



Irrigated Agriculture

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Map of the Kimberley Region



Legend

- Sealed major road
- Sealed minor road
- Unsealed road
- 4WD track
- 4WD track only
- 1 National highway
- 95 National route
- Marine park boundary
- Reef
- Conservation park
- Marine park
- National park
- ✈ Airport
- Local Government Area boundary

Approximate driving distances (km)

	Perth GNH	Perth NWCH	Broome	Derby	Fitzroy Crossing	Halls Creek	Wyndham	Kununurra	Darwin
Perth GNH	—	—	2237	2391	2565	2843	3197	3202	4039
Perth NWCH	—	—	2374	2528	2701	2990	3345	3349	4176
Broome	2237	2374	—	221	395	683	1037	1042	1869
Derby	2391	2528	221	—	259	547	894	899	1733
Fitzroy Crossing	2565	2701	395	259	—	289	642	647	1474
Halls Creek	2843	2990	683	547	289	—	354	359	1186
Wyndham	3197	3345	1037	894	642	354	—	100	929
Kununurra	3202	3349	1042	899	647	359	100	—	829
Darwin	4039	4176	1869	1733	1474	1186	929	829	—

GNH = Great Northern Highway, NWCH = North West Coastal Highway

Executive Summary

This regional brief outlines the state of the Irrigated Agriculture industry, its opportunities, and its challenges and highlights recommendations to enable long term sustainable growth of the sector for the betterment of the Kimberley and its people.

Irrigated Agriculture presents a renewable, sustainable, and high-value growth industry for the region currently contributing approx. \$76M annually to the GRP and 500 seasonal jobs.

The region is defined by its monsoon climate, access to clean, reliable water sources and abundant land suitable for crop production. In comparison to other like regions, agriculture in the Kimberley is grossly under-developed.

Powered by the Ord Irrigation Area (ORIA), the region has 24,000 hectares (less than half a percent of the Kimberley landmass) under irrigation producing a range of tropical fruit, vegetable, fodder, grain and seed crops. The west Kimberley is seeing development of mosaic irrigated lands for fodder production, however there is significant room for further expansion and integration to value add to the pastoral sector.

There is much opportunity as the region has capacity for substantial development, bringing critically required scale to operations and capitalising on increasing global demand for food and fibre products, as well as supplying counter season produce for the domestic market.

For industry to expand it requires key infrastructure of resilient roads including dual lane bridges, cool/cold storage, processing plants and air freight access to export markets. Industry requires access to consistent, economical water allocations and better land tenure security.

Critically, multilayered regulation constraints at all levels of Government are lengthy, complicated, costly to industry, and a disincentive to expansion and investment.

RDAK Recommendation:

- Australian Government streamline and reduces costs associated with various multi-agency approval processes to expedite private sector investment and industry development.
- Australian Government investment into resilient road infrastructure and air freight infrastructure to facilitate access to domestic and international markets.



¹ ABARES Value of agricultural production and land use, Kimberley region

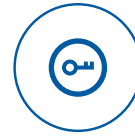
The Snapshot



\$76 Million¹ to GRP



24,000ha under irrigation = less than half a percent of the Kimberley landmass



Strong clean, green, bio-secure image



ORIA produce fruit, vegetables, grains, fodder, and tree crops.



Significant potential for irrigated fodder production on pastoral land



Access water allocations & land tenure are essential

Industry Overview

Irrigated agriculture is a sustainable, renewable industry and high value and growing sector, which has enormous potential to improve the economic resilience of Kimberley and contribute positively to the community and government goals such as Closing the Gap.

Driven by the east Kimberley's Ord River Irrigation Area (ORIA) and supported by new intensive groundwater irrigated systems of the West Kimberley, the industry contributes approx. \$76M annually to the RGP and employs 500 local, seasonal and migrant visa workers.

