NORTHERN TERRITORY PLANT INDUSTRIES ECONOMIC IMPACT ANALYSIS
QUICK FACTS

The NT has a robust foundation of critical infrastructure, with further development required in rural areas to facilitate the development of plant-based agriculture and horticulture.

The NT’s climate and location provides significant competitive advantages that will enable the development of an economically viable plant-based agricultural and horticultural industry.

There are a number of plant-based agricultural and horticultural precincts being developed in the NT, including Western Davenport, Wildman, Larrimah and the Keep.

The production of mangoes is 3.5 times more valuable than broadacre crops and fodder in terms of Gross Value of Production, yet is undertaken over an area 2.5 times smaller.

$340 million
Gross Value of Production for plant-based agricultural and horticultural crops in the NT over 2019.

$1 billion
The project pipeline of current plant-based agricultural and horticultural precincts in the NT by 2030.

$1.6 billion
The projected cost to develop 60,000 hectares of greenfield sites as part of Douglas Daly Stage II development.

3,500+ FTE
The number of direct FTE roles facilitated by the plant-based agricultural and horticultural industry by 2030.

$1.5+ billion
The total economic benefit to the NT derived from the plant-based agricultural and horticultural industry by 2030.
EXECUTIVE SUMMARY

The plant-based agricultural and horticultural industry presents the Northern Territory (NT) agricultural sector with a significant opportunity to diversify crop production and enhance farm gate returns. The region's competitive advantages of proximity to key markets, suitable climate and sufficient land for development provide a strong foundation that will enable the long term success and viability of the plant-based agricultural and horticultural industry in the NT.

CURRENT SITUATION

In 2019, the Gross Value of Production (GVP) for plant-based agricultural and horticultural crops was over $340 million, which represented a Compound Annual Growth Rate (CAGR) of 10.66% since 2016. This, coupled with the fact that less than 50% of farms in the NT are producing plant-based agricultural and horticultural crops, confirms the significant growth potential of the industry.

So much so, that the plant-based agricultural and horticultural industry in the NT is projected to surpass a GVP of $1 billion per annum (p.a.) by 2030, injecting an additional $530 million p.a. into the NT’s economy through downstream effects.

The industry will also catalyse employment across the region, as the industry is forecast to directly employ over 3,500 FTEs by 2030, facilitating the creation of an additional 1,803 FTE roles in the NT.
EXECUTIVE SUMMARY

POTENTIAL LAND RESOURCE AREAS

To support and complement the development of these potential resources areas, several plant-based agricultural and horticultural precinct developments have been identified and substantiated through extensive stakeholder consultation. This includes Western Davenport, which was identified by NT Farmers, and Wildman River, Larrimah and the Keep, all of which identified by NTLC.

These plant-based agricultural and horticultural developments are highly prospective agricultural land developments, covering an area greater than 85,000 hectares (ha).

The developments will play a pivotal role to ensuring the long term success and viability of the plant-based agricultural and horticultural industry in the NT. These developments are well-suited to a variety of crop types, ensuring the plant-based agricultural and horticultural industry is diversified and mitigated against risks relating to trade relationships with major export nations.
EXECUTIVE SUMMARY

DOUGLAS DALY

Douglas Daly is one of many regions that will be pivotal in the development of the plant-based agricultural and horticultural industry. There is 60,000 ha of suitable land available for development, and the entire Stage II Development is forecast to cost $1.6 billion. The region provides numerous competitive advantages for plant-based agriculture and horticulture, namely a potential 520GL available for development and further opportunity to develop a managed aquifer recharge.

COTTON INDUSTRY

The cotton industry may prove critical in achieving this economic success. Initial trials conducted by nine farmers in the NT have confirmed the suitability of cotton production to the NT, having successfully harvested 1,000 ha. Therefore, cotton has been identified as the cornerstone crop going forward in NT plant-based agricultural and horticultural crop developments.

The development of the cotton industry will generate significant economic activity in the NT, as the projected cost to develop four financially viable cotton gins and 62,000 ha of greenfield sites for cotton production is $732 million. The development of the cotton industry in the NT will support the employment of up to 424 Full Time Employees (FTEs), which represents a total wage and salary contribution of $29.6 million p.a.

INFRASTRUCTURE REQUIREMENTS

The general enabling infrastructure requirements to support plant-based agriculture and horticulture are extensive and wide-ranging. However, due to the NT’s robust foundation of core infrastructure, only targeted common user infrastructure investments are required. The required common user infrastructure investments, such as the road network to southern regions and a local airport, are specific to select locations across the region and are identified through further detailed analysis.

The development of enabling and targeted common user infrastructure will support the NT to capture, and subsequently realise, the significant potential of the plant-based agricultural and horticultural industry.
SUMMARY

The plant-based agricultural and horticultural industry presents the NT with a significant opportunity to diversify the agricultural sector, develop the local economy and provide significant employment opportunities.

Competitive advantages

The NT is well positioned to produce plant-based agriculture and horticulture by capitalising on the region’s competitive advantages and locality to key export markets.

Economic benefits

The development of agricultural precincts will develop and diversify the NT agricultural industry and economy, and provide significant employment opportunities.

Land resource areas

Douglas Daly and surrounding regions provide sufficient land to develop agricultural precincts, and expand the production of plant-based agriculture and horticulture.

Farm gate returns

The development of agricultural precincts will support sufficient farm gate returns to substantiate the initial investment required.

Infrastructure

The development of agricultural precincts will require planning and investment in enabling and critical infrastructure.

Opportunity scale

The scalability of plant-based agriculture and agricultural precincts presents an opportunity to expand operations and production over the foreseeable future.
On behalf of the board and staff of the NT Farmers Association, I am pleased to present the Northern Territory Plant Industries Economic Impact Analysis. NT Farmers Association is focussed on delivering development for the benefit for all Territorians, ensuring Aboriginal people also benefit, with a significant target in remote and regional development.

Horticulture and plant-based agriculture is playing an increasingly important role in the NT’s economy, particularly in regional areas. As the peak industry body, NT Farmers seeks to expand the industry through strong advocacy to government and by informing and supporting existing farmers to diversify and expand, and prospective farmers to have the confidence to invest in the Territory. This important document is pivotal to both of these objectives.

From little to no production in the late seventies, farm gate returns reached $340m in 2019, with an annualised growth rate of 10.66% over the last four years. As the Territory enters uncharted economic waters thanks to COVID-19, this document highlights how plant-based industries are uniquely positioned to provide some of the heavy lifting our financial recovery will need. We are also uniquely positioned with the wisdom of hindsight to learn from past mistakes. The NT is home to some of the world’s most pristine landscapes and its oldest living culture. Arable land and water are limited. Our challenge as custodians of the land is to maximise development whilst minimising environmental impact and respecting aboriginal sovereignty.

