BLUESALT Consulting

Pilbara Regional Drought Resilience Planning 2024

Pilbara Region Background and Context Report

Prepared for the Pilbara Development Commission

Acknowledgements

We respectfully acknowledge the Traditional Owners throughout the Pilbara and their continuing connection to the land, waters, and culture. We pay our respects to Elders past, present and emerging.

The Regional Drought Resilience Planning program for the Pilbara is a locally led project that champions drought resilience and preparedness in the region. This program is jointly funded through the Australian Government's Future Drought Fund and the Western Australian Government through the Department of Primary Industries and Regional Development. It has been led by the Pilbara Development Commission, in partnership with the Department of Primary Industries and Regional Development and supported by the City of Karratha, Shire of Ashburton, Shire of East Pilbara and Town of Port Hedland.

Pilbara Drought Background & Context Report

Version	Date	Prepared by	Approved by
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Contents

Defining Drought

Although droughts are experienced in countries around the world, an agreed universal definition has not been established due to the complexities around measurement, its relatively slow onset, the different types of droughts, and variabilities in geographical contexts.[1]

The way that drought is defined has policy implications and important consequences for Australian farmers[2] and pastoralists. The need for a regionally appropriate definition of drought was raised several times during the stakeholder consultation process for Western Australia's pilot Regional Drought Resilience Planning (RDRP) program in 2022.[3]

Meteorological definitions of drought focus on rainfall deficiencies or shortages, compared to average rainfall over a preceding period.[4] The Australian Bureau of Meteorology provides a general definition of drought as "*…a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use.*"[5] This is not simply about low rainfall but refers to how conditions in a given season or year compare to normal conditions.

Meteorological definitions are quantifiable and lend themselves well to analyses of historical climate trends and future climate projections,[6] and therefore are considered suitable for the purposes of the RDRP process.

> A prolonged period of abnormally dry conditions that impacts negatively on water availability and agricultural production in a region and, consequently, impacts negatively on the economy and environment of the region and the health and well-being of its residents.
>
> Technical Working Group – pilot RDRP program WA

Because drought is also defined in terms of its impact on primary production, surface and groundwater levels, and regional communities, the following expanded definition of drought was developed by the Technical Working Group as part of the pilot RDRP process in WA: *"A prolonged period of abnormally dry conditions that impacts negatively on water availability and agricultural production in a region and, consequently, impacts negatively on the economy and environment of the region and the health and well-being of its residents."*[7]

Strategic Context

This literature review provides an overview of the current policy and planning landscape relating to drought resilience at a national, state and regional level. It also presents a high-level summary of insights from existing research regarding drought in Western Australia, and particularly the Pilbara region.

The purpose of this review is to assist with informing the Pilbara's stakeholder engagement process, to be undertaken as part of the 2024 Regional Drought Resilience Planning program. Its intention is to present what is occurring in the drought resilience space nationally, regionally, and locally whilst identifying gaps, challenges and opportunities.

Documents included in this review were obtained from a range of sources including policy documents, plans, frameworks, strategies, and reports (Table 1). In addition, a range of data and statistics have been sourced to inform the subregional and local government profiles. A pragmatic approach has been used to provide insights that are relevant, concise and of value to the Pilbara RDRP stakeholder engagement process.

Table 1: Documents included in this review.

NATIONAL
Drought Response, Resilience and Preparedness Plan 2019 Australian Government
National Climate Resilience and Adaptation Strategy 2021-25 Australian Government
State of the Climate 2022 Bureau of Meteorology

STATE
Climate Adaptation Strategy 2023 (DWER)
Climate Health WA Inquiry Final Report 2020 (WA Health)
Regional Planning and Infrastructure Frameworks (DPLH)
State Infrastructure Strategy (Infrastructure WA)
State Planning Strategy 2050 (DPLH)
WA Climate Change Policy 2020 (DWER)
WA Natural Resource Management Framework 2018 (DPIRD)
WA Primary Industries Plan 2020-24 (DPIRD)

STATE
WA Regional Development Framework 2023 (DPIRD)

REGIONAL
Pilbara Regional Water Plan 2010-2030 (DWER)
Pilbara Regional Planning and Infrastructure Framework 2012 (DPLH)
Pilbara Development Commission Strategic Plan 2023-25 (PDC)
RDA Pilbara Strategic Plan 2021/22 – 2023/24
Pilbara Water Resource Situation Analysis 2021 (Curtin University)
Pilbara Needs Assessment 2022-24 (WAPHA)
Ten Year Community Plan for the NGO Sector in the Pilbara 2016 (RDA Pilbara/PDC)
Regional Strengths and Infrastructure Gaps 2022 (Infrastructure Australia)
City of Karratha Strategic Community Plan 2020-2030
City of Karratha Economic Development Strategy (nd)
City of Karratha Environmental Sustainability Strategy (nd)
City of Karratha Public Health Plan 2022-2027
Shire of Ashburton Strategic Community Plan 2022-2032 and Corporate Business Plan 2023-2027
Shire of Ashburton Economic and Tourism Development Strategy 2019
Shire of East Pilbara Strategic Community Plan 2022-32 and Corporate Business Plan 2022-26
Shire of East Pilbara Economic Development Tourism Strategy 2021-26
Town of Port Hedland Strategic Community Plan 2022-2032
Town of Port Hedland Environmental Sustainability Strategy 2022-2027
Town of Port Hedland Community Development Plan 2022-2027

NATIONAL RESEARCH, POLICY AND PLANNING INSIGHTS

Research

Australia's rainfall is more variable than many other countries around the world, largely due to the El Niño Southern Oscillation, making it more vulnerable to wet and dry extremes. Drier conditions and changing rainfall patterns have had impacts on Australia's water supply with alternative sources needing to be accessed.[8]

A decrease in annual rainfall of 10-20 percent in South Western Australia has led to Perth becoming increasingly reliant on groundwater and desalination. Notably, North West Australia experienced unusually dry summers in 2018−19 and 2019−20. It is important to understand how Australia's rainfall will be affected by climate change in the future to make well informed decisions relating to water management and agriculture.[9]

Due to Australia's variable climate, the drought risk for farmers is high, particularly for those engaged in a high level of cropping activity in regions with variable climates. This includes New South Wales, Northern Victoria, South Australia Eyre Peninsula and the Western Australia North and Eastern Wheatbelt regions.[10]

Australia has been slow in its climate change action, with 80% of people in 2020 believing the country is currently experiencing climate change impacts, compared to 66% in 2013.[11]

However, a review of the literature reveals that Australian agriculture does have a track record of capacity to adapt and respond to risks. The sector is engaging in measures that involve increased non-farm income, diversified agricultural activities and written farm plans with business objectives.[12]

> Australian agriculture has a track record of capacity to adapt and respond to risks.
>
> ABARES (2017)

Specific drought resilience practices include de-stocking early in low rainfall periods to preserve groundcover (68%), improving soil water retention (64%), and increasing fodder and grain storage (58%). However, the greatest barrier to changing farming practices was time, followed closely by funds.[13]

The literature suggests that, with access to more innovative technologies and a sound knowledge base, the agricultural industry is well positioned to respond to risks in the future. However, the success of this will depend on adoption of viable alternatives, social capital, willingness to change, and a commitment to innovation.[14]

Although Australia has a strong reputation in terms of drought research and development, the system for managing this information is complicated and includes many players.[15] In particular, the body of research on drought resilience is limited.

Notably, science is playing a key and ongoing role in the collection, maintenance, distribution and analysis of climate data and is shifting towards developing science-based measures that encourage adaptability and risk management.[16] At a general level, national science-based drought initiatives include:

- Provision of training for strategic business planning and decision making.
- Methods of managing uncertainty.
- Delivery of climate data and methods to integrate into meaningful information.
- Increasing fodder and grain storage.
- Water use efficiency strategies.

