

1 A Brief History of the Avon River Basin

Parts of the Avon River basin were amongst the earliest settled areas in Western Australia. The first European sighting of the Avon River was by Ensign Robert Dale of the British Army's 63rd Regiment in August 1830 during one of his preliminary explorations eastwards of the Swan River settlement. Governor Stirling is thought to have named the river after the Avon River in England (Landgate 2012).

York was the first inland town settled in WA in 1931 after an expedition in October 1830 by James Henty along the Avon River; however, the Northam town site was reportedly selected in November 1830. WA was then only a fledgling colony, with an 1839 population of only 2,150, but it grew rapidly and had more than doubled to 4,500 by 1845.

Prior to European settlement, a thriving population of Noongar people had inhabited the region for tens of thousands of years, living in harmony with the land. Not surprisingly, the Noongar people and European settlers clashed repeatedly in the early days of settlement. By 1836, increasing conflict between Europeans and Noongar people of the Northam and Toodyay areas was being reported as ever-more settlers arrived and set about establishing farming and townships (DET 2012). By 1840 armed Native Police patrols restricted Noongar people's movements around Toodyay, Northam, Katrine, and York (Noongar 2012).

An *Aboriginal Protection Act* was introduced in 1886, and by the late 1890s Aboriginal people in Western Australia were 'protected, managed and controlled' under the *Aborigines Act of WA*. This Act signified the end of violent resistance by Noongar people of the Northam, Toodyay, Katrine and York regions; the last recorded large gathering of Noongar people in Northam occurred at what is now the Northam Reserve in 1897 (DET 2012).

The dispossession of the Noongar people remains one of the darkest chapters in the brief history of European occupation of the region.

1.1 Difficult Beginnings

Early European settlers in the Avon region faced extremely difficult conditions, not least from the Avon River itself. The river flooded in 1847, 1849, 1857, 1859 and 1862, and then again in 1902 and 1926. On the 21st of July 1926, the Avon River flooded Fitzgerald Street in Northam (Landgate, 2012).

Land in the new WA colony could be purchased very cheaply and with virtually no official oversight. For £3, a settler could have any available 16 ha (40 acre) parcel of land. By the 1830s, large areas of land had been taken up within the Avon Arc. By 1931 the system of land granting came to an end, and was replaced by the sale of crown land for five shillings per acre.

Prior to 1887, land occupation was largely associated with control of leasehold pastoral land. After that date the emphasis of settlement changed to acquisition of freehold land for agriculture (Burvill 1979).

Paddy Hannon discovered gold in Kalgoorlie in 1893, increasing pressure for development of rail and water resources through the centre of the Avon region to the Goldfields. By 1885 the railway extended to York (via Chidlow) and by 1894 reached east to Southern Cross (Mouritz 1965).

Fresh water was scarce in the Avon region and even more so in the Goldfields. As a result, the Goldfields Pipeline was constructed and by October 1902 allowed scheme water from Mundaring Weir to be pumped to Southern Cross (Le Page 1986). By December 1902, scheme water from the Mundaring Weir reached Coolgardie.

The first concerted agricultural expansion and associated increase in land clearing within the region occurred during the 1920s through the group settlement scheme (Burvill 1979). The aim of the scheme was primarily to clear land, initially by establishing dairy farms with settled British migrants in Karri areas south of the Avon River basin (ARB). The scheme then extended into areas of the ARB adjacent to the railways. During the 1920s the group settlement scheme led to extensive land clearing and planting of wheat. By 1929 wheat farms were scattered as far east as Hyden and Lake King and within 15 miles of Southern Cross. Between 1924 and 1929, the total wheat production in Western Australia more than doubled, facilitated by rapid land clearing.

The group settlement scheme was problematic with many landholders ultimately leaving the land, as many settlers were inexperienced at clearing and farming and the harsh and primitive conditions and isolation took their toll. A royal commission in 1925 recommended extensive reorganisation of agricultural land. Blocks were resurveyed and the government agreed to write off farmers' debts, yet development continued unabated until the onset of the great depression (ACF 1984).

