

# **Dam the expense**

## **The Ord River irrigation scheme and the development of northern Australia**

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*Attempts to develop northern Australia by subsidising capital-intensive industries like irrigated agriculture have a long and unimpressive history. An example is the Ord River Scheme which currently supports just 260 jobs despite \$2 billion spent and decades of effort. Different approaches are needed if northern development is to be sustainable and equitable in the 21<sup>st</sup> Century.*

Discussion paper

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# Summary

Australian governments have been trying to develop northern Australia for a long time, with the latest policy papers and Northern Australian Infrastructure Facility just the most recent in a long tradition of generally unsuccessful attempts to entice more people to the continent's north with the promise of jobs and prosperity.

The Ord River irrigation scheme in the east Kimberley region of WA, near to the NT border, is one of the longest running, most expensive and best known attempts to increase agricultural development in the north. With further Ord expansion proposed under current northern development policies, this paper summarises the history of the Ord and the economic assessments of its development:

- Over \$2 billion has been spent on developing irrigation agriculture in the Ord region. Over \$1.5 billion of this has been public money.
- Between 1959 and 1991 the public accrued a financial loss of \$939 million in 2016 dollars, representing a return of 17 cents for every public dollar invested. Private investors made modest gains of \$32 million during that period.
- Since 2009 a further \$364 million has been spent by taxpayers on expanding areas of irrigation by 1,600 hectares, a subsidy of \$227,500 per hectare. This has created around 60 jobs, a cost of about \$6 million per job.

Despite this investment,

- Irrigated agriculture employs just 260 people in the region
- The irrigated area of the Ord scheme represents just 1% of irrigated land in Australia.

By contrast, the investment in social development through health, education and community projects in the last Ord–East Kimberley Development package has been delivered on-budget and well received by the community.

The history and economics of the Ord demonstrate a basic reality: public subsidy of irrigated agriculture does not lead to large increases in employment or social development. Irrigated agriculture in northern Australia is capital intensive, using machinery and infrastructure rather than labour.

We need to work out what sort of development we want in northern Australia. Investing in health, education and services that improve the lives of existing communities would make these places more likely to keep and attract residents and

businesses. Agriculture should be a part of northern development, but investment must be directed towards viable enterprises that pass a cost benefit analysis.

There is no shortage of industries, infrastructure and community projects that can help develop northern Australia in a way that is economically viable, community-oriented and sustainable. Long experience shows that expansion of the Ord River Irrigation Area is not one of them.



# Introduction

If we were spending the money ourselves and of our own choice, we would, I think, like to have a good deal more information as to the problems of transport and marketing. It is one thing to feel reasonably satisfied that certain commodities can be grown under irrigation. It is, of course, quite another to determine whether they can be profitably grown. **Robert Menzies**<sup>1</sup>

In retrospect, the most interesting aspect of the Ord River Irrigation Project is that anyone should at any time have thought that it would be economically viable. **B. R. Davidson**<sup>2</sup>

Australian governments have been trying to increase economic development in northern Australia for over 100 years. The Abbott–Turnbull government is no exception, going to the 2013 election with a specific northern Australia “vision” document,<sup>3</sup> publishing a white paper in June 2015,<sup>4</sup> establishing the Northern Australia Infrastructure Facility (NAIF) and assigning ministerial responsibility for northern Australia.

Developing northern Australia means different things to different people. Few people would oppose a goal of making the people of northern Australia healthier, happier and more prosperous, or of aiming to ensure the land and resources of the north are used productively and sustainably. All of these things could be achieved, but there are many different policy approaches that could be taken. Some could lead to the kinds of development that are widely supported, but others will not. As noted in the White Paper, “many failed projects and plans litter the north”.<sup>5</sup>

With the renewed focus on developing northern Australia, it is time to learn from some of those failures. From an economic perspective, few projects have failed as spectacularly as the efforts to develop irrigation around the Ord River.

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<sup>1</sup> Quoted in Powell (1988) *An Historical Geography of Modern Australia: The restive fringe*, Cambridge University Press