We need to work more closely with aboriginal organisations and Land Councils to assist Traditional Owners unlock the opportunities for development on the Aboriginal Estate and the employment opportunities and social benefits this can bring.

Most importantly we need to work closely with and push for reform from the NT Government in three key areas that are inhibitors to farming expansion:

- Provision of a strong science-based regulatory framework that not only safeguards our natural resources but also provides security and certainty for farmers, developers and financial institutions
- A transparent and expedited development approval process
- Investment in key enabling infrastructure.

This document highlights the great potential of plant-based farming expansion in the Northern Territory. NT Farmers is committed to facilitating and fostering this new development while ensuring our members respect the terms of their social license and continue our proud tradition of responsible environmental stewardship.

Simon Smith
President,
Northern Territory Farmers Association
The Northern Territory Government and NT Farmers Association have identified the opportunity to expand agricultural production, enhance employment opportunities and facilitate economic prosperity across the region, through the development of agricultural precincts.

The importance of the agricultural sector to the Northern Territory (NT) population and economy cannot be understated, due to its prevalence and economic contribution to the region. Over 45% of the NT is agricultural land, and in 2019, the NT agricultural sector produced a gross commodity value of $1.14 billion. Beef cattle and plant-based agricultural and horticultural crops are the key contributors to this production value, contributing $800 million and $340 million respectively.1,2

The NT Farmers Association (NT Farmers) has identified the opportunity to diversify and grow the NT agricultural sector and, more broadly, the NT economy, through the development of agricultural precincts. By 2030, the pipeline of these projects is expected to reach $1 billion,3 highlighting the significant scale of this opportunity. This document provides an overview of the strategic need and subsequent benefits arising from the development of agricultural precincts and, more broadly, plant-based agricultural and horticultural production in the NT. This includes:

1. Overview of precinct development opportunities
   I. Current situation
   II. NT forestry industry snapshot
   III. NT economy snapshot
   IV. Growth potential of plant-based agriculture and horticulture
   V. Land available for development
   VI. Development multipliers

2. Potential precincts and enabling infrastructure requirements
   I. Potential land resource areas
   II. Proposed agricultural precinct developments
   III. Aboriginal Land Economic Development Agency (ALEDA)
   IV. Current state of NT infrastructure
   V. Enabling infrastructure requirements to support plant-based agriculture and horticulture operations

3. The Douglas Daly potential
   I. Overview of Douglas Daly and Daly region
   II. Douglas Daly Stage II Development
   III. Potential crop developments and farm gate returns
   IV. Water availability in the region (wet season runoff capture)
   V. Managed Aquifer Recharge opportunities
   VI. Estimated on farm development costs and minimum cash flow requirements

4. Cotton gin case study
   I. Australian cotton industry snapshot
   II. Economic benefits of developing a cotton gin in the NT
   III. Construction and operation cost of a cotton gin
   IV. Economic benefits of cotton industry to the NT
   V. Potential farm gate returns

1 Based upon information provided by the Northern Territory Cattlemen’s Association.
2 Based upon information provided by NT Farmers Association.
3 Based upon information provided by NT Farmers Association.
The total Gross Value of Production (GVP) for plant-based agricultural and horticultural crops in the NT was $340 million in 2019. This represents an increase of over $89 million since 2016, or compound annual growth rate (CAGR) of 10.66%.

As displayed above, the production of mangoes and melons is pivotal to the success of the NT horticultural industry. In 2019, the production of mangoes and melons was valued at $130 million and $69.4 million respectively, representing over 58% of the total GVP of plant-based agricultural and horticultural crops.
The expansion of plant-based agricultural and horticultural crop production across the NT, where feasible, will deliver an array of benefits. As displayed above, the GVP relative to the land area required for mangoes and melons is disproportionately greater than that of broadacre crops and fodder. Therefore, growers of high-value horticultural crops will experience significantly greater farm gate returns per hectare, compared to broadacre crop and fodder growers.

However, the production of plant-based agricultural crops, such as broadacre crops and fodder in conjunction with horticultural crops, remains pivotal to the industry. The market price of horticultural crops is highly elastic, thus a disproportionate increase in supply of horticultural crops, relative to market demand, may create an oversupply and subsequently reduce the market price and farm gate return per hectare for horticultural crop growers. Therefore, the production of plant-based agricultural and horticultural crops is pivotal to the success and long-term viability of the industry.

Expansion of plant-based agricultural and horticultural crop production will also reduce the NT agricultural sector’s reliance on beef cattle farming, which represents over 50% of farms in the region. This reliance on beef cattle farming and, more broadly, the livestock industry, significantly increases the financial and social risk to farm owners and their employees, with any change to the current trade relationship with major export nations likely to have widespread impacts.

Therefore, the expansion of plant-based agricultural and horticultural production in the NT will facilitate the diversification of the NT agricultural sector. This will not only enhance the sector’s resilience to external factors, but also provide broader financial and economic benefits to the region.

*Plant-based agriculture* and *horticulture* represents an industry with significant growth potential and suitability to the region.

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**Development of plant-based agriculture and horticulture will diversify the NT agricultural sector.**

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1 Information provided by NT Farmers Association.

The NT has a significant opportunity to expand the forestry industry and existing plantations. Currently, there are existing African Mahogany plantations in the Douglas Daly catchment, an expanding woodchip industry on the Tiwi Islands and a number of indigenous-owned forests across Arnhem Land. Despite the fragmented nature of the region’s plantations, a number of opportunities for industry development have been identified. This includes plantation expansions in the Douglas Daly region, Eucalyptus plantation growing advantages on the Tiwi Islands as well as the opportunity for branded products for international markets.\textsuperscript{7,8}

Over the next five to ten years, the scope for the forestry and forest products industry is expected to potentially treble in value, due to increasing harvest levels, an expansion of forest resources and potential for downstream processing and value-adding.

The existing African Mahogany plantation in the Douglas Daly region is one of numerous plantations across the NT with significant potential for further expansion. Currently, the plantation’s projected net present value (NPV) at harvest age is $390 million, with significant upside potential for an enhanced harvest age value. The planned 20% plantation expansion will deliver an additional $78 million at harvest age, and genetic selection and research and development (R&D) will support second rotation growth productivity of 15% to 20%.

The Forestry Industry Association Northern Territory (FIANT) predicts the following could be achieved through the expansion and development of the forestry industry:

- Enhanced Indigenous development and employment pathways
- Increased education in schools
- Greater development of jobs and career pathways
- Establishment of a robust emissions trading scheme
- Development of common user infrastructure, including a road sealing program for greater distribution.