Many farmers faced great financial hardship due to a crash in the wheat price at the end of the 1920s. Unable to continue to eke out an existence, many landholders abandoned their farms and by June 1935 the State Agricultural Bank had more than 2,300 properties on its hands and almost £4 million outstanding (ACF 1984). Yet by the mid 1930s, railways had opened up most of the central region to agriculture in addition to large areas in the eastern and southern subregions (refer Figure 1) (Burvill 1979).

Land cleared in the early days of settlement tended to leave little or no native vegetation refuges, with very high clearing rates, typically greater than 95% in shires where early settlement occurred. Figure 2 illustrates most that most large areas of native vegetation within the region are more than 16 km (10 miles) from the 1940 rail distribution network.

Figure 1. Early Settlement Rail Construction within the Avon River Basin (adapted from Burvill 1979, Mouritz 1965).

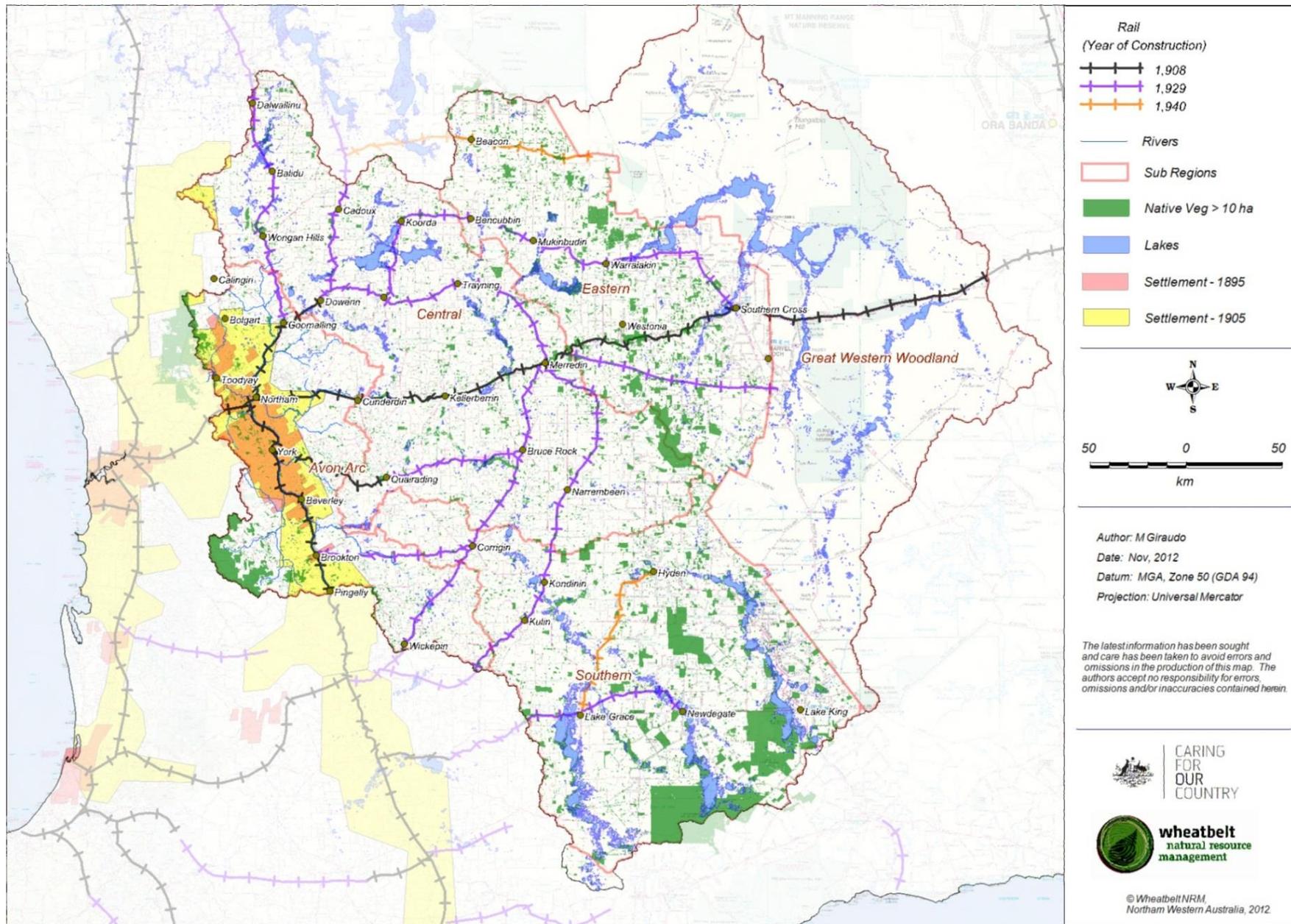
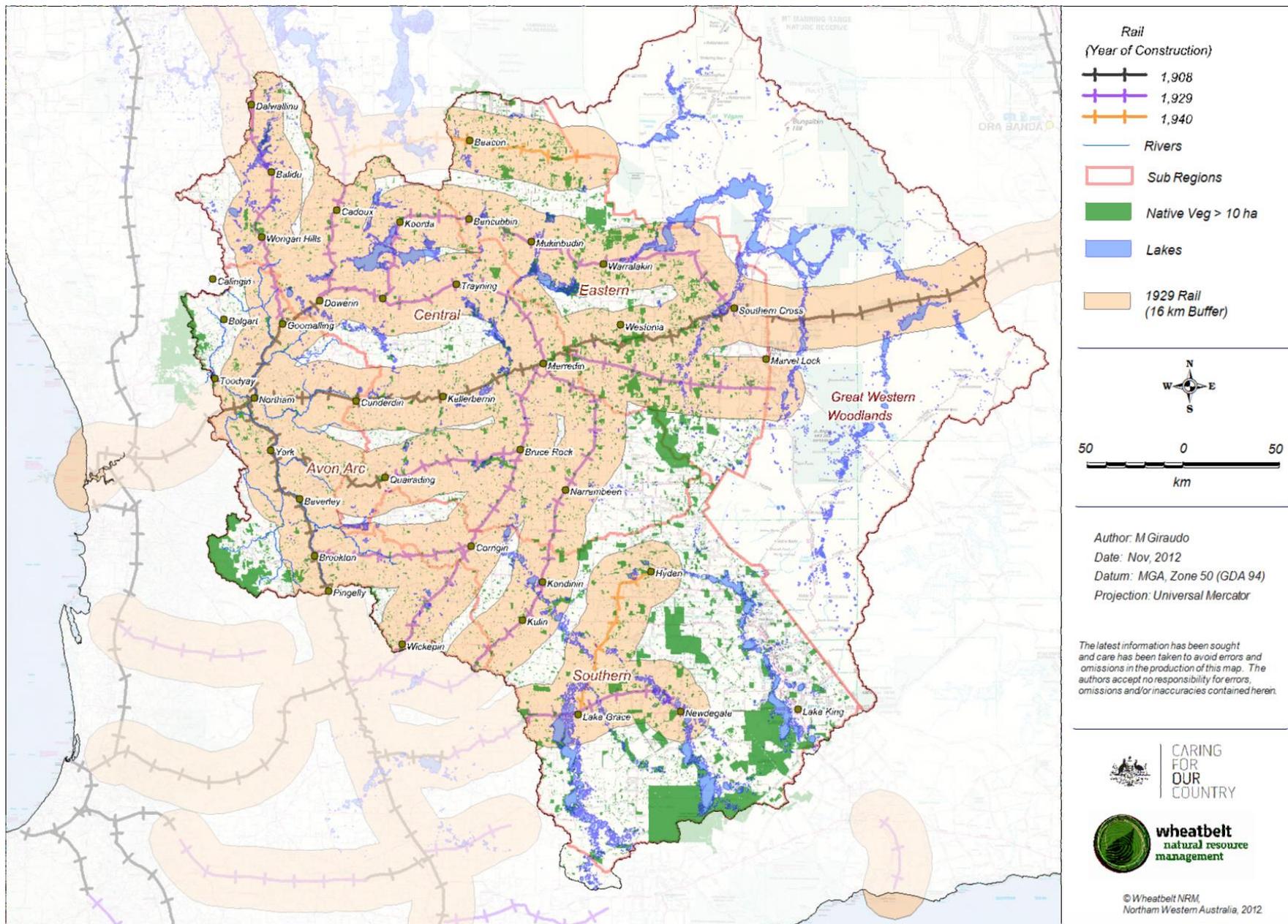


