Supply Agreement between Pacific Hydro Limited and the Water Corporation.

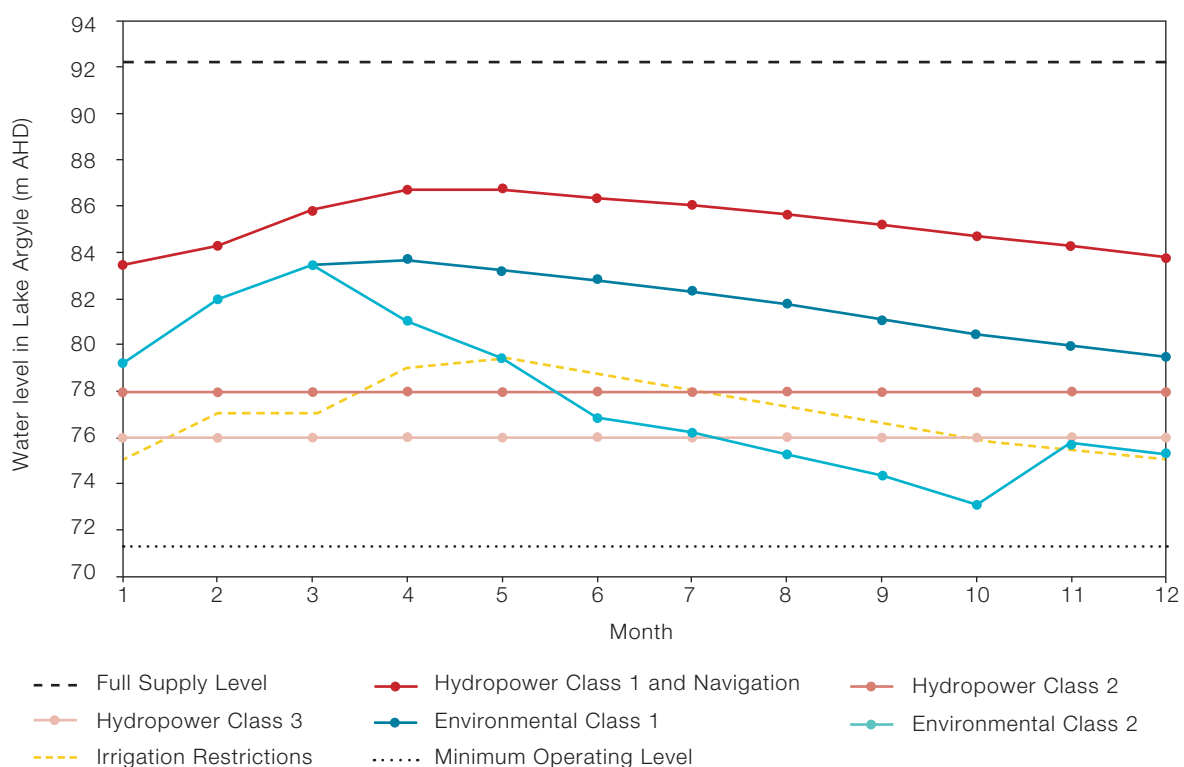
The current hydropower water release rules, together with those for irrigation, environmental and navigational releases, are designed to maintain the security of irrigation licences in the Main Ord subarea when triggered. Class 1 hydropower restrictions are applied first to reduce the total demand on Lake Argyle before storage levels become very low. If lake levels continue to drop, navigation,

Class 2 and 3 hydropower, irrigation and environmental restrictions are also applied.

Class 1 hydropower restrictions were triggered during the dry seasons of 2013 and 2016 following periods of low wet season inflows to Lake Argyle. No other restrictions have been triggered.

The department has adjusted the Class 1 hydropower restriction triggers to reflect that the current demand for hydroelectricity is less than what it was at the time the Ord plan was developed. The new Class 1 hydropower restrictions triggers continue to maintain the security of supply to irrigators. No changes have been made to the navigation, Class 2 and 3 hydropower, irrigation or environmental restriction triggers.

The department will continue to work closely with the Water Corporation to optimise hydropower water releases as new irrigation land is developed.



New water releases rules in the Ord

Water for the environment

The environmental water provision, which is measured at the Tarrara Bar gauging station, is the flow regime the department has set to maintain the existing post-dam environmental values of the lower Ord River. The environmental water provision consists of a wet and dry season baseflow, a series of annual and inter-annual wet season peak flow events and infrequent (high magnitude) wet season flood events.