Policy and Planning

National drought policy in Australia has shifted from crisis management and financial assistance to preparedness, risk management, and supporting the agricultural sector to become more self-reliant in dealing with the effects of drought.[17]

In Australia, drought programs currently in place support preparedness and resilience or encourage re-examining operating models and risk management approaches. Underpinning most of this work is the government's $5 billion Future Drought Fund (FDF), supported by the Drought Resilience Funding Plan.[18]

The FDF is an investment by the Australian Government to build drought resilience in Australia's agriculture sector, landscapes, and communities. Providing $100 million a year in secure, continuous funding for drought resilience initiatives, the FDF helps farms and communities prepare for the impacts of drought.[19]

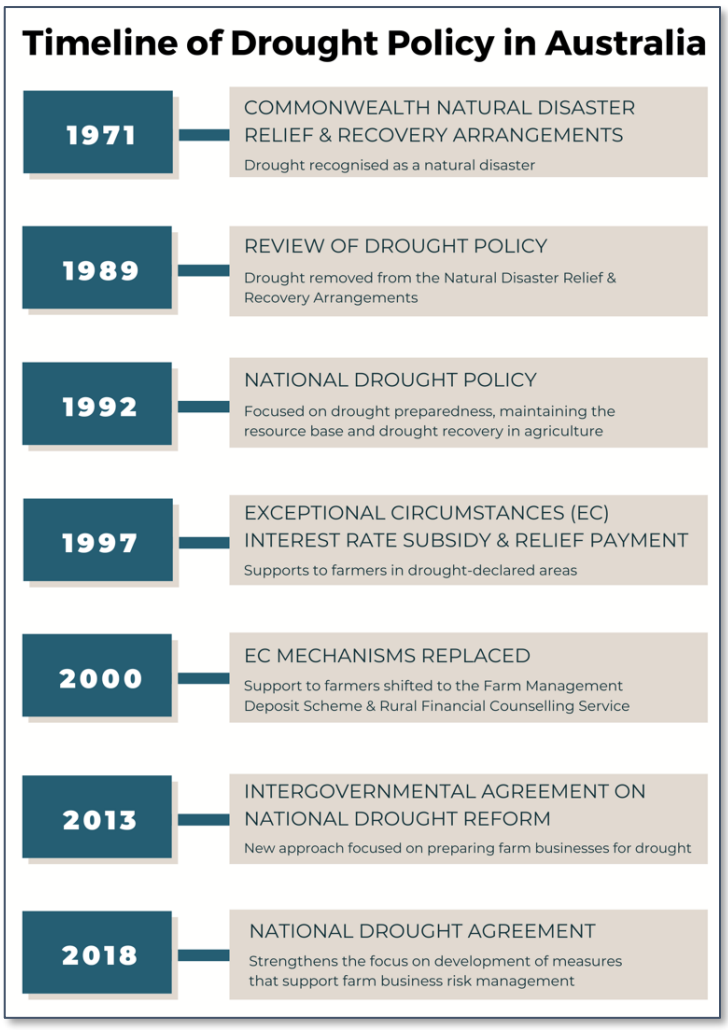

Figure 1: Timeline of drought policy in Australia, 1971-2018

Drought Response, Resilience and Preparedness Plan 2019

The Australian Government's 2019 Drought Response, Resilience and Preparedness Plan describes its strategies for helping farming communities prepare for and manage drought. Stakeholder feedback for this plan was provided as part of a review completed in May 2023. This review is informing the development of a new Australian Government drought plan, expected to be finalised in 2024.[20]

National Climate Resilience and Adaptation Strategy 2021-2025

Based on the principles that successful adaptation relies on science and information, partnerships, investments, and effective governance and coordination, this strategy has been developed to support governments, communities and businesses to successfully adapt to climate change. The strategy is structured around natural, built, social and economic domains, with a view to supporting climate change adaptation.[21]

STATE RESEARCH, PLANNING AND POLICY INSIGHTS

Research

The Western Australian Government's policy decisions focus on improving preparedness through business training, risk management tools and improved social support for farm families. WA's drought assistance measures have also been developed within the context of the Pilot of Drought Reform Measures - a project undertaken in partnership with the Australian Government.

Findings from the Natural Resource Management Drought Resilience survey, conducted by ABARES in 2021,[22] reveal the types of farm management practices currently being undertaken by WA farmers. With over half of survey respondents stating that they had adopted new land management practices, it is evident that farmers are employing best practice in land and business management and this is becoming an essential part of most farming businesses.

However, it is worth noting that use of water efficient crops or pasture varieties, planting/maintaining deep-rooted perennial pastures, and carbon farming/sequestration are the least used practices. This suggests the need for more support in the way of training and education, as well as additional research.[23]

> "…water efficient crops or pasture varieties, planting/maintaining deep-rotted perennial pastures and carbon farming/sequestration are the least used practices."
>
> ABARES (2021)

From a climate perspective, the State Government is investing in clean energy infrastructure to support its commitment to net zero emissions by 2050. It is also developing climate change legislation to support the reduction of emissions and increase WA's climate resilience, acknowledging that adaptation is essential to mitigating the impacts of climate change.[24]

Policy and Planning

WA Climate Change Policy 2020

This policy[25] outlines the WA Government's commitment to climate change adaptation and achieving zero greenhouse gas emissions by 2050. Several climate resilience initiatives have been identified as part of this policy, including:

- Climate Resilience Action Plan 2022-25
- Climate Science Initiative
- Climate Risk Framework
- Pilot Sectoral Adaptation Plans.

Foundations for a Stronger Tomorrow: State Infrastructure Strategy 2022

Representing Infrastructure WA's (IWA) assessment of the state's significant infrastructure needs and priorities, this strategy makes recommendations to address these and provides a framework for improving the state's public infrastructure system.[26] It addresses climate change as a high priority and critical long-term issue particularly for the water, transport and energy sectors. A focus of this strategy is to reduce carbon emissions and improve the resilience of infrastructure to address the impacts of climate change.[27]

It outlines strengths in the Pilbara region as:

- Globally significant resources sector and largest regional economy
- Solar resource
- Significant Aboriginal population, culture and heritage.

Climate Adaptation Strategy 2023 – Building WA's Climate Resilient Future

This most recent strategy[28] identifies four directions the government will take, along with specific actions, to increase climate adaptation across the state. To inform the stakeholder engagement process, the following infographic provides a high-level overview.

1 **Produce and communicate credible climate information and resources.**	• Expansion of the Climate Science Initiative. • Model the Urban Heat Island Effect to provide better data. • Investigate impacts of marine heatwaves. • Upgrade weather stations in Southern Rangelands. • Collaborate with researchers, community organisations and private sector to establish a Climate Adaptation Research Hub. • Develop a prioritised research program to address challenges for the WA water sector.
2 **Build public sector climate capability and strengthen accountability**	• Develop climate change legislation. • Implement a Climate Risk Framework. • Incorporate climate adaptation into the State Planning Framework and policies. • Explore regional water supply options. • Establish robust metrics to measure progress.
3 **Enhance sector-wide and community partnerships to unite and coordinate action**	• Evaluate outcomes of the Regional Climate Alliance Pilot Program and strengthen LG capacity. • Delivery of a Climate Adaptation Toolkit, training program and science and innovation funding. • Expand the Rangelands Revitalisation Project. • Support WaterSmart farms. • Deliver a Sector Adaptation Plan Program for WA to identify sector specific climate impacts and priority adaptation actions.
4 **Empower and support the climate resilience of Aboriginal people**	• Engage with Aboriginal organisations and academics on the Adaptation Research Hub. • Investigate climate adaptation practices and identify future opportunities. • Engage with Aboriginal leaders and regional communities on a First Nations Climate Resilience Fund. • Collaborate with the Aboriginal Health Council of WA to support health adaptation measures. • Deliver improved and more climate resilient water and power services to remote communities through the Transfer of Essential Services program. • Deliver the Remote Communities Fund to support appropriate housing in remote communities. • Evaluate climate risk to airport infrastructure in remote communities.

WA Natural Resource Management Framework 2018

This framework[29] was developed in 2018 and focuses on partnerships that protect and manage WA's natural resources. Six key priorities were identified for coordinating NRM in WA (relevant to drought resilience):

- Sustainable management of land resources.
- Maintenance and enhancement of water assets.
- Protection and enhancement of the marine and coastal environment.
- Biodiversity conservation and recovery.
- Enhancement of skills, capability and engagement.
- Delivery of high quality planning that leads to effective action.

Regional Planning and Infrastructure Frameworks (RPIFs)

In addition to the State Planning Strategy, Regional Planning and Infrastructure Frameworks (RPIFs)[30] have been developed for each of WA's regions and are undergoing review. RPIFs are developed through a partnership between the WA Planning Commission, Regional Development Commissions, Regional Development Australia and local governments and are important in the context of future drought resilience planning and identifying key issues associated with climate change and variability.

WA Primary Industries Plan 2020-24

Designed to guide the development of WA's primary industries, this document identifies the following strategic initiatives that are specifically relevant within the context of drought resilience planning[31] :

1 **Protect and enhance the condition of our natural resources.**	• Sustainable management of land and soil resources. • Systems based agriculture. • Climate change strategy.
2 **Maintain and build competitiveness.**	• Applied research to maintain and increase productivity. • Growth through Ag-Tech and digital connectivity. • Building business resilience. • Primary industries workforce.
3 **Differentiate, value add and diversify primary industries.**	• Expand value-add agribusiness sector. • Agrifood cluster development program. • Diversification of agribusiness opportunities.