<sup>2</sup> Davidson (1982) *Economic Aspects of the Ord River Project*, CIS

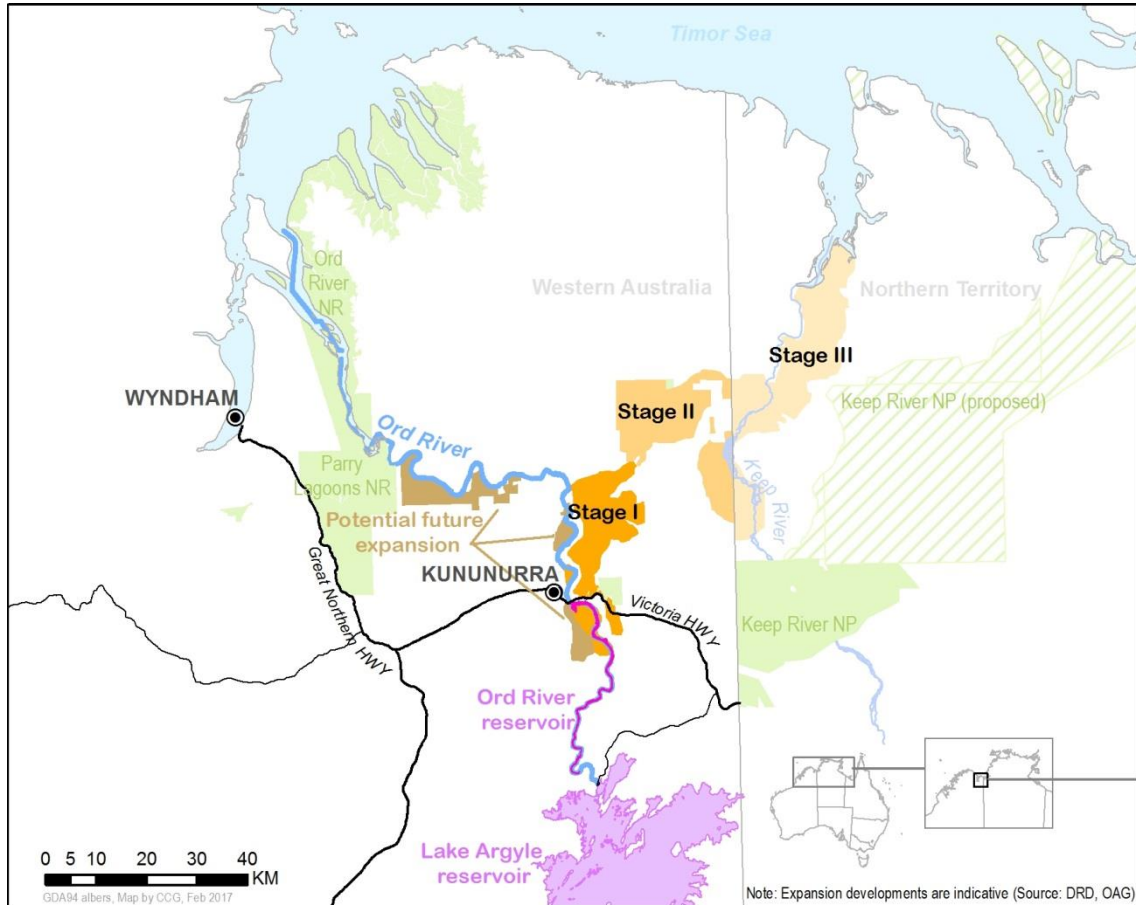
<sup>3</sup> Liberal and National Coalition (2013) *The Coalition’s 2030 Vision for Developing Northern Australia*, <http://www.markcoulton.com.au/Portals/0/2013ElectionPolicies/The%20Coalitions%202030%20Vision%20for%20Developing%20Northern%20Australia%20-%20National%20Party.pdf>

<sup>4</sup> Australian Government (2015) *Our North, Our Future: White Paper on Developing Northern Australia*, <http://northernaustralia.gov.au/sites/prod.office-northern-australia.gov.au/files/files/NAWP-FullReport.pdf>

<sup>5</sup> Ibid, p 2

The Ord River is located in the north of Western Australia, in the east of the Kimberley region, close to the border with the Northern Territory. It is around 320 kilometres in length, running from the southeast of the Kimberley to the Joseph Bonaparte Gulf and the Timor Sea, as shown in Figure 1 below:

**Figure 1 – Ord region map**



Source: Map compiled from various sources for The Australia Institute by the Centre for Conservation Geography

The Ord has two dams on it, a smaller ‘diversion dam’ near the town of Kununurra, forming the Ord River reservoir, shown as a narrow pink line in Figure 1 above. The larger Ord River Dam, or main dam, is further south and forms Lake Argyle, one of Australia’s largest inland waterways.

The two dams provide water to the Ord River Irrigation Area (ORIA). The first stage of ORIA resulted in 14,000 hectares of irrigated farmland being developed.<sup>6</sup> This is around

<sup>6</sup> WA Department of Agriculture and Food (2016) *Ord River development and irrigated agriculture*, <https://www.agric.wa.gov.au/assessment-agricultural-expansion/ord-river-development-and-irrigated-agriculture>



17,000 soccer fields. For comparison, this represents 1 percent of the Murray Darling Basin's 1.4 million hectares of irrigated lands. Western Australia has a total of 50,000 hectares of irrigation area including the Ord, with larger areas between Perth, Bunbury and Collie.<sup>7</sup>

The White Paper includes a proposal to expand the Ord Irrigation area by 14,500 ha:

Expanding the size of the Ord irrigation area offers the potential to achieve scale and establish a variety of commercial crops in the district, which would enhance both the profitability and economic resilience of the region.<sup>8</sup>

While the White Paper sounds optimistic about the profitability of establishing more commercial crops on the Ord, determining if this is profitable is, as Robert Menzies said, quite another thing. Even in Menzies' day, dreams of developing the north and the Ord in particular had often failed. Further Ord irrigation development also faces Indigenous opposition and political uncertainty, with the Northern Territory government focusing on other priorities.<sup>9</sup>

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<sup>7</sup> ABS (2013) 4618.0 - *Water Use on Australian Farms, 2011-12*, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4618.0main+features42011-12>

<sup>8</sup> Australian Government (2015) *Our North, Our Future: White Paper on Developing Northern Australia*, p 43, <http://northernaustralia.gov.au/files/files/NAWP-FullReport.pdf>

<sup>9</sup> James (2017) *Ord River irrigation project expansion put on hold by NT Government*, <http://www.abc.net.au/news/2017-01-31/ord-river-irrigation-project-on-hold/8226512>