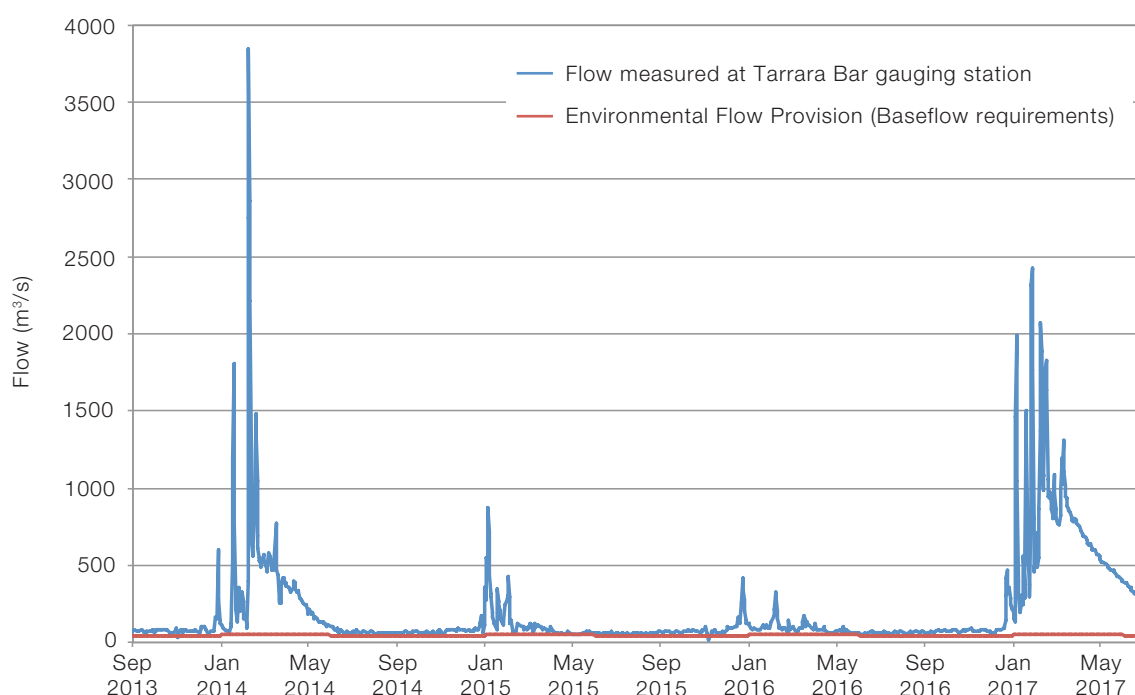
The environmental water provision is met through a combination of water releases from Lake Argyle and Lake Kununurra, and unregulated flows from the Dunham River. At present, water releases from the lakes are dominated by hydropower releases, however more and more of this is expected to be diverted as the demand for irrigation water grows.

Flows at Tarrara Bar exceeded the baseflow component of the environmental water provision over the evaluation period. However, there were a few days when Water Corporation needed to lower the water level in Lake Kununurra for levee inspection and

maintenance outside the irrigation season, or carry out repairs at Ivanhoe Crossing. In 2016, the department commissioned a study which showed that shutting off releases from Lake Kununurra for a period for 48 hours does not impact the ecology of the lower Ord River.

In most years the wet season peak flow events have been met from large hydropower releases and large catchment flows. Additional water to 'top up' wet season flow events has therefore not been required. However, as irrigation expands and water abstraction increases, flows into the lower Ord River will decrease and wet season 'top up' releases may be required.

The Water Corporation, as part of its surface water licence, has implemented an ecological monitoring program since 2015. The Water Corporation monitors sites on the lower Ord River and unregulated rivers or 'control sites', sampling fish annually and macroinvertebrates and vegetation triennially. The department will use monitoring information to assess if the flows in the lower Ord River are maintaining its ecological condition.



Flows and baseflow EWP at Tarrara Bar gauging station 1 September 2013 to 30 June 2017



Kununurra Diversion Dam

Water for traditional Indigenous access, water-based tourism and recreation

The department and Water Corporation recognise the importance of low-flow periods to the Miriuwung Gajerrong people. The Water Corporation ensures that the Miriuwung Gajerrong Corporation are made aware of any activities (such as power station maintenance and lowering Lake Kununurra) that reduce flows sufficiently for customary practices to be undertaken.

Water-based tourism and recreation is important to the local economy and community. The department supports releases from Lake Argyle for tourism and navigation between the Ord River and Kununurra Diversion dams. However such releases are only supported when water levels in Lake Argyle are high as releases during low levels would compromise irrigation, environmental and power outcomes. The department has met with local tour boat operators to consider ways to meet recreational water requirements and continues to work with operators and Water Corporation to ensure navigational water requirements are considered.

Further information

For licensing information, please contact our Kununurra regional office. You can also view the latest water allocation and availability information through the water register on our website water.

www.water.wa.gov.au/maps-and-data/maps/water-register.

If you would like to receive updates on the Ord plan, please register your interest by emailing: allocation.planning@dwer.wa.gov.au

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