Climate Health WA Inquiry Final Report 2020[32]

This report provides a blueprint for the next 10 years of the WA health system's response to adapt to climate change, making 10 recommendations to plan and respond to the health impacts of climate change.

WA Regional Development Framework 2023[33]

This framework outlines the government's approach to regional development, with a particular focus on building climate resilience, maintaining biodiversity and environmentally sustainable development.

REGIONAL RESEARCH, POLICY AND PLANNING INSIGHTS

Research

Many Aboriginal people hold Native Title rights to water in the Pilbara region which is significant to their way of life and system beliefs.[34] Water availability in the Pilbara is highly variable, with severe droughts often followed by major floods. Water supplies depend on cyclones which can vary in number and the amount of water they bring.[35]

Water use in the region is dominated by mining operations and mine dewatering discharge, placing increased demand on the water supply schemes that serve the towns and ports.[36]

Potential impacts and outcomes from climate change in the region include increased temperatures, changes in rainfall patterns, extreme events, ecosystem vulnerability, shifting social norms, and declining financial investment.[37] Critical adaptation strategies should include disaster management, data sharing and longer-term planning. [38]

Figure 2: Potential Impacts and Outcomes from Climate Change for the Pilbara

The health of the Pilbara community will also be impacted by climate change, particularly vulnerable communities such as the elderly and remote Aboriginal communities.

Sectors most at risk from climate change include agriculture, mining, small business and the services sector including transport, water services, and ports. Other services at risk include health, local government and services to remote communities. The availability of water in the Pilbara is a limiting factor in almost all sectors.[39]

Figure 3: Sectors Most at Risk from Climate Change in the Pilbara

In terms of recent initiatives relevant to drought resilience and planning, a $12.5M Pilbara Hinterland Agricultural Development Initiative (PHADI) for desert irrigation for the East Pilbara has explored the feasibility of agricultural production based on mine dewatering and groundwater however, a better understanding of its feasibility needs to be established.[40]

The Pardoo Beef Corporation is leading the development of irrigated fodder for high value beef, with an aim to develop this as a major industry over the next decade. Additionally, a feasibility study for a Sahara Forest Project has been undertaken for a proposed horticulture and renewable energy scheme which identified potential pilot land adjacent to the Karratha airport.

A 60ha project has also been identified with a 20ha greenhouse with the potential to employ as many as 200 people. A business case is planned to assess viability.[41]

Northern WA and NT Drought Resilience Adoption and Innovation Hub (Northern Hub) – Summary of current projects

Covering the tropical Top End and Rangelands, the Northern Hub supports rural industries and communities to prepare for drought through the leveraging of expertise and fostering innovation and new practices. Recent projects include:

- 30 Year Review (Rangelands NRM) - Evaluating Ecologically Based Rehydration Works in WA's pastoral Stations.
- Building Drought Resilience in Irrigated Horticulture (SWWA Hub) - Northern Hub and Vic Hub combined project.
- Coordinated Dry Season Response (KPCA) - Enhancing Climate Resilience for Pastoralists.
- Forage Management WA – New project to extend Rangelands work to Kimberley and Pilbara Regions in WA.
- Improving Water Management at Bullara Station (RDA Pilbara) - Improving Water Management for Sustainable Tourism at Bullara Station.
- Ord Water (DPIRD) - Investigating Water Use and Efficiency in the Ord River Irrigation Area.
- Spinifex Dominated Pastures (KPCA) - Importance During Drought & Knowledge Collation Project. [42]

Policy and Planning

Pilbara Regional Water Plan 2010-2030[43]

The Pilbara region was originally prioritised back in 2007 for the development of a water plan due to growing water demand and variable water supply.

The Pilbara Regional Water Plan 2010-2030 guides water resource management and sets strategic directions for the sustainable management and development of the region's water resources.

Identified in the plan is a shared vision for water in the Pilbara region. This vision is supported by several objectives with long term outcomes relating to water management.

> Our precious water resources are managed and developed in a sustainable manner to maintain and enhance our natural environment, our cultural and spiritual values, our quality of life and the economic development of the Pilbara.
>
> Pilbara Regional Water Plan 2010-2030 Shared Vision

Pilbara Regional Planning and Infrastructure Framework (RPIF) 2012

This framework considers the projected impact of climate change on a risk management basis and emphasises the importance of ensuring a reliable future water source. It also makes provision for the conservation of water source areas.[44] Key takeaways relevant to drought resilience stakeholder engagement include:

- The Pilbara region's population is projected grow to 140,000 by 2035.
- Population growth will require an increase in facilities and services to attract and retain workers.
- Water supply and demand is a challenge for this region, with Karratha and the other Nickol Bay settlements, Port Hedland and Onslow being entirely climate dependent for their water supply.

Pilbara Development Commission (PDC) Strategic Plan 2023-25

The PDC Strategic Plan[45] articulates its focus, priorities and deliverables for the region's economic development. Focus areas identified as relevant to drought resilience planning and consultation include liveability, economic development, diversification and innovation, Aboriginal empowerment and prosperity, climate resilience, low carbon transition and collaboration and partnerships.

Figure 4: PDC Strategic Plan Focus Areas Relevant to Drought Resilience Planning

RDA Pilbara Strategic Plan 2021/22 – 2023/24

RDA highlight key challenges for the Pilbara as climate change, housing, workforce shortages, delivering infrastructure in a high-cost environment, cost of living and doing business, and the viability of pastoralism. A key goal for RDA Pilbara to 2024 is to facilitate responsive solutions to enhance drought resilience in the Pilbara, with efforts focused through a partnership role in the Northern Western Australia and Northern Territory Hub.[46]

Pilbara Water Resource Situation Analysis 2021

This document was commissioned by BHP Western Australian Iron Ore. It provides an overview of the region's water resources, stakeholder insights, challenges and opportunities, and identifies potential collective actions.

Challenges identified include:

- Water resource sustainability and security.
- Maintaining water quality.
- Valuing cultural perspectives.
- Environmental integrity.
- Economic development value of water.
- Governance and decision making.

Opportunities identified include:

- Data coordination and sharing.
- Engagement with traditional owners.
- Integrated water management strategies.
- Water monitoring by traditional owners.
- Managing cumulative impacts.

> The Pilbara region faces diverse water resource challenges. Some are regionally significant, whereas others are subregional or locally focused. They extend across cultural, social, environmental and economic domains.
>
> Pilbara Water Resource Situation Analysis (2021)

WA Primary Health Alliance - Pilbara Needs Assessment 2022-24[47]

Findings from this assessment highlighted a lack of access to primary care. Contributing factors include long travel distances, workforce shortages, lack of bulk billing, appointment wait times and lack of access to culturally secure services. The leading cause

of disease burden in the region is injury, followed by mental health conditions - particularly depression, suicide, and self-harm.

Stakeholders have identified a need for suicide postvention services, and gaps in the provision of timely and consistent drug and alcohol services to smaller isolated communities.

Ten Year Community Plan for the Non-Government Organisations Sector in the Pilbara 2016

Building on a map and gap analysis undertaken in 2012, this plan adopts a vision of 'healthy and engaged Pilbara residents in thriving Pilbara communities'. The plan identifies a range of issues affecting social service delivery in the Pilbara as well as strategic goals and outcomes, including healthy, inclusive and citizen-centric local communities, culturally connection and a diversified regional economy.[48]

Regional Strengths and Infrastructure Gaps 2022

This document provides a national view of the strengths and infrastructure gaps in Australia's regions, with the aim of identifying priorities for future planning and identification of solutions to challenges.

Gaps identified for the Pilbara region include availability, diversity and affordability of housing, access to further education and skills training, distribution, transmission and generation of energy.[49]

Figure 5: Infrastructure Gaps Identified in the Pilbara Region

Local Government Strategic Context

At the local government level, the following strategic documents contain relevant information relating to drought preparedness and climate adaptation and are important to informing future drought related stakeholder engagement and planning.

- City of Karratha Strategic Community Plan (nd)
- City of Karratha Economic Development Strategy (nd)
- City of Karratha Environmental Sustainability Strategy (nd)
- City of Karratha Public Health Plan 2022-2027
- Shire of Ashburton Strategic Community Plan 2017-2027
- Shire of Ashburton Economic and Tourism Development Strategy 2019

- Shire of East Pilbara Strategic Community Plan 2022-32 and Corporate Business Plan 2022-26
- Shire of East Pilbara Economic Development Tourism Strategy 2021-26
- Town of Port Hedland Strategic Community Plan 2022-2032
- Town of Port Hedland Environmental Sustainability Strategy 2022-2027
- Town of Port Hedland Community Development Plan 2022-2027

Drought Impacts

GENERAL IMPACTS

The impacts of drought can be significant and serious, and have interconnected environmental, economic and social aspects.