# History of Ord River development

## Pre-1950

The agricultural potential of the Ord River valley has excited European Australians since they first explored it in the late 1870s. Efforts to develop tropical agriculture in the north west soon followed, but by the late 1920s had 'failed dismally'.<sup>10</sup>

The first serious research into establishing irrigated agriculture began in the 1940s. The first request for Commonwealth money came in 1949, when the WA government requested a grant of 4.3 million pounds (\$130 million dollars today) for agricultural development. This initial Ord scheme was not funded, but the idea of developing irrigation on the Ord had taken root.<sup>11</sup>

## First dam

Through the 1950s, numerous proposals were made by Western Australian governments for grants to develop its northern areas, including for irrigation schemes around the Ord River. Some funding was received from the Commonwealth through this time, which had a generally bipartisan position for developing the area on the grounds of defence and closer settlement.<sup>12</sup>

It was not until 1959, however, that the Menzies federal government approved and provided funding for the initial diversion dam on the Ord. Work began on the diversion dam in 1961 and it was officially opened in 1963. Farms were then allocated for this first phase of Ord irrigation between 1962 and 1965.<sup>13</sup>

## Main dam and the Northern Myth

The main dam on the Ord was approved and federal grants provided two years later in 1967. This decision followed extensive public debate around the economic merit of the main dam, perhaps most famously by economist Bruce Davidson in his book *The Northern Myth*. Davidson was a persistent critic of government policy on developing

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<sup>10</sup> Graham-Taylor (1982) *A Critical History of the Ord River Project*, p 27, <http://www.cis.org.au/app/uploads/2015/07/pm2.pdf>

<sup>11</sup> Ibid. Conversion to 2016 dollars via Reserve Bank of Australia *Pre-Decimal Inflation Calculator*

<sup>12</sup> Ibid

<sup>13</sup> Ibid

more intensive agriculture in the north of Australia, and of the Ord scheme in particular, for decades.<sup>14</sup>

A key part of Davidson's criticism was the early failures of the Ord region's farms. Extensive financial assistance had to be provided to cotton growers through the 1960s. No review or assessment of the first part of the Ord development was conducted before a decision was made to build and fund the main dam. When Federal Governments expressed reluctance to keep funding a remote agricultural region dependent on one crop, their hesitance was derided in Western Australia as 'chronic procrastination'.<sup>15</sup>

Despite federal reluctance and criticism from economists like Davidson, construction of the main dam went ahead and was completed in 1972, creating Lake Argyle, one of Australia's largest reservoirs. Just two years later cotton crops were abandoned in the ORIA altogether.

## Chronic problems

Aside from cotton, beef and grain enterprises were also struggling financially in the Ord. Pest problems, insecticide costs, transport and marketing costs all put ORIA at a disadvantage to the rest of Australian agriculture. Despite, or perhaps because of, the lack of financial viability of the whole scheme, the WA government borrowed millions more from the Commonwealth to develop more irrigation holdings in 1974.<sup>16</sup>

By 1976 the complete economic failure of the scheme was obvious. WA Premier Sir Charles Court, the WA Cabinet, technical advisors and top bureaucrats met and concluded that the remoteness of the location could not be overcome by the existing Ord scheme. Their solution was one that is echoed time and again in discussion of Ord irrigation: it just needs to be bigger! More government money would be spent on research, water subsidies, government guarantees, fixed prices, provision of transport, handling and marketing infrastructure.<sup>17</sup>

## Sugar rush

While numerous crops were experimented with, sugar became the great hope of the Ord scheme in the late 1970s and to some extent remains so today. Sugar company

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<sup>14</sup> Ibid

<sup>15</sup> Ibid

<sup>16</sup> Ibid

<sup>17</sup> Ibid

CSR began investigating the feasibility of operations in 1976, but it took until 1995 for a sugar mill to be built in the region by CSR and the Ord River District Cooperative.<sup>18</sup>

The mill was sold in 2000 to a Korean corporation, Cheil Jedang, but was eventually dismantled in 2008. No sugar was grown in 2007–08 in ORIA. Another great economic hope for the scheme had failed completely.

Despite 30 years of failure, current Ord irrigation proponents are still calling for greater areas of irrigation to grow sugar. Kimberley Agricultural Investments, the latest major investor in Ord irrigation, says on its website that they “aim to establish a scale sugar industry in the region,” and headlines like “Lack of scale crushing the Ord Irrigation Scheme’s sugar dream” still make regular appearances.<sup>19</sup>

## Global Financial Crisis and beyond

Proposals to build ‘Ord Stage II’ grew through the late 1990s until they were eventually funded by federal and state governments in 2009. The project formed part of the Federal Government’s fiscal stimulus in response to the Global Financial Crisis.