Across the region, there are currently 24,000 hectares under irrigation producing a range of tropical fruit, vegetable, fodder, grain and seed crops, including 50% of Western Australia's mango supply, 12,000 tonnes of melons, 19,000 tonnes of hay and silage and over 11,000 hectares of vegetables for Australian consumption². There is capacity for a substantial

increase in the current area of irrigated lands in the Kimberley, bringing critically required scale to operations.

Global food demand will rise sharply as the world's population increases over the next 20 years, creating potent growth opportunities for agri-food and fibre exports. For the Kimberley to capitalise on this opportunity, it requires a framework which encourages private investment to generate larger scaled enterprise supplying market-led produce, better supply chains and efficient, reliable logistics networks.

Growing the irrigated agriculture industry is one highly significant opportunity for the Kimberley, and nurturing its growth requires community and government decisions more than it does any public investment.

² ATEA – Kimberley Snapshot 2020 No 2

Climate

The Kimberley has a predictable semi-arid monsoonal climate characterised by distinct wet and dry seasons. The dry season (May to October) has little rainfall and average temperatures of between 20–30°C. The wet season (November to April) has high humidity levels, average day temperatures of 37°C, and intermittent cyclones producing some of the highest rainfalls in Australia. The region has a pronounced north–south rainfall gradient, southern parts are semi-arid, with less rain and higher annual temperature range than the northern parts.

Parts of the Kimberley region have much better, more predictable rainfall and climate than other parts of Australia for agriculture. For example, the environment at Fitzroy Crossing is better and more predictable than areas of NSW where crops are grown, yet the area remains undeveloped.

Land

Approximately 24,000 hectares of land are under irrigation across the Kimberley, which represents just 0.05% of the whole region. The State Government of Western Australia owns most of the land and water needed for agriculture, and it, therefore, has unique ability to determine the future of agriculture in the Kimberley.

However, the Australian Government does own strategic land ideally suited to agriculture in freehold tenure around the RAAF Curtin Airbase, close to Derby and Broome. Consideration as to what is in the greatest national interest: to leave that as it is or allow it to be used for a different purpose to help generate prosperity for Kimberley people.

Water

Access to a clean, reliable, cost-effective water source is integral to industry development, and the sustainability and prosperity of the region.

The strategic strengths of irrigated agriculture in the Kimberley lies in an excellent, predictable climate, suitable soils, and water. With average rainfall above 600 mm/yr the Kimberley has 80% of Western Australia's total freshwater resources, with less than one percent currently being utilised to support people or industry sectors.

Although there is a growing national perception of constant, abundant supply, the water systems of Kimberley's rivers and streams are highly seasonal according to monsoon rainfall. Only the Ord River has a perennial flow, and this is because of the controlled water release from the Lake Argyle reservoir. Lake Argyle is the most extensive freshwater storage on mainland Australia with a capacity of 10,760 gegalitres, with potential to increase by 50%.

In the West Kimberley, the extensive Fitzroy River Catchment System of ground and surface water could support 160,000 ha of irrigation in 85% of years and significant underground aquifers could support an additional 30,000ha of production annually³.

The state government and traditional owners are currently working on a development plan for the sustainable and culturally appropriate use of surface and ground water from this extensive network. The Fitzroy water allocation plan will cover an area spanning almost 94 000 km² extending from near Halls Creek in the east, downstream to the coast near Derby in the west. Increased access to reliable water supply would open significant opportunities in irrigated horticulture and other key food and fibre industries the region.



³CSIRO Northern Australia Water Resource Assessment Fact Sheet

East Kimberley

The East Kimberley is the largest producer of irrigated horticulture in the region, powered by the Ord Irrigation Scheme as water from Lake Argyle and Lake Kununurra is diverted and gravity fed through kilometres of open channels to irrigate farmlands. In the process, sustainable hydroelectricity is produced to power the east Kimberley.

The ORIA expanded from a historical base of around 15,000ha to approx. 21,000 ha with the potential to increase to 60,000 ha or more.