Environmental impacts are among the most noticeable effects of drought and can be widespread and long-lasting.[50] The environment can also be a major determinant of our health.[51]

Economic impacts of drought commonly include falls in volume of agricultural production, reduced herds and reduced surplus. [52]

Social impacts are primarily driven by the effects on financial security (income and employment), as well as indirect effects on regional communities.[53] [54] Based on past research in Western Australia it is assumed that existing vulnerabilities will be exacerbated by drought.[55] [56] Aboriginal Australians are also likely to be disproportionately affected by drought because of pre-existing health and social disadvantage.[57]

A formative international study on pastoralists found a close relationship between environmental conditions and emotional wellbeing, showing that water insecurity leads to extreme worry and fatigue among the studied population, especially in the dry season.[58]

LOCALISED IMPACTS

In contrast to the South West of WA, the Pilbara region experiences moderate to high rainfall variability from year to year. In certain seasons this increases to extreme variability[59] and tropical cyclones can contribute from 0-86% of summer rainfall in the North West of WA.[60]

Over the past 24 years, rainfall deciles per calendar year demonstrate differing rainfall patterns across Western Australian regions.[61] Reflecting the localised nature of drought, 2002, 2006, 2010 and 2019 are recognised as drought years in Western Australia based on dry conditions but not all of these years resulted in widespread drought in the Pilbara, see Figure 6.

Historically, there have been few extended periods where the whole Pilbara region was affected by serious or severe drought, but localised areas have been regularly affected. Below average rainfall of five years or more occurred around 1903, 1912, 1925, 1938, 1950 and 1992.[62] The region has also experienced a background trend of increasing maximum temperatures since 1970.[63]

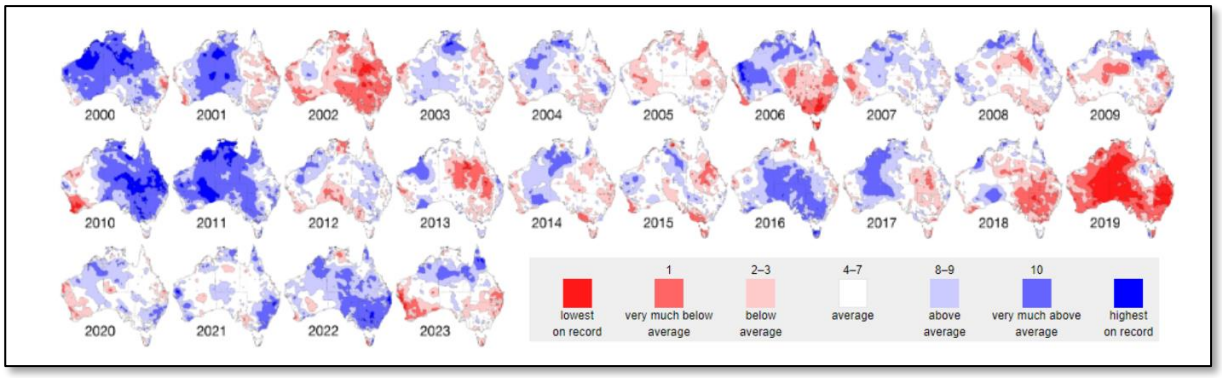

Figure 6: Snapshot of Australian rainfall deciles 2000-2023.

Water Corporation supply in the region is primarily from groundwater, with Karratha supplied by additional surface water from Harding Dam. Water Corporation customers in the North West are reported as some of the highest users per capita in WA. Around 42% of treated wastewater is recycled in the North West and this will play an increasingly important role to support economic activity and population growth.[64]

Water holds significance to Pilbara Aboriginal people as part of the creative legacy of the ancestral beings, as an elemental resource for life, and for group and individual identity. Water is also a key focus of concern around the ongoing effects of resource development.[65]

Practice-led research in the East Pilbara has found that prolonged drought conditions alter the landscape and negatively affected place-identity, attachment to place, and wellbeing of pastoralists.[66]

Environment condition scores in both the West and East Pilbara have varied significantly between 2000-2022, and years with widespread or localised below average rainfall show a correlation between poor environmental conditions, see Figure 7.

Existing vulnerabilities in the broader community and economy, which may be exacerbated by drought, are highlighted in the Regional Profile section.

As part of the RDRP process, the vulnerability of this subregion will be explored in more detail through a Drought Vulnerability Assessment (DVA).

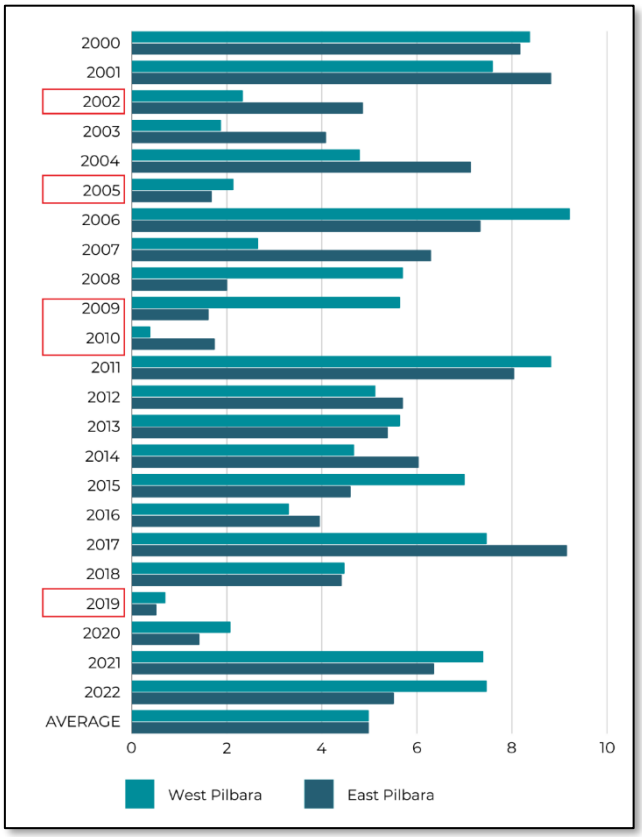

Figure 7: Environment Condition Scores in the Pilbara, years of below average rainfall highlighted.

Regional Profile

LOCATION

This profile covers the Pilbara region of Western Australia. This region includes four local governments: City of Karratha, Shire of Ashburton, Shire of East Pilbara and Town of Port Hedland, as shown in Figure 8.

The region covers 507,896km^2 and supports a population of approximately 58,940.[67] Key population centres are:

- City of Karratha - regional city of Karratha and townsites in Wickham and Dampier.
- Shire of Ashburton - Tom Price, Paraburdoo and Onslow.
- Shire of East Pilbara - Newman, Nullagine and Marble Bar.
- Town of Port Hedland - South Hedland.

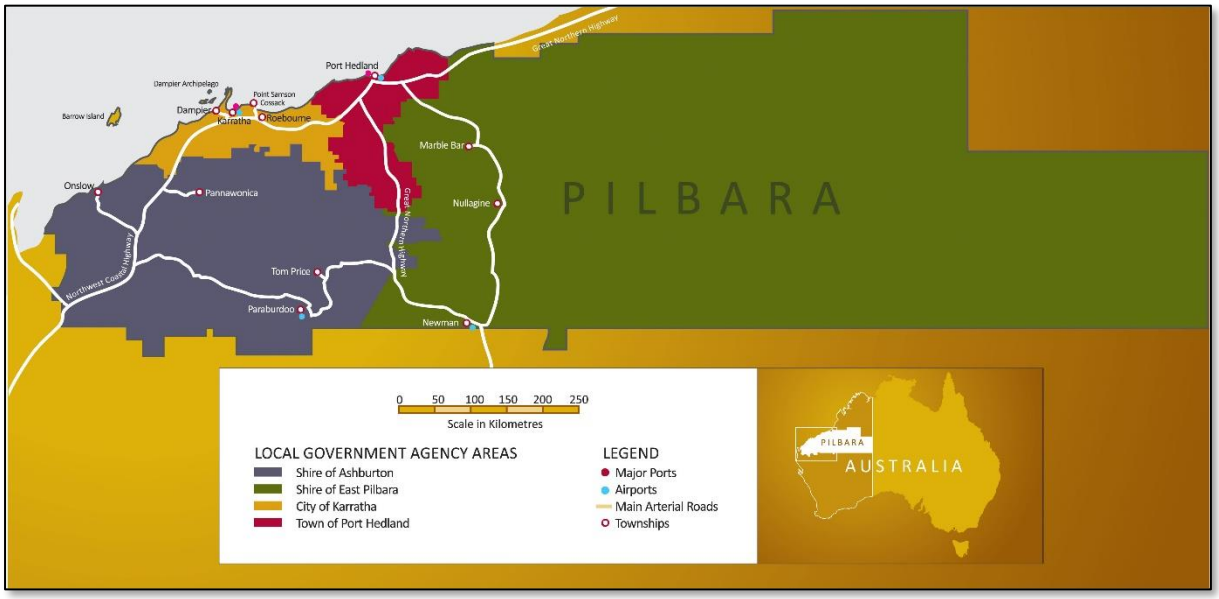

Figure 8: The region covered by this plan.

