

# Strategic Analysis Paper

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## The Ord River Irrigation Scheme – Charting a Course for Economic Success

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### Key Points

- The Ord River Irrigation Scheme commenced operation in 1962 with grants from the Australian and Western Australian State Governments to construct the Kununarra Diversion Dam across the Ord River.
- The early Ord River Stage One cotton and rice crops succumbed to natural pests and others were very low-yielding, influencing some early farmers to leave the region.
- Recently, the WA Auditor General released an investigation report that was critical of the expansion of the Scheme.
- In 2016, nearly 20,000 hectares were under irrigation, carrying a varied range of food and commercial crops, including trials of genetically modified cotton.
- Further investment is needed from both government and the private sector to capitalise on opportunities in cotton production, sugar refining and irrigated farming technology.

### Summary

In order to maintain and expand an agricultural sector capable of providing a secure source of food for the long-term future of the nation, Australia must consider a broad range of development opportunities and be prepared to take calculated risks. Creative new ventures will be essential but this may also include the restructuring of programmes that, despite continued and concentrated investment, have so far met with little economic success. The Ord River Irrigation Scheme in the East Kimberley region of northern Western Australia is one agricultural development plan that has achieved many positive outcomes but has attracted, rightly or wrongly, criticism of its productivity. With investment from domestic and international sources, and commitment by all levels of government and industry, the East Kimberley region still has the potential to make a significant contribution to the economic and cultural development of northern Australian. This will

contribute to continued self-reliance in food production and develop important export trade in food and commodities.

## Analysis

### Background and History

The Ord River Irrigation Scheme is the result of a bold plan to develop part of the nation's tropical north for intensive irrigated agriculture by harnessing the waters of the Ord River. First works on the project, in the East-Kimberley region of WA, were completed in the early 60s. Those works saw the construction of a diversion dam in 1961 to enable irrigation, and then the creation of Lake Argyle followed in 1973 to store and manage the extensive annual flood waters produced during the annual wet season. Associated works entailed clearing and preparation of new farmland as well as the establishment of a network of drainage and irrigations channels. The water was to be used to irrigate newly established agricultural farmlands planted with commercial crops such as rice, cotton, sugar as well as some experimental crops. It was intended that this new agriculture venture would instigate an economic expansion of northern Australia as well as enticing industries allied to agricultural commerce, transportation and tourism to the region.

Early agriculture in the Ord River region met with limited success. Despite significant management intervention, extensive losses of cotton crops occurred from infestation by caterpillars and insects such as thrips and mirids. For cotton to be commercially viable, research work would need to be undertaken that would protect the plants from insect attack through the intervention of [genetic modification \(GM\) biotechnology](#). The technology is now available, and the region expects to grow cotton again in the next few years (the region has over 10 years of trial experience with GM cotton and in 2017 had a commercial trial of 100ha which will be extended in 2018 the trial will be 350ha). Other early products, tobacco for example, would not prove economically viable due to an emerging negative community attitude towards smoking and tobacco use. The emerging rice crops also fared poorly from regular attack and consumption by large numbers of native Australian magpie geese. In assessing the early broadacre cropping failures, research later determined that some of the experimental crops were simply not suited to the soil types and the region's specific environmental conditions.

Reviews carried out to identify other reasons why the broader Ord River Irrigation Scheme failed to meet expectations in the early years concluded there were a number of reasons: transport concerns; the generally low scale of infrastructure; and low commodity prices were cited. Moreover, reviews also identified a general lack of governmental oversight and regulatory process meant issues were not identified and dealt with in a timely fashion.

### Expansion of the Ord River Irrigation Scheme

Explorer Alexander Forrest, in about 1889, noted in his diary and marked on the first maps of the region made by him the potential for, among other things, cotton and sugarcane. The development of the Ord River Irrigation Scheme, however, was devised and implemented in response to perceived agricultural potential for the region that was first observed by the pastoralist [M.V. Durack](#), as early as the 1920s. The first crops of cotton and rice in the 1960s failed to meet the anticipated agricultural benefits, due to insect infestation in combination with a reliance on methods of farming that were not suited to the region. Since that time, however, extensive research and development has been undertaken in agricultural technology. Commencing in the 1980s, research has identified that, with appropriate management, the Ord River is suitable for growing a wide range of crops, including high-value horticultural and seed crops, some specialty pharmaceutical crops, sugar cane, sandalwood, grains and GM cotton. Now more than 50 crops are grown in the area,

including Indian sandalwood, as well as bananas, pumpkins, melons, chia, sorghum, corn, beans and chickpeas.

When Ord River Stage One was completed with the creation of Lake Argyle in 1972, it was determined that when filled, the dam held about 5,600 gigalitres or 20 times more water than Sydney Harbour, enough to irrigate up to 14,000 hectares of land under cultivation. In 1996 the storage capacity of dam was increased by raising the spillway so that when full the dam holds 10,760 gigalitres, making it Australia's second largest reservoir and one of the most secure water sources in the country.