\textsuperscript{8} Information provided by NT Farmers Association.
From 2011 to 2015, the NT experienced a significant increase to major project investments in both the public and private sector. The primary growth driver over this period was the development of several major oil and gas projects in the NT, including the Darwin LNG (DLNG) and Ichthys LNG facilities.

However, as illustrated above, project investment has rapidly declined in recent years. The smaller pipeline of projects, in conjunction with a 33% reduction in investment, has contributed to a negative Gross State Product (GSP) growth rate in 2019, which may be further compounded by the economic impacts of COVID-19.

The NT Government is attempting to address the region’s declining economic performance through the Economic Development Framework, implemented to increase private investment and stimulate economic development and diversification in the region. In addition to this, the NT Government has recently released Operation Rebound, established to reconstruct the NT economy as it rebounds from the adverse impacts of COVID-19.

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**Economic Development Framework**

In 2017, the NT Government released the Northern Territory Economic Development Framework. The purpose of this framework is to ensure investments made by the Government act as a catalyst for private sector investment, critical in growing business and industry. This framework, implemented to support the strategies of the NT Government, will facilitate the development of several economically beneficial Projects. This includes:

- **Upgrading the region’s critical infrastructure**, including telecommunications networks
- **Providing a secure water supply**, critical in producing high-value agriculture and horticulture
- **Enhancing connectivity to key supply chains**, including further integration and access to south east Asia.
In the wake of the COVID-19 pandemic, the NT Government released the green paper, *Operation Rebound*. The purpose of *Operation Rebound* is to recover, rebuild and rebound the NT economy to ensure it is stronger in the future.

The NT Government is aiming to average 5% annual economic growth and, in doing so, ultimately reach a $40 billion GSP by 2030. The development of critical enabling infrastructure is a key component in achieving this, due to the role it plays in stimulating the economy and facilitating investment.

The benefits associated with achieving a $40 billion GSP include:

- Creating 35,000 more jobs
- Generating new economic output of $1.3 billion per year
- Boosting the NT population beyond 300,000
- Increasing the mass of demand to support a greater level of services for NT businesses and community.

The proposed infrastructure initiatives that will support and enable the development of plant-based agriculture and horticulture in the NT are specified below.

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The region's competitive advantages provide a robust foundation for significant growth in plant-based agricultural and horticultural production across the NT. These competitive advantages include:

**Proximity to key markets**
Darwin is closely located to key supply chains and markets across Asia. As plant-based agricultural and horticultural production increases, the cost of freight and transportation to these markets will likely reduce through economies of scale.

The Port of Darwin, for example, provides reduced transit times to key export nations across south east Asia, relative to that of Brisbane. This proximity to key markets, in conjunction with economies of scale, would enable Darwin to become a service hub for not just the NT, but also Australia.

<table>
<thead>
<tr>
<th>Port of Brisbane</th>
<th>Port of Darwin</th>
<th>Port of Singapore</th>
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<tr>
<td>10+ days</td>
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**Favourable climate**
The NT climate is largely conducive for plant-based agricultural and horticultural development. The top end of the region is located in a tropical zone, thus experiences relatively consistent and sufficient rainfall each year.\(^\text{13}\)

The region's rainfall pattern, in conjunction with no requirement to carry water across seasons, presents a viable opportunity to produce high-value agricultural and horticultural crops.

**Successful trials**
During 2019, two farmers in the NT planted and harvested around 100 ha of rain fed and irrigated cotton. Furthermore, seven farmers in the NT are currently in the process of harvesting 1,000 ha of cotton crop. These trials have demonstrated that the rates of return from cotton can allow for greenfield site development.

Industry support, local grower initiatives and the implementation of new technologies will enable the expansion of cotton growing across the region, paving the way for further plant-based agricultural and horticultural cropping developments.

Over the course of 2018/19, significant tracts of land changed hands, with new investors seeking to convert previously exclusive pastoral operations to cropping.

These owners and investors are looking to initiate the development of these properties, with the potential of releasing parcels of suitable land throughout the region, with further red soil land available for development in the Katherine and Douglas Daly regions.\(^{14}\)

This presents an opportunity to develop several agricultural precincts and, in doing so, expand plant-based agricultural and horticultural production across the NT.

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The development and expansion of the NT plant-based agricultural and horticultural industry will provide many downstream benefits.

As displayed below, the NT plant-based agricultural and horticultural industry is forecast to surpass a GVP of $1 billion per annum (p.a.) by 2030, assuming the industry’s CAGR of 10.66% continues. This direct GVP of the industry will initiate a downstream and flow-on economic effect in the NT, injecting an additional $530 million into the region’s economy each year. As a result, the total economic benefit derived from the NT plant-based agricultural and horticultural industry is forecast to surpass $1.5 billion p.a. by 2030.

The NT plant-based agricultural and horticultural industry will also catalyse FTE employment across the region. By 2030, the industry is forecast to employ over 3,500 FTEs. This employment is forecast to facilitate the creation of an additional 1,803 FTE roles in the NT. The number of FTE roles supported by the horticultural industry, both directly and indirectly, will be exceed 5,300 by 2030. This, coupled with the forecast economic contribution of $1.5 billion p.a., confirms the vast potential associated with the NT plant-based agricultural and horticultural industry.  

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17. Information provided by NT Farmers Association.
Following extensive stakeholder consultation, several potential resource areas for plant-based agricultural and horticultural production were identified (pictured below).
Western Davenport is located in the central areas of the NT, over 1,000 km south of Darwin.

The Western Davenport Regional Development Group, a partnership between the community and private stakeholders, traditional land owners and the Government, has identified the vast potential of the Davenport region (see below).18

18 Based upon information provided by NT Farmers Association.
The Western Davenport Strategic Plan envisages the potential development of between 8,000 to 10,000 ha of irrigated agricultural land over the next 10 to 15 years. This development, valued at approximately $300 million, will likely lead to a significant increase to the region’s agricultural production, forecast to be between 150,000 and 200,000 tonnes across a range of horticulture and broad acre crops. Furthermore, with this development and subsequent expansion of agricultural land and production, it is envisaged that 2,000 to 3,000 people will likely be employed. The goals, and infrastructure required to achieve these goals, are discussed below.

The key goals for Western Davenport (2020 to 2025) include:

- Increase Gross Value of Production to $300m-$400m by 2030
- Water resources allocated and utilised in an staged, equitable, sustainable, effective and efficient manner
- Establish 2,000 to 3,000 ha of irrigated intensive high-value horticulture
- Establish an additional 1,000 to 7,000 ha of irrigated broad acre agriculture
- Establish the critical infrastructure required to facilitate development
- Aboriginal stakeholder involvement and opportunity at all levels
- Adopt a region wide adaptive management plan
- Provide employment for 2,000 to 3,000 people.