The characteristics of each LGA are summarised below, with a more detailed description of key indicators to follow.

Table 2: High level summary of the Pilbara LGAs, compared to Western Australia

	City of Karratha	Shire of Ashburton	Shire of East Pilbara	Town of Port Hedland	Pilbara (Region)	Western Australia (State)
Population (ABS, 2021)	23,412 ↑	7,781 ↓	10,378 ↓	16,666 ↑	**58,237**	
Median Age (ABS, 2021)	32.6	34	34.5	32.4	**33**	**38**
SEIFA Score IRSAD (Quintile) (ABS, 2021)	1,052 (5)	1,024 (4)	939 (3)	1,011 (4)	**1,016**	
Land Area (km²) (ABS, 2021)	15,238	100,817	372,295	18,417	**507,896**	
Environment Score (ANU, 2022)	7.21	7.53	5.65	4.61	**5.5 - 7.4**	**6.0**
Annual economic output ($bill) (Remplan, 2024)	19.82	33.74	43.16	14.77	**111.5**	**819,345**
Output from Ag (%) (Remplan, 2024)	0.1	0.1	0.1	0.1	**0.1**	**1.8**
Jobs in Ag (%) (ABS, 2021)	0.8	1.5	2.1	1	**0.4** (Remplan)	**2.4** (Remplan)

Millstream-Chichester National Park

CLIMATE AND NATURAL ENVIRONMENT

Climate and Landscape

The Pilbara region is arid with low seasonal rainfall and high humidity summers and warm winters along the coast, or hot dry summers and warm winter inland.[68] [69] Under the updated Köppen-Geiger classification system (based on precipitation and temperature) it is classified as a mix of Desert (hot persistently dry, warm persistently dry) and Grassland (hot persistently dry, hot summer drought).[70]

The region is within the Rangelands Natural Resource Management zone and sits across seven IBRA7 regions (as shown in Figure 9).[71] These will be detailed in the region's Drought Vulnerability Assessment.

The Pilbara has a network of permanent and ephemeral river systems which are largely driven by cyclonic and tropical depressions.[35]

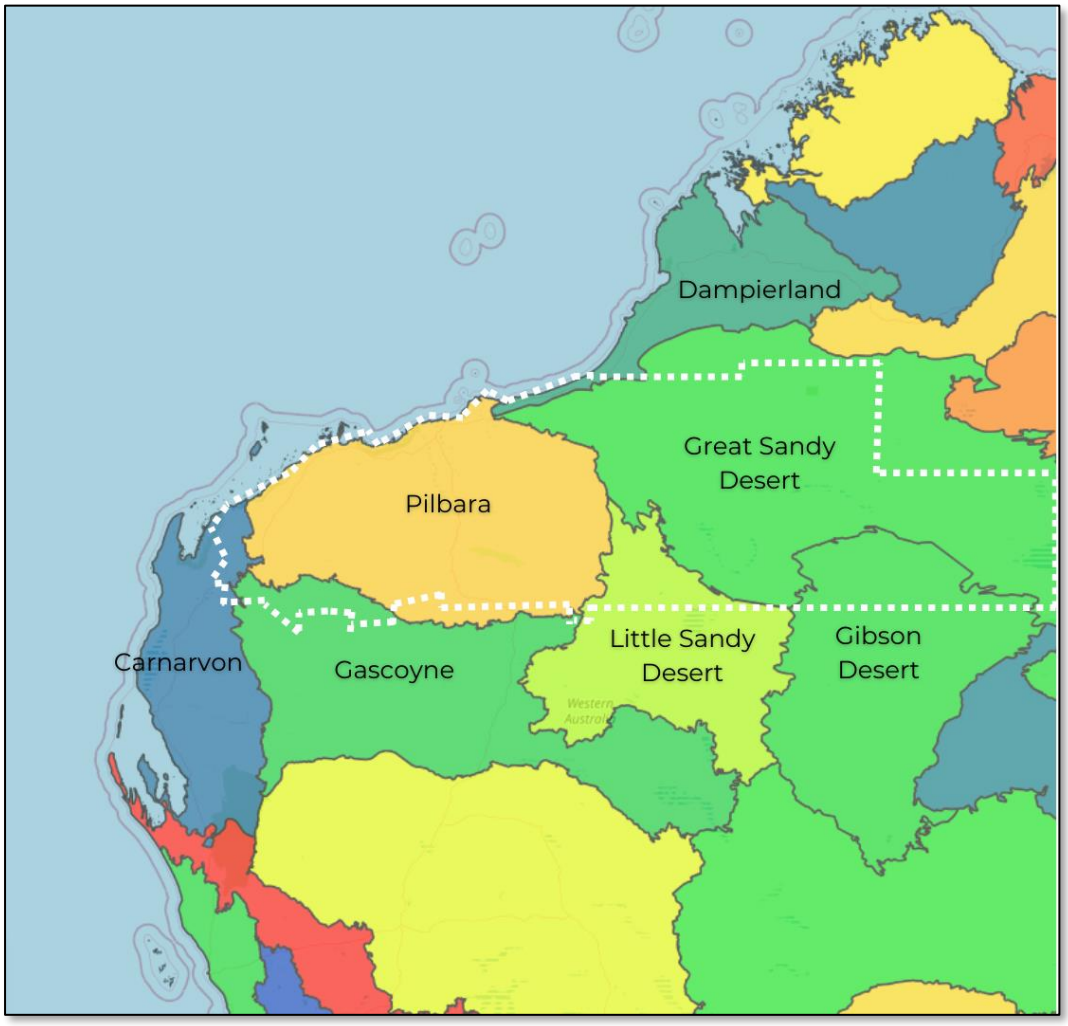

Figure 9: IBRA 7 Regions shown with Pilbara Region boundary.

Protection and Condition

The region currently has two threatened ecological communities – the critically endangered Themeda Grasslands in the Shire of Ashburton and the Ethel Gorge aquifer stygobiont community in the Shire of East Pilbara (at least one species of Chydaekata is known only from this community).[72]

There are no RAMSAR listed areas in this region[73] although the Eighty-Mile Beach wetland region does extend into the northern tip of the Shire of East Pilbara.

The area of land protected totals 110,142km^2 in the East Pilbara statistical area, with 24% of land indigenous protected land and 4.2% national parks.[74] In the West Pilbara statistical area 15,997km^2 of land is protected, with 11.6% of the area national park and 2.1% nature reserve.[75]

The area of protected land varies significantly across the LGAs, from only 74 hectares (less than 1% of total land area) in the Town of Port Hedland, to 30% of the Shire of East Pilbara.

In the 2022 Australia's Environment Report, the West Pilbara statistical area had an environmental condition score of 7.4, similar to the previous year and a significant improvement from 2.0 in 2020.

The East Pilbara statistical area had an environmental condition score of 5.5, a decline from 6.3 in 2021.[76] The score for Western Australia was 6.0.

The average score over the past 20 years was 4.99 for both statistical areas. High variability has been experienced from year to year, including a low of 0.39 (in 2010, West Pilbara) to a high of 9.16 (in 2017, East Pilbara), see Figure 7. All LGAs experienced a decline in environmental condition from 2021 to 2022, except for the Shire of Ashburton.

PROTECTED LAND (NATIONAL PARK / NATURE RESERVE (ABS, 2021)	ENVIRONMENTAL CONDITION SCORE (ANU, 2022)
KARRATHA	KARRATHA
1.4%	↙ 7.2
ASHBURTON	ASHBURTON
16%	↗ 7.5
EAST PILBARA	EAST PILBARA
30%	↙ 5.6
PORT HEDLAND	PORT HEDLAND
<1%	↙ 4.6

KEY:

↙ reduced/ declined ↗ increased/ improved ■ stable

COMMUNITY AND BUILT ENVIRONMENT

Demographics

The City of Karratha is a major commercial centre for the region and has the largest population, just over 42% of the Pilbara region population. The population in Karratha and Port Hedland LGAs grew between the 2016 and 2021 Census and declined in Ashburton and East Pilbara. The median age has increased in all LGA except the Shire of Ashburton and is consistent with the Pilbara (33) but lower than WA (38).