In 2010 the Western Australian Government commenced construction of new infrastructure to enable the area of irrigated farm land to be expanded. This brought about the release of land under Native Title Agreements to enact the [Ord River Irrigation Expansion Stage Two](#). As of 2017, those expansions resulted in a combined area of more than 20,000 ha of farmlands under irrigation, extending east to within seven kilometres of the Western Australian and Northern Territory border. [Expansion works](#) took the form of capital engineering for drainage and irrigation channels, the erection of levee banks and the building of 41 kilometres of new roads.



Figure 1: Ord River Dam Wall. Source: Nullysontheroad, Flickr

### Future Investment and Development

The development of the Ord River Irrigation Scheme to date has been largely funded by the WA government and the private sector. Working jointly with WA, the [Australian government](#) has also provided funding for social and common use infrastructure essential for modern service delivery and to support an expanding

region. Consistent with the intent of the Australian Government [White Paper](#), opportunities exist for the further economic expansion of the region, enabled through infrastructure investment from the private sector.

The WA government called for a request for proposal for investors to take up development and farm the new expanded farming areas of Ord Stage Two. Kimberley Agricultural Investment (KAI), a wholly owned subsidiary of Shanghai Zhongfu Group, is the appointed developer. KAI has been building new farms consistently since 2013 and has now invested \$200million in the region and assembled 25,000ha of new land to be developed.

### **Future Success**

Agricultural ventures in northern Australia must be based on sound economic and business principles. They must lead to increased export potential to strengthen the national economy. We are an exporting nation with an abundance of natural agricultural resources and a small domestic market; therefore, any significant increase in food production needs to be export focussed. Successful strategies must directly correlate with the Australian Government's intent and commitment to the economic development of the north through agricultural production and expanding current industries (beef) while establishing new and developing industries such as, aquaculture, grain fibre and [horticulture](#) crops. Nevertheless, allowance should be made for possible slow success realisation given the inherent challenges this region presents. Understanding previous problems and mistakes will be critical to future success. Governments, investors and the private sector will, therefore, need to closely review the factors attributed to earlier failures, particularly the lack of scale. Slow bureaucratic approval processes for the construction of critical infrastructure and, for approvals to develop, are two issues that will need to be overcome. It has been argued that gaining approvals through regulatory process is the principal challenge to investment and growth. Inadequate planning, and a lack of cost and benefit analysis to inform major decision making, has also been identified as a problem.

For future medium and long-term successes to be realised, stakeholders in the Ord River Irrigation Scheme should adopt an approach that both utilises and builds upon the gains made in development, infrastructure and technology. The growing of GM crops in combination with the latest practices in irrigated pasture management are examples of technological advancements that can contribute to success. A continued commitment to innovation must also complement technological improvements. This will aim to decrease costs and increase productivity with new infrastructure, such as a cotton processing plant.

### **Cotton Processor (Cotton Gin)**

Prior to 2009, [WA State Government regulations](#) prohibited the farming of GM cotton. The expansion in GM cotton in the Kimberley presents an opportunity for private sector investment to build a cotton processor (or cotton gin), together with the associated infrastructure and value add to other sectors such as the beef industry. Currently, should cotton be produced at Kununurra, it would need to be freighted by road to one of three commercial cotton gins located in Queensland or exported baled raw from Wyndham Port for processing overseas. Sending the raw cotton inter-state constitutes a significant cost overhead to WA producers and presents a disincentive for future farmers and producers to the region. The linkage between cotton production and use of cotton seed as an energy and protein source for beef production is attracting increasing investor interest in the Ord.



Figure 2: Commercial cotton gin operating in the USA. Source: Lubbock Avalanche-Journal, Flickr.

### Training and Policy Development

Importantly, successful agricultural development of northern Australia will create employment resulting in a socio-economic benefit. General and specialised [training](#) can lead to ongoing employment in agriculture, logistics, construction and related service industries. Roles will also emerge in the applied sciences through the development and application of new technologies associated with the growing GM crops in irrigated agriculture.

Future success of the Ord River Irrigation Scheme will also require Australian and state government oversight, continued investment and the establishment and implementation of robust policies. Those policies need to be supported by strong political leadership together with rigorous regulatory and reporting frameworks. Not only should the policies dictate governance arrangements, they must list key indicators and measures of success. As stipulated by the WA Auditor General, this will enable Regulators to [track outcomes](#) but also identify and determine avenues for future partnerships and investment.

### Conclusion

The Ord River Irrigation Project has now been in successful operation for 55 years, despite its limited scale. In 2017, the Australian government has committed to the economic expansion of northern Australia. This is complemented by considerable international interest in capital investment and business development. Therefore, the opportunities exist for the east Kimberly region to benefit greatly and realise the enormous value and importance it has in the development of northern Australian and the Australian economy generally.

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