The critical infrastructure required to initiate the Western Davenport Precinct development includes:

- Reliable, accessible and cost-effective electricity supply, to accommodate for the projected 3MW to 6MW required capacity
- Sufficient farm infrastructure
- Sufficient community infrastructure, including accommodation, communication services, and health and educational facilities.
WILDMAN AGRICULTURAL PRECINCT

The Wildman Agricultural Precinct is a unique large scale agricultural development situated approximately 135 km east of Darwin. The site is accessible by sealed road, via the Point Stuart Road which intersects the Arnhem Highway.

The Wildman Agricultural Precinct, approximately 26,000 ha in size, has been earmarked for development since the early 1980s and will be the largest land release for an agricultural development in the NT to date.\(^\text{19}\)

The landforms, vegetation and soils across the site are diverse in nature, and include:

- Drainage lines and swamps
- Low hills and rises
- Alluvial plains with some clay soils
- Sandy soil plains, varying in depth.

The site is largely covered in natural vegetation, with significant areas of sandy soils suitable for cultivation. Furthermore, a high percentage of the site’s soil types have been classified as moderate to high land capability for agriculture.

The site experiences high wet season rainfall, is located in a low risk cyclone area, and is provided a water licence of 8,021ML (NT Portion 5088). The proponent will be required to apply for additional water on the remaining NT Portions included in the precinct. By securing additional water, the site will have the capacity to accommodate multiple agricultural and horticultural activities.

The suitable crop types for the site include, but are not limited to:

- Bananas
- Mangoes
- Melons
- Hay / forage crops
- Kakadu plum
- Rain fed forestry
- Beef cattle and buffalo production.

Despite its significant potential, there is an evident need for further infrastructure to facilitate the development of the precinct. This includes:

1. Applying for additional water, due to the current water licence only available on NT Portion 5088.
2. Establishing an electricity supply to the site, with the closest power supply situated along the Arnhem Highway.
3. Developing sewer treatment facilities on site.
4. Upgrading the approaching intersection and/or internal road of the site.

Therefore, the development of critical infrastructure in the region will support the Wildman Agricultural Precinct development and production of high value agricultural and horticultural crops.

\(^{19}\) NT Farmers Association & NTLC (2020). Wildman Agricultural Precinct: Call for Expressions of Interest. Provided by NT Farmers Association.
The Larrimah Agricultural Precinct is a 5,712 ha development situated in close proximity to the township of Larrimah. Larrimah is located approximately 413 km southeast of Darwin and 200 km from Katherine.\textsuperscript{20}

As illustrated, the Larrimah Agricultural Precinct is located along the Stuart Highway, with direct access to both north and south logistics routes. The precinct is comprised of NT Portions 4478 and 4463.

A Land Suitability Assessment conducted by the Department of Environment and Natural Resources in 2019 confirmed the presence of suitable soils for irrigated agricultural purposes. Subsequently, the proposed Larrimah Agricultural Precinct site was identified, and the NT Land Corporation secured a water licence allocation of 10,000ML for the site.

The Soil and Land Suitability Assessment identified that there is greater than 2,180 ha of versatile agricultural land. This, coupled with the unique seasonal advantage of the Larrimah area, presents an opportunity to produce a range of dryland and irrigated crops.

The soils associated with this versatile land are largely deep, well-drained, sandy surfaced red earths on level to very gently undulating plains and low pediment slopes.

However, the soil across the site’s remaining 3,750 ha is either shallow, very gravelly, subject to flooding, poorly drained or too steep. As a result, these areas of the proposed site are either unsuitable for irrigated agriculture, or have limited versatility and thus restricted to a select range of crops.

However, similar to that of the Wildman Agricultural Precinct, development of critical infrastructure is required to facilitate the Larrimah Agricultural Precinct.

These critical infrastructure upgrades and developments include water, as the current licence is issued on a short-term basis, electricity, sewerage and access.

The Keep Agricultural Plains Development is the third stage of the Ord Agricultural development, providing 67,500 ha of fertile agricultural land under a long-term lease arrangement. The development, accessible via the recently upgraded Keep River Road, is comprised of NT Portion 1584 and 3221. The close proximity of the development to the Ord developments in Western Australia, and subsequent enabling infrastructure, is a significant advantage.

The Keep Plains Agricultural development presents an opportunity to develop a variety of commercial broadacre crops, and provide economic and employment opportunities to the region. This includes the involvement and consideration of native title holders, Miriuwung Gajerrong.

The vision for the Keep Agricultural Development is a thriving irrigated agricultural precinct that consolidates the region’s strong reputation as a premium quality food producer, and develops the local economy through the creation of training, employment and business opportunities.

The development is situated in close proximity to the Ord Valley farming community, a vibrant and highly active community considered one of the leading agricultural communities in northern Australia.

Current plantations and crop developments include:

- Sandalwood
- Chia
- Chick peas
- Sorghum
- Bananas
- Pumpkins
- Melons
- Mangoes
- Maize
- Cotton.

A key component of The Keep is the expansion of irrigation channels, currently within 6 km of the NT border. The expansion of these channels will provide the development with access to Lake Argyle, the largest freshwater body in Australia.

The development will be well-placed to produce high-value agricultural and horticultural crops. In doing so, the economic prosperity of the region will significantly increase through the development of the local economy and employment opportunities.

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The Aboriginal Land Economic Development Agency (ALEDA) was established by Centrefarm in 2018 to act as the agency to implement and drive 'at-scale' multi-industry developments throughout the NT. ALEDA acts as the point of reference and lead agency for economic development on Aboriginal land, with the primary goal of successfully overseeing the implementation of Centrefarm’s Economic Development Strategy (EDS).\(^{22}\)

The EDS is not a discrete single project, but rather an overarching long-term plan that encompasses both the commercial and cultural requirements necessary to ensure Aboriginal control at every stage.

The NT Farmers Association strongly supports ALEDA, the EDS and the long-term priority to increase Aboriginal control of land development in the NT.

Aboriginal Australians are paramount stakeholders in the NT economy, either owning or having some legal control over 90% of the NT land and sea. It is essential that Aboriginal peoples are at the forefront of any economic development and, unless Aboriginal interests align with commercial developments, they may fail both socially and economically.

The EDS addresses the core economic components of land, capital and labour and responds to key challenges with innovative solutions designed to bring together Aboriginal aspirations and knowledge with commercial business and development. It proposes solutions to the key challenges identified from this work, including an innovative investment mechanism - the Pilot Capital Fund. The six Pilot Projects of the Pilot Capital Fund are detailed below.