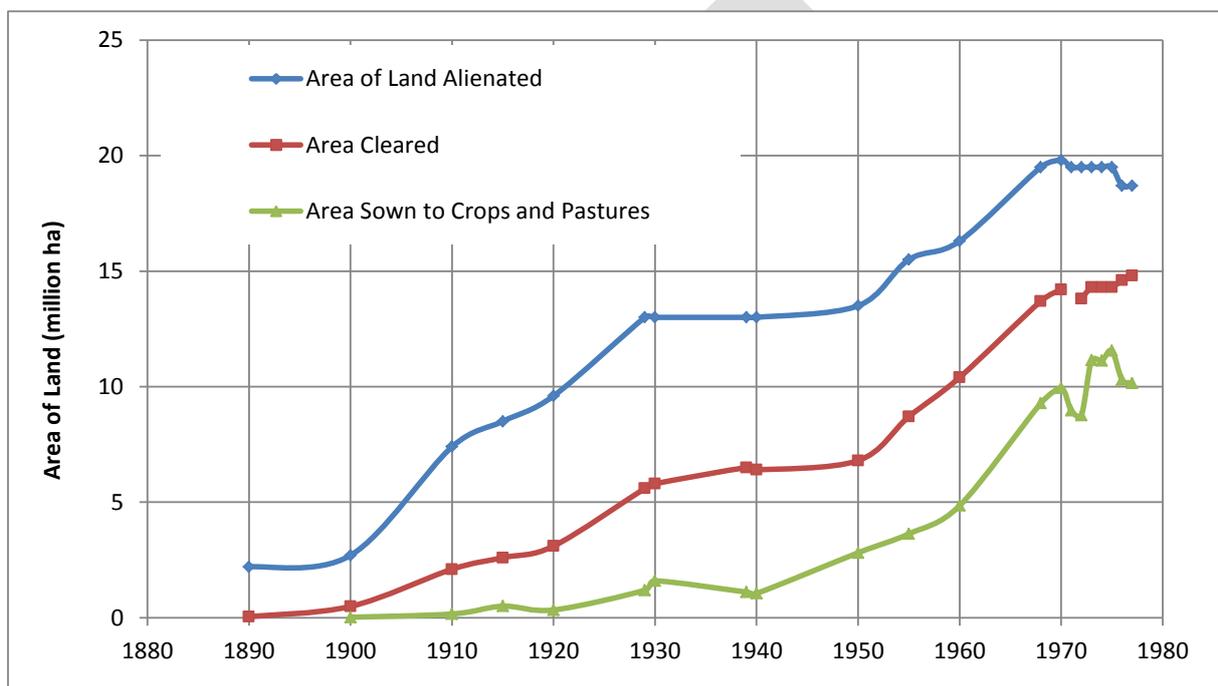
Figure 2. Distribution of Major Reserves and Early Rail Development (adapted from Burvill 1979, Mouritz 1965).



Economic hardship gripped the region throughout the 1930s and continued until the end of the Second World War. Over 4,000 farmers applied for government financial relief funds between 1935 and 1939, including approximately 75% of farms in marginal areas (ACF 1984). The problems faced by farmers in the 1930s appear to have been largely due to the reckless expansion of wheat growing areas during the 1920s, fuelled by generous credit offered by the agricultural bank. The cost to the government of the day of schemes to prop up derelict farms was a strain on the national economy. By the end of WWII, approximately 8 million ha of Western Australian bushland had passed into private control; most of that land has since been cleared of native vegetation (ACF 1984).

Between 1946 and the 1970s, the area of Western Australian land released for agriculture increased dramatically (Figure 2).

Figure 3. Area of Land Released and Cleared in Western Australia 1890–1980 (Adapted from Burvill 1979)



1.2 Foxes and Rabbits

Early European explorers in the Avon region described massive clouds of native insects and abundant native mammals and birds (ACF 1984 Mouritz 1965), but the subsequent clearing of native vegetation for agriculture, altered fire regimes, and introduction of domestic stock, the fox and the rabbit had a dramatic impact on the Wheatbelt's biodiversity.