Since the collapse of sugar the dominant product grown in the Ord has been sandalwood, an aromatic tree that can be used to produce oil used in perfumes and cosmetic goods as well as wood. Citrus, chickpeas, melons, pumpkin and mangoes are also grown. Sandalwood accounts for the vast majority of the value of irrigated production in the Ord region, although up-to-date data is scarce.<sup>20</sup>

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<sup>18</sup> Ibid

<sup>19</sup> KAI (n.d.) *Project*, <http://www.kai-australia.com.au/project>; Brann (2014) *Lack of scale crushing the Ord Irrigation Scheme’s sugar dream*, <http://www.abc.net.au/news/2014-11-13/lack-of-scale-crushing-ord-sugar-dream/5885158>

<sup>20</sup> WA and Commonwealth Governments (2009) *Ord–East Kimberley Development Plan*, [http://www.drd.wa.gov.au/Publications/Documents/Ord\\_East\\_Kimberley\\_Development\\_Plan.pdf](http://www.drd.wa.gov.au/Publications/Documents/Ord_East_Kimberley_Development_Plan.pdf)

# Ord Stage II and the Ord East Kimberley Development Plan

While the expansion of ORIA had been suggested many times, the impetus for the eventual expansion came in 2009 as the Australian Government responded to the Global Financial Crisis with its \$4.7 billion Economic Stimulus Package. Part of this package was the Ord East Kimberley Development Plan, with a budget of \$415 million, which consisted of two parts:

- The Ord Irrigation Expansion Project
- The East Kimberley Development Package

In October 2016, the WA Auditor General released a review of the two parts of this plan. In the following sections we look at the proposal and the result of the two parts of the Development Plan.

## Ord Irrigation Expansion Project

The Ord Irrigation Expansion Project part of the Ord–East Kimberley Development Plan was budgeted at \$220 million, to be paid by the Western Australian Government. Launched in 2009, it was intended to facilitate:

The release of an initial 8,000 hectares of agricultural lots within the Weaber Plains area in 2011. While this area of land is being prepared all the necessary scoping work for another land package of up to 6,680 hectares comprising the Packsaddle, Ord West Bank and Mantinea areas will be conducted. <sup>21</sup>

The Weaber Plains/Goomig area was supposed to be subdivided into lots by the WA Government's Landcorp and sold to a range of agricultural businesses.

These plans were not fully realised. While 8,000 hectares of irrigated area were planned, as of June 2016 only 1,600 were under crop, with the developers expecting

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<sup>21</sup> Department of Regional Development and Lands (2009) *Ord-East Kimberley Development Plan*, p 6, [http://www.drd.wa.gov.au/Publications/Documents/Ord\\_East\\_Kimberley\\_Development\\_Plan.pdf](http://www.drd.wa.gov.au/Publications/Documents/Ord_East_Kimberley_Development_Plan.pdf); Note that Weaber Plains is in the section marked Stage II in Figure 1 above, while the others are coloured brown and marked "potential future expansion".

4,000 by late 2016. Only one developer has taken up a land allocation in the expanded agricultural area, Chinese-owned Kimberley Agricultural Investment Pty Ltd.<sup>22</sup>

Constructing the irrigation infrastructure took until December 2014 and cost the WA Government \$334 million, a cost overrun of \$114 million, or 52 percent, according to WA's Auditor General.<sup>23</sup>

There was a complete lack of financial and economic planning around the implementation of the irrigation project:

There was no specific business case or detailed costings undertaken for the entire project prior to commencement of the project in 2009. There were [only] costings for the first construction phase extending the main irrigation channel.

DRD did not prepare a comprehensive costing to support its request for \$91 million in additional funding in 2011. The funding request explained that construction costs were going to be much higher than originally anticipated, but did not itemise where or what costs had increased. A revised budget was also not prepared.<sup>24</sup>

Unsurprisingly, this delayed, costly, poorly planned irrigation development is not providing socio-economic benefits:

Economic activity, employment and agricultural return were the main reasons for Government support for the OEKD Plan. However, neither DRD nor DSD currently have measures to monitor and report on these outcomes. In the absence of these measures, DRD and DSD cannot show the impact of the expansion project.<sup>25</sup>

## East Kimberley Development Package

The other part of the Ord–East Kimberley Development Plan was the East Kimberley Development Package. Administered by the Commonwealth, this \$195 million dollar program consisted of 27 separate projects:

- Nine health projects, including an upgrade of Kununurra Hospital and Wyndham health facilities and aged care and health facilities in remote areas.

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<sup>22</sup> Ibid

<sup>23</sup> WA Auditor General (2016) *Ord-East Kimberley Development*, <https://audit.wa.gov.au/reports-and-publications/reports/ord-east-kimberley-development/auditor-generals-overview/>

<sup>24</sup> Ibid, p 8

<sup>25</sup> Ibid, p 9

- Nine education projects, including early learning, primary, high school and TAFE facilities
- Two housing projects, social housing in Kununurra and Wyndham and transitional housing in Kununurra and other locations.
- Two transport projects – an upgrade to the Wyndham Port and Kununurra Airport
- Five community-oriented projects, relating mainly to sports and arts facilities.<sup>26</sup>

Unlike the irrigation infrastructure, the community projects were delivered on budget, although with similar delays and lack of performance monitoring. Importantly, these projects have delivered benefits for the local community:

Community response to the Commonwealth-funded social infrastructure projects has generally been positive, although there is little reporting of outcomes. For example, there are occupants in all 40 new transitional dwellings in Kununurra, with a waitlist of around 30 people. Similarly, the number of students enrolled at North Regional TAFE's Kununurra campus increased following the building program, from 865 students in 2013 to 1,064 students in 2015. However, the community impact of these projects has not been measured.<sup>27</sup>

Budget overruns aside, the differences between the Ord irrigation expansion and the community development package demonstrates a simple point. Investments in capital-intensive irrigation projects in remote regions are unlikely to create widespread benefits for the community, while investing directly in community outcomes through health and education is likely to be far more effective. The example of the Kununurra TAFE campus demonstrates this. For a capital investment of \$10 million, over 1,000 students benefit each year, with an expanded enrolment of 200 people. While direct comparison is difficult, in the following sections we see that hundreds of millions of dollars have been invested in irrigation infrastructure for just tens of jobs.