PILOT PROJECTS

The EDS is advancing into a five-year pilot phase with six at-scale commercial projects totaling circa $60 million (CAPEX and OPEX) and 1,100 ha. The main priorities and goals of the Pilot Projects include:

- Prove the strategy’s commercial viability
- Develop a mechanism that facilitates collaboration between Land Councils, industry and the NT and Commonwealth Governments in the social and economic development of Aboriginal Land Trusts
- Develop joint Land Council, NT and Commonwealth Government programs and delivery systems
- Researching approaches that support development in cross-cultural and complex environments
- Provide a practical opportunity to report, monitor and evaluate the EDS.

The Pilot Phase of the EDS is a unique opportunity to engage and restructure current development approaches. It provides an opening for research and development (R&D), and the trialing of additional processes regarding self-determination, empowerment and indigenous-led economic development to improve livelihoods.

Concurrently, ALEDA and the Land Councils are preparing other potential projects across the NT as investment-ready opportunities. These are being prepared for release in 2023/24 and will raise upwards of $250 million for Projects beyond the initial Pilot Projects.

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The six Pilot Projects of ALEDA’s EDS are pictured below.
The NT’s key infrastructure assets include roads, railways, air and sea ports, as well as energy, telecommunication, water and sanitation networks.

The NT has modern and efficient transport infrastructure that links the region to southern Australia, providing a north-south connection. Furthermore, Darwin is one of Australia’s most pivotal capital cities, serving as a trade, service and supply hub to global markets. As such, Darwin has a relatively broad range of economic and social infrastructure.23

Despite Darwin’s robust foundation of infrastructure, the NT as a whole is currently unable to support the development of significant new plant-based agriculture. Enabling infrastructure is largely centralised in Darwin, thus likely to be insufficient to support the production of plant-based agriculture or horticulture in rural areas across the NT.

**KEY ENABLING INFRASTRUCTURE**

As displayed below, the general enabling infrastructure requirements to support the development and operations of an agricultural precinct are extensive and wide-ranging. However, due to the NT’s robust foundation of core infrastructure, only targeted common user infrastructure investments are required.

The required common user infrastructure investments, such as the road network to southern regions and a local airport, are specific to select locations across the region and are identified through further detailed analysis.

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DOUGLAS DALY

The Douglas Daly region is located approximately 200 km south of Darwin, covering an area of 11,514 km², which equates to just 0.008% of the NT’s total land mass.

The region largely consists of grazing and conservation and natural environments, representing 52% and 41% of the total area respectively. Currently, the major crops produced in the region include fodder crops, dry-season vegetables and plantations of African Mahogany and Sandalwood.

Douglas Daly is in a strong position to increase the cropping of cotton, grains and fodder, while integrating cattle operations. Of these crops, cotton is envisaged to be the most pivotal plant-based agricultural crop for the region. So much so, that crops of cotton are regarded as the cornerstone going forward, incorporating rotations of sorghum, rice, legumes, maize or other high value crops.

The Douglas Daly region provides a number of distinct advantages, including:

- Existing public infrastructure
- Close proximity to Darwin, providing access to rail, road and sea freight
- Sandy or loamy red earths, yellow earths or skeletal soils underlain by limestones, shales and other sediments
- Sufficient water supplies, with the region’s bores yielding a total of 50,000-80,000 m³ per day
- Perennial rivers throughout the region support endemic wildlife, irrigation development, and domestic and stock use
- Opportunity for wet season overland water capture.

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26 Information provided by NT Farmers Association.
DOUGLAS DALY STAGE II DEVELOPMENT

The degree of success experienced by the current development in the Douglas Daly region is critical in facilitating and supporting further agricultural development in the Katherine-Daly basin.

To ensure the current development in the region is successful, NT Farmers have implemented a strategy highlighting the importance of sustainable agriculture. The key elements of this strategy includes economic viability, conservation of the natural resource base, and the mitigation of adverse off-farm impacts.

The underlying plan for Douglas Daly envisions between 40 and 50 new properties. These properties will include 500 to 1,500 ha for irrigated operations, and 3,000 to 15,000 ha for mixed farming and more intensive grazing operations.

While it is recognised that intensive grazing in Douglas Daly is economically sub-optimal, further development needs to occur. This development includes improvements to soil, pasture and infrastructure, all of which requiring skilled operators with capital resources.

The critical infrastructure required to support this development are two new road networks, extending for a total length of 120 km in total. This includes 25 km from Fleming Road to Dorisvale Road, and 95 km from Edith Farms Road to Ooloo Road. The latter road network between Edith Farms Road and Ooloo Road is critical to the Douglas Daly region, as it will open the Douglas and Jindare Stations. The staged development of these road networks is forecast to cost approximately $120 million.

These networks, in conjunction with the proposed Katherine-based cotton gin, will support the expansion of plant-based agricultural and horticultural production in Douglas Daly.

60,000 ha of suitable land for intensification into cropping production will be available following Douglas Daly Stage II. This will consist of:

- 45,000 ha of dryland cropping cotton/fodder/grain
  - 20,000 ha for cotton
  - 15,000 ha for hay or sorghum production
  - 10,000 ha for rice, peanuts or hemp
- 3,000 of irrigation cropping (cotton base rotation)
- 2,000 ha of irrigated horticulture
- 10,000 ha of improved pasture.

---

27 Information provided by NT Farmers Association.
POTENTIAL CROP DEVELOPMENTS

NT Farmers have identified the following list of diversified crops as potential crop developments in the Douglas Daly region.

<table>
<thead>
<tr>
<th>Irrigated Cropping:</th>
<th>Dry land cropping:</th>
<th>Horticulture:</th>
<th>Forestry:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed crops</td>
<td>Cotton</td>
<td>Dry season vegetables</td>
<td>African and Australian Mahogany</td>
</tr>
<tr>
<td>Cotton</td>
<td>Sorghum</td>
<td>Asian vegetables</td>
<td>Acacia</td>
</tr>
<tr>
<td>Other fodder crops</td>
<td>Rice</td>
<td>Mangoes</td>
<td>Sandalwood.</td>
</tr>
<tr>
<td>Grains</td>
<td>Maize</td>
<td>Melons and pumpkins</td>
<td></td>
</tr>
<tr>
<td>Peanuts</td>
<td>Sesame</td>
<td>Bananas</td>
<td></td>
</tr>
<tr>
<td>Rice</td>
<td>Mung Beans</td>
<td>Citrus</td>
<td></td>
</tr>
<tr>
<td>Industrial hemp.</td>
<td>Soybeans</td>
<td>Potatoes, onions and garlic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jarrah grass</td>
<td>Asparagus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cavalcade hay.</td>
<td>Other tropical fruits</td>
<td></td>
</tr>
</tbody>
</table>

The following sections provide a brief overview of four key crops that will likely be pivotal to establishing a sustainable and economically viable plant-based agricultural and horticultural industry.