The fox was introduced to Victoria in 1871 and spread to Western Australia by 1912, with devastating impact on native fauna. Clearing of native vegetation promoted the proliferation of the fox population, as they prefer the fragmented habitat of the agricultural landscape (Short & Smith 1994).

Foxes were preceded by the rabbit, which was introduced to Australia with the first fleet but remained captive until 1859 when released at Barwon Park near Geelong. Rabbits appeared in

Western Australia in 1895. Construction of rabbit-proof fences running north–south through Burracoppin and Cunderdin between 1901 and 1907 proved largely unsuccessful in stopping the rabbit population sweeping west across the region. By the late 1920s rabbits were widespread throughout the Avon region, devastating agriculture and native ecosystems alike. This continued through the 1930s and 1940s as rabbit populations grew extremely large (Tomlinson & Gooding 1970, Maher 2007).

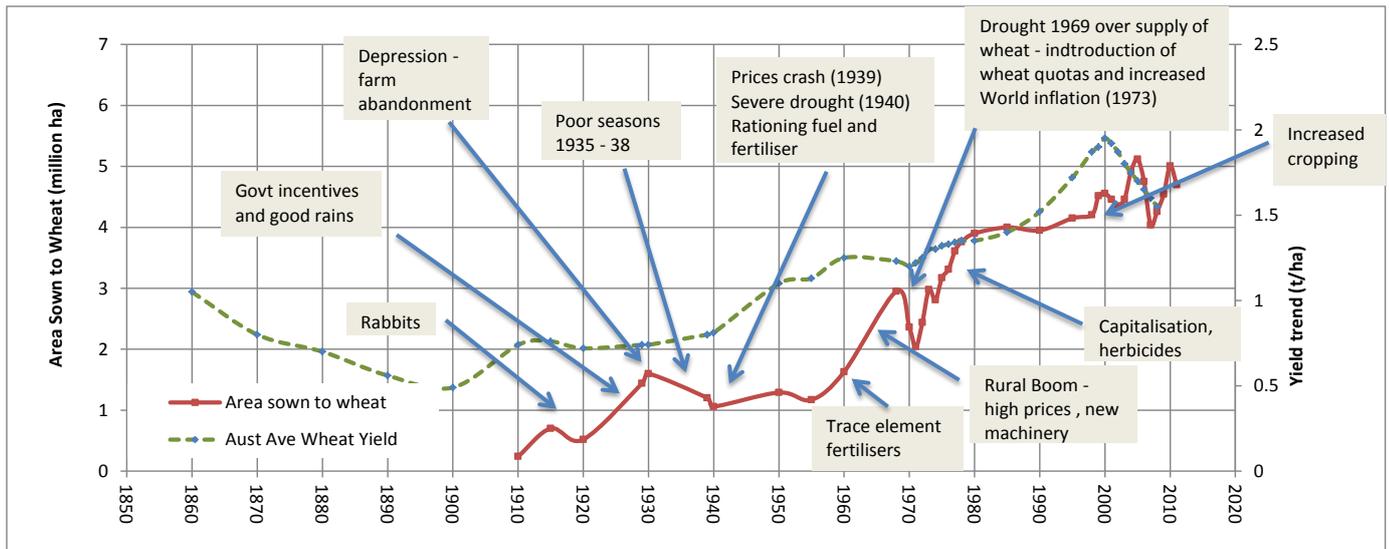
Prior to the commissioning of the Agricultural Protection Board in 1950, landholders attempted to control rabbits by poison baiting, fumigation, trapping and burrow destruction, with varied success. The introduction of one-shot oats and myxomatosis in the 1950s, followed by the later introduction of the rabbit flea in the 1970s, resulted in successive reductions in rabbit numbers within the region. Rabbit calicivirus has had a spectacular effect on populations in arid and semi-arid regions of WA since 1996, but its effectiveness has been patchy in wetter areas (CSIRO 2008).