Housing and Health

Across the region, approximately 1,150 households were in mortgage or rental stress in 2021 (where repayments are 30 percent or more of income), the majority rental households. Relative to population, rates of housing stress were highest in Karratha LGA (2.8%) and Port Hedland LGA (2.3%).

Dwellings with no internet access ranged from 10% in Ashburton up to 18.6% in East Pilbara, against 12.5% in Western Australia.

Around 63% of the population in Karratha, Ashburton and Port Hedland LGAs reported no long-term health condition in 2021, and 59% in the East Pilbara. Across WA 61.2% report no long-term health condition.

HOUSEHOLDS IN RENT OR MORTGAGE STRESS (ABS, 2021)

KARRATHA
652

ASHBURTON
43

EAST PILBARA
63

PORT HEDLAND
392

INTERNET NOT ACCESSED FROM DWELLING (ABS, 2016)

KARRATHA
12%

ASHBURTON
10%

EAST PILBARA
19%

PORT HEDLAND
14%

NO LONG TERM HEALTH CONDITION (ABS, 2021)

KARRATHA
63%

ASHBURTON
62%

EAST PILBARA
59%

PORT HEDLAND
63%

OFFENCES PER 1,000 PEOPLE (WAPOL, 2023)

KARRATHA
33.5

ASHBURTON
102

EAST PILBARA
200

PORT HEDLAND
230

Karratha is the most walkable centre / townsite in the region and is considered very walkable (71/100) as most errands can be accomplished on foot. Newman is considered somewhat walkable (56) as some errands can be accomplished on foot. Other townsites are considered car dependent based on access to services, with walkability scores of:

- Wickham (38)
- Dampier (42)
- Tom Price (0)
- Onslow (22)
- Paraburdoo (23)
- Nullagine (12)
- Marble Bar (8)
- Port Hedland (25)
- South Hedland (38)[77]

Safety

The crime rate for the Pilbara district in 2022-23 was 172 per 1,000 population. The most common offence types for the Pilbara district in 2022-23 were family assault (2,096) and stealing (1,397),[78] consistent with broader regional WA but not metropolitan WA.

In the same period the main offence type and crime rate per 1,000 was estimated at:

- City of Karratha: 33.5 in Karratha, 108 in Wickham and 41.3 in Dampier - 41.45 averaged across all three. Main offence type in Karratha stealing (220), main offence type in Wickham and Dampier family assault (61, 12).
- Shire of Ashburton: 75 in Tom Price, 52 in Paraburdoo, 278 in Onslow - 102 averaged across all three. Main offence type across all location family assault (40, 11, 59).
- Shire of East Pilbara: 247 in Newman, 43 in Nullagine, 80 in Marble Bar - 200 averaged across all three. Main offence type in Newman, Paraburdoo and Nullagine family assault (40, 402 and 14) and motor vehicle stealing in Marble Bar.
- Town of Port Hedland: 278.4 in South Hedland, - 229.83 averaged across Port and South Hedland. Main offence type in Port Hedland stealing (86), in South Hedland family assault (717).[79]

Income and Wealth

In WA 78% of people rely on employee income as their main source of income. Across the Pilbara there is a much higher reliance on employee income, being the main source of income for 93.2% of earners in Karratha LGA, 93.2% in Ashburton, 95.4% in East Pilbara and 93.6% in Port Hedland. Minor sources of main income were investments or business.

In WA the income share of the top 5% of earners is 22.5%. In the Pilbara the top 5% of earners have 16.5% in Karratha LGA, 12.3% in Ashburton LGA, 13.2% in East Pilbara LGA and 13.3% in Port Hedland LGA, suggesting more equitable income distribution.

Disadvantage

By LGA SEIFA scores, the level of disadvantage varies across the region, with East Pilbara averaging the highest disadvantage (939) and Karratha the least (1,052). Both Ashburton and Karratha have less disadvantage overall compared to the broader Pilbara region. Quintiles in the region ranged from 3 (East Pilbara) to 5 (Karratha), with quintile 5 the most advantaged.

The region is made up of seven Statistical Area 2 (SA2). Across a broad set of 37 social, economic and environmental indicators the East Pilbara, Newman, South Hedland and Roebourne SA2 have an index score of 1 out of 5, 1 being the most disadvantaged. The remaining SA2 are Port Hedland with a score of 3, Ashburton 2 and Karratha 2.

Several domains of common high disadvantage (index score of 1) are highlighted in Figure 10 and include heat vulnerability, particulate matter (air quality), lack of green canopy and low school attendance.[80] Areas of existing disadvantage should be considered when developing the RDRP.

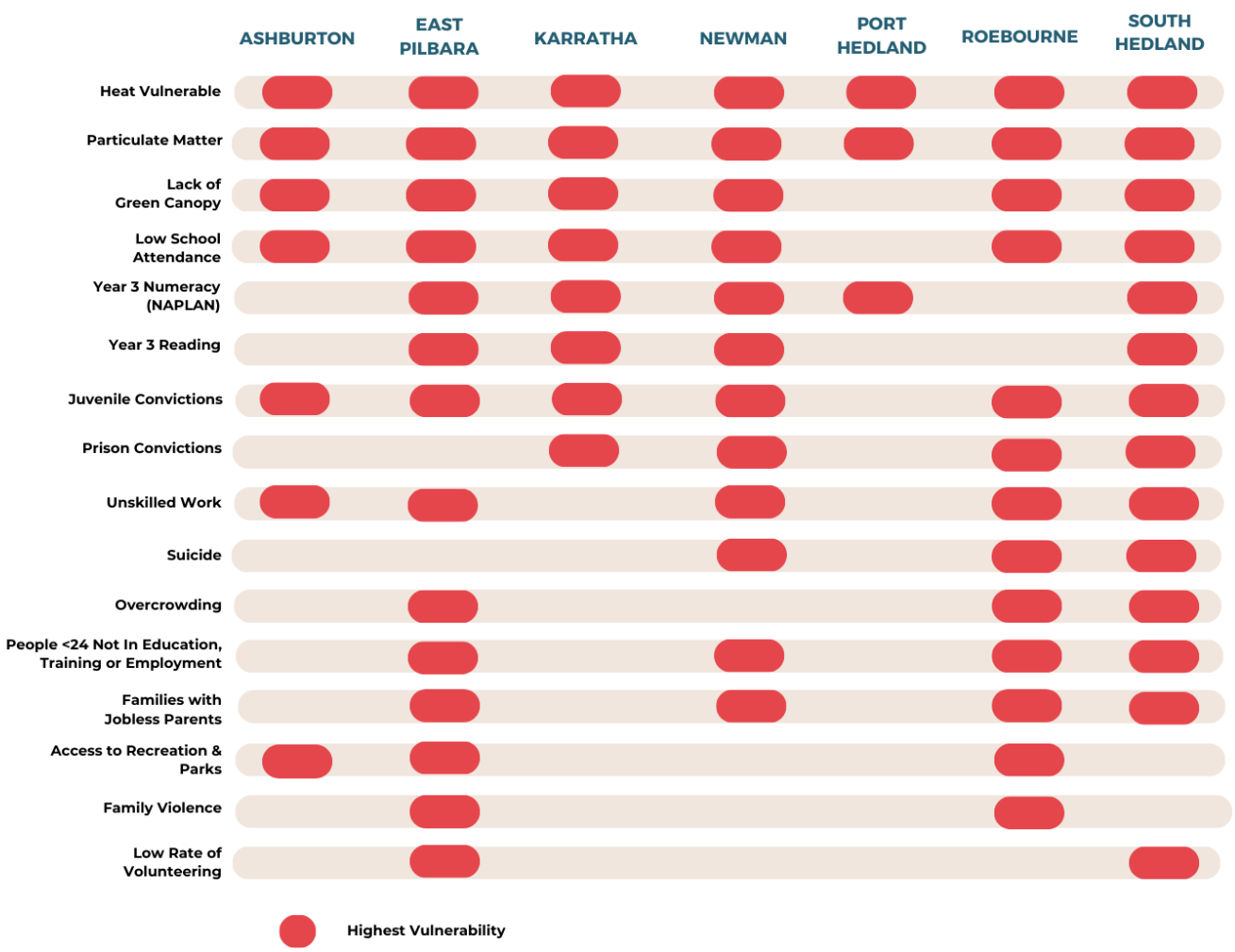

Figure 10: Domains of high disadvantage across Pilbara SA2s.

Strengths

In contrast, the region had some domains which scored an index of 5, the least disadvantage, and are highlighted in Figure 11. Areas in common were a low proportion of:

- Low family income (under $650 per week)
- Psychiatric admissions (overnight, per 10,000 population)
- Needing assistance with core activities
- Underemployment (proportion of people working who would like more hours)
- Long term unemployment
- Housing stress (proportion of households in bottom 2 quintiles of income distribution paying more than 30% of their gross income on rent or mortgage)
- Receiving rent assistance
- Financial stress (proportion of people who cannot raise $2,000 in a week for something important).