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<sup>26</sup> Department of Regional Development and Lands (2009) *Ord-East Kimberley Development Plan*, p 31, [http://www.drd.wa.gov.au/Publications/Documents/Ord\\_East\\_Kimberley\\_Development\\_Plan.pdf](http://www.drd.wa.gov.au/Publications/Documents/Ord_East_Kimberley_Development_Plan.pdf)

<sup>27</sup> WA Auditor General (2016), *Ord-East Kimberley Development*, p 24

# Ord River studies

Numerous economists and specialists from other disciplines have made assessments of the Ord Schemes and related northern Australia development proposals. The most prominent has been Bruce Davidson, author of the *Northern Myth* (discussed above).<sup>28</sup>

The most recent, publicly available cost benefit analysis was conducted by consultants Hassall & Associates and covered the period between 1959 and 1991. The study was commissioned by the WA Government's now defunct Kimberley Water Resources Development Office.<sup>29</sup> Hassall & Associates' study was updated in a 2013 study by Economists at Large commissioned by the Wilderness Society.<sup>30</sup>

In 2004 Marsden Jacob & Associates were commissioned by the Western Australian Department of Industry and Resources to prepare a business case valuation for an expansion of the Ord River Irrigation Area. This report was then updated in 2008. The assessment found that the net cost to the public was likely to be between \$63.5 million and \$105.5 million.<sup>31</sup>

Despite finding a net cost of the expansion Marsden Jacobs recommended to the Western Australian government that it should proceed due to concerns around the scale of ORIA and expected downscaling of the nearby Argyle Diamond Mine. Curiously, the report acknowledges that the local Aboriginal people have not derived much advantage from the Argyle Diamond Mine, and so its closure would not disadvantage them. But it goes on to say:

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<sup>28</sup> Davidson (1972) *The Northern Myth: A study of the physical and economic limits to agriculture and pastoral development in tropical Australia* (3<sup>rd</sup> ed.) Carlton, Victoria: Melbourne University Press; see also Centre for Independent Studies (1982) *Lessons from the Ord*, Policy Monographs 2, <https://www.cis.org.au/publications/policy-monographs/lessons-from-the-ord>

<sup>29</sup> Hassall & Associates (1993) *The Ord River Irrigation Project Past, Present and future: An Economic Evaluation – Stage 1*, prepared for the Kimberley Water Resources Development Office, Hassall & Associates and Coffey MPW

<sup>30</sup> Economists at Large (2013) *Rivers, rivers, everywhere: The Ord River Irrigation Area and the economics of developing riparian water resources*, prepared for The Wilderness Society, <http://www.ecolarge.com/work/the-ord-river-irrigation-area-and-the-economics-of-developing-rivers-in-northern-australia/>

<sup>31</sup> Marsden Jacob & Associates (2008) *Ord Expansion Project: Business Case Evaluation*, prepared for The Department of Industry & Resources, Western Australia, p 23



On the other hand, the failure to replace sugar growing and milling severely reduces – and probably removes for several decades – the prospects of the Miriuwung and Gajerrong people participating in the main stream economy.<sup>32</sup>

Despite expecting a net financial cost to the public of between \$63 million and \$105 million, the business case recommended proceeding with the project on social grounds, without ever considering whether this money could be better spent on projects that would more directly benefit the Indigenous and non-Indigenous community.

Other notable studies have looked at the Ord development from different perspectives. This has included Lesley Head, who looked at the development from the perspective of how we view development of the north, the role of the Aboriginal people and the themes of colonialism.<sup>33</sup>

More recently, academic economists assessed the likely costs and benefits of developing irrigation in northern Australia, finding that the costs of capital investment would likely outweigh the benefits that would be capitalised into land values.<sup>34</sup>

The WA Auditor General also did additional work on the more recent investment of public money, discussed above.

## COST BENEFIT ANALYSIS

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The Hassall & Associates cost benefit analysis is the most recent comprehensive cost benefit analysis of ORIA. It was commissioned in the early 1990s as the Western Australian Government was pushing to expand the ORIA. It prompted the Kimberley Water Resources Development Advisory Board to investigate further possibilities for expansion. The board appointed Hassall & Associates to look at the costs and benefits of the ORIA to date and look for any potential for expansion.