1.3 The Modern Era

The agricultural industry in WA suffered during WWII due to shortages of labour, fuel, fertilisers and machinery and uncertain markets. However, a range of technical advances after the war, including improved access to heavy machinery, in association with more buoyant commodity prices and cheaper fuel and other inputs, led to a dramatic increase in agricultural profitability which in turn drove increased rates of clearing. The introduction of trace element fertilisers resulted in a further significant expansion of agriculture into regions with sandy or gravelly soils where agriculture had previously been unproductive (Alison 2003). Clearing of the “light land” resulted in the removal of natural ecosystems that supported the rich and world-renowned flora and fauna which, prior to the 1960s, had been largely excluded from clearing (ACF 1983). The Western Australian government released approximately 4 million ha of land in 1960–1970, including land not proven capable of supporting profitable agricultural production (ACF 1983).

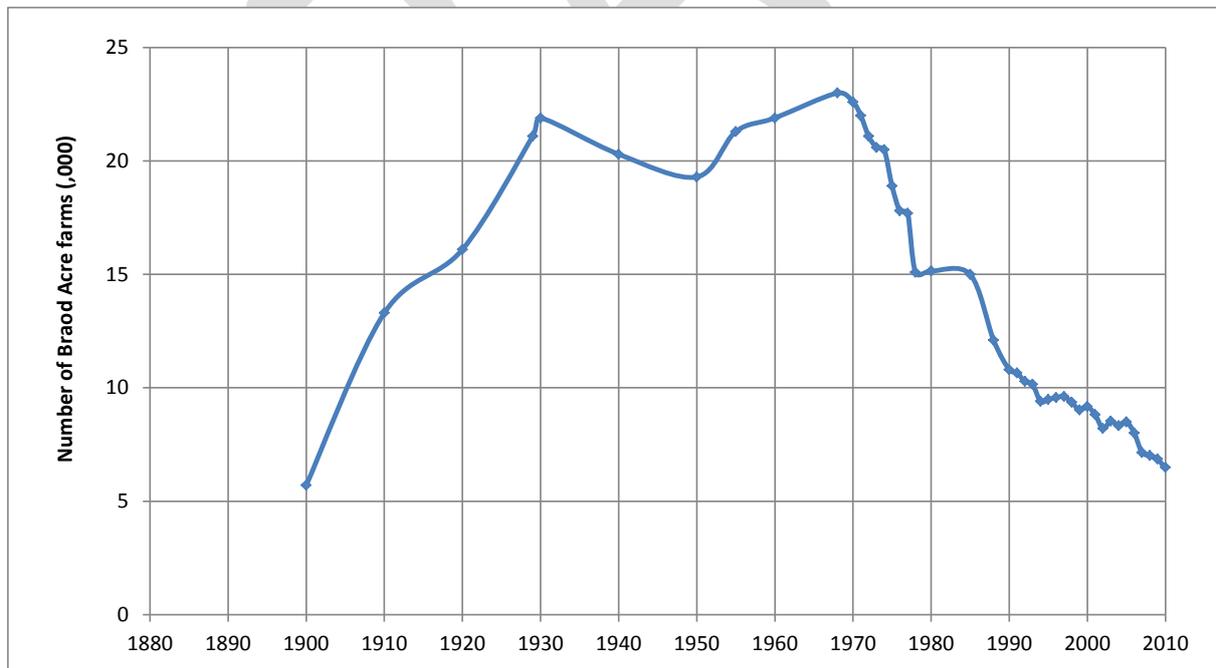
The area of WA sown to wheat increased very significantly during the period 1955–1970, but only modest increases in wheat yields were achieved during this period. Subsequent capitalisation within the industry and adoption of herbicides resulted in increasing yields during the 1970s and beyond (refer Figure 3). However, a series of poor rainfall years, coinciding with declining commodity prices, led to a return to economic hardship for many farmers during the early to mid-1970s (Burvill 1979, ACF 1983, Alison 2003).

Figure 4. Major Influences in Wheat Production in Western Australia (adapted from Burvill GH 1979, ABARES 2003, Alison H 2003, ABEARS 2011)



The economic difficulties of the 1970s resulted in a dramatic internal restructure within the agricultural industry, with an approximately 33% reduction in the number of broadacre farms in Western Australia between 1970 and 1980. That trend has continued to the present day, albeit at a slightly reduced rate (refer Figure 5).