COTTON CROP

Cotton is a highly scalable crop suited to the NT, due to the suitable soil, climate and rainfall patterns. So much so, that production is forecast to reach 80,000 bales by 2022, yet only 55,000 bales are required for an economically viable cotton gin. Further details regarding the development of cotton crops in the NT is provided on page 38.
PEANUT CROP

Peanuts are a highly important crop to plant-based agricultural and horticultural crop producers in the NT, given their high gross margin and suitability to the region.

Peanuts, while traditionally grown on red clay loams, can be grown on a wide range of soils, including sands, sandy loams and silty loams. Soils with loose and friable surfaces, such as sandy levee and Blain sandy loams, are favoured as they are both easier to dig, and are able to produce a clean, light coloured shell.

Despite peanuts often being classified as drought tolerant, the highest quality and yields are often obtained from areas with reliable rainfall, and with access to irrigation. As such, irrigation management is critical to obtaining a high yielding economically viable crop.

A regular rotation of crops with peanuts is encouraged, to avoid building up weed, disease and insect problems associated with any mono-culture system. The ideal crops to include with peanuts include cereal crops, such as maize and sorghum, sugar cane or a grass pasture phase.

There is a significant opportunity to expand the production of peanuts in the NT. Australian growers only supply a fraction of the local domestic demand and prices remain relatively stable throughout the year. Currently, there are no shellers/processors in the NT, resulting in all produce being freighted to Queensland. Peanut Company Australia (PCA) remain interested in peanut production in the NT as a post farm gate handler.

The development of an agricultural precinct, with the relevant machinery and capabilities to process peanuts, will enable plant-based agricultural and horticultural producers to include peanuts into their rotation of crops. 28, 29, 30

RICE CROP

Rice, similar to peanuts, has shown potential for incorporation into an economically viable crop rotation in the NT, specifically the Douglas Daly region. So much so that, in 2019, trials of wild rice were planted in close proximity to Darwin.

The soil and water resources of the NT are sufficient to develop the minimum scale required for post farm gate processing of rice, in rotation with peanuts and mung beans.

The most suitable rice crop variety for the region is likely aromatic rice, given its significant gross margin and sizeable market size and competitiveness. There is significant growth potential associated with the development of an aromatic rice crop, in rotation with other crops, as Australia imports around 200,000 tonnes at an estimated value of $130 million per year.

Australia’s main rice marker, SunRice, purchased a rice mill in Burdekin during 2016 for aromatic rice production, signaling the potential growth and economic viability of a plant-based agricultural precinct with rice-production capabilities.

There is also strong support from the Federal Government for the production of rice production across northern Australia. The Government established a $4 million program in 2016 to support the expansion rice production in the region, and provided $1.8 million of funding to the Charles Darwin University to develop a commercially-viable native rice industry.

The development of a plant-based agricultural precinct would support the production of aromatic rice, or other suitable varieties, in the NT. Aromatic rice, in rotation with other crops such as peanuts and mung beans, is a biologically sustainable and economically viable agricultural production model. 31

INDUSTRIAL HEMP CROP

The development of industrial hemp presents plant-based agricultural and horticultural producers with a significant growth opportunity, following the momentum and traction it has gained in the past decade.

Industrial hemp is a fast growing, annual herbaceous plant with a deep tap root. Industrial hemp is a short-day plant, thus requires a set number of successive days for flower initiation.

To achieve a viable gross margin, the production of industrial hemp must occur on a broad acre basis. As such, the farming operations will likely need to be comparable to that of other broad acre crops, such as sorghum, cotton and soybean.

Industrial hemp is well suited to fertile, neutral to slightly alkaline, well drained clay loam or silt loam. The plant is largely intolerant to wet, flooded or waterlogged soil, thus should be sown at a 4cm to 5cm depth in non-crusting soils to achieve rapid germination. Furthermore, adequate moisture is required during active growth to obtain an economically viable yield.

Investigation into industrial hemp has concluded that, once infrastructure is established, the crop has potential to compete with other broad acre crops in terms of farm gate returns. Therefore, the construction of a processing facility will provide further opportunities for industrial hemp production.

The development of a plant-based agricultural precinct would support the production of industrial hemp in the NT, likely resulting in the realisation of the crop’s vast growth potential and scalability for the future.32, 33

Plant-based agriculture and horticulture presents a significant opportunity to stimulate the NT economy and diversify the NT agriculture industry.


### POTENTIAL FARM GATE RETURNS

The potential crops produced on the suitable land developed as part of Douglas Daly Stage II are specified below, with their irrigation requirement, gross margin, and total potential revenue.

<table>
<thead>
<tr>
<th></th>
<th>Crop</th>
<th>Hectares developed (ha)</th>
<th>Irrigation requirement (ML/ha)</th>
<th>Gross margin ($/ha)</th>
<th>Total Revenue ($ p.a.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cotton</td>
<td>20,000</td>
<td>0 to 4</td>
<td>$3,580</td>
<td>$71.6m</td>
</tr>
<tr>
<td>2</td>
<td>Roads grass or Sorghum</td>
<td>15,000</td>
<td>10 to 14</td>
<td>$3,600</td>
<td>$54m</td>
</tr>
<tr>
<td>3</td>
<td>Cavalcade and Jarrah Hay</td>
<td>15,000</td>
<td>0</td>
<td>$534</td>
<td>$8.01m</td>
</tr>
<tr>
<td>4</td>
<td>Peanuts</td>
<td>10,000</td>
<td>5.5 to 6.5</td>
<td>$1,192</td>
<td>$11.92m</td>
</tr>
<tr>
<td>5</td>
<td>Rice</td>
<td>10,000</td>
<td>7.5 to 8.5</td>
<td>$387</td>
<td>$3.87m</td>
</tr>
<tr>
<td>6</td>
<td>Industrial Hemp</td>
<td>10,000</td>
<td>4 to 8</td>
<td>$2,450</td>
<td>$24.5m</td>
</tr>
</tbody>
</table>

As displayed above, the total revenue obtained from the crop developed as part of Douglas Daly Stage II Development is projected to be **over $170 million per year**, highlighting the significant benefit of the development for plant-based agricultural and horticultural producers.

The Douglas Daly region provides several distinct advantages that will support the development of plant-based agriculture and horticulture, substantiating the development of a closely-located agricultural precinct.

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1. DAF (2018); AEC. Based upon information provided by NT Farmers Association.