Hassall & Associates produced a comprehensive cost – benefit analysis of ORIA from 1959 to 1991. Hassall & Associates found that by 1991 total public and private costs were returning just 44 cents in the dollar. That is for every dollar invested in ORIA only

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<sup>32</sup> Ibid, p 61

<sup>33</sup> Head (1999) *The Northern Myth Revisited? Aborigines, environment and agriculture in the Ord River Irrigation Scheme, Stages One and Two*, *Australian Geographer*, vol 30 issue 2, <http://www.tandfonline.com/doi/abs/10.1080/00049189993684?journalCode=cage20>

<sup>34</sup> Dent et al. (2014) *Food Bowl or Folly? The economics of irrigating Northern Australia*, Monash Business School, Discussion paper 02/15, [https://business.monash.edu/\\_data/assets/pdf\\_file/0004/339304/food\\_bowl\\_or\\_folly\\_the\\_economics\\_of\\_irrigating\\_northern\\_australia.pdf](https://business.monash.edu/_data/assets/pdf_file/0004/339304/food_bowl_or_folly_the_economics_of_irrigating_northern_australia.pdf)

44 cents was returned. The public return was much worse with governments only receiving 17 cents in each dollar invested.

Table 1 below shows the Hassall & Associates cost – benefit analysis. The figures have been updated into 2016 dollars.

**Table 1 – Hassall & Associates cost – benefit analysis updated to 2016 dollars**

Year	Public costs (\$ millions)	Private costs (\$ millions)
1959 to 1991	1,125	483
<b>Total private &amp; public costs 1959 to 1991</b>		<b>1,608</b>
	Public benefits	Private benefits
1959 to 1991	186	515
<b>Total private &amp; public benefits 1959 to 1991</b>		<b>701</b>
<b>Net benefits 1959 to 1991</b>	<b>-939</b>	<b>32</b>
<b>Total private &amp; public net benefits 1959 to 1991</b>		<b>-907</b>

Source: Hassall & Associates (1993) *The Ord River Irrigation Project Past, Present and future: An Economic Evaluation – Stage 1*

The cost benefit analysis shows total private and public costs of \$1.6 billion against total private and public benefits of \$700 million. This means that over the 32 years costs exceeded benefits by \$900 million. Or, put another way, costs were more than twice as large as benefits. While private benefits just exceeded private costs by \$32 million, the public costs exceeded public benefits by almost \$1 billion.

In order to best compare newer costs with older costs, the undiscounted figures from Hassall & Associates were used. The more recent figures are also undiscounted. All figures have been updated to 2016 dollars so they can be more easily compared. Sensitivity analysis at various discount rates was done in the Hassall & Associates report as well as the Economist at Large report. This analysis shows that the net present value of the project was always a large negative value. Discounted figures would change the numbers but not the fact that costs far exceed benefits.

Table 2 updates the Hassall & Associates cost figures with more recent data.

**Table 2 – ORIA costs 1959 to 2014 updated to 2016 dollars**

<b>Year</b>	<b>Public costs (\$ millions)</b>	<b>Private costs (\$ millions)</b>	<b>Source</b>
<b>1959 to 1991</b>	1,125	483	Hassall & Associates (1993)
<b>1992 to 2009</b>	72.6	24	Economists at Large (2013)
<b>2010 to 2014</b>	364	Not Available	WA Auditor General (2016) <sup>35</sup>
<b>Total</b>	<b>1,562</b>	<b>507</b>	
<b>Total private &amp; public costs to 2014</b>		<b>2,069</b>	

Table 2 has only had limited private costs for the period from 1992 to 2014 as data on private costs are not as readily available as public costs. Total costs in 2016 dollars now exceed \$2 billion.

Figures on benefits are also difficult to locate from 1992 onwards. The Hassall & Associates cost benefit analysis showed that costs exceed benefits by more than 2 to 1, and there is no indication that this has changed.

Before the government spends more taxpayer money on ORIA, a comprehensive cost benefit analysis similar to the Hassall & Associates should be conducted. From the available information it seems that the government and Australia are not getting value for money.

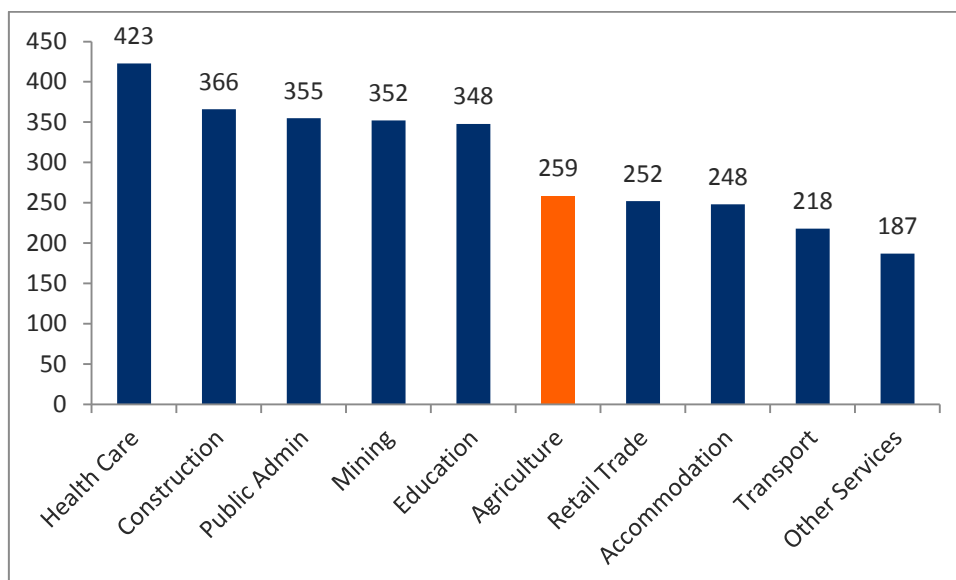
<sup>35</sup> Note: the figure of \$364 million is in 2016 dollars. It is based on the WA Auditor General's estimate of \$334 million in nominal dollars spent during the years 2009 to 2015, assuming the funds were spent equally in each year, with each year's spending converted to 2016 dollars and added. This approach was taken to present consistent 2016 dollar figures throughout the report.