Figure 5. Number of Broadacre Farms in WA (Alison 2003, ABARES 2012)



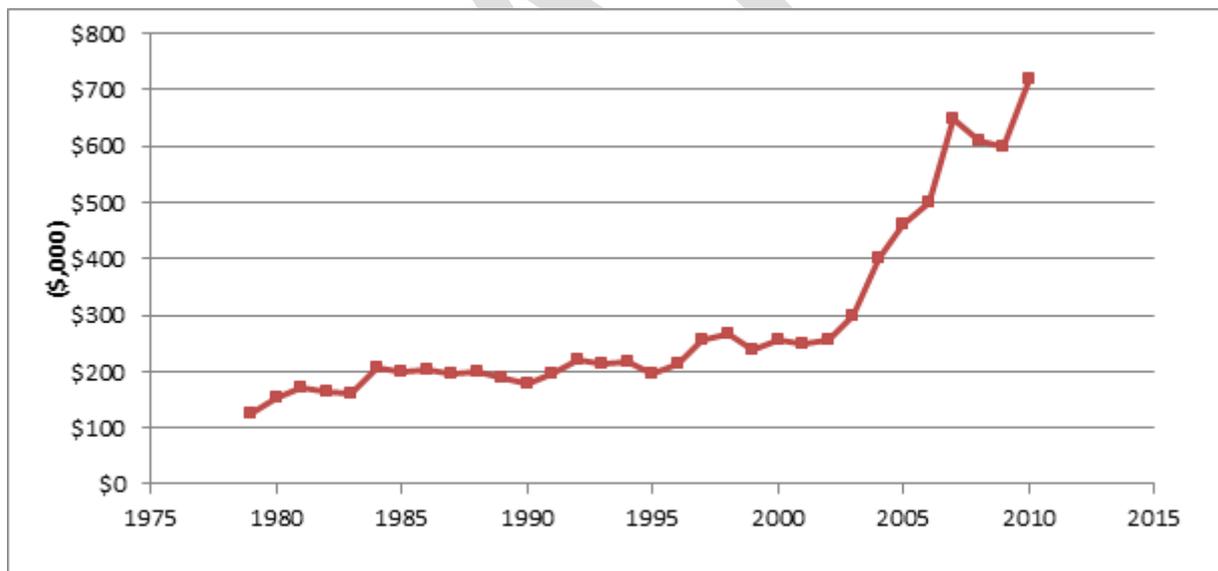
By the 1970s government recognised the difficulties faced by new farmers in Western Australia. An Industries Assistance Commission report into new farms in 1975 recognised that government did not

plan effectively for the release of new land, released land that in some cases was not proven and did not consider the financial needs of new farmers (ACF 1983).

Increasing environmental awareness of the range of degradation processes occurring within agriculture occurred throughout the 1980s and 1990s, with the adoption of a range of soil and water conservation practices, including the wide adoption of minimum till farming. In addition, the area sown to wheat increased dramatically between 1970 and 1980 and again in the mid-1990s, reflecting improved economics of broadacre grain production. However, declining wheat yields since 2000 associated with a period of poorer seasons has resulted in fluctuations in the area sown to wheat (refer Figure 4).

Since the mid 1990s, the most significant development in the broadacre agricultural industry in Western Australia has been rapidly increasing debt (refer Figure 6). This now looms as the third major financial crisis within the industry since the great depression. Previous crises were caused by the collapse of world markets in the 1930s and high interest rates and poor commodity prices in the 1970s, whereas this crisis is driven by ongoing decline in terms of trade, increasing debt associated with capital and land purchase, but primarily by a series of poor seasons since 2000. It should be noted that the 1930s and 1970s were also dry decades, with low production coinciding with unfavourable underlying economic conditions for agriculture.