The importance of water availability for plant-based agriculture and horticulture cannot be understated, as it enables the production of high-value agricultural and horticultural crops and, in doing so, facilitates economic development and diversification. As such, **water availability is critical to ensuring the development of agricultural precincts and plant-based agriculture and horticulture** in the NT.

The Daly region is one of very few areas in northern Australia with a perennial river system. The two primary water resources in the Daly region are surface water (rivers) and groundwater, both of which interconnected and used to support the region's main water users. Of these water resources, groundwater is the most crucial for agricultural and environmental purposes, supplying **80% of the region's water**.\(^\text{42}\)

In 2009, CSIRO developed the 'Water in the Daly region of the Timor Sea Drainage Division', detailing the availability of water in the Daly region. An outline of this report is provided on the following page.

WATER IN THE DALY REGION OF THE TIMOR SEA DRAINAGE DIVISION

In 2006, CSIRO was commissioned by the Prime Minister and Murray-Darling Basin (MDB) State Premiers at the time to undertake an assessment of sustainable yields of surface and groundwater systems within the MDB. This initial assessment was expanded by the Council of Australian Governments (COAG) to establish a scientific assessment of water yield in all major systems across the nation, resulting in the development of the Northern Australia Sustainable Yields (NASY) Project. Through this Project, CSIRO developed the 'Water in the Daly Region' report, which was subsequently commended to the Australian Government.43

The report provided critical information on current and likely future water availability, enabling the sustainable use and management of water assets in the region. The development of the NASY Project, specifically for the Douglas Daly region, was the most comprehensive hydrological modelling ever undertaken for the region, including the use of rainfall-runoff models, groundwater recharge models in addition to the consideration of all upstream-downstream and surface-subsurface connections.

KEY FINDINGS

There were a number of key findings from the Water in the Daly region report. These include:

- There is an extreme seasonality in rainfall patterns, with 95% of rainfall occurring during the wet season, but also high wet season potential evapotranspiration (APET) of 1015mm
- The region’s high rainfall intensity (>8mm of rain per day) results in a rapid runoff and short lag between rainfall and runoff
- The entire region has a median annual runoff of 135mm. The median wet season and dry season runoff for the region are 127mm and 9mm respectively
- The region’s recent climate record is statistically significantly wetter than historical records, with recent rainfall and runoff 25% and 66% higher respectively
- The Daly River system has the highest baseflow of all rivers across the NT due to discharge from limestone aquifers
- The region’s wetlands are ecologically and culturally significant, due to the range of aquatic life they support and the importance and cultural value to the indigenous community.

WATER AVAILABILITY IN THE DALY REGION

The following sections provide an overview of the key water resources in the Daly region.

RAINFALL & RUNOFF

The region's annual rainfall varies from 900mm to 1,200mm each year, with a mean annual rainfall and runoff of 1027mm and 159mm respectively. As displayed above, up to 95% of this rainfall occurs during the wet season (November-April), resulting in the majority of the region's river flows occurring over this same time period.\textsuperscript{44, 45}

The amount of annual rainfall is highly important for both groundwater and surface water users. The degree of rainfall not only impacts the flow of key tributaries, but also determines the degree of water allocations for extraction licences.

The rainfall pattern and runoff coefficient (0.5) of the area targeted for further development may present an opportunity to develop and enhance the surface water capture methods, with further detail provided in the following sections.

\textsuperscript{45} CSIRO (2009). Water in the Daly region of the Timor Sea Drainage Division. Provided by NT Farmers Association.
**GROUNDWATER**

As displayed below, the Daly Basin aquifers underlay the large majority of the Daly River surface water catchment. The four key aquifers include Florina, Jinduckin, Oolloo and Tindall, the latter two of which are currently fully allocated.46,47

The region’s primary aquifers, while highly important, are not the only groundwater sources in the region. There are a number of smaller low-yielding aquifers across the Daly region that support the local water supply, namely for stock and urban (domestic) uses.

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**SURFACE WATER (OVERLAND FLOW CAPTURE)**

The Daly River and tributaries form one of the largest river systems in the NT, and one of the few across northern Australia to have a perennial flow. The Daly River and tributaries form the largest river system in the NT, and one of the few across northern Australia to have a perennial flow.48

The main tributary of the Daly River is the Katherine River, with the remaining key tributaries including the Flora, Fergusson, Edith, and Douglas rivers. The King and Dry rivers, while significant in terms of catchment size, contribute little to the dry season flow of the Daly River due to their locality in a lower rainfall area.48

As previously highlighted, the runoff coefficient for the region is 0.5. This, in conjunction with the 1000mm of rainfall and 20% potential capture rate, may result in an available 520GL for further agricultural and horticultural developments in the region.

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WATER AVAILABILITY IN THE DALY REGION

OTHER RIVER CATCHMENTS

Sub-catchments across the Daly catchment are in extremely good condition, with low pressures, good water quality and no evidence of river health degradation.\textsuperscript{49, 50}

Specifically, the:

- \textbf{Dry} and \textbf{King River catchment} has a significant amount of flow, with a large majority being lost to the groundwater system (limestone aquifer). A Managed Aquifer Recharge (MAR) has been proposed to address this issue.
- \textbf{Flora River} experiences a significant baseflow of approximately 3 m\textsuperscript{3}/s.
- \textbf{Seventeen Mile River} and upper \textbf{Katherine River catchment} experience significant baseflow volumes.
- \textbf{Daly River catchment} was assessed to be in good ecological health, with low pressures and high water quality and biodiversity.

MANAGED AQUIFER RECHARGE OPPORTUNITIES

The limited flow in the Daly Rivers at the end of the dry season presents an opportunity to develop a MAR in the region. In 2019, the Jacobs Group conducted the Northern Territory Irrigated Agriculture Feasibility Study (NTIAFS) to assess the feasibility of a MAR, to increase the available water and water security for irrigated agriculture in sites across the NT.\textsuperscript{51}

The NTIAFS concluded that the most beneficial located for a MAR include Lower King River weir, and Stray Creek weir. Both developments, detailed below, are closely located to expansive areas of arable soils for plant-based agricultural and horticultural crop production.

LOWER KING RIVER WEIR

The proposed Lower King River weir is situated on the lower reaches of King River that flow over the southern Ooloo Dolostone aquifer.

Initial analysis conducted on this weir indicated that 10GL could be recharged into the aquifer during the wet season through just one 2m tall weir. As such, the potential to construct two weirs in this location could result in a recharge 20GL per annum.

The annualised cost to supply irrigated water through the Lower King River weir is forecast to enable the economic feasible production of several \textit{plant-based agricultural and horticultural crops}.

STRAY CREEK WEIR

The proposed Stray Creek weir is situated on the downstream reach of Stray Creek, where the creek flows over the northern Ooloo Dolostone aquifer.