# Employment and the Ord River scheme

The 2011 census provides employment numbers by industry for local government areas (LGA). The ORIA is located within the Wyndham–East Kimberley LGA. Wyndham–East Kimberley LGA includes areas outside the ORIA so employment figures from the census include areas outside the Ord River scheme, although these areas are sparsely populated.

The top 10 employing industries in the in the Wyndham–East Kimberley LGA are shown in Figure 2. Total employment for the area is 3,742, from a population of 7,800.

**Figure 2 – Top 10 employing industries in Wyndham–East Kimberley LGA**



Source: Census 2011

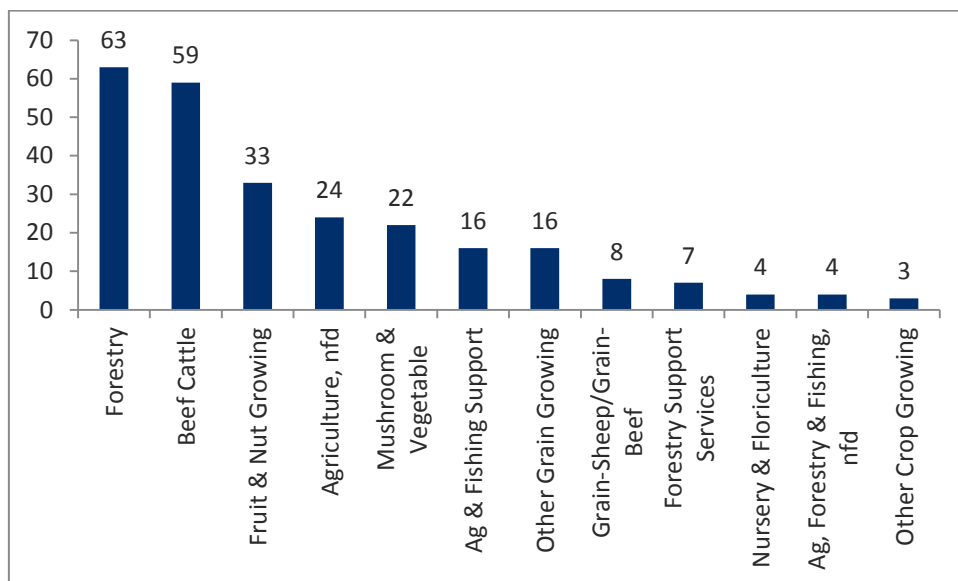
Figure 2 shows that employment in the area is highest in the health care sector, with construction, public administration and mining also important employers. Despite the enormous investment in irrigation infrastructure, agriculture is only the sixth largest employer in the LGA, highlighted in red (although, as they date from 2011, employment numbers in Figure 2 do not include people employed by the most recent expansion of ORIA).

This is not unusual. Most parts of Australia, including regional areas, have health care, construction, education and other services as major employers. Agricultural and

mining employment in this region are proportionately higher than Australian or probably state averages. However, this serves to emphasise that agricultural development is not labour intensive.

The inability of irrigation investment to create employment is further emphasised when the agriculture sector is examined in more detail. Figure 3 below shows agricultural employment by sub-industry in the Wyndham–East Kimberley LGA:

**Figure 3 – Agriculture by sub-industry in Wyndham–East Kimberley LGA**



Source: Census 2011

Employment in the agricultural industry in this region is dominated by forestry and beef cattle farming. Forestry employment is reliant on irrigation and is mainly focused on Indian Sandalwood plantations. Sandalwood generates less employment than many crops because for most of a tree’s multi-year life it requires little labour.

Employment in the beef industry is not closely related to irrigation infrastructure. Beef grazing in the Wyndham–East Kimberley LGA is mainly extensive grazing on large properties that are unlikely to benefit directly from ORIA. While cattle grazing is a considerable part of agriculture in the LGA, this activity would occur even in the absence of the ORIA.

This is highlighted by looking at employment in the similar nearby LGA of Halls Creek. This LGA has similar physical features to Wyndham–East Kimberley but has not had the substantial investment in irrigation that has occurred in ORIA. In Halls Creek total employment in Agriculture is 80 persons, of which 73 are in cattle grazing. This shows that cattle grazing would be a significant part of the region even without investment in irrigation schemes.

Figure 3 includes employment in catch-all categories such as *Agriculture nfd* (not further defined), *Agriculture, Forestry and Fishing nfd* and *Other Agriculture and Fishing Support Services*. The Australian Bureau of Statistics (ABS) uses these categories for employment that does not neatly fit into the larger sub-industries. Employment in these categories may or may not be related to irrigated agriculture.

Assuming that all non-cattle employment is related to ORIA, total employment related to the scheme is around 200 according to the 2011 census. More recently, the WA Auditor General reported that employment relating to the recent expansion was 61 people plus 10–15 seasonal workers.<sup>36</sup>

Given the public investment of \$334 million (\$364 million in 2016 dollars), 61 jobs is not a large increase in employment from the latest expansion. Similarly, across the whole scheme, employment of around 270 people is small when compared to the \$2 billion in public and private costs including more than \$1.5 billion of public money, in 2016 dollars. This simple exercise confirms the results of the more complete analyses done that show only a small benefit when compared to the substantial costs.