The ORIA produces mango, citrus, watermelon, rockmelon, pumpkin, chickpea, sunflower, sorghum, maize, sandalwood and other crops for Australian consumers and export markets. Future areas for growth of the industry have been identified and are in various stages of planning, approval, or development.

West Kimberley

Irrigated agriculture is a smaller industry in the west, and there are presently less than 3,000ha under irrigation across a vast geographical spread.

The West Kimberley relies on groundwater pumped from large aquifers rather than surface water, although there is potential for limited surface water capture and storage in some locations. Large scale dams on the Fitzroy River do not have community support and not recommended.

Production is predominately on pastoral stations for fodder under centre pivot as well as some small areas allotted to mangoes, stringless beans, sweet corn, asparagus, and more recently table grapes.

Growth in the industry continues to be frustrated by the State of Western Australia's land and water regulations, the Federal Environmental Protection and Biodiversity Consideration Act (EPBC), and environmental groups.

Reports indicate a suitable land capacity for irrigated products in the West Kimberley has a massive potential of 300,942 hectares⁴, which would bring critically required scale to the industry. Even 10% of that growth would be significant but will not happen unless these constraints are better managed.

Markets

Export

The export sector is critical to the industry because of the relatively limited domestic market. The global population is growing at around 180 million people per year, and Asia's middle class is forecast to reach 3 billion by 2030, unlocking new consumers demanding safe, clean, and healthy food. Kimberley is Australia's closet region to these markets and in the same time zone, which helps facilitate trade.

However, without a considerable increase in the scale of production, exports will be limited and improvements in air freight, cold storage will be difficult to fund.

Domestic

Western Australia's population is expected to reach four million by 2050 with the national forecast to increase 41%⁵ by 2050.

Mild winters position the region to supply counter season fresh fruit and vegetable produce to the nation and mitigate risk when other production areas are impacted by natural events or disease.



⁴State Water Strategy – Irrigated Agriculture in Western Australia

⁵Worldometer February 2020

IRRIGATED AGRICULTURE ANALYSIS

STRENGTHS

- Access to water
- Access to suitable land
- Clean, green, bio secure image
- Ideal climate
- Proximity to SE Asian & onward global markets

OPPORTUNITY

- Growing global demand for food
- Increase scale
- Mosaic irrigation for fodder & integration to pastoral sector
- Product diversification
- Develop regional brand

BARRIERS

- Government policies & their interpretation by public sector administrators
- Access to air freight
- Processing & storage infrastructure underdeveloped
- Land tenure & regulation
- Access to local labour

RISKS

- Low level of political interest/support.
- Low desire of Kimberley population for change
- Biosecurity breaches
- Natural or environmental disaster

Industry Opportunity

Proximity to Global Markets

Kimberley is strategically located for efficient access to growing global demands of markets in SE Asia and beyond, provided air freight access, and trade links are established. The Kimberley's location, Australia's preferential market access via free trade agreements, outstanding environmental credentials, and stringent biosecurity systems place it in a unique position to capitalise on this growing demand⁶.

Product Diversity

Opportunity for product diversification is favourable as ideal climate, soil, and access to water position the region well. However, products need to be market-driven, not product-led. There is potential to undertake hydroponic cultivation of high yield herbs and essential herbal oils and other products such as Australian native plants for cosmetics, medicines, and bush food.

Innovation

Investment in and the utilisation of new research and development techniques will improve the region's profitability and competitiveness to meet growing demand. An opportunity exists to further develop

innovative, collaborative farming models with pastoralist and Indigenous landowners to increase the scale of operations across the region.

Mosaic Irrigation

Commercially scaled irrigation on existing rangeland settings represents a pivotal opportunity for regional economic diversity and growth. Mosaic irrigation for forage production has the potential to substantially increase both pastoral productivity and the scale of the horticultural output in the region by;

- Drought-proof' cattle operations
- Improve animal welfare and nutrition
- Negate the need to import feed,
- Improve herd performance
- Reduce pressure on rangelands, and
- Allow turn off to stock all year around.