Figure 6. Average Debt, Western Australian Broadacre Farms (ABARES 2003, ABARES 2011)



1.4 Reflections

The history of WA and the ARB reveals that many of the problems impacting the region's environment, industries and communities have been preceded by poor planning exacerbated by a lack of effective research and development. Expansion of wheat growing areas in 1920 was poorly planned and ended in financial chaos. Land releases during the 1950s and 1960s proceeded with little research or planning and no effective land capability assessment. Over-clearing of native vegetation and a failure to effectively manage pervasive stressors has resulted in species loss and landscape-scale degradation processes. A lack of understanding of appropriate fire regimes and a

limited understanding of the interactions of the range of stressors impacting our altered landscape has produced a legacy of poorly managed natural resources.

In addition, our history is punctuated by a lack of action even when we have identified degrading processes. The link between clearing of native vegetation and salinity was first recognised in the early in the 1900s, when W.E. Wood (a railway engineer) claimed to have noticed increasing salinity in cleared areas, concluding that the water may become too saline for engine boilers. He presented his findings to the Royal Society of WA in 1923. Around the same time, it became evident that salinity in the Salmon Gums area was resulting in poor crop yields. By 1946 there was so much concern about salinity in the Lake Grace and Newdegate areas that a committee was appointed to investigate the problem. Yet clearing continued almost unabated until clearing controls were introduced during the 1980s.

A 40-year cycle of major economic upheavals is apparent in Western Australia's agricultural history. Previous crises in the 1930s and 1970s occurred due to a combination of adverse economic conditions and poor seasons, resulting in farmers being faced with unmanageable debt (a situation reflected in the present day). During the financial crisis of the 1930s and 1970s, government-backed financial institutions wrote off large amounts of debt, allowed landholders to leave the region with dignity and reduced the potential severity of the financial impact on the region, allowing the industry to undergo rapid rationalisation and transformation. How the currently looming financial crisis will unfold is unclear, but this time the debt is held by private financial institutions rather than government, which probably rules out a repeat of previous write-offs and rescues.

The number of farms in the Avon region has fallen dramatically over the last four decades and is now approximately the same as it was in 1900 and one quarter of that in the 1970s. This is reflected in the region's dramatic decline in population and loss of services. Given the extent of the rationalisation that has occurred in the agricultural industry over the previous four decades, due mostly to technological improvements and pursuit of economies of scale, it is difficult to imagine what further rationalisation and transformation could occur in response to the current financial crisis. If we have learned anything from history, it is that effective planning supported by applied research and development, managing debt and supporting local communities will be essential in guiding the agricultural industry and management of natural resources within the region.

1.5 References

ACF 1984 *Diversity or Dust. A review of the impact of agricultural land clearing programs in South West Australia*. Australian Conservation Foundation, April 1984.

Alison H 2003 *Linked Socio-ecological Systems. A case Study of the Resilience of the Western Australian Wheatbelt*. PhD Thesis, School of Environmental Science, Murdoch University.

Burvill GH 1979 *Agriculture in Western Australia. 150 years of development and achievement 1827–1979*. University of Western Australia Press, Perth.

CSIRO 2008 Rabbit Calicivirus Disease (RCD). <http://www.csiro.au/en/Outcomes/Food-and-Agriculture/RCDFactsheet.aspx>

DET 2012 Historical Timeline, WA Wheatbelt.

<http://www.det.wa.edu.au/aboriginaleducation/apac/detcms/aboriginal-education/apac/regions/wheatbelt/historical-timeline.en?oid=MultiPartArticle-id-9292063>

Mouritz NE 1965 *History of Agriculture in Western Australia*. University of Western Australia. Manuscript reference no.: NLA MS 1663.

Landgate 2012 History of WA Rivers.

<http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+River+Names>

South West Aboriginal Land and Sea Council 2012 The Noongar People.

<http://www.noongar.org.au/noongar-people-history.php>

Le Page JS 1986 *Building a state: the story of the Public Works Department of Western Australia 1829-1985*. Leederville, WA: Water Authority of Western Australia. [ISBN 0-7244-6862-5](#)

Short J, Smith A 1994 Mammal Decline and Recovery in Australia. *Journal of Mammalogy*, Volume 75, Number 2, pp. 288–297.

Tomlinson AR, Gooding CD 1970 The Organisation of Rabbit Control in Western Australia.

Proceedings of the Fourth Vertebrate Pest Control Conference, South Perth, Western Australia.