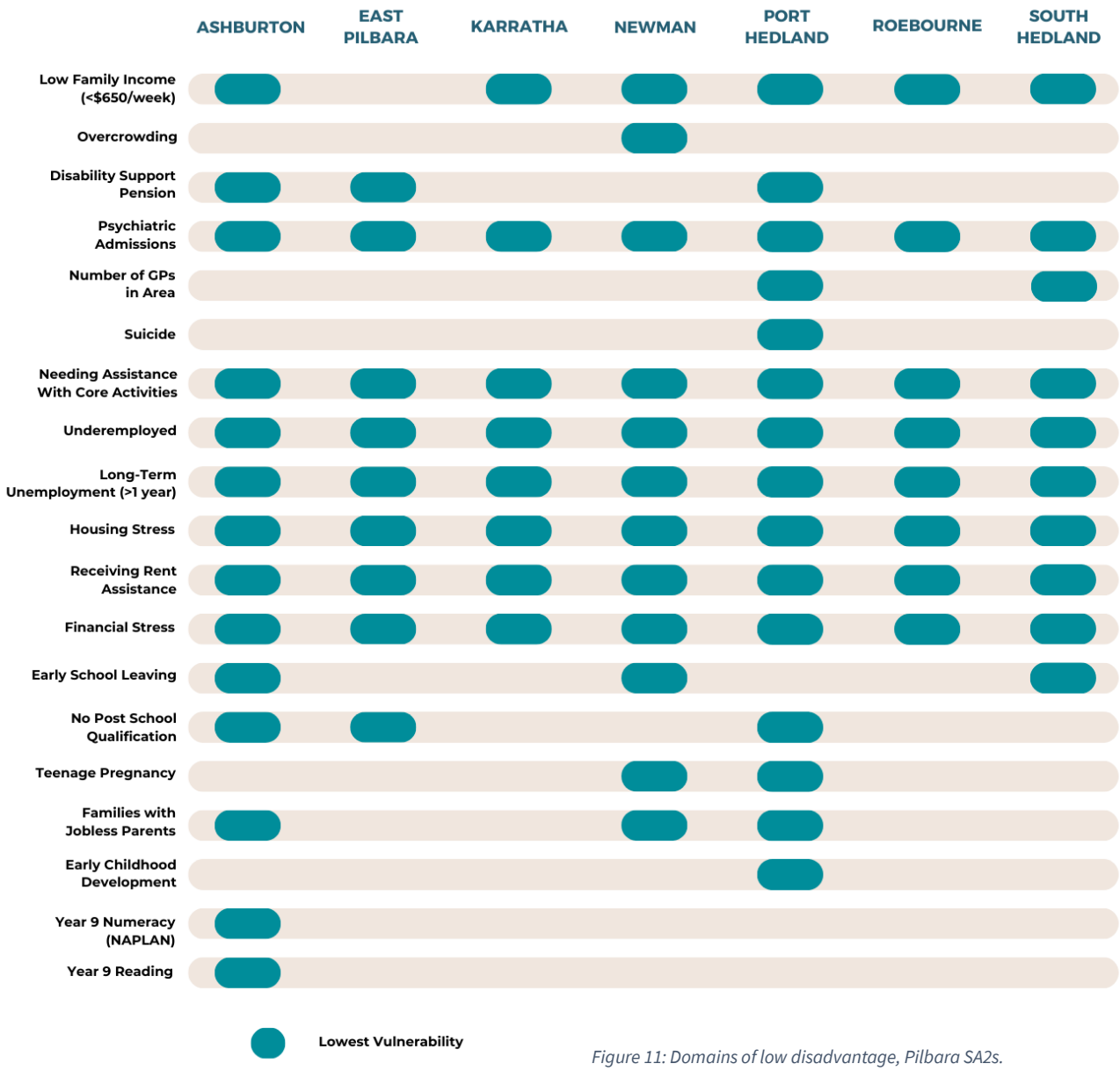

Figure 11: Domains of low disadvantage, Pilbara SA2s.

ECONOMY AND AGRICULTURE

Economy

The region has a combined economic output of $111.5 billion, 13.6% of Western Australia's output ($819.3 billion). East Pilbara LGA accounts for 38.7% of annual economic output for the Pilbara, followed by Ashburton with 30.3%.[81] The Pilbara economy is highly reliant on mining, accounting for 87% of region output and over 90% in the East Pilbara and Ashburton LGAs.

Agriculture

The region has a total land area of 507,896km2, with approximately 145,982 (28.7%) of this agricultural land. Almost 70% of land in both Ashburton and Port Hedland LGAs is agricultural.

In 2020-21 the gross value of agricultural commodities was $130 million, with almost half of this in the East Pilbara LGA. This included 281,904 animals (meat cattle), 48,271 tonnes of production (predominantly hay) and 1,176 trees (mango).[82]

Of the 59,782 jobs in the Pilbara region, 256 (0.4%) are in the agriculture sector, with 115 of these in the East Pilbara LGA.

Jobs in Australia data shows jobs in the Agriculture sector increased or were stable across all LGAs, accounting for less than 1% of jobs in the City of Karratha to 2% in the Shire of East Pilbara.

AGRICULTURAL LAND (ABS, 2021)	DIRECT OUTPUT AGRICULTURE SECTOR (REMPLAN, 2023)	JOBS IN AGRICULTURE SECTOR (ABS, 2021)
KARRATHA	KARRATHA	KARRATHA
18%	0.8%	■ <1%
ASHBURTON	ASHBURTON	ASHBURTON
68%	1.5%	↗ 1.5%
EAST PILBARA	EAST PILBARA	EAST PILBARA
17%	2.1%	↗ 2%
PORT HEDLAND	PORT HEDLAND	PORT HEDLAND
67%	1%	↗ 1%

KEY:

■ stable

↙ reduced/ declined

↗ increased/ improved

Appendix - Drought Actors

Some of the key actors in relation to drought in Australia are outlined in the following tables. Additional key actors involved in the drought space include rural consultants, private consultants, farming and grower groups, and agribusiness companies. Universities across Australia are also key players in drought related research.

Table 3: Snapshot of National-Level Drought Actors

ACTOR	ROLE
Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)	Focuses on understanding and measuring the effects of climate variability and change on agricultural industries with a focus on drought from the farmers' perspective.
Australian Centre for International Agricultural Research (ACIAR)	Fosters strategic partnerships with key research institutions to improve the productivity and sustainability of agricultural systems and the resilience of food systems in partner countries.
Australian Export Grains Innovation Centre (AEGIC)	An investment of the Australian Government through the Grains Research and Development Corporation and the WA Government through DPIRD, with the aim of increasing value in the Australian grains industry.
Australian Institute for Disaster Resilience	Develops, maintains and shares knowledge and learning to support disaster resilience in Australia.
Australian Institute of Family Studies (AIFS)	AIFS is the Australian Government's key research body in the area of family wellbeing. It's involved in research and provision of resources and publications relating to the effects of drought on families and communities.
Australian Research Council (ARC)	The ARC fosters excellence, partnerships and the highest ethical standards in research and research training in all fields of science, social sciences and the humanities.
Bureau of Meteorology (BoM)	The Bureau contributes to national social, economic, cultural and environmental goals by providing observational, meteorological, hydrological and oceanographic services and by undertaking

ACTOR	ROLE
	research into science and environment related issues in support of its operations and services.
Centre for Australian Weather and Climate Research (CAWCR)	Established in 2007 - research partnership between CSIRO and the Bureau of Meteorology, focused on the Earth's climate system.
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Focus on broad megatrends, environmental resilience; farm resilience; forecasting and monitoring; smart agriculture; social and urban resilience.
Department of Agriculture, Water and the Environment (DAWE)	Supporting stewardship and sustainable management of Australia's environment and improving sustainable management of Australia's water resources for agriculture, the environment and communities.
Grains Research and Development Corporation (GRDC)	Involved in research and development to support Australian grain growers.
International Universities Climate Alliance (IUCA)	Represents the leading research universities in climate research with members from world-leading research institutions.
National Climate Change Adaptation Research Facility (NCCARF)	2008 – 2019 NCCARF - climate change adaptation publications, set up and supported national climate change adaptation networks, built a nation-wide website with countless resources of its own and held six national and international conferences.
National Drought and North Queensland Flood Response and Recovery Agency (NDNQFRRA)	Works hand-in-hand with communities, all levels of government, charities and agricultural organisations to support farmers and other rural and regional Australians living through the immediate and longer-term effects of drought and flood.
Natural Resource Management Regions Australia (NRMA)	Communicates with Australian Government Ministers (alongside other organisations) on behalf of all regional NRM bodies to help ensure that NRM policy is coordinated strategically and effectively.