⁶Department of Primary Industry Regional Development – Agribusiness food and trade website

Industry Barriers

Local and Political Interest and Leadership

Leadership at local level and state and federal political level for expanding agriculture as a means of prosperity for Kimberley has been and is erratic and inconsistent. It is likely that private investment to expand scale will continue to be slow and intermittent while this continues. Underlying the inconsistent local and political leadership is the often-vexed nature of indigenous and environmental lobby groups, which feed into political processes, influencing the system, which results in protracted delays in decision making, leading to a frustrating investment environment.

Scale

The ongoing limited scale of the industry limits the potential benefits, constrains investment, and makes it more challenging to bring down input costs of freight and transport. The small scale defines the level of investment made in improving infrastructure.

Freight Access

Underdeveloped transport infrastructure and long distances have presented a consistent challenge to development. Opening air freight pathways is critical to encouraging investment, support increased scale, and diversify products. Currently, three-day minimum road transport to Australian consumers sees perishable goods loss of up to 25 percent. Air access could create a value-add 100% to current perishable crop value⁷ and open access to SE Asian markets for high demand, high-yield hydroponic, and other crop production. Additionally, major infrastructure requirements at all regional ports need to be studied to determine long term needs of this and other key industries.

Labour

Despite high unemployment levels across the region, skilled and unskilled labour is not reliable, and migrant visa workers are utilised. In some instances, this causes increased costs to businesses, but it does provide the reliability of labour. Engagement of the local Indigenous workforce is the goal and ideal in a region where approx. 50% (central Kimberley 74%) of the population are Indigenous, and only 35% over the age of 15 years are currently employed.

Regulations

Irrigated agriculture is subjected to considerable regulatory control, and land use requires multiple studies and permits such as water use, diversification of purpose on pastoral lands, land clearing, flora and fauna controls, and Indigenous heritage. If proponents are foreign investors, they also need to comply with the requirements of the Foreign Investment Review Board. The cost of clearing regulatory hurdles on irrigated agriculture can be as high as \$2,000 per hectare adding between 10% and 15% to a development⁸. These costs can make developments unfeasible. Lengthy delays, complicated compliance, and multilayered agencies across state and federal bodies are frustrating, costly, and time-consuming inhibiting timely growth.

Land Tenure & Development

Kimberley land tenure is dominated by Government-owned land. Less than five percent of the Kimberley region is in freehold tenure. This means for many proposed developments, developers must deal with Governments, and mostly the State Government of Western Australia. It, therefore, is in a unique position to influence Kimberley future and well-being. There are multiple, overlapping land considerations and numerous permits and approvals required for land development, which should be streamlined to encourage enterprise.

Processing and Storage

Development of local processing infrastructure is essential for higher profitability, enabling operators to shed transportation weight and costs, increase shelf life of crops, and allow by-product utilisation. Cool and cold storage, along with bulk handling facilities would foster development. However, there need to be economies of scale to justify the high costs of capital investment, and economies of scale are constrained by erratic leadership, and Government processes around approvals, and land and water security.

⁷ Interview Shire Wyndham East Kimberley Economic Development Advisor Alfred Nagaiya 31/1/20

⁸ ATEA Kimberley Snapshot 2020

Industry Risks

There are several risks to industry growth and prosperity:

- Low levels of political interest and support for development risks industry stagnation
- Apathy from Kimberley population around change
- Biosecurity breaches affecting production and consumer confidence
- Natural disaster risk of flood, drought, fire or cyclone

Report Recommendations

Recommendation One

Australian Government streamline and reduces costs associated with various multi-agency approval processes to expedite private sector investment and industry development.

Recommendation Two

Australian Government investment into resilient road infrastructure and air freight infrastructure to facilitate access to domestic and international markets.



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