Initial analysis conducted on this weir indicated that 5.5GL could be recharged into the aquifer over the wet season with one 2m tall weir. As such, the potential to construct five weirs in this location could result in a recharge over 27GL per annum.

The annualised cost to supply irrigated water through the Stray Creek weir is forecast to enable the economic feasible production of several \textit{plant-based agricultural and horticultural crops}. This includes mangoes, Asian vegetables and melons, all of which high-value crops that will likely enhance the farm gate returns across the region.


\textsuperscript{50} DHI Water & Environment (2006). Daly River Catchment: Water Availability Assessment Project

The on farm costs associated with the production of plant-based agriculture and horticulture in the Douglas Daly region are outlined below.\textsuperscript{52}

### Development of Agricultural Precincts

The cost of developing plant-based agricultural and horticultural crops is significantly greater for greenfield sites, forecast to cost more than \textbf{\$1.6 billion to develop 60,000 ha of greenfield sites} in the region. As a result, this substantial cost and cash flow requirement creates high barriers to entry for new plant-based agricultural and horticultural producers.

However, the development of agricultural precincts in the NT may lower this barrier to entry for new producers on greenfield sites, through reduced transportation costs and greater farm gate returns borne from economies of scale and cost sharing.

As such, the development of agricultural precincts will be pivotal to ensuring the development and success of plant-based agriculture and horticulture in the NT.

#### Capital Cost and Subsequent Net Cash Flows

The capital cost and subsequent net cash flows required to break even are specified below.

<table>
<thead>
<tr>
<th>Development</th>
<th>Capital Cost for an Existing Farm, Developing a New Crop System</th>
<th>Required Minimum Net Cash Flow per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut-Based</td>
<td>Peanut-Based: $18,600 / ha</td>
<td>$2,000-2,500 / ha p.a.</td>
</tr>
<tr>
<td>Rice-Based</td>
<td>Rice-Based: $16,300 / ha</td>
<td>$2,000-2,500 / ha p.a.</td>
</tr>
<tr>
<td>Greenfield Site</td>
<td>Capital Cost for a Greenfield Site, Including All Development Costs</td>
<td>$4,500 / ha p.a.</td>
</tr>
</tbody>
</table>

\textsuperscript{52} North Australian Agribusiness Management (2016). Douglas Daly Agricultural Zone Economic Analysis. Provided by NT Farmers Association.
The cotton industry has **significant economic development potential**, because:

- Approximately 90% of the 1,500 cotton farms across Australia are family-owned
- Australian cotton farms, on average, directly create nine jobs
- Cotton represents between 30 and 60% of gross agricultural production in the regions it is currently grown.  

The Australian cotton industry is also highly productive, as:

- Yields are more than three times the world average
- Water productivity has increased by 40% since 2003
- Biotechnology is used for more than 99% of cotton crop.  

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COTTON GIN CASE STUDY

ECONOMIC BENEFITS TO THE NT

The development of a cotton gin will deliver significant benefits to the NT. These benefits, quantified through an economic impact assessment,\(^{57}\) include:

**CONSTRUCTION PHASE**

- Supports a total of 90 FTE jobs across NT
- Contributes $19.6 million to NT economy

**OPERATION PHASE**

- Supports a total of 106 FTE jobs across NT
- Contributes $25.7 million p.a. to NT economy
- Contributes $7.4 million in wages and salaries p.a.

**ESTIMATED PROJECT COST - COTTON GIN**

The private sector is willing to contribute to financing agriculture-based infrastructure in the NT. The cotton gin case study indicated that it is commercially viable for private sector investment in the cotton gin to generate favourable returns on investment.

The costs, and forecast revenue per bale in 2021, associated with the development and operations of a cotton gin in the NT are outlined below.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Cost</td>
<td>$28 million</td>
</tr>
<tr>
<td>Fixed Operating Cost (p.a.)</td>
<td>$1.2 million</td>
</tr>
<tr>
<td>Variable Cost (per bale)</td>
<td>$33.45</td>
</tr>
<tr>
<td>Revenue (per bale)</td>
<td>$529</td>
</tr>
</tbody>
</table>

---

\(^{59}\) Based upon information provided by NT Farmers Association.
ECONOMIC BENEFITS OF COTTON INDUSTRY TO THE NT

As outlined on page 28, the development of four cotton gins is forecast to be economically viable by 2025. A conservative approach has been taken in the economic assessment of the cotton industry.

The economic benefits associated with the development of four cotton gins and cotton production over the Project appraisal period, from 2020 to 2035, are specified below:

**OVERVIEW OF FARM GATE RETURNS**

<table>
<thead>
<tr>
<th>Total revenue (Real $)</th>
<th>Annual farm gate revenue (Real $ p.a.)</th>
<th>Total farm gate gross margin (Discounted $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.1 billion</td>
<td>$186.7 million</td>
<td>$460.5 million</td>
</tr>
</tbody>
</table>

**OVERVIEW OF ON FARM DEVELOPMENT COSTS**

<table>
<thead>
<tr>
<th>Total land developed*</th>
<th>Development cost per hectare</th>
<th>Total on farm development cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>62,000 ha</td>
<td>$10,000 per ha</td>
<td>$620 million</td>
</tr>
</tbody>
</table>

* Land development assumed to remain at 62,000 from 2029, due to conservative approach taken in economic assessment.

**OVERVIEW OF ECONOMIC BENEFITS TO THE NT FROM GIN & ON FARM OPERATIONS**

<table>
<thead>
<tr>
<th>Total development cost (gin &amp; on farm)</th>
<th>Potential jobs supported*</th>
<th>Total wages and salaries (p.a.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$732 million</td>
<td>424 FTE roles</td>
<td>$29.6 million</td>
</tr>
</tbody>
</table>

* Assuming 106 FTE roles are directly and indirectly supported through the operations of a single gin.

The development of the cotton industry will facilitate increased employment and economic development in the NT.
SUMMARY

Competitive advantages

The NT is well positioned to produce plant-based agriculture and horticulture by capitalising on the region’s competitive advantages and locality to key export markets.

Economic benefits

The development of agricultural precincts will develop and diversify the NT agricultural industry and economy, and provide significant employment opportunities.

Land resource areas

Douglas Daly and surrounding regions provide sufficient land to develop agricultural precincts, and expand the production of plant-based agriculture and horticulture.

Farm gate returns

The development of agricultural precincts will support sufficient farm gate returns to substantiate the initial investment required.

Infrastructure

The development of agricultural precincts will require planning and investment in enabling and critical infrastructure.

Opportunity scale

The scalability of plant-based agriculture and agricultural precincts presents an opportunity to expand operations and production over the foreseeable future.