ACTOR	ROLE
Queensland Climate Change Centre of Excellence (QCCCE)	The only state-based climate science research centre in Australia.
Regional Development Australia (RDA)	The RDA network, shares information, and collaborates to develop innovations and solutions that can be adapted across the country.
Research and Adoption Innovation Hubs (RAIH)	Support farmers and communities to get ready for drought. They connect farmers with regional agricultural experts, innovation and new practices.
The Australian Research Council's Centre of Excellence for Climate System Science (CECSS)	International research consortium funded by the Australian Research Council and made up of five Australian universities and Partner Organisations with the aim of expanding on existing modelling of regional climates to improve adaptation to climate change.
The Future Farm Industries CRC (Cooperative Research Centre)	Took the place of the CRC for Plant-Based Management of Dryland Salinity (2001-2007) with a 7-year grant. Areas of expertise included farming systems research; research in crop and animal production; new industry development involving farm grown biomass; bio-energy and wood products, plant breeding; animal psychology; nutrition and behaviour.

Table 4: Snapshot of State-Level Drought Actors

ACTOR	ROLE
Australian Association of Agricultural Consultants WA (AAAC)	Professional association providing representation, mentoring, professional development and resources for agricultural consultants working in Western Australia.
Pastoralists and Graziers Association (PGA)	WA based not for profit organisation representing primary producers of wool, grain, meat and livestock.
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Drought resilience research: ● Environmental resilience ● Farm resilience ● Forecasting and monitoring ● Smart agriculture ● Social and urban resilience
Kondinin Group	Provides research findings and agricultural information on best farming practices.

ACTOR	ROLE
Curtin University of Technology (CUT)	Focus areas: ● Centre for Crop and Disease Management ● Curtin Earth Dynamics Research Group ● Remote Sensing and Geospatial Sciences Group ● Centre for Digital Agriculture ● Remote Sensing and Satellite Research Group
Department of Primary Industries and Regional Development (DPIRD)	Committed to growing and protecting WA's agriculture and food sector. Focus areas related to drought: ● Climate change ● Dry seasons and drought ● Land use planning ● High rainfall pastures ● Carbon farming ● Water management ● Assessment for agricultural expansion ● Report card on conditions and trends ● Managing soils
Department of Water and Environmental Regulation (DWER)	Supports Western Australia's community, economy and environment by managing and regulating the state's environment and water resource. Key roles: ● EPA conducting environmental impact assessments and developing policies to protect the environment. ● Environmental Regulation responsibility for all environment and water regulation. ● Managing the availability and quality of water.
Department of Planning, Lands and Heritage (DPLH)	Focus areas (relevant to this report): ● Aboriginal heritage and lands management. ● Integrated land and infrastructure policy development. ● Land use planning and policy development.
Edith Cowan University (ECU)	Climate Initiative Taskforce Report: includes recommendations and projections based on climate change research and trends and annual carbon footprint auditing. Centre for Ecosystem Management.
Grower Group Alliance (GGA)	Capacity building for grower groups and connecting WA grower groups, researchers, funding bodies and industry.
Murdoch University	Food Futures Institute: consolidates research to sustainably improve food production.
Regional Development Commissions	Common goal of long-term social and economic growth.
Rural Aid	A charity organisation that provides immediate relief and support for longer term resilience and preparedness against natural disasters in rural communities including counselling and wellbeing, financial assistance, sourcing and delivery, domestic water deliveries, domestic water tanks, Farm Army job platform, and educational resources.
Rural Business Development Corporation (RBDC)	Administers assistance schemes and other services for the rural industry on behalf of the State and other services for the rural industry.

ACTOR	ROLE
North Regional TAFE	Provides important training and education in agriculture, conservation and land management and horticulture.
The Western Australian Biodiversity Science Institute (WABSI)	Facilitates partnerships across industry, government, community and researcher to address science knowledge gaps, support decision making and improve biodiversity outcomes. With restoration of biodiversity in agricultural lands one of its key focus areas.
University of Western Australia (UWA)	UWA's Centre of Excellence in Natural Resource Management (CENRM): Based in Albany CENRM maintains networks in national natural resource management activities and has worked with regional organisations and communities on matters where evidence-based science is important to their policy and operation. At a snapshot, UWA also lead or are involved in: ● Institute of Agriculture ● International Centre for Plant Breeding ● Centre for Legumes in Mediterranean Agriculture (CLIMA) ● Centre for Environmental Economics and Policy ● Inter-related regional health focus through the Western Australian Centre for Rural Health
Western Australian Livestock Research Council (WALRC)	Initiated by Meat and Livestock Australia (MLA) to improve consultation with levy payers and industry stakeholders for the WA agricultural region and southern rangelands.
WA No-Tillage Farmers Association (WANTFA)	The largest agronomic grower in Western Australia, WANTFA supports the adoption of sustainable and profitable broad acre cropping systems through shared experiences and innovative research. It is the only WA group focused on precision agriculture, endorsing the following principles: ● Limited soil disturbance; ● Precision agriculture; ● Permanent ground cover; ● Diverse rotations; and ● Reduced compaction.
Water Corporation	Key priorities: ● Waterwise Business Program; ● Waterwise Towns Program; ● Waterwise Councils Program; ● Undertaking large water integrated schemes to ensure a climate-resilient water supply ● Have taken over responsibility for many Aboriginal communities (formerly Department of Communities REMS).
Western Australian Landcare Network	Not-for-profit organisation with a foundation membership of 10 community groups. It operates with an Executive Committee who work with part time staff to provide benefits to members and raise the profile of land care in WA.

Table 5: Snapshot of Regional-Level Drought Actors

ACTOR	ROLE
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. Land and Sea Management encompasses a wide range of functions and activities that can be described as "looking after Country".
Aboriginal Corporations within the region	Including but not limited to: • Desert Support Services • Pilbara Meta Maya • Ashburton Aboriginal Corporation • Gumala Aboriginal Corporation • Karlka Nyiyaparli Aboriginal Corporation • Kanyirninpa Jukurrpa (KJ) • Ngarliyarndu Bindirri Aboriginal Corporation (NBAC) • Robe River Kuruma Aboriginal Corporation
Local Government Authorities	Responsible for infrastructure services, health services, community services, planning and development approvals, administration of facilities, and water services in some states.
Department of Agriculture, Fisheries and Forestry	Delivers community-based projects that address environmental degradation at a community level.
Department of Fire and Emergency Services	Supports the community to prepare for disasters and protect against unpredictability of natural hazards and emergency incidents.
Department of Primary Industries and Regional Development	Serves to cultivate and preserve WA's agriculture, food industry and aquatic resources and build regional communities and economies.
Department of Biodiversity, Conservation and Attractions	Fund the WA Aboriginal Rangers Program which operates in the region. The program aims to help Aboriginal organisations manage country and protect the environment across the State, in partnership with the public and private sectors.
Rural Business Development Corporation (RBDC)	Administers assistance schemes for the rural sector on behalf of the State and other services that benefit the industry.
Rural Edge	Not for profit organisation that designs and delivers training opportunities to businesses in the regional agricultural sector.
Society of Precision Agriculture Australia (SPAA)	Operating across Australia, this is a broad based organisation providing independent, objective precision ag information to the grains, sugarcane, horticulture, and livestock industries.
Grower Group Alliance	Responsible for building innovative agricultural research, development and extension, capacity of the grower group network and connect the network with industry.
WA Lot Feeders Association	The leading representative body for WA cattle feedlot producers.
Kimberley-Pilbara Cattlemen's Association (KPCA)	Not for profit organisation that supports and promotes the beef industry through accessing innovation, building capacity and achieving industry influence.

ACTOR	ROLE
Northern Western Australia and Northern Territory Drought Resilience Adoption and Innovation Hub (Northern Hub)	One of eight national Drought Resilience and Adoption Innovation Hubs as an initiative of the Future Drought Fund, committed to building resilience and sustainable prosperity for rural communities and industries. Core consortium partners from WA include Kimberly Pilbara Cattlemen's Association (KPCA), Rangelands NRM, Regional Development Australia and WA Department of Primary Industries and Regional Development.
Pilbara Meta Maya	Locally based regional service provider now working with Water Corporation (formerly Department of Communities) to service Aboriginal communities.
Rangelands NRM	Leads ecological preservation and sustainability activity across the Australia Rangelands in WA.
RDA Pilbara	Supports the growth and development of Australia's regions.
District Leadership Group	Explores local issues and initiatives, develops collective strategies to address local priorities, delivers collaborative initiatives, consultation and feedback, and shares expertise and resources.

List of Figures

List of Tables

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