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<sup>36</sup> WA Auditor General (2016) *Ord-East Kimberley Development*, p23

# Conclusion

With renewed political emphasis on developing northern Australia, it is important to consider exactly what sort of development we want in the North. The Ord irrigation scheme demonstrates that more than space, money and water is required to build communities and generate employment. Billions of dollars have been spent on irrigation projects that have led to huge losses for taxpayers and only a small number of jobs in the East Kimberley.

Even if these projects had been better managed and more financially successful, the result in terms of employment and community development would be similar. Irrigated agriculture in locations like northern Australia is land and capital intensive. The industry uses huge areas of land and lots of machinery, but does not employ lots of people.

There is scope for further development of agriculture in northern Australia, but efforts should be directed towards enterprises that are commercially viable, sustainable and generate employment and other benefits for northern Australian communities. This is demonstrated by the finding that of the 260 people employed in agriculture in the Wyndham East Kimberley local government area at the 2011 census, at least 60 worked in agricultural enterprises with little direct relationship with irrigation. Many non-irrigated agricultural enterprises in northern Australia are commercially viable and generate net benefits for local and wider communities.

Irrigation enterprises working with existing infrastructure may also be viable and worth supporting now that the infrastructure is already built – in economics jargon, the costs are ‘sunk’. The key message to come out of decades of losses on Ord infrastructure is that new irrigation infrastructure in northern Australia is unlikely to be viable or provide significant community benefits. The money can be far better spent.

The East Kimberley Development Package shows that investment directly in services and infrastructure that benefit communities can be delivered on budget and generate benefits for residents. If these communities are to retain existing populations and attract new people and businesses then improving the lives of the people living there will be important. Health, education and transport infrastructure are likely to provide community benefit more effectively than investment in capital intensive industries like new irrigated agriculture. Other investments such as communication infrastructure – mobile phone reception, access to internet, high-speed broadband – are also likely to generate direct benefits for communities.

One industry that is labour intensive and has strong potential in northern Western Australia is the tourism industry. According to Tourism Western Australia, in the year ending September 2016 there were 1.4 million visitors to the North West of WA, who spent \$1.2 billion.<sup>37</sup> Tourism and transport infrastructure will play a major role in developing the north.

Investing in the Indigenous community should also be a focus for northern development. There are enormous social and economic benefits from programs such as the Indigenous Protected Area and Indigenous Rangers schemes, which provide training and employment for indigenous people in environmental management.<sup>38</sup> Cost benefit analyses of indigenous social programs consistently show that they provide large net economic benefits.<sup>39</sup>

In short, there is no shortage of industries, infrastructure and community projects that can help develop northern Australia in a way that is economically viable, community-oriented and sustainable. Long experience with the Ord River Irrigation Area shows that government spending on irrigated agriculture is financially dubious and not likely to lead to the sort of development that would benefit the communities of northern Australia.

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<sup>37</sup> Tourism Western Australia (2016) *Fast Facts Year Ending September 2016*, p 16, [http://www.tourism.wa.gov.au/Publications%20Library/Industry%20Support%20and%20Opportunities/Fast\\_Facts\\_YE\\_Sept\\_2016.pdf](http://www.tourism.wa.gov.au/Publications%20Library/Industry%20Support%20and%20Opportunities/Fast_Facts_YE_Sept_2016.pdf)

<sup>38</sup> PM&C (n.d.) *Indigenous Rangers - Working On Country*, <https://www.dpmc.gov.au/indigenous-affairs/environment/indigenous-rangers-working-country>; SVA Consulting (2016) *Consolidated report on Indigenous Protected Areas following Social Return on Investment analyses*, [https://www.dpmc.gov.au/sites/default/files/publications/SROI-Consolidated-Report-IPA\\_1.pdf](https://www.dpmc.gov.au/sites/default/files/publications/SROI-Consolidated-Report-IPA_1.pdf)

<sup>39</sup> See for example Daly and Barrett (2015) *Independent Cost Benefit Analysis of the Yuendumu Mediation and Justice Committee*, [http://www.centraldesert.nt.gov.au/sites/centraldesert.nt.gov.au/files/attachments/yuendumu\\_cba\\_0.pdf](http://www.centraldesert.nt.gov.au/sites/centraldesert.nt.gov.au/files/attachments/yuendumu_cba_0.pdf); Colmar Brunton (2014) *Mornington Island Restorative Justice - Project evaluation*, [https://www.dpmc.gov.au/sites/default/files/publications/indigenous/Mornington-Island-Restorative-Justice-Project-Evaluation/pdf/MIRJ\\_Project\\_Evaluation\\_PDF.pdf](https://www.dpmc.gov.au/sites/default/files/publications/indigenous/Mornington-Island-Restorative-Justice-Project-Evaluation/pdf/MIRJ_Project_Evaluation_PDF.pdf); Deloitte Access Economics (2014) *Prospective Cost Benefit Analysis Of Healing Centres*, <https://www.indigenousjustice.gov.au/resources/prospective-cost-benefit-analysis-of-healing-centres/>